

Doosan Fuel Cell Sustainability Report 2023

Hydrogen Energy Global No.1 Player



DOOSAN



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Overview

Doosan Fuel Cell has published Doosan Fuel Cell Sustainability Report since 2022 to transparently share its annual sustainable management activities and outcomes with internal and external stakeholders. This Report presents Doosan Fuel Cell's willingness and efforts to grow with the community as a sustainable company by aligning its strategies with ESG and its reporting strategies and activities in accordance with DJSI and KCGS evaluation criteria.

Reporting Standards

This report is prepared in accordance with the GRI Standards 2021 reporting principles of the International Sustainable Management Standards Guidelines. Financial information follows Korea International Finance Reporting Standards(K-IFRS) standards and is prepared based on consolidated financial statements.

Reporting Period

This report describes and reports financial and non-financial activities and outcomes, in both qualitative and quantitative terms, for the period from January 1, 2022 to June 30, 2023.

Reporting Scope

The scope of this report includes the headquarters of Doosan Fuel Cell in Iksan, the Seoul office, and the R&D Center. In addition, the report also presents outcomes of primary suppliers while minimizing the impact on suppliers.

Reporting Cycle

Every year

Reporting Assurance

This report has been verified by With Accounting Corporation('verifier'), an independent, third-party assurance agency, to secure the reliability of data and prevent ESG greenwashing. The verifier performed an independent assurance engagement in accordance with ISAE 3000(International Standard on Assurance Engagements 3000), Revised Assurance Engagements other than Audits or Reviews of Historical Financial Information, which was established by the IAASB(International Auditing and Assurance Standards Board). The Third-Party Verification Statement can be found on pages 96.

Contact Information

This report can be downloaded by visiting the Doosan Fuel Cell website(<https://www.doosanfuelcell.com>). For inquiries, please use the contact information below.

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CEO Message

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Dear respected shareholders, customers, and stakeholders,

Doosan Fuel Cell is strengthening the foundation for future growth through the advancement of business structure and the identification and cultivation of new future technologies and new businesses to achieve its vision of ‘Hydrogen Energy Global No. 1 Player’ at a time when global interest in climate change is accelerating. Despite the energy industry’s difficulties, such as last year’s increasing energy prices, large-scale overseas orders for hydrogen fuel cells have begun in earnest, and even growth has been achieved, such as the dualization of core materials and expansion of eco-friendly business. It was possible because of the unwavering trust and support of all stakeholders, including customers and suppliers, and the passion and effort of employees. Doosan Fuel Cell will continue to do its best to realize a sustainable future along with the growth of its business.

ESG management has become a critical component in securing business competitiveness in the global marketplace. Doosan Fuel Cell has been striving to diversify the business models and create economic and social values across the company’s business over the past few years. Doosan Fuel Cell has been striving to create both economic and social values in overall corporate management over the past few years through the development of various business models. To this end, we established ESG vision as an ‘Eco-friendly Energy Company that Realizes a Sustainable Future’ and implemented activities to achieve mid- to long-term ESG strategic direction and vision. We have managed to ensure that ESG is reflected in the entire management operations through ESG’s performance management system, which has been centered on leaders since 2022. As a result, it was first incorporated into the 2022 Dow Jones Sustainability Indices (DJSI) and was recognized for its sustainable management capabilities.

We will strive to create ESG performance that can contribute to future business competitiveness. We will strengthen eco-friendly management to achieve 2050 Net-Zero and become a leading company in the eco-friendly market through continuous change. We promise to take the lead in the development and distribution of eco-friendly, high-efficiency power generation fuel cells and realize a clean hydrogen economy to provide optimal eco-friendly energy to customers and contribute greatly to revitalizing the hydrogen economy. By clearly setting goals for each ESG area, we will deploy ESG as the core of our management activities, and through constant innovation, we will grow beyond economic profit generation to become a leading ESG management company.

We sincerely thank all stakeholders who trust and are with Doosan Fuel Cell, and we ask for your interest and encouragement to repay them with constant communication and innovation.

Thank you.

Doosan Fuel Cell, Ltd., CEO **Hyungrak Chung**

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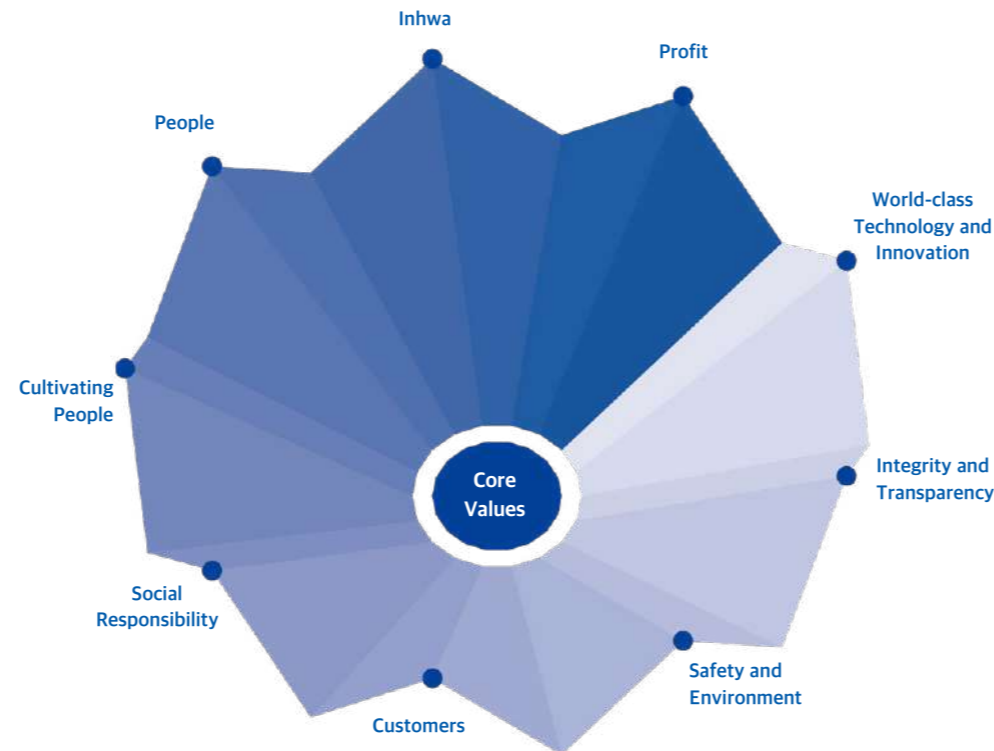
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Group Goals

Doosan's ultimate goal is the creation of 'Proud Global Doosan.' In our Vision, each of our employees and all of our stakeholders will benefit from and be proud of their association with Doosan. Every employee takes great pride in being a member of Doosan. Each customer recognizes and appreciates Doosan's high-quality goods and services. Every shareholder values our fair distribution and high levels of profit.

Core Values

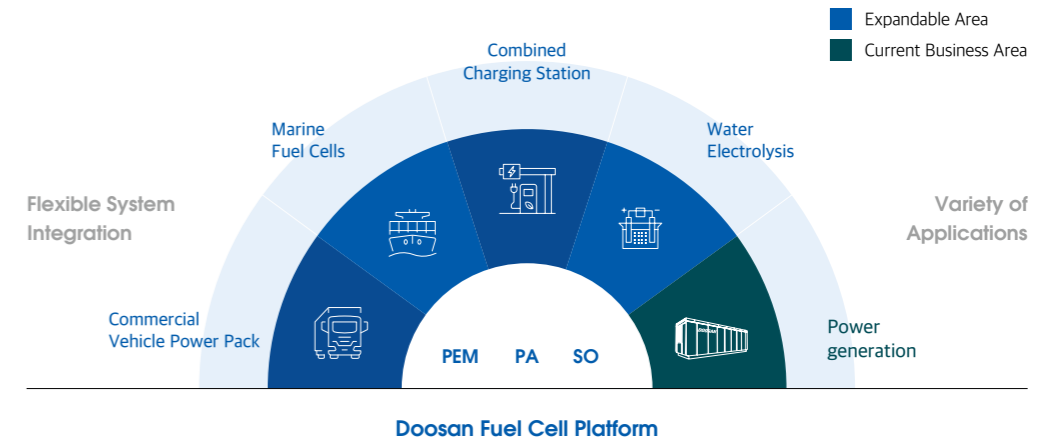
Doosan People practice the nine core values of the Doosan Credo everywhere we operate, every day, to build a "Proud Global Doosan". These values guide the way we do business, the way we treat each other and the way we work with our partners. The nine core values of the Doosan Credo are as follows:



Doosan Fuel Cell aims to create customer value, develop highly efficient and inexpensive products, and achieve sustainable growth based on our corporate vision. Responding proactively to the changing business environment, we will do our best to build a company that grows continuously with society.

Management Strategy

Doosan Fuel Cell is realizing a business model based on eco-friendly technology and clean energy solutions to speed up the realization of a hydrogen society that increases the sustainability of mankind. To secure a competitive advantage in the power generation fuel cell market, R&D and application diversification efforts are made. In the mid- to long-term, we plan to expand our business to ship/land mobility business(hydrogen utilization), hydrogen fusion charging station solution(hydrogen distribution), and renewable energy water electrolysis solution(hydrogen production).



Mid and Long-term Growth Project

Mid and Long-term direction	Major tasks
Securing business competitiveness	<ul style="list-style-type: none"> Increasing competitiveness in securing orders by creating customer value Mass production of SOFC(Solid Oxide Fuel Cell) Expanding business applications, such as hydrogen refueling station solutions, etc. Maximizing operation competitiveness by improving the supply chain of core components
New Biz. & Market	<ul style="list-style-type: none"> Increasing exports through new global 3rd markets New hydrogen projects, such as marine fuel cells, land mobility power pack, etc.
Carbon-neutral Response	<ul style="list-style-type: none"> Developing high-performance products and CO₂-free response technologies



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Doosan Fuel Cell was established on October 1, 2019, through an equity spin-off of the fuel cell division of Doosan. We specialize in fuel cells, and the main business of Doosan Fuel Cell is supplying tools and materials for power fuel cells and providing long-term maintenance services for fuel cell power plants. The fuel cell manufactured and supplied by us is an eco-friendly power source with high complex efficiency, excellent stability, and distributed power generation, including electrical and thermal efficiency, and we have been able to record the highest cumulative share in the domestic power fuel cell market.

Company Name	Doosan Fuel Cell Co., Ltd.
Date of Establishment	October 1, 2019
Chief Executive Officer	Hyungrak Chung, Hooseok Che(Representatives, appointed in March 2022)
Head Office Location	100, Seogam-ro 7-gil, Iksan-si, Jeollabuk-do, Republic of Korea
Major Businesses	Power-generating fuel cell business
Largest Shareholder	Doosan Enerbility Co., Ltd.(34.78%)
Number of Employees	471 persons(as of the end of 2022)
Branch/Corporation	Seoul Office, R&D Center

* The achievements listed above are based on the annual business report for 2022.

2022 ESG Evaluation Results

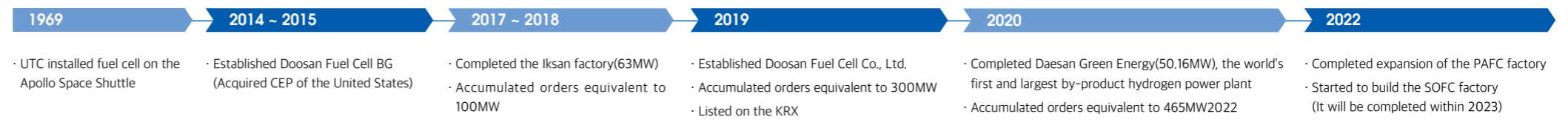
KCGS



DJSI



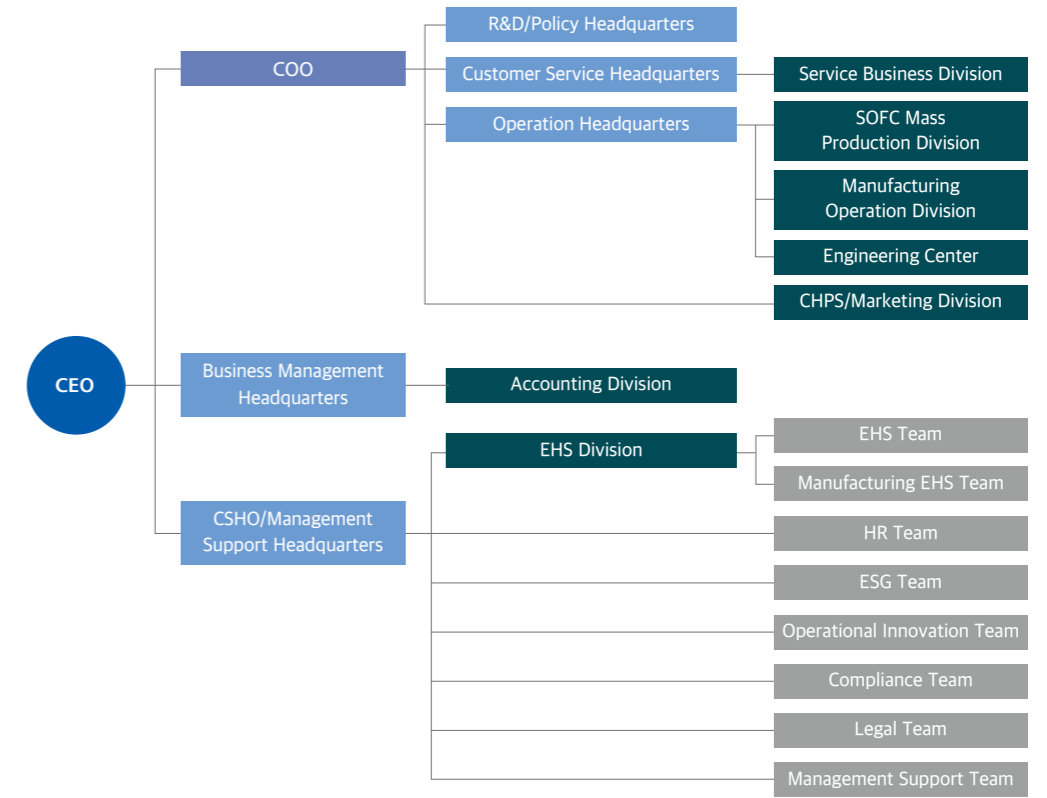
History



Doosan Fuel Cell has been leading the fuel cell business for power generation and buildings in Korea since its foundation on October 1, 2019. As a company specializing in fuel cells, Doosan Fuel Cell possesses core technologies for the entire process, from the design and manufacturing of stacks and reformers to the production of the integrated system.

Company Organizational Chart

Doosan Fuel Cell runs its businesses within an organizational system that comprises five headquarters, six divisions, and one center. We implement active and practical ESG management in the fields of environment, society, economy, and governance centered on ESG committee.



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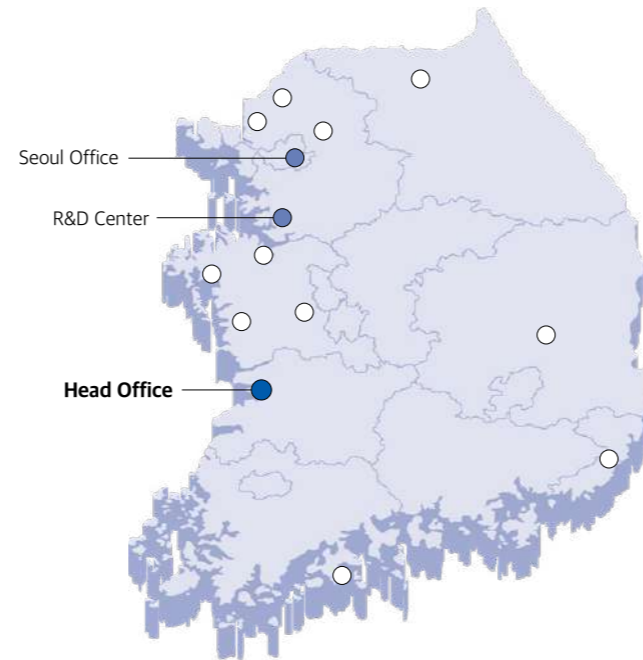
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Domestic Business Status

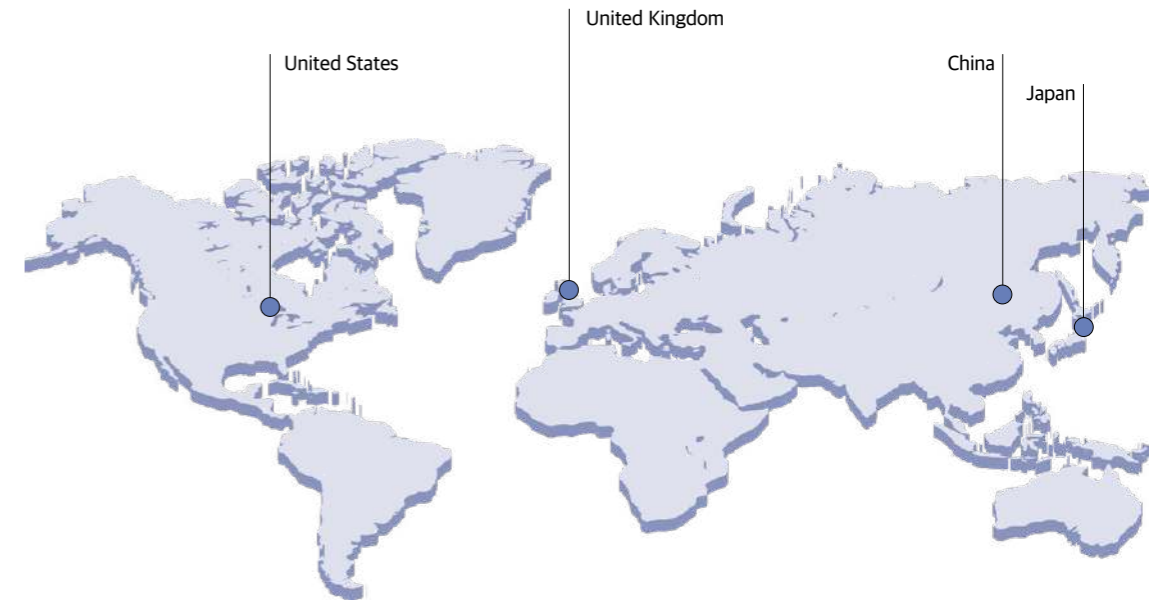
Doosan Fuel Cell carries out its fuel cell business through the head office in Iksan, Jeollabukdo, which produces fuel cell products, the office in Seoul, and the R&D Center in Gwanggyo, Suwon. A total of 1,065 fuel cells are currently in operation(468.19MW) at facilities nationwide, with a further 552 fuel cells being installed and operated(229.68MW).

Global Business

Doosan Fuel Cell operates 117 fuel cells of 51.84MW capacity each and 36 fuel cells of 15.54MW capacity each at commercial and industrial buildings in the United States, including data centers and universities. In the United Kingdom, 3 fuel cells of 1.3MW capacity each are installed and operated, mainly in commercial buildings. Doosan Fuel Cell accomplished sales of 1.5 million dollars in 2021 by selling products and supporting services in the emerging market of China. Recently, 4 hydrogen fuel cells(440kW) were installed as part of a distributed generation system in Nanhai of Foshan, China to supply electricity and cooling/heating power to apartment houses and buildings, and an additional 11 fuel cells are planned for installation. In addition, in February 2023, we are accelerating our entry into overseas markets by signing an MOU with the South Australian government to foster the hydrogen industry. The supply volume for power hydrogen fuel cells in major counties is 601MW in Korea, 483MW in the United States, and 313MW in Japan. The scale of the global power fuel cell market is expected to increase up to 12.7GW~25.4GW by 2030.



○ Fuel cell operation and installation



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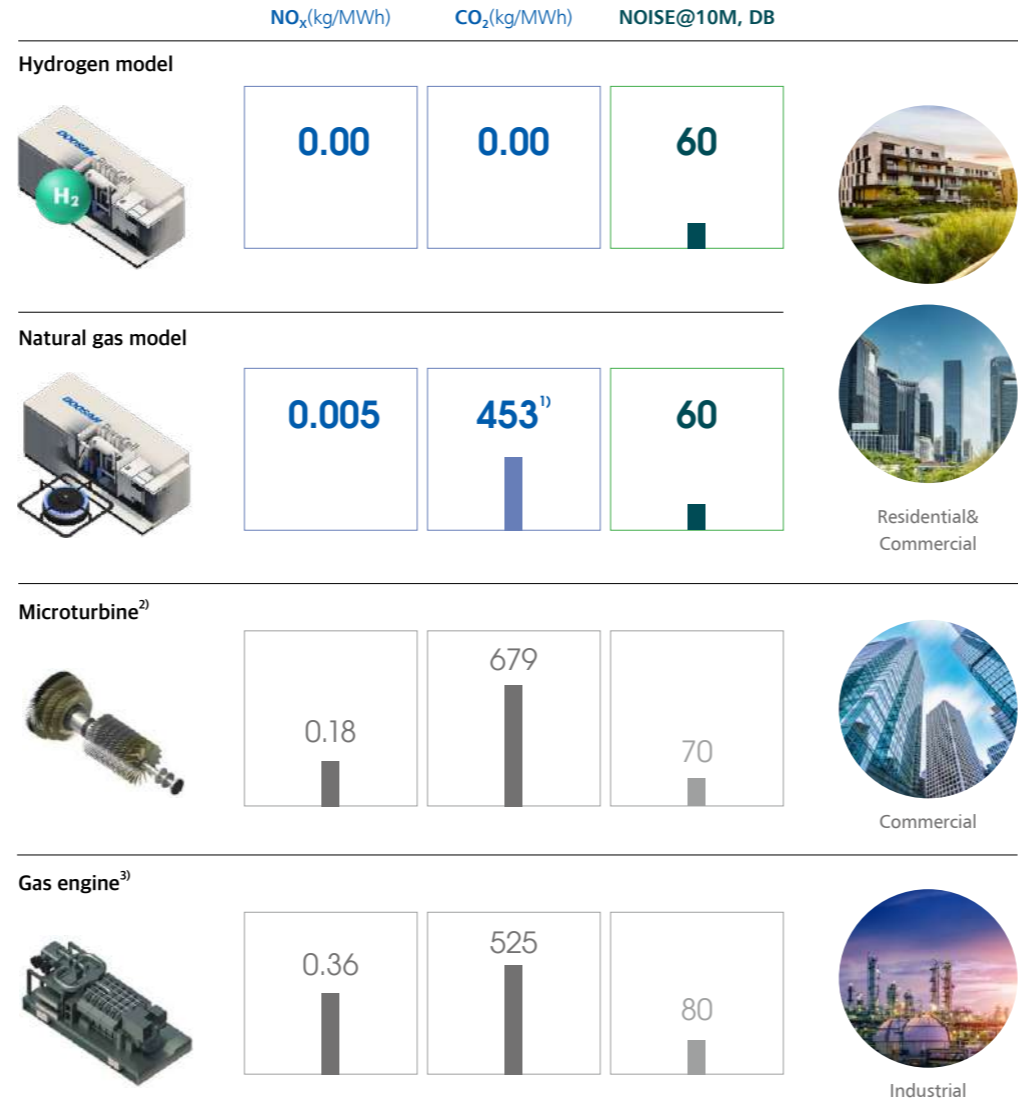
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Green Energy Business

This significantly lowers gas emissions and noise compared to conventional power plants and allows pollution-free power generation using hydrogen fuel cells.



1) GHG emissions when producing electricity and thermal energy simultaneously: 261g/kWh 2) 333kW(Source: DOE) 3) 633kW(Source: DOE)

Doosan Fuel Cell has been leading the fuel cell business for power generation and buildings in Korea. As a company specializing in fuel cells, Doosan Fuel Cell possesses core technologies for the entire process, from the design and manufacturing of stacks and reformers to the production of the integrated system.

Safe Technology

Doosan Fuel Cell offers safe technology that does not require high pressure and combustion in the power generation process. This safety aspect has been proven since its first application in a project by NASA in the United States. Doosan Fuel Cell maintains a high-level of safety, suitable for a wide range of building types, by acquiring designs that meet international standards and inspections and safety certifications.

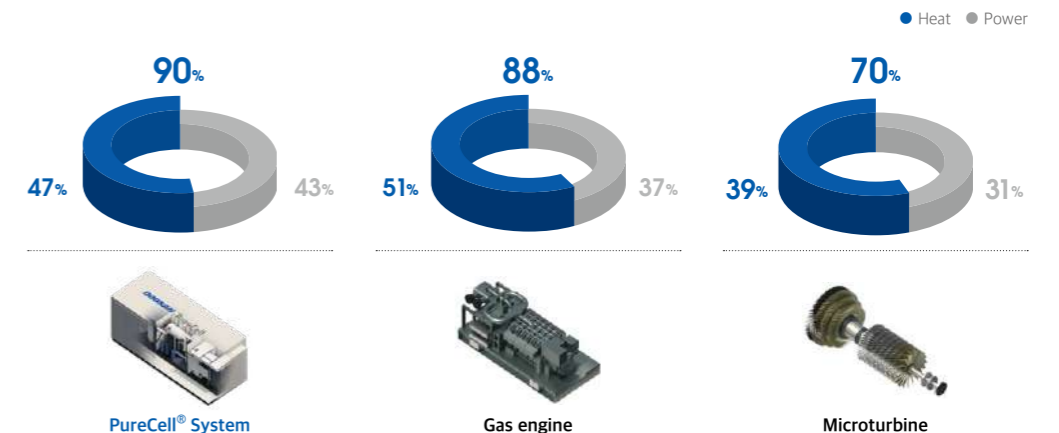
Non-combustible reaction	The non-combustible start-and-stop method, which produces electricity through the electrochemical reaction of hydrogen and oxygen, prevents the risk of fire.	Low pressure operation	Fuel is supplied and processed at atmospheric pressure in the entire process, and there is no risk of explosion because fuel is not stored.
Safety device	More than 70 double failure and triple failure safety measures against fuel leakage are installed to enhance the capacity to respond to unpredictable accidents.	International design standards	Designs that meet international standards are applied, and safety is verified through regular safety inspections and certifications.

Highly Efficient Power Generation

Power and heat are delivered with low energy loss and high efficiency to maximize productivity. The initial investment costs can be minimized as the installation requires only a small space and supports flexible response to various installation conditions.

High energy efficiency

The technology is based on highly efficient cogeneration power unit that generates power and heat simultaneously.



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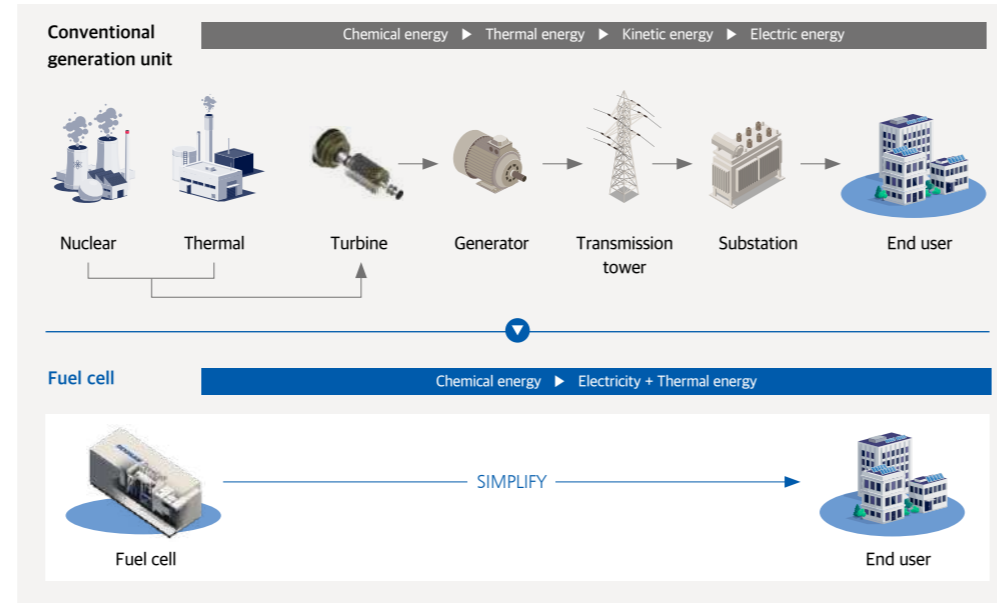
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Low energy loss Energy is supplied to end users with minimum energy loss.



Small space for installation The compact-sized fuel cells do away with the need for large installation spaces and can be installed anywhere, such as outdoors, indoors, or in multi-story buildings.

Outdoor	Indoor	Residential area	Multi-story

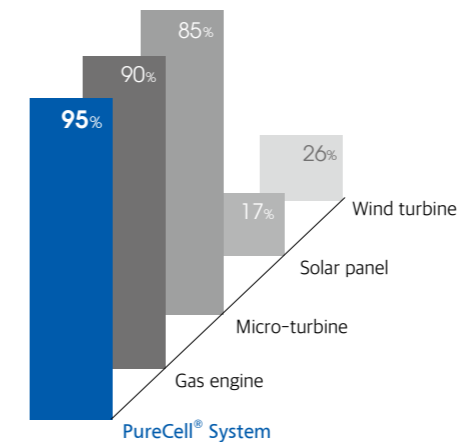
7,140m ²	88MW	0.5MW	0.08MW

High Reliability

Equipped with an outstanding capacity factor and fast response, Doosan Fuel Cell offers reliable energy. We deliver trustworthy services backed by many years of commercialization experience and technical data.

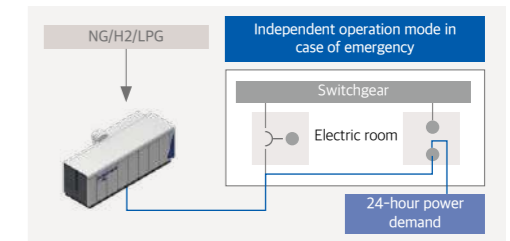
Outstanding capacity factor

Reliable power and heat supply based on high reliability.



Independent operation mode

In the event of blackouts caused by natural disasters or power system failures, Doosan Fuel Cell's power plants switch over to grid-independent operation immediately for the reliable supply of power and heat.



Smart remote control

24/7 IoT-based remote monitoring system supports remote control and responds to issues in real time.



Doosan Fuel Cell Highlights

Ever since UTC supplied fuel cells for NASA's Apollo missions, Doosan Fuel Cell has been delivering 440kW stationary fuel cells at home and abroad.

Domestic	United States	United Kingdom	China
<ul style="list-style-type: none"> • In operation: Approx. 468.19MW(1,065 units) • In installation: Approx. 229.68MW(552 units) 	<ul style="list-style-type: none"> • In operation: 51.84MW(117 units) • In installation: 15.54MW(36 units) 	<ul style="list-style-type: none"> • In operation: 1.3MW(3 units) 	<ul style="list-style-type: none"> • In installation: Approx. 6.6MW(15 units) • Order completed:

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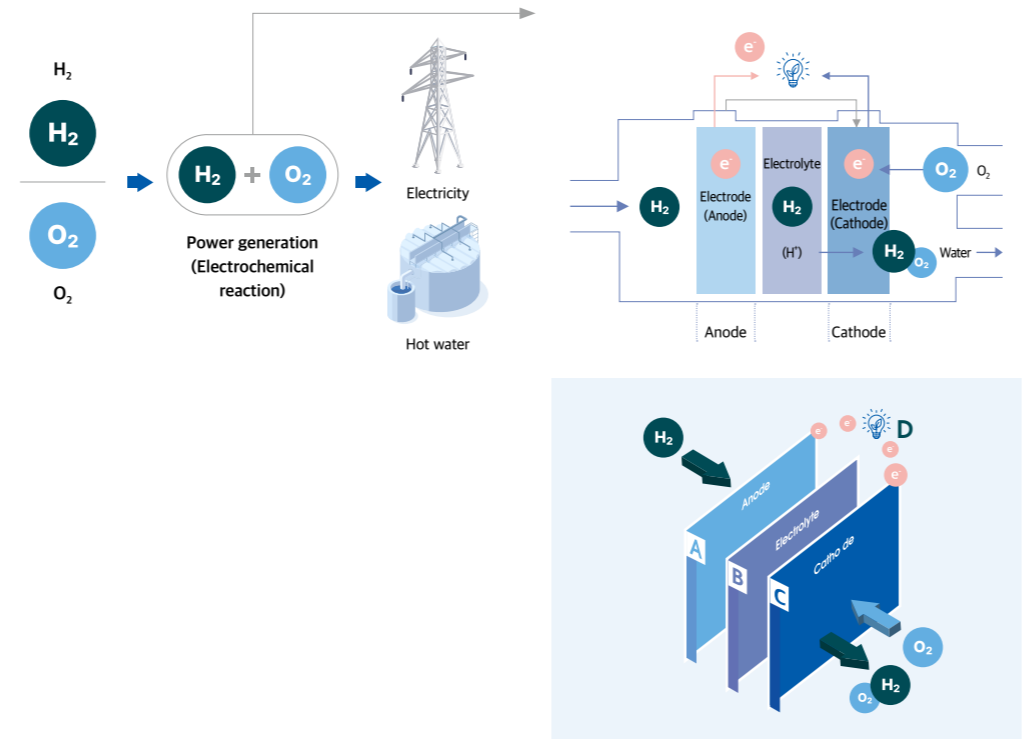
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Technology Introduction

Fuel Cell Principle

A fuel cell is an efficient and green energy generation technology based on the electrochemical reaction between hydrogen and oxygen.



A Anode

The hydrogen fuel is channeled to the anode and split into positive hydrogen ions (protons) and negatively charged electrons by a catalyst.

C Cathode

At the cathode, the positively charged hydrogen ions that passed through the electrolyte and the oxygen from cathode are combined to form water.

B Electrolyte

The electrolyte allows only the positively charged ions to pass through it to the cathode. The hydrogen ions go from the Anode through the electrolyte to the cathode.

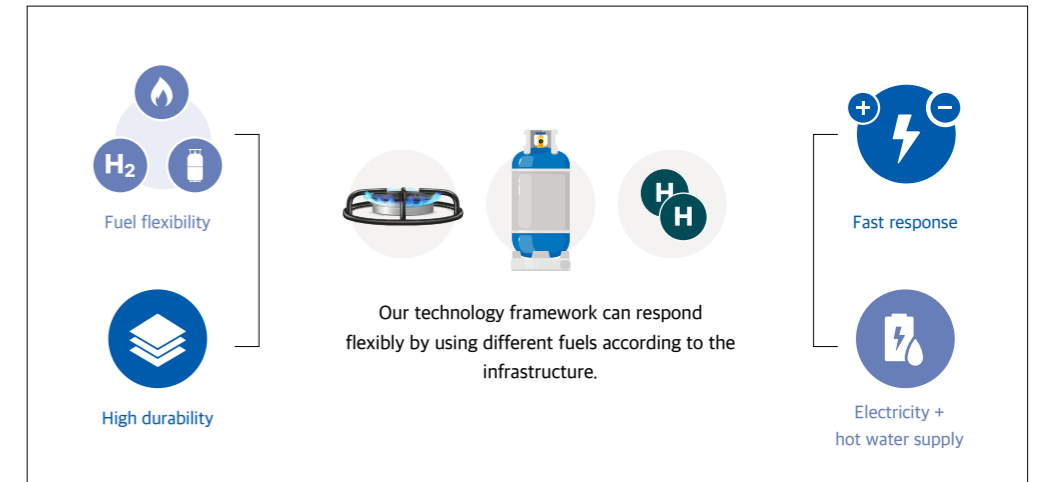
D Electrolyte

Electrons travel along an external circuit, creating an electrical current.

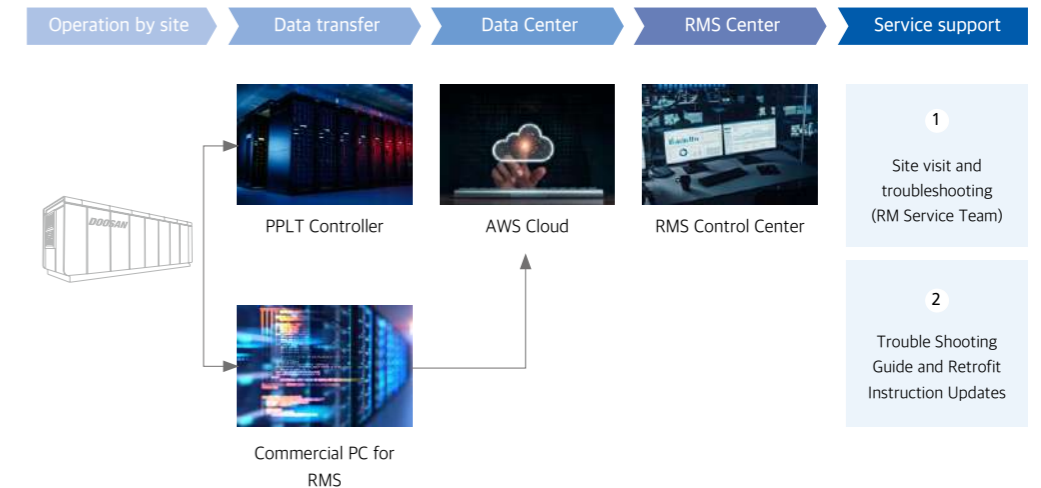
Doosan Fuel Cell performs joint research related to solid electrolytes and cathodes, working with domestic and overseas universities to preemptively secure technologies required for fuel cells. Based on this, we designed a 2025 product development roadmap for solid electrolytes and high-output cathode composite technology.

Fuel Cell Technology

Doosan Fuel Cell possesses PAFC (Phosphoric Acid Fuel Cell) technology that utilizes liquid phosphoric acid as an electrolyte. Our technology provides the benefits of durability, fuel flexibility and fast response to meet your energy needs in real time.



Fuel Cell System



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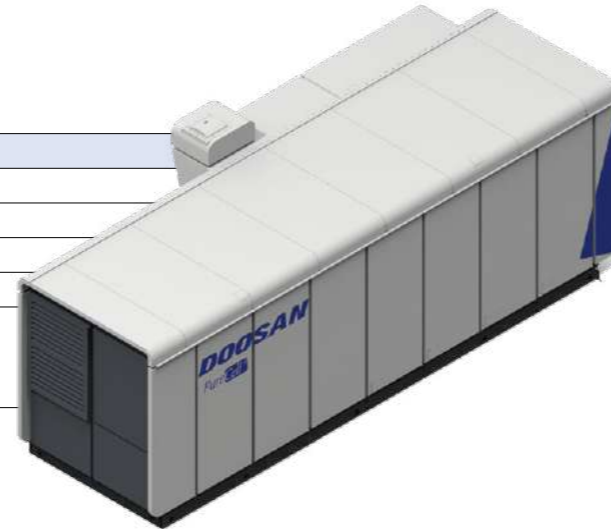
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Product Introduction

Purecell® M400 NG

Purecell® M400 NG utilizes natural gas that is supplied through gas pipelines. Highly suitable for urban areas as electricity and heat are supplied using the current infrastructure.

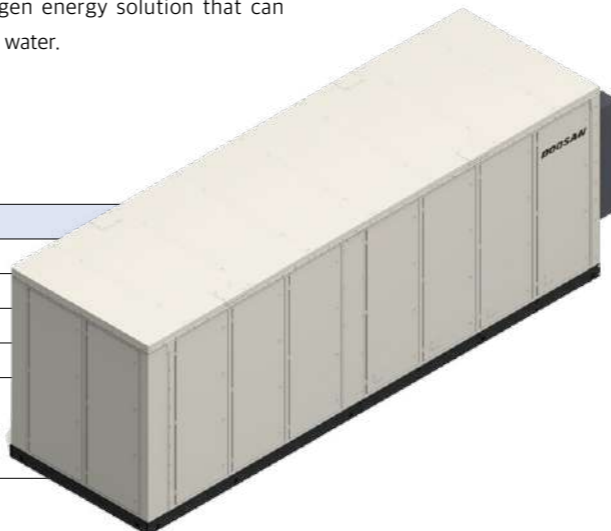
Category	Specification
Fuel	NG
Size	8.3x2.5x3.0m
Rated output	440kW
Heat supply	HG(120°C) / LG(60°C)
Efficiency	Compiling 90% Power 43% Heat 47%



Purecell® H2

A highly efficient, eco-friendly hydrogen energy solution that can generate high power efficiency and clean water.

Category	Specification
Fuel	H ₂
Size	8.3x2.5x3.0m
Rated output	440kW
Heat supply	HG(120°C)
Efficiency	Compiling 85% Power 50% Heat 35%

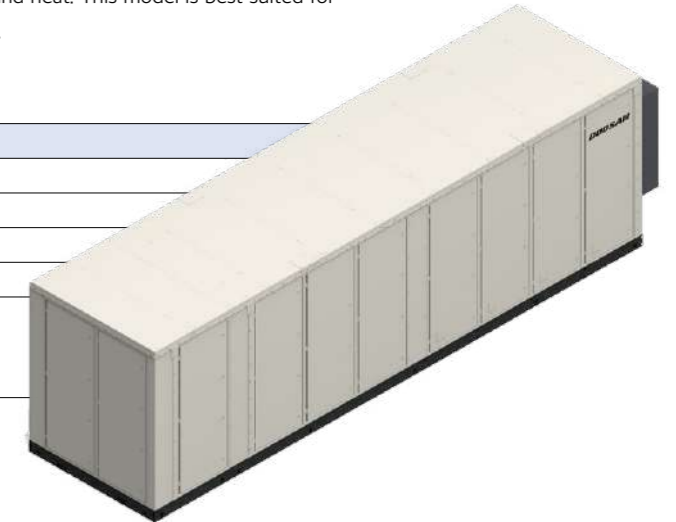


Doosan Fuel Cell leads the fuel cell industry by producing the current Purecell® M400 NG, H2, LPG/ NG Dual models and Tri-gen product.

Purecell® LPG/NG Dual

A natural gas/LPG-based model designed to operate in dual mode in regions where there is insufficient access to energy. LPG can be used as a backup fuel to supply electricity and heat. This model is best suited for use as an emergency power supply.

Category	Specification
Fuel	LPG/NG
Size	9.8x2.5x3.0m
Rated output	440kW
Heat supply	HG(120°C) / LG(60°C)
Efficiency	Compiling 90% Power 41%, 43% Heat 49%, 47%

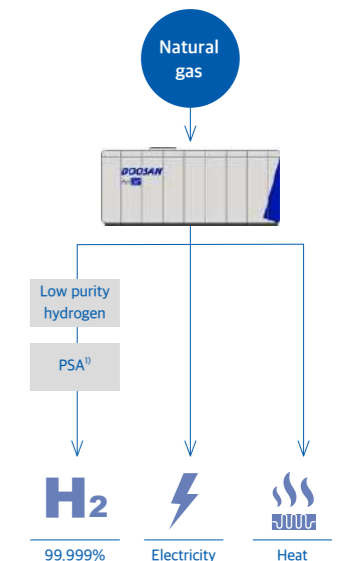


Tri-gen

A triple energy production model that generates hydrogen through a reformer inside a fuel cell, in addition to electricity and heat generated through the stack. It can be installed on-site and direct installation to a hydrogen station can reduce the cost of transporting high pressure hydrogen.



* A concept image of charging a fully electric loader and hydrogen car through Tri-gen, which generates hydrogen, electricity, and heat



1) PSA: Pressure Swing Adsorption



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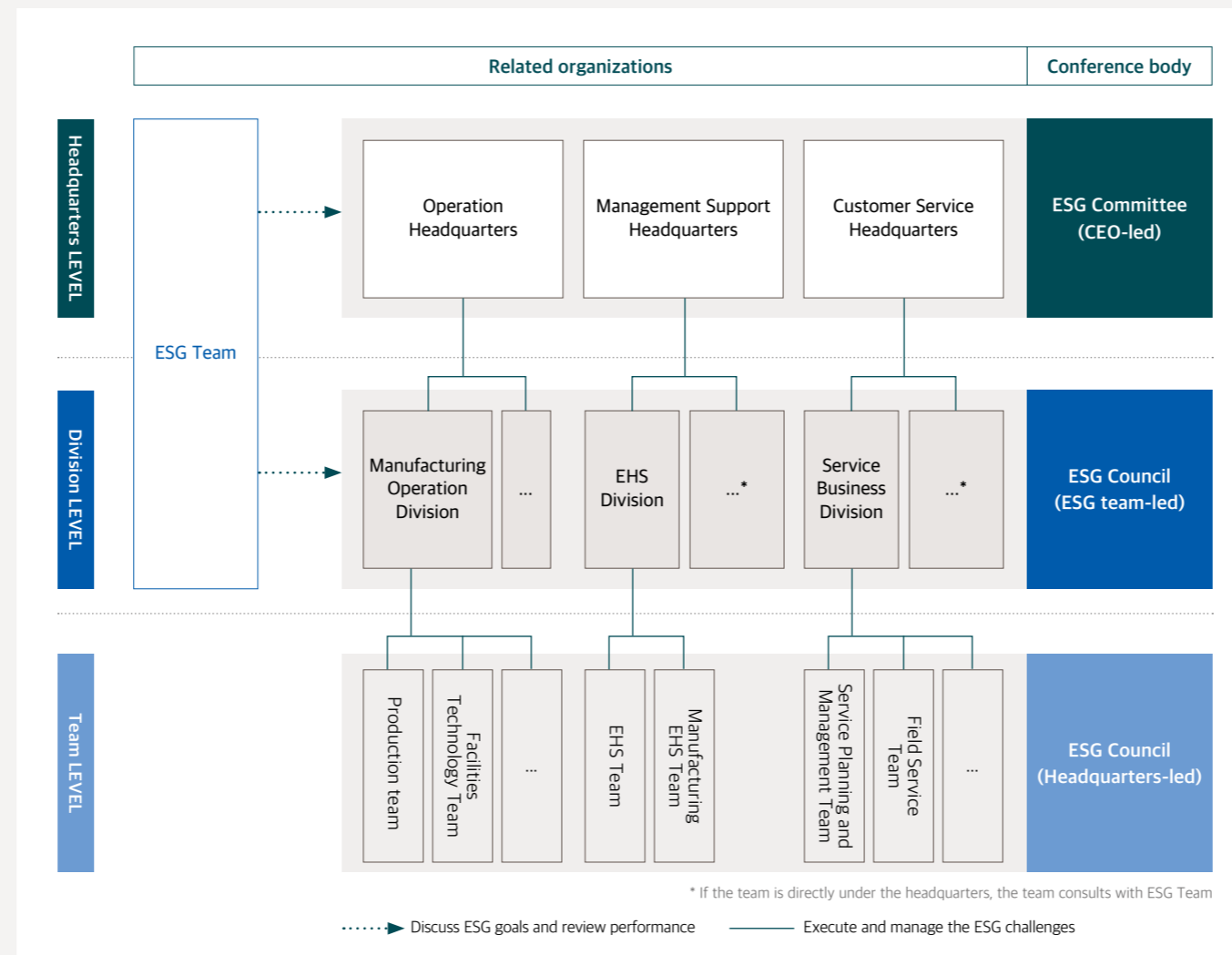
014/015	ESG Governance / ESG Strategy
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ESG Governance

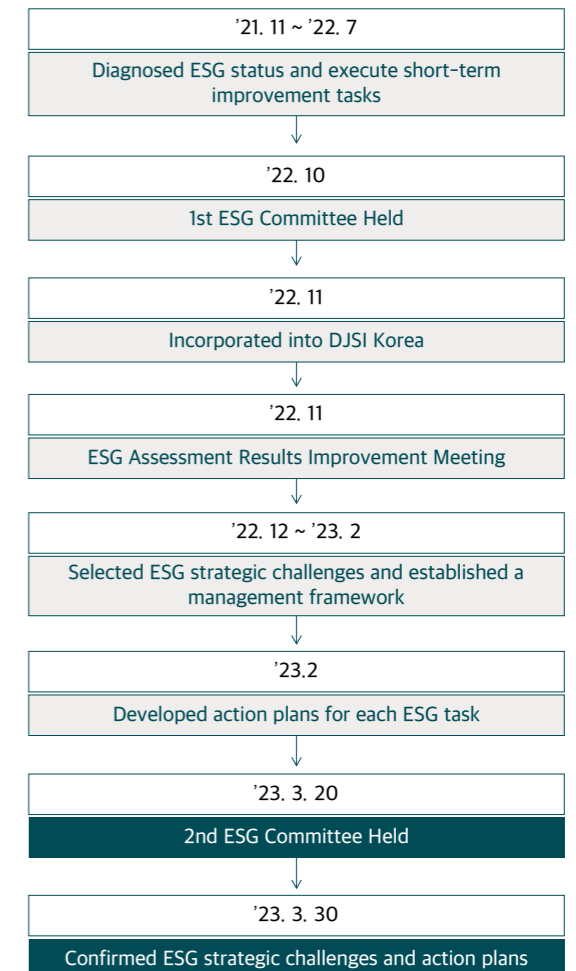
Doosan Fuel Cell will do its best to ensure leadership around the ESG Committee and to take the lead in responding to the changing business environment to create a company that continues to grow with the whole society.

ESG Committee and Council

Doosan Fuel Cell operates a quarterly working-level consultative meeting for the smooth management and implementation of ESG strategies. The first and third quarter councils are organized by the ESG team, and the second and fourth quarters are organized by headquarters to check performance and enhance execution. In addition, we held an ESG committee meeting organized by the CEO to make decisions on ESG goals, achievements, and implementation plans for the year.



Major Activities

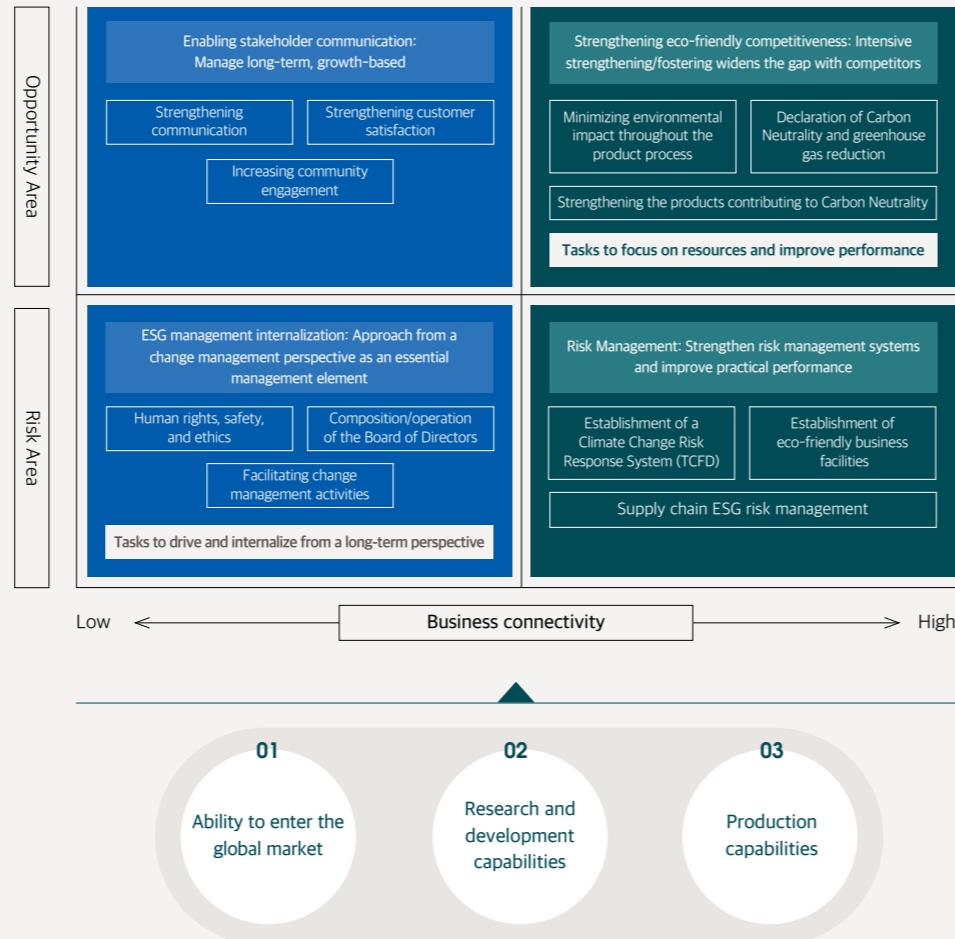


ESG Strategy

Founded in October 2019, Doosan Fuel Cell established a mid- to long-term ESG management strategy for the first time at the end of 2022 and held briefing sessions for all employees below the CEO to implement systematic ESG management. The ESG management strategy first derived key trends by conducting external environmental analysis, including laws, institutions, global ESG guidance, and benchmarking of advanced companies, and formed a pool based on internal environmental analysis, including Doosan Fuel Cell's core business capabilities and ESG activities. Next, through interviews with leaders including management, we selected urgent and important tasks and merged similar tasks to select 12 final strategic tasks.

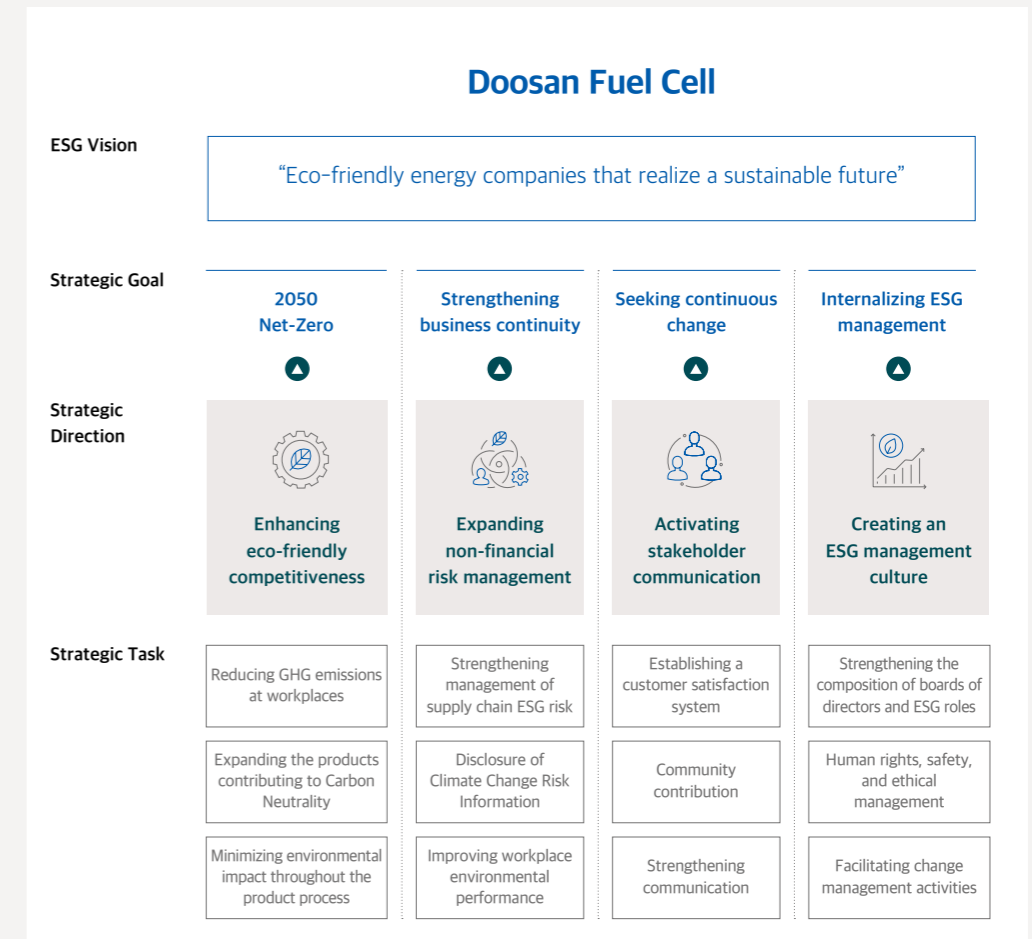
Establishing ESG Strategic Direction

Doosan Fuel Cell has established strategic directions and activity policies for each task based on business connectivity and crisis/opportunity factors.



Establishing ESG Strategic Framework

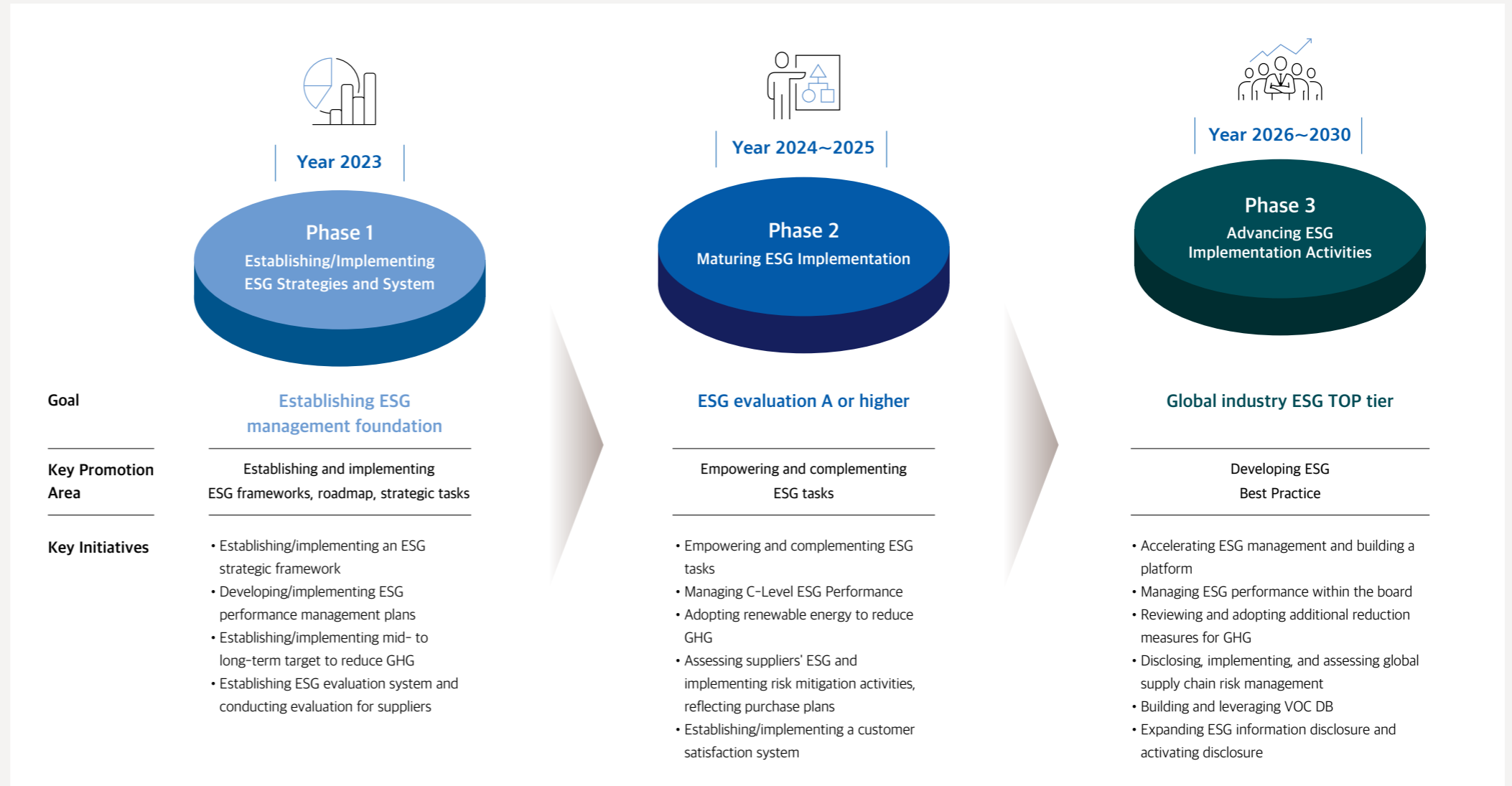
The selected strategic tasks were divided into four categories, and their concentration of resources and period were decided: 'Enhancing Eco-friendly Competitiveness' to focus and foster resources to grow into an eco-friendly company leading the market; 'Expanding Non-financial Risk Management' to strengthen the management system and focus on improving gradual performance for strengthening business continuity; 'Activating Stakeholder Communication' to seek sustainable change by managing growth from a long-term perspective; and 'Creating an ESG Management Culture' to ensure that ESG Management is internalized in all employees from a change management perspective.



ESG Strategy

ESG Mid- to Long-Term Roadmap

Doosan Fuel Cell has established a mid- to long-term roadmap to achieve ESG Vision as an “Eco-friendly Energy Company that Realizes a Sustainable Future” by 2030. In 2023, we plan to prepare performance management measures based on ESG management strategies and set goals and activities for major tasks such as reducing GHG and managing ESG risks of our suppliers. From 2024 to 2025, we want to increase ESG task execution and make up for shortcomings to produce tangible results. Starting in 2026, the goal is to build and actively utilize IT Infrastructure to advance ESG implementation activities, and develop ESG Best Practices to become a global ESG Top Tier by 2030.



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Stakeholder Communication

Accepting Stakeholders' Opinions

Classification of Stakeholders

Doosan Fuel Cell classifies its stakeholders into shareholders, investors, customers, employees, subsidiaries, communities, and governments to reflect the opinions of the stakeholders that have a direct and indirect impact on business activities. We are carrying out a variety of activities to expand stakeholder communication based on this classification system.

Active Stakeholder Communication

Doosan Fuel Cell is diversifying its communication channels to recognize, consider, and respond to the interests expressed by stakeholders as well as the legal rights of stakeholders. In addition, stakeholder communication activities and achievements have been disclosed in the Sustainable Management Report since 2022, and we conduct a materiality assessment every year to identify sustainable management issues that stakeholders view as important.



Stakeholders	Shareholders and Investors	Employees	Customers	Suppliers	Local communities	Government and affiliated organizations	Related organizations
Major interests	<ul style="list-style-type: none"> Financial performance Transparent disclosure of information 	<ul style="list-style-type: none"> Employee development and increasing welfare Strengthening communication within the organization Establishing a cooperative labor-management relationship 	<ul style="list-style-type: none"> Reinforcing the customer complaint handling and customer satisfaction processes Improving product quality and enhancing responsibility 	<ul style="list-style-type: none"> Providing support to strengthen suppliers' competitiveness and competency Expanding information sharing Empowering ESG competency 	<ul style="list-style-type: none"> Listening regularly to the opinions of the local communities Supporting the growth of local communities in the vicinity of worksites 	<ul style="list-style-type: none"> Policymaking Complying with laws and regulations Private-public partnerships 	<ul style="list-style-type: none"> Improvement of institutions and regulations Public-private partnership
Communication channels	<ul style="list-style-type: none"> General meeting of shareholders Investor Relations(IR) Public disclosure Website Analyst meeting Governance report 	<ul style="list-style-type: none"> Educational program Employee satisfaction survey Grievance handling Channel Company intranet Company newsletter Labor-Management Council 	<ul style="list-style-type: none"> VOC Product training 	<ul style="list-style-type: none"> Cooperative Committee Hotline Technical exchange meetings Safety and Health Consultative Group ESG Evaluation Briefing 	<ul style="list-style-type: none"> CSR activities Meetings with local governments and local social welfare institutions 	<ul style="list-style-type: none"> Meeting and briefing session Inspection of production facilities Participating in national projects Partnership with the government and public organizations 	<ul style="list-style-type: none"> Government and parliamentary Meetings Participation in research services Meetings and discussions

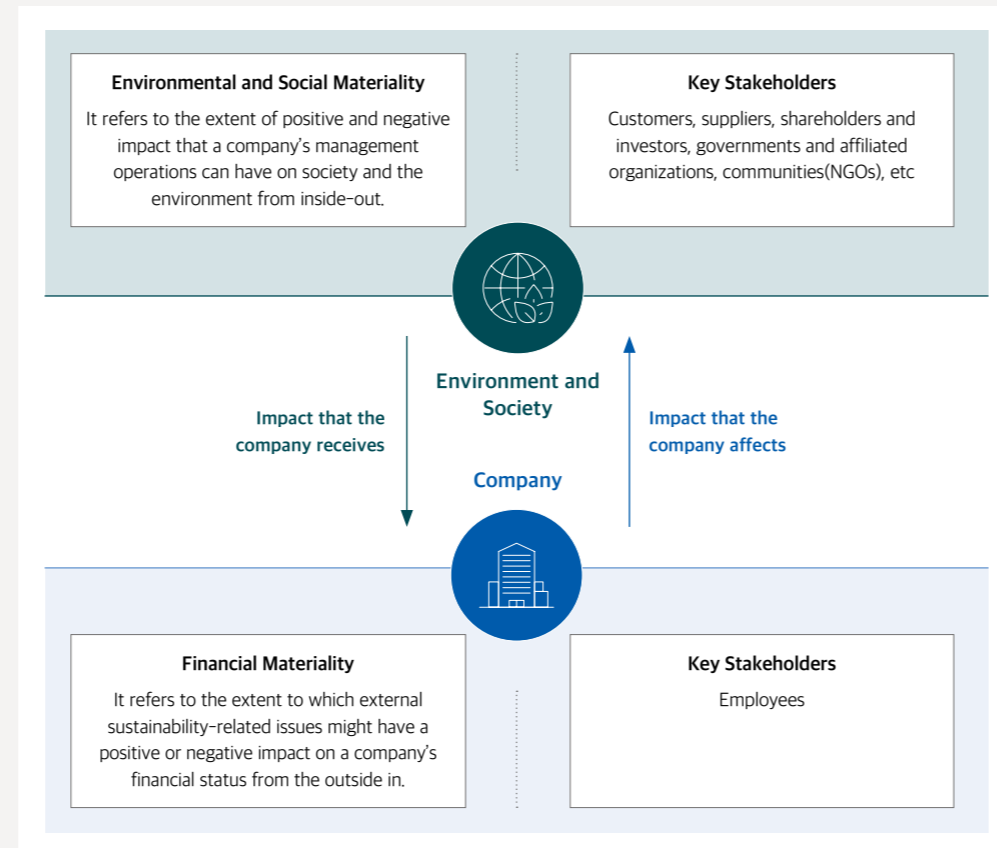
Double Materiality Assessment

Concept and Process of Double Materiality Assessment

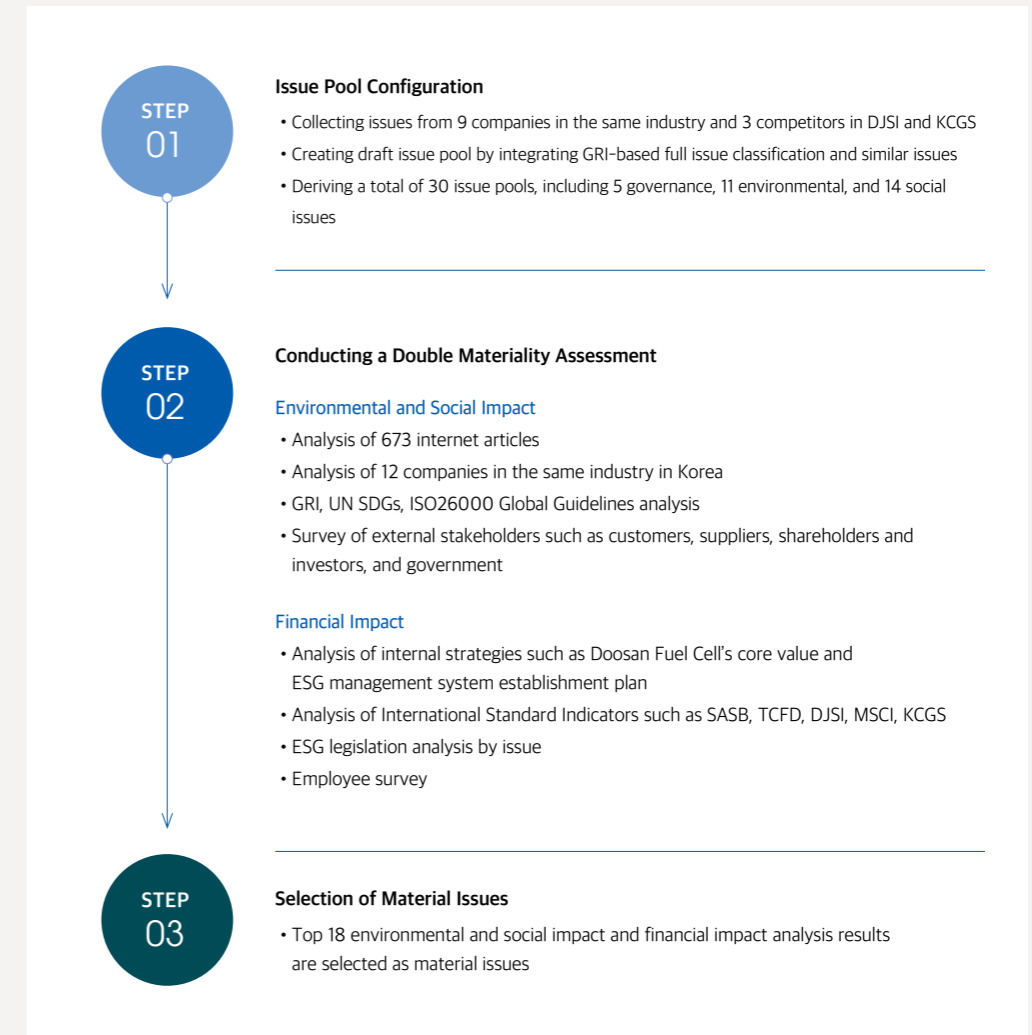
Doosan Fuel Cell conducts an annual materiality assessment based on the GRI Standards reporting topic selection principle for sustainable management. This year, for the first time, we have adopted a double materiality assessment that derives material issues by considering both environmental and social impacts and financial impacts. Accordingly, a total of 18 material issues were derived by reflecting the opinions of not only employees but also various external stakeholders such as customers, suppliers, shareholders and investors, and government-related organizations. This report details policies, objectives, activities, and performance on material issues.

Double Materiality Assessment

International ESG disclosure guidelines, such as CSRD and GRI Standards, apply the double materiality concept to advance the reporting level of sustainable management. The double materiality is a concept that takes into account external sustainability-related environmental and social factors that affect a company's financial status, as well as the external impact of its management activities, i.e., both internal and external perspectives.



Double Materiality Assessment Process



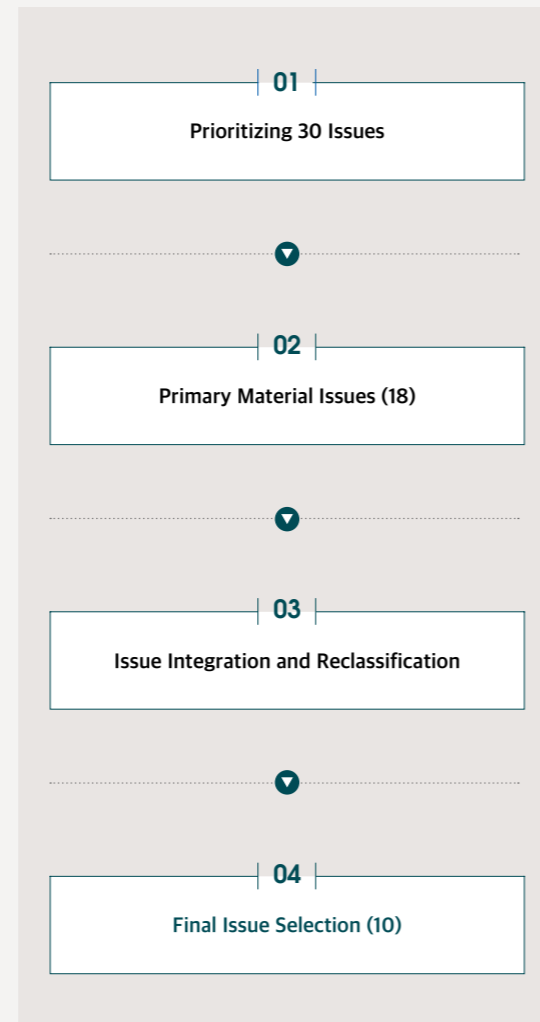
Double Materiality Assessment

Final Material Issue Selection

Doosan Fuel Cell selected 10 issues derived from comprehensive consideration of environmental and social impact and financial impact as material issues.

These issues are linked to the four major strategies to promote various activities, and the main activities and achievements of each issue and strategy are reported in the report. Materiality metrics and processes have been reported and approved by the CEO-participated ESG Committee.

The Process of Selecting Issues



Materiality Assessment Results

●●● High ●●○ Medium ●○○ Low

Strategy	Issue Name	Business Impact and Response Measures	Key Stakeholders	Impact		Reporting Page
				Environmental/social	Financial	
Strengthening eco-friendly competitiveness	Reducing GHG emissions at workplaces	This issue meets the needs of power generation companies, which are major customers as suppliers of eco-friendly renewable energy generation facilities, which directly affects product orders and businesses. In line with the government's policy to revitalize the hydrogen economy, we recognize efficiency of existing products, environmental impact reduction, and greenhouse gas reduction at workplaces as major opportunities to increase corporate competitiveness and strengthen market dominance.	Shareholders and investors, customers, governments, related organizations	●●●	●●●	26-27p
	Strengthening eco-friendly businesses			●●●	●●●	44-45p
	Reducing product environmental impact			●●○	●●○	28-33p
Expanding non-financial risk management	Response to climate change	As climate change becomes more serious, financial and non-financial risk management, such as delays in production and delivery due to extreme heat waves, heavy rains, droughts, and forest fires, is becoming more important. We recognize the issue as a crisis factor and are strengthening non-financial risk management, including supply chains.	Suppliers, customers, governments, employees	●●●	●●●	41-43p
	Sustainable supply chain management and win-win cooperation			●●●	●●○	35-40p
Enabling stakeholder communication	Product and customer-centered management	Our sales consist of a 6:4 ratio of product sales and Long-Term Service Agreement (LTSA) sales. Therefore, in addition to selling products, stable operation and service provision of products delivered to customers and the safety of customer companies' employees are important issues directly related to product sales. Based on continuous communication with stakeholders, we are implementing various activities for high satisfaction.	Customers, employees	●○○	●●●	46-48p
	Customer safety			●●●	●●○	48p
	Employment and labor relations			●●○	●●●	53-62p
Creating an ESG management culture	Workplace safety and health	Since the enforcement of the Serious Accident Punishment Act in January 2022, responsibilities and penalties related to safety and health have been strengthened for employers, and interest in workers and society as a whole has increased significantly. Therefore, Doosan Fuel Cell ensures optimal working conditions to enable workers to engage themselves in a safe environment, ensure business continuity, and prevent external damage to their image due to negative issues by achieving zero workplace accident rate.	Employees, communities, shareholders/investors, customers, governments	●●●	●●●	63-65p
	Risk management			●●○	●●●	81-82p

ESG Strategy

Our Goal & Performance

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► **ESG Goal and Performance**

ESG Performance Management

ESG Performance

Appendix

01 Enhancing Eco-friendly Competitiveness



Reducing GHG emissions in the business sites

Performance Established targets and prepared annual implementation plans for reducing GHG emissions in 2030 at the Iksan(PAFC) factory, reviewed the feasibility of installing roof-type solar power generation facilities at the Iksan factory, and identified annual GHG emissions at the Gunsan (SOFC) factory

Detailed plan Establishing a roadmap for mid- to long-term GHG reduction at the Gunsan (SOFC) factory, certifying ISO50001(energy management system), and managing Scope 3 emissions

Expansion of products/technology contributing to carbon neutrality

Performance Developed of high-efficiency hydrogen model (SCSA PAFC hydrogen model), and high-efficiency PAFC (next-generation catalyst/metal separator) products, discovered CCS (carbon capture and storage) demonstration tasks, used high-efficiency SOFCs, and developed SOFCs for ships

Detailed plan Completion of the development of high efficiency new product (SOFC) products, diversification of SOFC applications (for ships), improvement of SOFC product efficiency and development of fuel diversification models, and assessment and disclosure of environmental/social/economic benefits of fuel cell use

Minimizing impact in the entire production process

Performance Implemented the entire production process inventory

Detailed plan Life Cycle Assessment(LCA) throughout the production process, environmental report mark certification

02 Expanding Non-Financial Risk Management



Strengthening ESG risk management in the supply chain

Performance Established and evaluated of supply chain ESG risk management system(establishment of Supplier ESG Policy, identified suppliers' status and re-categorized from the QCD*+ ESG perspective, established Supplier ESG Risk Assessment Criteria and self-diagnosis, due diligence)

Detailed plan ESG risk assessment results are reflected in the purchase plan, creating an incentive/penalty for unsustainable or under-sustainable suppliers, improving ESG performance of supply chain, and supporting shared growth programs

* QCD (Quality, Cost, Delivery): Quality, price, delivery date

Disclosure of climate change risk information

Performance Disclosed detailed requirements for Topic (governance, strategy, risk management, metrics and objectives) within TCFD Guidance

Detailed plan Quantitative measurement and disclosure of financial impact of climate change, scenario analysis and establishment and implement of response plan

Improving environmental performance in the business sites

Performance Acquired ISO14001(environmental management system) certification at Iksan factory, identified the current status of its major environmental indicators (waste, water use, pollutant emissions, rehabilitation capacity, hazardous chemical use, etc.), selected environmental indicators that need to be improved and managed compared to competitors and advanced companies

Detailed plan Establishing mid- to long-term improvement goals for major environmental indicators, reflecting environmental indicators in C-Level performance evaluation, establishing a resource circulation system, and strengthening additional standards for pollutant emission

03 Activating Stakeholder Communication



Establishing a customer satisfaction system

Performance Developed customer satisfaction survey indicators(quality stability, field operation, EHS, product training, satisfaction, etc.), established survey and evaluation criteria (evaluation method, period, etc.)

Detailed plan Conducting satisfaction survey for major customers, establishing VOC DB, develop product, and improving service, and evaluating and supplementing the effectiveness of satisfaction survey

Community contribution

Performance Implemented eco-friendly social contribution activities 'Green Walking Challenge' campaign, recruited disabled athletes to expand employment and diversity for vulnerable groups, launched regular volunteer activities for Iksan 'Direum Rice Car', supported for replacement of old boilers and gas stoves, and donation of idle office equipment

Detailed plan Implementation of community economy/infrastructure support projects(hydrogen manpower training programs), input-output impact analysis of social contribution projects, acquisition of community contribution recognition systems, and supporting social contribution activities of suppliers

Strengthening communication

Performance Regular publication of sustainability reports, disclosed TCFD Guidance information, updated ESG information on the website, disclosed corporate governance reports on the Korea Exchange, delivered notice of convocation (previously 2 weeks ago) before regular general meetings of shareholders, and recommended proxy voting

Detailed plan Separating Story Book and Pack Book of sustainability report, Publishing TCFD Report separately, and Establishing Online ESG Information Disclosure Platform

04 Creating ESG Management Culture



Strengthening the composition and roles of the board of directors

Performance Reviewed of the board's ESG enhancement case study

Detailed plan Listing ESG agenda on the board of directors, revising regulations of Board of Directors and Audit Committee, appointing female outside directors (When company assets exceed KRW 2 trillion), and strengthening ESG roles and capabilities of the board

Human rights management

Performance Announced in-house human rights policy and guidance on the grievance process

Detailed plan Excellent family-friendly company certification, conducting human rights impact assessments and conducting follow-up mitigation measures, regular human rights education for managers, and sending human rights management letters for office workers

Safety management

Performance Acquired ISO 45001(Safety and Health Management System) certification at Iksan factory, strengthened EHS organization system, established R&R such as management managers, sustained zero serious accidents, decreased the number of safety accidents by 1 case in 21 → 0 case in '22, and established EHS evaluation and management standards for internal and external suppliers

Detailed plan Reestablishment of EHS-related legal management system such as enhancing the effectiveness of ISO/DSRS, strengthening employee operational capabilities, and strengthening EHS evaluation/education/inspection of suppliers, strengthening EHS response to new projects and overseas projects

Ethical management

Performance Introduction of the fair trade compliance program

Detailed plan Produced a manual for the fair trade compliance programs and operated the fair trade compliance programs

Facilitating change management activities

Performance Reflected executives' KPIs in ESG strategic tasks and linked them to performance evaluation

Detailed plan Conducting regular in-house ESG trainings, regular production/distribution of in-house ESG promotional materials, operation of ESG proposals and rewards for employees, and fostering in-house ESG instructors

ESG Performance Management

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ESG Performance

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Strategic Task Roadmap

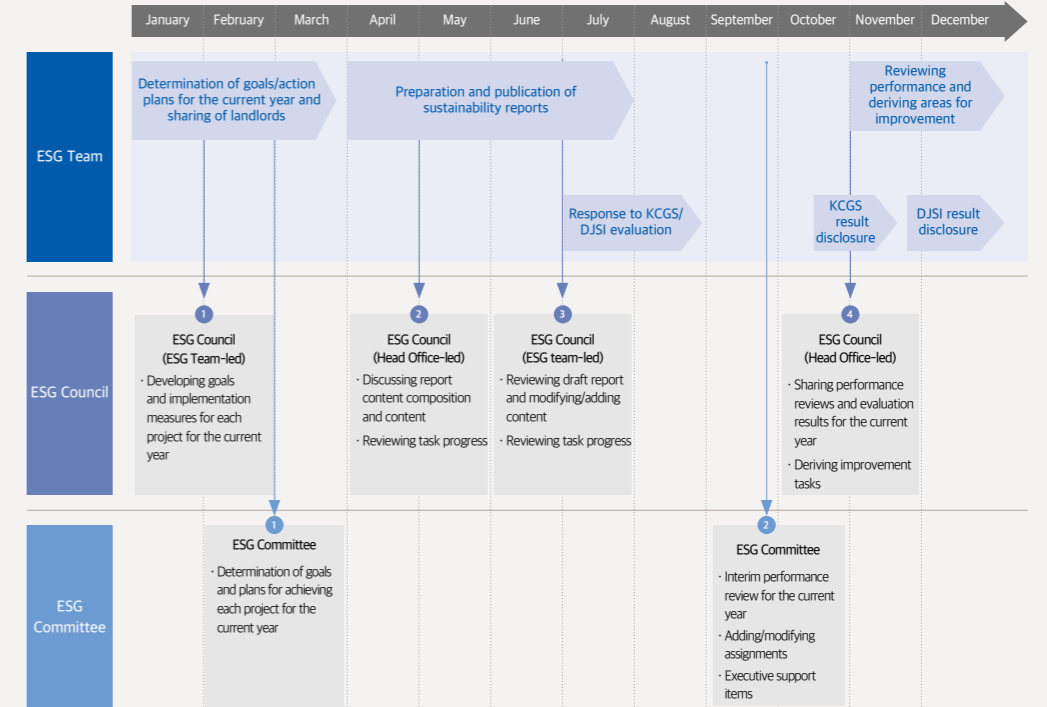
For the smooth management and implementation of strategic tasks, Doosan Fuel Cell systematically manages performance by designating Owners for each task and setting mid-term goals and Milestone for 2025 Target, and will continue to discover and promote tasks. In addition, we are reflecting ESG performance in the MBO qualitative evaluation of employees so that performance is linked to compensation.

Strategic Direction	Strategic Task	R&R	2023				2024				2025			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Strengthening eco-friendly competitiveness	Establishing mid- to long-term goals for reducing greenhouse gas emissions at workplaces and implementation measures to achieve them	Operations Headquarters	Establishing mid- to long-term reduction goals and roadmaps and devising implementation measures				ISO 50001 (Energy Management System) certification for implementing greenhouse gas reduction activities							
	Strengthening the products contributing to Carbon Neutrality	R&D	Developing high-efficiency PAFC models, developing power generation/ship SOFC models, applying CCU technology, Expansion of hydrogen fuel cell business model using biogas											
	Minimizing environmental impact throughout the product process	ESG Team	-	Completion of Life Cycle Inventory (LCI) establishment and evaluation preparation			Reviewing LCA implementation feasibility		Promoting life cycle assessment and certification					
Strengthening non-financial risk management	Supply Chain ESG Risk Management	ESG Team	Development of mid- to long-term roadmaps and advancement of evaluation		Supplier Evaluation		Reflecting in SCM strategy & Implementing assessment and improvement programs							
	Climate change risk information disclosure (TCFD)		-	TCFD information disclosure		Scenario analysis & Preparation and implementation of countermeasures								
	Conservation of biodiversity		-	Developing a policy		Included in the environmental impact assessment criteria, development and implementation of biodiversity conservation activities								
	Setting mid- to long-term environmental management goals and improving performance (Collaboration with OP Headquarters)	EHS Division	Third-party verification of greenhouse gas emissions from voluntary workplaces				Establishing mid- to long-term reduction targets and roadmaps for environmental tasks				Implementation of environmental indicator improvement activities			
Activating stakeholder communication	Strengthening customer satisfaction	Service Division	-	Development of Satisfaction Survey Tool		Conducting a customer satisfaction survey		Deploying VOC DB		Establishing VOC analysis and improvement process				
	Social contribution activities	ESG Team	Green Walking Challenge, Daihoun Free Meal Car sponsorship/Regular Service in Ilsan			Hydrogen Human Resources Development Project		Quantifying performance		-		Business advancement		
	Communication		Publication of sustainability report (continuation)			Strengthening the establishment of stakeholder communication channels		Building an online ESG platform						
Creating an ESG Management Culture	Strengthen the composition of boards of directors and ESG roles	IR Team	Presentation of ESG agenda within the board				-							
			-	Revising regulations of Board of Directors and Audit Committee		-		Promoting the appointment of female outside directors						
	Human rights, safety, and ethical management	Legal Team	Production of a manual for self-compliance with fair trade		Implementation of the Fair Trade Self-Compliance Program									
		ESG Team	-	Join the United Nations Global Compact		Running the Top 10 Principles Compliance Program and reporting activity results								
		EHS Team	Activities to reduce the rate of industrial accidents of employees and suppliers											
		HR Team	Implementing human rights impact assessment and mitigation measures				-							
			-	Preparing for certification of excellent family-friendly enterprises		Application and acquisition of certification of excellent family-friendly enterprises		-						
Facilitating change management activities	Strategy/HR Team	-	Reflecting on Executive MBO		-		Reflecting on Executive KPI							
			-				ESG online training (Every half-year) and ESG letters (Every quarter) for employees							
	ESG Team		-				Providing ESG expert lectures to outside directors and members of committees/councils							
			-				Implementation of the environmental/social performance improvement proposal system and awarding outstanding employees							

Doosan Fuel Cell strives to manage ESG performance with the recognition that in order for ESG management to be successful, it is necessary to set specific goals for major tasks and systematically manage performance.

Performance Management Process

Doosan Fuel Cell operates a quarterly working-level consultative meeting for the smooth management and implementation of ESG strategic tasks. The first and third quarter councils are organized by ESG team, and the second and fourth quarters are organized by headquarters to check performance and enhance execution. In addition, we hold an ESG committee organized by the CEO to make decisions on ESG objectives, performance, and implementation plans for the year.



ESG committee for the second half of 2022



ESG council in Q2 2023 at the operations headquarters



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- 026 GHG Management
- 028 Expanding Green Products and Technology
- 031 Expansion of Products/Technology Contributing to Carbon Neutrality

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- 035 Supply Chain ESG Management
- 041 Response to Climate Change
- 044 Improving Workplace Environmental Performance

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- 047 Customer Satisfaction
- 049 CSR

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- 060 Human Rights Management
- 063 Safety and Health
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Strengthening Eco-friendly Competitiveness

In the area of strengthening eco-friendly competitiveness, we will review and promote various measures to achieve the goal of reducing GHG emissions by 2030, and develop and commercialize high-efficiency and carbon-free fuel cell technologies that contribute to carbon neutrality. In addition, we plan to minimize the environmental impact of the entire product process to ensure eco-friendliness from the raw material/assembling part stage to the disposal stage as well as the eco-friendliness of the product use stage.

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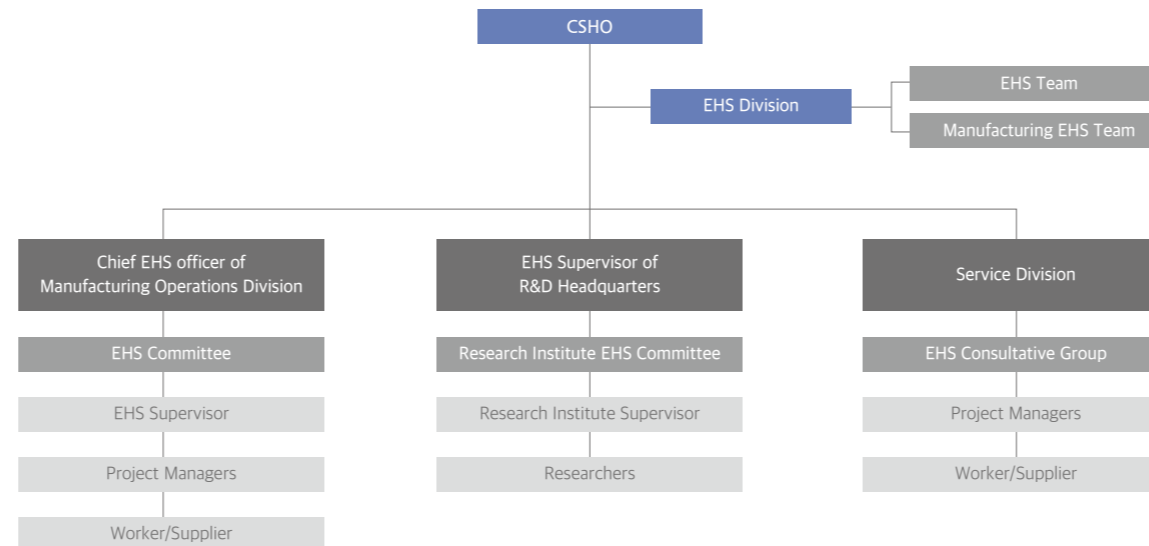
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Environmental Management



Environmental Management Organization

Doosan Fuel Cell appointed a CSHO(Chief Safety and Health Officer), who supervises work related to the environment, safety, and health, to achieve its mid-, long-, and short-term EHS goals and create an eco-friendly, pleasant, and safe workplace. Furthermore, the EHS management organization operates under the CSHO's supervision to manage the manufacturing facilities, research institute, and service field effectively. The CEO of Doosan Fuel Cell manages and supervises environmental management issues through the ESG Committee. Climate-related financial impacts and management strategies are managed through response strategies by analyzing the potential financial impacts of the environmental risks and opportunity factors related to climate change, as well as Carbon Neutrality.



* CSHO(Chief Safety and Health Officer)

Environmental Management Policy

According to the Doosan Credo, Doosan Fuel Cell recognizes a safe and clean environment as our responsibility and core value for our company, our family, and society. We are establishing the EHS (Environment, Health & Safety) management system and making every effort to follow the global standards.

Environmental Policy

1. Establish an environmental management system and carry out continuous improvement activities to improve environmental management performance.
2. Proactively identify environmental impacts that may occur in overall management activities. We will effectively prevent environmental accidents by improving them, and try to minimize the damage in the event of an accident by strengthening our ability to respond to emergencies.
3. Minimize the emission of pollutants and waste from the project and minimize environmental risks through regular monitoring.
4. Comply with environmental laws and regulations and proactively respond to environmental issues and international trends at home and abroad.
5. Minimize GHG emissions by efficiently using resources and energy, and actively make efforts to respond to climate change.
6. Actively participate in community environmental protection activities and open communication with our stakeholders based on honesty and transparency.
7. Continuously invest and research to provide eco-friendly products and services.
8. Protect the global environment such as air, water quality, and soil, and implement various activities to protect biodiversity.

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Environmental Management

Environmental Management Goals



'ZERO' environmental accidents



Reduction in the use of energy and resources

Over 90% of annual targets



Compliance with environmental laws

'Zero' violation of environmental regulations



Prevention of/ response to emergencies

Implementing at least one case for each headquarters

Environmental Management Strategy

- 1 Proper monitoring(inspection, measurement) and maintenance of facilities discharging and preventing environmental pollutants
- 2 Minimizing wastewater/waste through energy saving (electricity, gas, etc.) and the reduction of resources.
- 3 Conducting a regular evaluation of compliance with the law and monitoring of revised laws
- 4 Performing environmental impact assessments and emergency drills to prevent and handle environmental accidents
- 5 Establishment of environmental management system and implementation of continuous improvement

Environmental Management Program

Response to and Monitoring of Environmental Regulations

As environmental issues continue to attract greater public interest at home and abroad, environmental regulations are being reinforced and expanded, and environmental management is becoming more important for businesses. By establishing an environmental management system, Doosan Fuel Cell strives to minimize the various environmental impacts caused its business activities, and takes proactive response measures by monitoring environmental regulations.

Waste Management System

Doosan Fuel Cell controls the waste generated by each process and separates recyclable waste to minimize the types of waste incinerated or reclaimed. In addition, we classify and store the generated waste by type to manage the amount of waste generated and handled in accordance with all related laws, and carry out activities to reduce and recycle the waste generated. Waste disposal companies are selected through annual evaluation and selected as companies that can be legally disposed of.

In addition, major facilities with poor performance are recovered, repaired, and reused to increase facility recycling rates and minimize waste generation.

Minimizing the Discharge of Environmental Pollutants

Doosan Fuel Cell has set and complied with self-regulatory standards for environmental pollutants generated from its workplaces to be less than 30% of the legal emission standards, and strives to minimize environmental impact beyond legal standards through regular inspections and measurements and prompt maintenance of facilities.

Biodiversity Policy

Doosan Fuel Cell recognizes the importance of restoring natural ecosystems and preserving biodiversity, and established biodiversity policies to minimize the impact on the environment in the areas around the workplace.

1. Evaluate the impact on biodiversity in advance when carrying out new projects and make efforts to prevent threats and factors. In addition, we will comply with the legal requirements of the countries and regions covered by the International Convention(IUC Category I-IV protected areas).
2. Regarding business operations, actively consider supporting initiatives related to biodiversity protection, putting the protection of endangered rare and endemic species first.
3. Operate stricter in-house environmental pollutant emission standards than domestic and overseas legal acceptance standards, and strive to prevent loss in terms of biodiversity (NNL, No Net Loss) and have a more positive impact(NPI).
4. Recognize that forests are a very important resource for preserving the global ecosystem and voluntarily implement various forest protection activities.
5. Recognize the importance of protecting biodiversity through various media such as education and public relations activities for employees and stakeholders related to us.

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GHG Management



GHG Emission Status

Doosan Fuel Cell manages GHG gas emissions in accordance with IPCC guidelines and national management guidelines and discloses related information.

Recognizing that GHG emissions are a key factor in climate change, we voluntarily conducted third-party verification of GHG emissions in 2022 despite not being allocated to the target management system to strictly manage GHG emissions.

Setting Goals for GHG Emissions and Energy Consumption

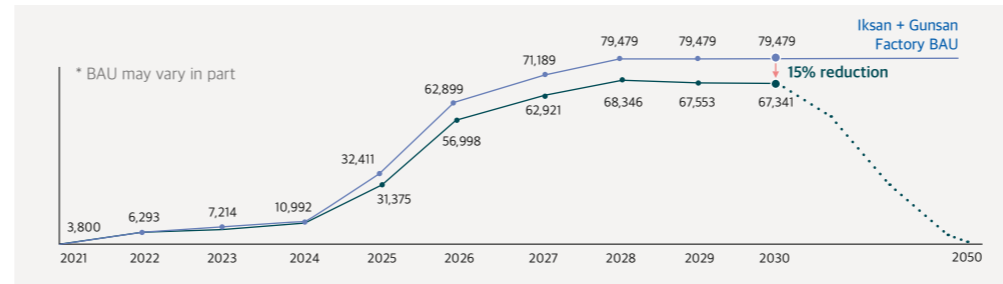
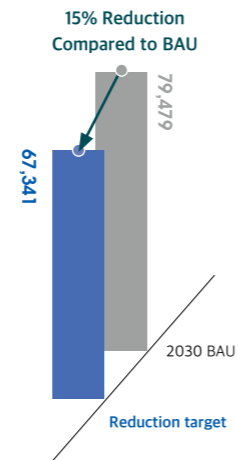
Doosan Fuel Cell establishes and implements GHG and energy reduction goals every year in accordance with the mid- to long-term GHG reduction roadmap.

In 2022, with the operation of the plant expansion line, we set GHG targets of Scope 1&2 at 1325.79 tCO₂eq and 5015.53 tCO₂eq, respectively. We set energy usage targets of 102.031 TJ for electricity, 18.285 TJ for steam, and 14.854 TJ for LNG.

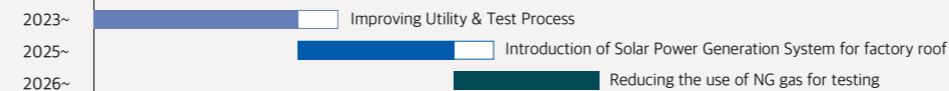
Although overall emissions inevitably increased compared to 2021 due to the expansion of the Iksan factory, we achieved the goals of Scope 1 and 2 through facility stabilization of the expansion line and energy reduction of the existing line.

GHG Emission reduction targets(Scope 1+2)

Unit: tCO₂eq



GHG Reduction Plan



* Business As Usual(BAU): Estimated greenhouse gas emissions from facility operation without additional reduction efforts

Development of GHG Reduction Roadmap

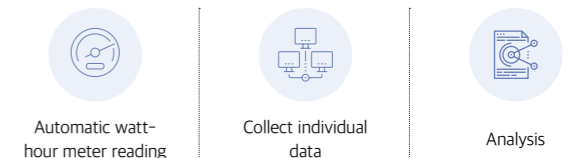
Doosan Fuel Cell has established a roadmap for reducing GHG in 2030 and is making various efforts to reduce emissions by 15% compared to its forecast. As the Iksan factory(PAFC) facility expansion in 2022 and the Gunsan factory(SOFC) completed in the second half of 2023 and fully operational in 2024, we inevitably set a reduction goal based on emission forecasts, but we will do our best to achieve Net-Zero in the future.

Energy/GHG Reduction Activities

Strengthening the Foundation for Energy Data Collection

In order to reduce energy use, we are adding automatic power-reading meter to subdivide load individual data. As of June 2023, the new additional wattmeter configuration has been completed, and the automatic meter reading work has been carried out.

In the second half of 2023, we will upgrade the SCADA Report Program to build a usage analysis data base and analyze load types and trends to continue to identify energy usage savings points.



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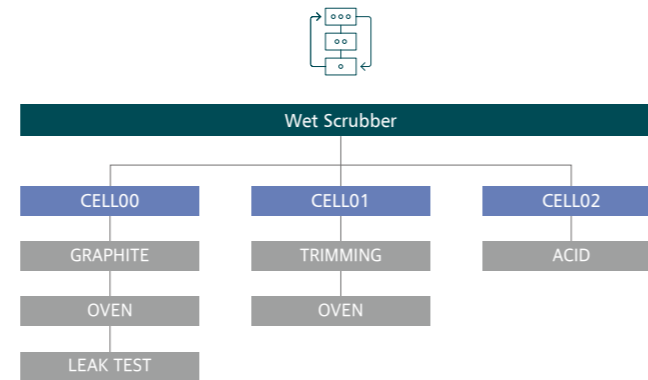
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GHG Management

System Improvements

Previously, Wet Scrubber, an essential facility for *CSA automatic line operation, was manually turned on/off, generating unnecessary power. However, to save energy, we have established a system to monitor the operation status of the CSA automatic line at all times and automatically start/stop Wet Scrubber.

* CSA : Cell Stack Assembly



Optimizing the CSA Test Process

By reducing the number of E-Fills in the CSA Test process by 13.4%, and reducing power and CO gas usage by reducing the waiting time for judgment, energy use and GHG emissions were reduced.

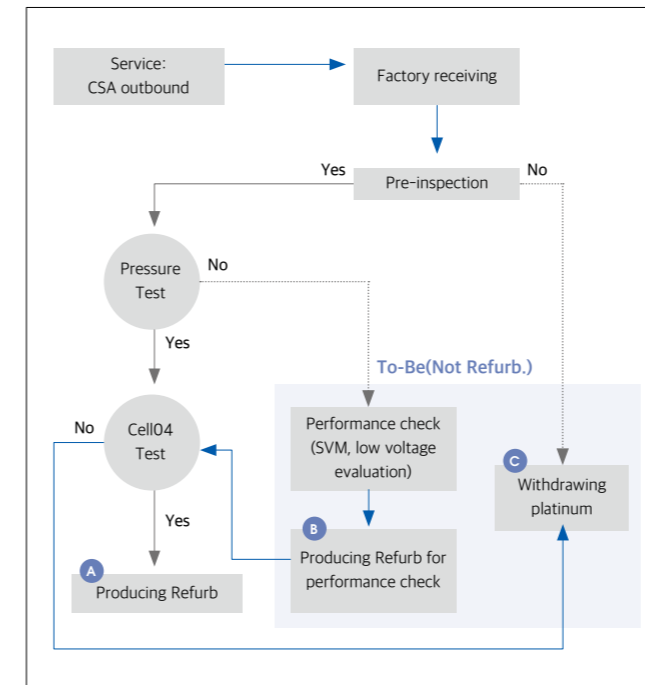
Utilization of Fuel Cell Test Power

The PAFC product is tested twice in the production process, which generates electricity. Doosan Fuel Cell does not throw away the power generated during the test process and uses it in its factory, and in 2022, it consumed about 1.1 million kW of test power on its own, replacing KEPCO's electricity use. In addition, utilizing about 290,000 kW of the 1.1 million kW of test power generated during the test of the hydrogen model without the reforming process reduced GHG emissions by about 137.5 tons* compared to the use of KEPCO's electricity.

* Application of GHG emission coefficient of 0.4747 tCO₂/MWh

Process Improvement

The CSA Refurbishment Process is optimized to reduce power consumption. By reducing the steam pressure of the heating, ventilating, and air conditioning systems of the CSA Line by 60% and reducing their consumption, approximately 9.8 tons of GHG are expected to be reduced annually. 96 unnecessary light fixtures are separated, and the essential space is replaced with efficient bulbs, which are expected to reduce GHG emissions by approximately 54.3 tons per year.



Expansion of the Introduction of Eco-friendly Cars

Doosan Fuel Cell replaces air pollutants and GHG emitted from operating vehicles with eco-friendly vehicles every year. In 2022, two out of a total of 33 vehicles were replaced with electric vehicles and three with hybrid vehicles. In the future, we plan to gradually replace vehicles that are scheduled to be replaced with eco-friendly vehicles such as electric vehicles.

Internal Carbon Prices

Application of Internal Carbon Prices

Doosan Fuel Cell is not subject to the Target Management System for GHG and Emission Trading Scheme, but we encourage employees to perform energy-saving activities by setting the internal carbon prices and using it for economic evaluation and an internal reward system to check GHG emissions and promote energy-saving.

Comparison of Economic Feasibility by Fuel Type

Doosan Fuel Cell created its own GHG calculator and fuel comparison chart to predict the amount of reduction when establishing a GHG reduction plan and to compare the economic feasibility of each fuel in terms of GHG reductions when improving facilities and changing fuel.

Reflection of Individual Performance in the Area of GHG Reduction

We added evaluation of the GHG reduction performance to the cost reduction reward system to encourage employees to carry out active energy reduction activities.

Calculation of Annual GHG Reduction Effects

We disclose the total reduction costs incurred as the result of the annual GHG reduction activities in terms of the internal carbon price to increase awareness and encourage participation in various energy-saving activities.

As a result, in 2022, 407.37tCO₂eq of GHG was reduced by improving the Boiler control method and the Steam supply method, and about KRW 8.35 million was reduced based on the internal carbon price.

Aligning with Performance Assessment and Rewards

Annual energy consumption and GHG emission reduction targets are set according to the mid- to long-term GHG reduction roadmap, and are reflected in the MBO qualitative evaluation items of Operation Headquarters and each department manager.

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Development of Green Products and Establishment of Sales Standards

	<p>Green Energy business</p>	<p>PAFC fuel cells made by Doosan Fuel Cell have significantly lower gas emissions and noise compared to the conventional fuel cells, and enable non-polluting power generation when hydrogen is used.</p>
	<p>CCS-linked PAFC system</p>	<p>Fuel Cell is an eco-friendly power generation technology for producing electricity through the chemical reaction between hydrogen and oxygen. It is possible to eliminate CO₂ emissions when hydrogen is used as fuel for PAFC but if hydrogen is used by modifying hydrocarbon fuels(natural gas, LPG, etc.), a small amount of CO₂ occurs during the combustion process to supply heat for the modification of hydrogen. For CO₂ capture technologies to reduce CO₂, we apply wet/dry/separators CO₂ capture technology at a 10MW level for coal thermal power generation and industrial processes. In Korea, there is no precedent for developing a technology that combines fuel cells with CCS. Doosan Fuel Cell is designing a CSS-linked PAFC system and developing optimal technology to capture CO₂ discharged through exhaust gas*. We are currently developing technologies to reduce PAFC CO₂ emissions by more than 70% through the configuration and control of the CO₂ concentration system, optimized design of exhaust gas heat recovery, and integrated management of multi PAFC system gas. *Unnecessary gas discharged from the combustion engine, etc.(A large amount of vapor, combustion products, excess fuel, soot, dust, etc.)</p> <p>In this regard, Nambu Power, Samsung C&T, Korea Energy Research Institute, and Doosan Fuel Cell signed a "Clean Hydrogen Fuel Cell Development and Conversion Business Agreement"(22.6) to accelerate the development of fuel cell-linked CCU.</p> <p>* Gas that is unnecessarily emitted by internal combustion engines (large amounts of water vapor, combustion products, unburned fuel, soot, dust, etc.)</p>
	<p>Blower filter design</p>	<p>1MW of fuel cells requires a supply of air that can sustain about 10,000 adults. Our fuel cells are composed of multiple BOPs(Balance of Plant) that supply air. When designing a blower for dual air circulation, we apply a high-performance filter to filter out fine particles, ultrafine particles, and impurities to supply clean air into the cell. This can reduce the entry of fine particles as the fuel cell expands.</p>
	<p>Sales standards of eco-friendly products</p>	<p>Doosan Fuel Cell has defined eco-friendly products based on K-Taxonomy announced by the Ministry of Environment, and calculated and disclosed related sales results. Among our fuel cells, the PureCell M400 Hydrogen model, a hydrogen-only model, is an eco-friendly product that meets the K-Taxonomy green sector's "hydrogen and ammonia-based energy production" economic activities as it does not emit pollutants such as GHG, fine dust, nitric oxides, and sulfur oxides during power generation. The PureCell M400NG model is an eco-friendly product that meets the economic activities of 'Liquid Natural Gas(LNG) and Mixed Gas-based Energy Production' in the K-Taxonomy conversion sector when producing a combination of heat and electricity. In addition, sales of maintenance/repair/management services of the product are calculated as eco-friendly service sales and disclosed.</p>

Minimizing Environmental Impact throughout the Whole Process

Doosan Fuel Cell performs activities to collect data and study the environmental impacts occurring in the whole process, from the production stage to the use and disposal stages. We analyze the environmental impacts for each process, aiming to remove hazardous chemical substances from all products manufactured by Doosan Fuel Cell in the product development process, reduce energy in the production process, and secure green attributes in the use stage. We are reviewing the list of hazardous chemical substances present in our products and establishing the GHG inventory.

Product Design Standards

Doosan Fuel Cell is developing to change the existing PAFC CSA separator made of graphite(carbon) to a metal separator to improve resource circulation. Currently, the metal separator shape design and coating process development and evaluation have been completed, and we are developing a manufacturing process for empirical evaluation with the aim of completing the development in 25.

Metal separation plates use metal base materials to increase the possibility of recycling the separation plates that were previously discarded, and increase the output of the stack by securing design/production flexibility and reducing electrical resistance.

In addition, it can reduce unnecessary material loss during the manufacturing process and secure price competitiveness, thereby improving higher eco-friendliness and product competitiveness.

Doosan Fuel Cell plans to strengthen eco-friendly products and technology from the product design stage and expand the high-efficiency, high-power fuel cell power generation market by developing metal separators.

*RCF(Refractory Ceramic Fibers), on the other hand, is a government-designated carcinogen that is commonly employed in high-temperature modified items such as fire protection equipment and aerospace and is used as insulation for parts in Doosan Fuel Cell's fuel cell. Doosan Fuel Cell safely handles the material in accordance with domestic and foreign regulations and guidelines, but plans to design and manufacture pilot products within the third quarter of 2023 and replace them with non-RCF materials by the end of the year.

* RCF: Refractory Ceramic Fibers

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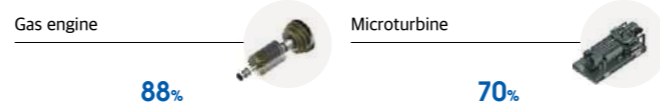
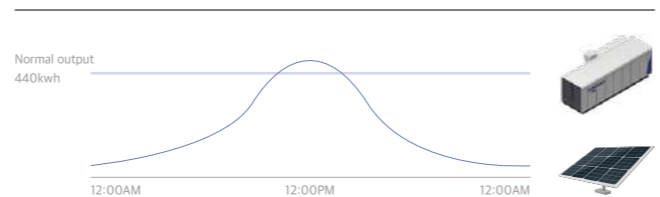
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Environmental Efficiency in the Use Stage

Doosan Fuel Cell performed an analysis of the changes and values that fuel cells can bring in the present and near future. We calculated the economic, social, and environmental value of fuel cells and we would like to share the results with our stakeholders.

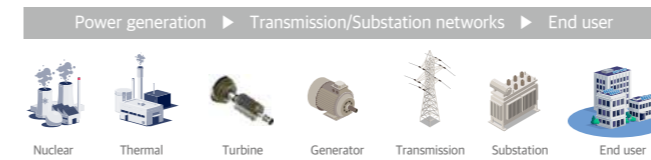
Economic Value

In terms of economy, fuel cells are power sources with high efficiency and high density. As fuel cells involve direct conversion of chemical energy into electricity, they can reduce power loss and achieve high efficiency compared to conventional power sources based on fossil fuels. In addition, they require a smaller area compared to other new renewable energy sources and can be operated stably without environmental restrictions.



Social Value

From a social perspective, fuel cells can facilitate the expansion of employment and investment in infrastructures in various industries across the value chain, such as production, storage, transportation, and use of hydrogen to promote the transition to a hydrogen economy. Furthermore, fuel cells are suitable for distributed power generation. Fuel cells are highly efficient, green energy sources that can be installed close to the end user to supply electricity and heat. They involve less power loss compared to the conventional energy sources in the power transmission and substation process. They can also contribute to the development of the community by reducing social costs from installing transmission and substation facilities.

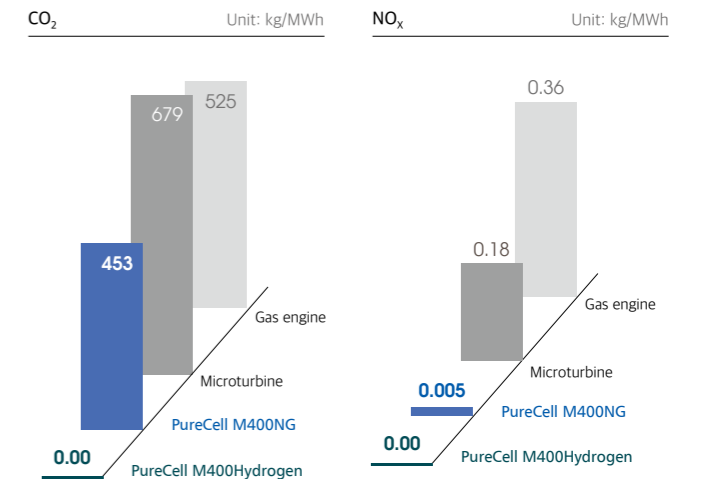


- Low costs due to loss from energy conversion
- Reducing costs of building transmission/substation networks
- High efficiency and GHG reduction
- Possible to install close to end users



Environmental Value

In terms of economy, fuel cells contribute to environmental improvement as green energy sources with almost no emission of pollutants such as GHG, fine particulates, nitrogen oxides, and sulfur oxides. Fuel cells do not generate nitrogen oxides since they do not involve the combustion process, and sulfide compounds are eliminated inside the device. They can reduce CO₂ emissions based on high power generation efficiency and do not require separate kinetic energy, avoiding damage from noise and dust. We will develop technology combining CCS(Carbon Capture and Storage) with PAFC to lead the blue hydrogen market. When the production of green hydrogen is generalized in the future, hydrogen model fuel cells developed by Doosan Fuel Cell will be used as zero emission energy facilities that do not emit pollutants.



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Responsibility for End-of-life Products

Resource Circulation Process

Doosan Fuel Cell has established and operated a resource circulation system for products whose lifespan has ended in order to revitalize resource reuse/recycling and realize a circular economy. When the fuel cells installed at the power generation site reach the design life, our engineers will completely disassemble and repair and replace parts, and major parts such as CSA will be recovered and regenerated through refurbishing. This process minimizes disposal and contributes to resource conservation and circulation.

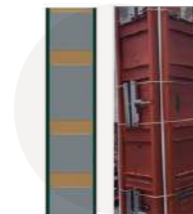
Recycling after CSA Repair

CSAs are returned to the site after repairs according to the following process. We try to recycle CSAs that cannot be used due to quality issues rather than discarding them. 36 CSAs were recreated using this approach in 2022 during the repair process.

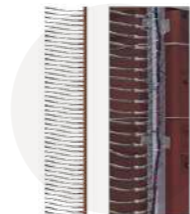
Doosan Fuel Cell conducted parts recycling in accordance with refurbished CSA manufacturing. We plan to further identify parts that can be recycled and continue to make stronger efforts towards recycling.

RM reuse

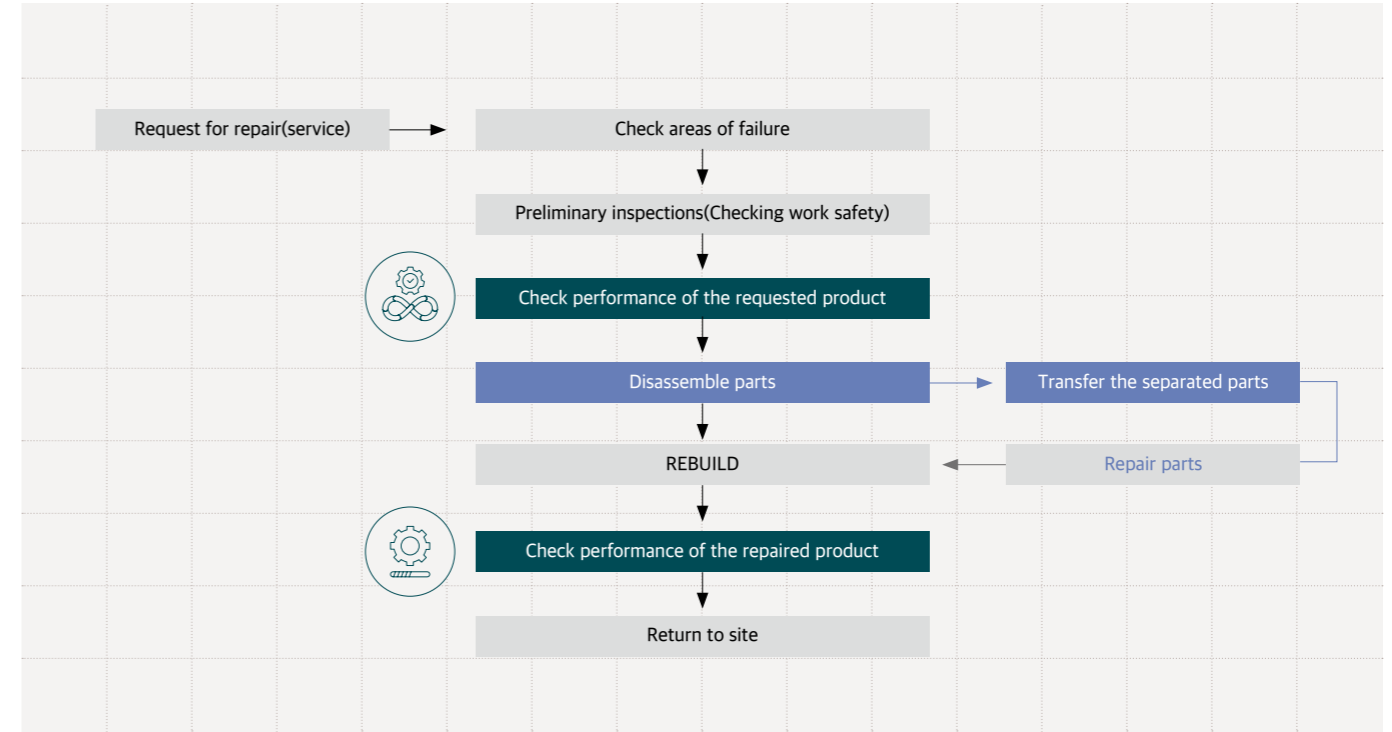
When consumable parts such as RM(Reactant Manifolds) and CM (Coolant Manifolds) are damaged, they are replaced and reused.



After replacing RM



After replacing CM



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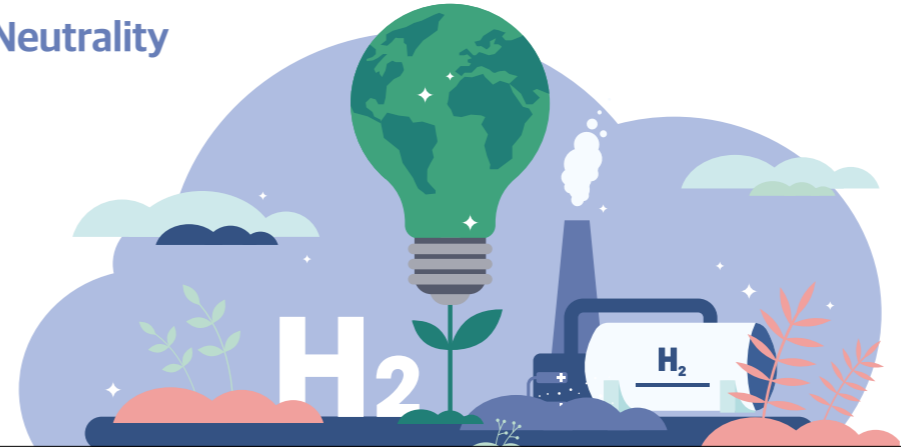
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Expanding our Business Areas by Entering the Land Hydrogen Mobility Market

According to the government’s roadmap released in 2019 for invigorating the hydrogen economy, the domestic hydrogen mobility market will be expanded by establishing 1,200 hydrogen refueling stations, 40,000 hydrogen buses, and 30,000 hydrogen trucks by 2040. In line with this roadmap, Doosan Fuel Cell declared a plan to expand its business areas by entering the ‘land hydrogen mobility’ field in addition to ‘power hydrogen fuel cell’ and ‘marine hydrogen mobility.’

In April 2022, Doosan Fuel Cell signed an MOU, for the development of a hydrogen fuel cell system for the mobility and supply of hydrogen buses, with Ballard Power Systems(hereinafter referred to as Ballard) and HyAxiom at the headquarters of HyAxiom in Connecticut, United States.

Ballard is a Canadian company specializing in PEMFC(Polymer Electrolyte Membrane Fuel Cell) that has global competitiveness in the field of hydrogen mobility. HyAxiom is a Doosan subsidiary that has competitive power in the field of PAFC(Phosphoric Acid Fuel Cell).

Doosan Fuel Cell, Ballard, and HyAxiom formed an agreement to cooperate on the development and mass production of PEMFC systems for mobility, sales of hydrogen buses, and the supply of hydrogen and electricity charging stations.

A pilot project for hydrogen buses will be carried out domestically in

2023, launching buses equipped with a hydrogen fuel cell for mobility developed by HyAxiom. The three companies showed a strong will to cooperate and take on the global market with high growth potential.

This MOU is significant in that it is a ‘strategic alliance’ for advancing into the global market in addition to the Korean market. SOFC(Solid Oxide Fuel Cell) for marine mobility is in development and PEMFC for hydrogen mobility represents a new growth engine.

Efforts to Convert to Clean Hydrogen Fuel Cells with CCU Technology

Doosan Fuel Cell is working to secure a super technical gap to convert to clean hydrogen fuel cells. In early June 2022, Doosan Fuel Cell signed an MOU for the ‘development and conversion of clean hydrogen fuel cells’ with Korea Southern Power, Samsung C&T Corporation, and the Korea Institute of Energy Research(KIER) at Dongdaemun Doosan Tower. This MOU was prepared to meet the policies for invigorating the domestic hydrogen economy, such as the Clean Hydrogen Certification System and Clean Hydrogen Energy Portfolio Standards(CHPS). The main activities include the development of CCU* technology related to fuel cells; the conversion of conventional hydrogen fuel cells to blue and green hydrogen fuel cells; and collaboration for the commercialization of an ammonia fuel cell demonstration project.

* CCU(Carbon Capture, Utilization): A technology for collecting and using carbon dioxide`

Hydrogen is largely classified into grey hydrogen, blue hydrogen, and green hydrogen according to the method of production. Grey hydrogen takes up about 96% of the hydrogen produced today and is derived from natural gas. Byproduct hydrogen produced from petrochemical companies is also classified as grey hydrogen. When the CCU technology is used on grey hydrogen, it is categorized as blue hydrogen. Since the cost of producing green hydrogen based on electrolysis with the power sourced from renewable energy such as solar power is rather high, blue hydrogen with almost no CO₂ emissions and reasonable production costs is taking the spotlight.

Doosan Fuel Cell jointly developed the fuel cell CCU technology with KIER and is conducting the demonstration of blue hydrogen fuel cells that apply this technology. After successful completion of the demonstration phase, the existing hydrogen fuel cells will be replaced with blue hydrogen fuel cells in collaboration with Korea South Power to lead the conversion to clean hydrogen. Doosan Fuel Cell will also participate in the ammonia fuel cell demonstration project. Ammonia can be liquefied at -33°C and offers 1.5 times higher transportability compared to hydrogen because of the smaller volume. In addition, ammonia is considered to be highly efficient and economically feasible than liquid hydrogen(liquefaction temperature of -253°C) thanks to the high energy density.

As part of the demonstration project, Doosan Fuel Cell will develop ammonia fuel cells and Samsung C&T Corporation will supply ammonia from abroad. Korea South Power will provide the site for the ammonia fuel cell demonstration.

Through this MOU, Doosan Fuel Cell will accelerate the conversion to clean hydrogen fuel cells by responding actively to the government’s clean hydrogen policies and ensure competitiveness for a super technical gap

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Implementation of Commercialization of Hydrogen Charging Stations based on Eco-friendly Mobility

In November 2022, Doosan Fuel Cell signed a business agreement with SK Energy to 'Prove High-purity Hydrogen Production Linked to Hydrogen-Charged Fuel Cells and Refining Facilities' to implement a hydrogen charging station construction project using hydrogen-charged fuel cells(Tri-gen).

Doosan Fuel Cell will supply and install Tri-gen that can produce hydrogen, electricity, and heat at the same time, and SK Energy will be in charge of supply and maintenance of hydrogen refining facilities and demonstration of Tri-gen-linked hydrogen refining facilities.

After completing the demonstration of charging facilities that can produce more than 99.99% of high-purity hydrogen by the first half of next year, the two companies decided to install hydrogen charging stations that can be charged with on-site hydrogen by 2026.

We plan to produce 1 ton of hydrogen per day that can charge 200 hydrogen cars or 30 hydrogen trucks per charging station, and electricity produced by Doosan Fuel Cell's Tri-gen products can also charge electric vehicles, enabling the construction of a complex energy charging station in the future.

Doosan Fuel Cell's 'Tri-gen' is a product that uses 440 kW of phosphoric acid fuel cells(PAFC) per unit and has advantages such as price-competitive hydrogen supply for on-site hydrogen charging, flexible response to hydrogen demand for mobility, and ease of charging electric vehicles.



Expansion of Eco-friendly Hydrogen Fuel Cell Business Model Using Biogas

Doosan Fuel Cell signed a 'Basic Agreement to Expand Mid- to Long-term Business and Cooperation Areas' with Kolon Global in March 2023 regarding hydrogen fuel cell power generation projects using biogas.

According to this agreement, the two companies will cooperate step by step to develop an eco-friendly hydrogen fuel cell business model using biogas, Doosan Fuel Cell will be in charge of supplying hydrogen fuel cells, long-term maintenance(LTSA), and Kolon Global will supply fuel, EPC(design, procurement, construction), and securing piping facilities. In addition, the two companies decided to cooperate in various licensing and technology exchanges necessary for the business.

The concept of this business model is to remove impurities from biogas generated in sewage treatment plants and mix them with natural gas(NG) to use them as fuel for hydrogen fuel cells. The electricity generated here will be distributed, and the heat will be used for heating, cooling, and hot water. Doosan Fuel Cell's Tri-gen products, which can produce hydrogen, electricity, and heat at the same time, will be installed together to ultimately charge hydrogen cars.

This business model is examined in particular as one that lets all local governments, businesses, and citizens to cohabit by employing biogas generated from sewage treatment plants, which were traditionally characterized as filthy facilities, as eco-friendly energy.



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Developing and Commercializing High-efficiency Hydrogen Models

Doosan Fuel Cell has been operating the world's first/largest hydrogen fuel cell power plant commercially since 2020. The hydrogen fuel cell model was confirmed stable performance with a model developed to expand the carbon neutral power generation market, utilize various hydrogen resources, and diversify fuel.

Doosan Fuel Cell is not resting on its laurels, and has been working on a high-efficiency hydrogen model since the third quarter of 2021, with plans to commercialize it in 2024.

The high-efficiency hydrogen model boosts output from the same footprint to 550 kW power generation capacity as the conventional 440 kW power generation capacity system, while simultaneously improving electrical efficiency by roughly 2-3% pt. In addition to these technological improvements, price competitiveness has been achieved by reducing LCOE by 42 KRW/kWh, reducing the required site area and construction cost.

Doosan Fuel Cell plans to contribute to the expansion of the carbon-neutral power generation market and accelerate the expansion of the clean hydrogen utilization market by securing a high-efficiency, high-power hydrogen direct-use model.

* LCOE: Levelized Cost of Electricity



Developing High-efficiency SOFCs and Diversifying Applications

Doosan Fuel Cell is attempting to gain SOFC(Solid Oxide Fuel Cell) technology in addition to the existing PAFC (Phosphoric Acid Fuel Cell) technology in order to accelerate growth and increase its market domination for securing future markets as the hydrogen economy expands fast.

In particular, the existing SOFC system for power generation is operated at a high temperature of 800°C or higher, so the power efficiency is high but the life expectancy is short, so we want to secure market competitiveness through the medium-low-temperature SOFC business that can compensate for these shortcomings.

To this end, Doosan Fuel Cell is building a new 50 MW plant in the Saemangeum Industrial Complex in Gunsan, Jeollabuk-do, with the aim of completing it in August 2023. It will produce NG models for 300 kW power generation and ship in 2024.

Doosan Fuel Cell expects Doosan's mid- to low-temperature SOFC, which has higher power efficiency and a relatively long life expectancy compared to existing products, to expand its market share and quickly advance its global carbon neutrality.





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As a way to expand mid- to long-term non-financial risk management, we will include supply chain ESG risk assessment results in purchasing strategies, prepare climate change strategies, and implement gradual improvement in workplace environmental performance to minimize negative impacts and strengthen business continuity.



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Supply Chain ESG Management



Supplier ESG Management System

In preparation for the adoption of the EU supply chain due diligence law and taking into account the rising supply chain management trend, Doosan Fuel Cell has devised a roadmap for building a supply chain ESG risk management system and mid- to long-term implementation measures.

To establish the supply chain ESG management system, Doosan Fuel Cell's existing supply chain management system was reviewed and the current status was analyzed through international standards and third-party benchmarking. After that, we divided them into 4 types, such as Critical, Bottleneck, Leverage, and Routine, according to these standards: ▲ Parts Purchasing Proportion ▲ Critical Parts ▲ Replaceability ▲ Expertise and Core Technology ▲ Procurement Period ▲ National/Regional Risk ▲ Organization/Manpower Size. In addition, we developed questions and indicators to evaluate ESG risks in the supply chain and prepared evaluation methods, period, and follow-up management measures for each type.

In 2023, the developed evaluation index was used to conduct self-diagnosis of all parts/product primary suppliers, and the feasibility and reliability of the evaluation index were verified by conducting a consultant on-site inspection of the critical suppliers. Doosan Fuel Cell plans to develop a mitigation program for high-risk suppliers and prepare and implement a follow-up management system from the second half of 2023 to upgrade ESG management in the supply chain.

* QCD(Quality, Cost, Delivery): Quality, cost, delivery date

1. Labor & Human Rights

1.1 Prohibition of Discrimination	Suppliers of Doosan Fuel Cell shall make efforts to create a workplace free of illegal discrimination or harassment on the basis of race, skin color, age, gender, sexual orientation, ethnicity, disability, health issues, pregnancy, religion, political orientation, trade union membership, nationality, marital status or other factors in carrying out employment practices including recruitment, promotions, bonuses, and the provision of education and training opportunities.
1.2 Prohibition of Ill Treatment of Employees	Suppliers of Doosan Fuel Cell shall treat all employees with respect, and employees shall not be subjected to nor be threatened with cruel or inhumane treatment or acts such as sexual harassment, sexual abuse, corporal punishment, physical or mental cruelty, verbal abuse or irrational proposals.
1.3 Prohibition of Child Labor Abuse	Suppliers of Doosan Fuel Cell shall comply with the minimum working age convention adopted by the International Labor Organization (ILO) and shall not hire employees under the minimum age for employment set forth by the local law.
1.4 Protection of Basic Conditions of Employment	Suppliers of Doosan Fuel Cell shall not force employees to work past the maximum number of working days and working hours as defined by local law, and shall fully comply with all the provisions of the Labor Standards Act related to wages and benefits to protect the basic conditions for employment.

2. Safety & Health

2.1 Management of Occupational Safety	Suppliers of Doosan Fuel Cell shall eliminate workplace hazards in advance and take preventive measures via appropriate design, engineering and administrative control, and preventive maintenance and safety procedures. Suppliers shall ensure that employees are not exposed to potential safety hazards (e.g., hazards associated with electricity and other power sources, fires, vehicles and falls). In case such hazards cannot be reduced sufficiently by the aforementioned means, suppliers shall provide workers with proper personnel protective equipment.
2.2 Industrial Hygiene Management	Suppliers of Doosan Fuel Cell shall keep the workplace safe and healthy, and comply with relevant laws, regulations, and directions. To this end, Suppliers shall provide the basic hygienic facilities that are accessible to all employees, and establish a pleasant workplace with adequate lighting and ventilation.
2.3 Emergency Response Plan	In case of an emergency, Suppliers of Doosan Fuel Cell shall go through the process of identifying and assessing emergency situations to minimize the damage, and establish basic safety procedures such as fire and accident response systems.
2.4 Accident and Disease Management	Suppliers of Doosan Fuel Cell shall establish a procedure and system to prevent, manage, monitor, and report industrial accidents and occupational diseases. Suppliers should be able to utilize the system to identify workers' injuries and diseases, provide the needed treatment and take corrective measures to prevent recurrences.

3. Environment

3.1 Environmental Permits and Reports	Suppliers of Doosan Fuel Cell shall obtain and maintain environmental permits required to operate and manage the business site, and ensure compliance based on the latest updates at all times. Suppliers shall also comply with the requirements for operations and reporting that are needed in the process of obtaining the permits.
3.2 Management of Hazardous Materials	Suppliers of Doosan Fuel Cell shall identify hazardous materials used in the workplace, and keep records and history of safe handling and transport, preservation, usage and disposal of hazardous materials. Hazardous materials herein are defined as chemical and other substances that pose a threat to the safety of workers when discharged or exposed to humans.

Guidelines for Sustainable Supply Chains(GSSC)

We set guidelines to enable suppliers of Doosan Fuel Cell to pursue their sustainability goals. The guidelines regulate the basic matters to be followed by suppliers and contractors(hereinafter referred to as 'suppliers') that provide products and services. These guidelines also stipulate basic matters related to labor and human rights, safety and health, environment, ethics and fair trade, and general management. All suppliers doing business with Doosan Fuel Cell must comply with the following guidelines

3.3 Management of Pollutant Emissions and Discharge	Suppliers of Doosan Fuel Cell shall establish a system to monitor the emission and discharges of pollutants from facilities, work processes and sanitary facilities at the business site; and comply with the control and treatment methods and discharge limits set forth by local laws. Pollutant emission and discharges include waste water, waste materials(general/specific), air pollutants and ozone-depleting substances.
3.4 Eco-Efficiency	Suppliers of Doosan Fuel Cell shall utilize the resources at the business site efficiently through improvement activities such as the enhancement of process efficiency, conversion to alternative fuels, and recycling and re-use of resources. Resources include raw and subsidiary materials, energy, water and other materials employed in production activities.
3.5 Response to Product Environmental Regulations	Suppliers of Doosan Fuel Cell are responsible for compliance with local laws, regulations, and customer requirements, including but not limited to, recycling and treatment labeling for products, and the prohibition, approval and registration of specific materials as set forth by local laws.
4. Ethics & Fair Trade	
4.1 Business Ethics and Compliance	Suppliers of Doosan Fuel Cell are required to practice the highest ethical standards in all business relationships. Unethical behaviors, including corruption, extortion, and offer or receipt of bribes and favorable treatments are strictly prohibited. Suppliers are responsible to ensure compliance with the ethical codes by conducting inspections of and crackdowns on unethical behavior.
4.2 Fair Trade Compliance	Suppliers of Doosan Fuel Cell are prohibited from proposing or accepting offers to gain economic benefits based on unfair or unjust business transactions. Suppliers shall adhere to laws and regulations related to fair trade, and shall not be involved in unfair trading that would disrupt the orderly performance of business practices.
4.3 Transparency and Disclosure	Suppliers of Doosan Fuel Cell shall disclose information on business activities, financial positions, business results and other factors in a transparent manner in accordance with relevant laws and regulations.
4.4 Protection of Intellectual Property Rights	Suppliers of Doosan Fuel Cell shall not violate or illegally use intellectual property rights, including patents, software, design, and trademarks. Suppliers shall respect the intellectual property of others, and any transfer of skills and know-how shall be conducted in a manner that protects intellectual property rights of the rightful owner.
4.5 Information Security	Suppliers of Doosan Fuel Cell shall do their utmost to protect technology data, information and intellectual property obtained in the process of doing business with Doosan Fuel Cell. Suppliers shall also arrange and follow a procedure to ensure that employees' personal information is not distributed or disclosed to third parties.
5. General Management	
5.1 Regulatory Compliance and Continuous Improvement	Suppliers of Doosan Fuel Cell shall make efforts to comply with laws, regulations, and customer requirements relevant to doing business, and continue to make improvements by conducting compliance self-assessments.
6. Guidelines Accessibility and Compliance Efforts	
6.1 Accessibility to the Guidelines and Training Program	Suppliers of Doosan Fuel Cell shall understand and adhere to these guidelines. To this end, these guidelines shall be easily accessible to employees, and a compliance training program shall be offered to employees to help them follow the guidelines effectively.
6.2 Feedback and Reporting	Suppliers shall take feedback from employees regarding the standards and conditions applicable to these guidelines, and follow procedures to make improvements based on feedback. Contact us at Doosan Fuel Cell's Cyber Reporting Center at sangun@doosan.com / http://ethicshelpine.doosan.com/

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- Improving Workplace Environmental Performance

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Definition of Supply Chain for ESG Risk Management

Doosan Fuel Cell has defined 51 domestic and overseas parts suppliers as ESG risk management suppliers to prevent disruptions in parts procurement caused by suppliers' risks and expected delays in production schedules and delivery. All parts suppliers are assessed for ESG risk every year or every three years, and those classified as high-risk suppliers are encouraged to implement remediation measures, and the end result is reflected in the purchase plan.

Supply Chain Risk Management Training and Communication

Doosan Fuel Cell regularly conducts trainings, including labor and human rights, safety and health, environment, ethics and fair trade, and general management, as well as ESG risk assessment for its suppliers.

We have introduced a sustainability assessment for suppliers through education related to the supplier sustainability assessment and risk management system

Details of education related to the supplier risk management system: Definition of ESG, introduction to the background, trends, status of ESG in Korea, ESG status of Doosan Fuel Cell, Doosan Fuel Cell ESG Guidelines, and introduction to the sustainability assessment for suppliers

On February 9, 2022, we distributed and trained "Guideline for Sustainable Supply Chain for Doosan Fuel Cell's Suppliers" to five partners, and on May 24, 2023, we held a 'Supply Chain ESG Risk Management System Briefing' with more than 20 suppliers to recognize the importance of ESG management.

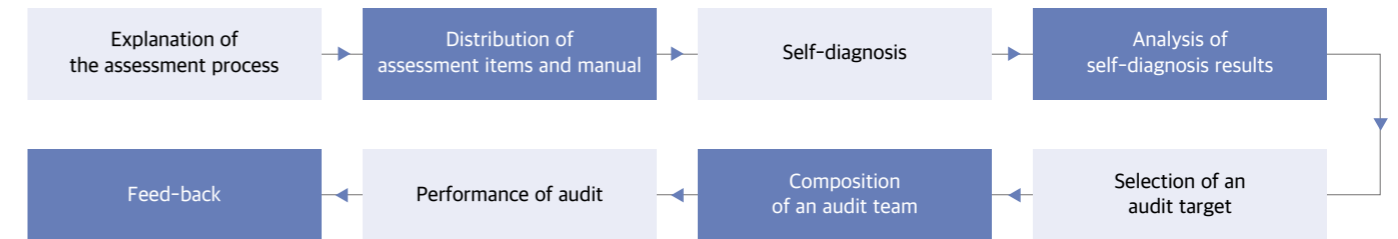


Sustainability Evaluation of the Supply Chain DCSSAP, Doosan Corporation Supplier Sustainability Assessment Program





According to the 2023 sustainability evaluation of suppliers, there are five high-risk suppliers with high sustainability risks, accounting for 11.9%.

We will carry out an audit and corrective measures and send feedback to the high-risk supplier.

Supplier Sustainability Assessment Process



Supply Chain ESG Self-diagnosis Criteria

	 Disclosure	 Environment	 Social	 Governance and economy
Area/Question	1 area 1 question	7 areas 18 questions	8 areas 27 questions	2 areas 9 questions
Details	ESG information disclosure format	Environmental management system / energy / GHG / hazardous substances / waste / air pollution and noise / water pollution / environmental facilities / environmental performance	Relevant company policy / Labor / Human Rights / Safety and Health System / improving work environment / preventing industrial safety / supplier management/ information protection / customer satisfaction	Ethical management / financial stability

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Supply Chain Risk Management Assessment and Follow-up

Doosan Fuel Cell evaluated suppliers' ESG activities in 2022 and found that the remaining 12 critical suppliers passed the high-risk supplier selection criteria(80 points), except for one out of 13 critical suppliers that accounts for more than 1% of material costs. In the first half of 2023, the Ministry of Trade, Industry and Energy developed 'K-ESG Guidelines for Response to Supply Chain' and 'ESG Self-diagnosis Index' reflecting trends in each country. ESG evaluation was conducted on 42 domestic suppliers out of 51 parts suppliers, and 5 of the manufacturers were selected as high-risk suppliers.

For selected high-risk suppliers, we plan to implement risk mitigation measures and follow-up management measures from the second half of 2023.

Supplier Risk Management Process



Supply Chain Strategy and ESG Integration(Linking Purchase Strategy and ESG)

Doosan Fuel Cell has established and continues to operate goals for supply chain strategies considering the link with ESG. The main goals are as follows. Starting in the second half of 2023, we plan to reflect ESG assessment results more systematically with QCD* in our purchasing strategy.

* QCD(Quality, Cost, Delivery): Quality, cost, delivery date

ESG goal 1.



We added ESG evaluation criteria to the supplier evaluation index to assess the management capability and strengthen the supply chain network. We evaluate the ESG evaluation scores in the areas of human rights, health, and environment based on the management capabilities of the supplier and determine factors that may have an impact on work continuity and stability due to withdrawal or accidents occurring to employees based on these indices.



We comply with HSF(Hazardous Substances Free), which is the product hazardous substance standard, and XRF(X-ray Fluorescence), which is the hazardous substance inspection management guideline. Doosan Fuel Cell understands its responsibility to strictly follow and manage laws and guidelines related to hazardous materials and environmental management as it runs a fuel cell business classified as green energy. The minimum criteria for ESG evaluation are applied to new suppliers. The percentage of new suppliers of mass-produced materials that apply ESG factors for evaluation was 11.5% in 2021.

ESG goal 2.

Conflict Minerals Policy

Doosan Fuel Cell does not purchase or procure conflict minerals, as the four minerals classified as conflict minerals(tin, tungsten, tantalum, gold) are not used in any products developed by Doosan Fuel Cell.



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Shared Growth Implementation System

Doosan Fuel Cell is stabilizing supply and demand through the dualization of raw materials in order to expand alongside its suppliers, and it is also sharing the cost savings. We are also working to reduce loss time and stabilize production quality by supporting facility investment for our supplier's productivity improvement and improving our manufacturing and inspection processes.

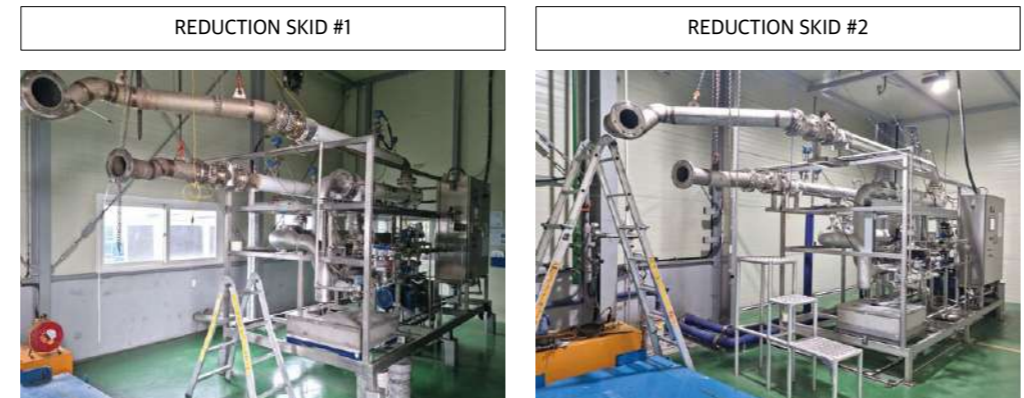
Shared Growth Support System

Support for productivity improvement of Suppliers

Doosan Fuel Cell supports direct investment in some of the facilities needed to grow and technical training in new facilities for Capa. up of suppliers.

1) Investment in Catalyst Reduction Facilities of Major Machinery Parts Modules Production Suppliers

As there was a limit of 12 production Capa. units per month in the operation of one Reduction skid, we have successfully achieved Capa. Up through investment support from our suppliers for new facilities that have been upgraded compared to existing facilities. This has increased productivity, contributing to the production of quality products by providing stable product supply and preventing overload of existing facilities.

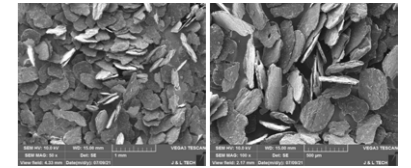


Stabilizing Supply and Demand and Supporting Cost Competitiveness Activities through Dualization of Raw Materials

Doosan Fuel Cell is implementing technical support activities such as stabilizing supply and demand of materials and securing cost competitiveness by providing support activities for dualization development of raw materials used to produce suppliers' products.

1) Development of material for separator production suppliers

We supported the activities of our suppliers in the procurement process and analyzed the characteristics of raw materials, and supported the development of material dualization through verification of dozens of evaluation items such as thermal conductivity and electrical resistance in parts condition.

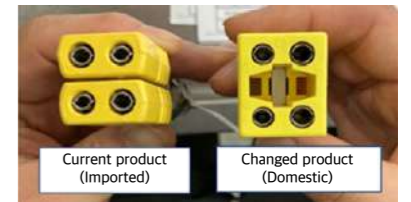


Examples of support for separator development

2) Developing Thermocouple(T/C), ILS Cylinder coil

① Development of 10 localized types of T/C(stabilization of supply and demand)

The possibility of supply instability has increased due to instability in supply and demand of raw materials of T/Cs, which have been produced entirely from imported parts materials, and a sharp increase in unit prices due to the pandemic(COVID19). Accordingly, Doosan Fuel Cell selected domestic suppliers and developed to solve the risk of supply and demand instability of suppliers using it and support the stabilization of supply and demand.



② Development of a localized ILS Cylinder coil(stabilization of supply and demand)

Due to unstable supply and demand of equipment for important parts, domestic companies were discovered and developed localization in cooperation with our suppliers, and long-term reliability evaluation was conducted to develop products with the same performance as existing products to provide stable supply and cost savings.



[Water Pressure Test]
24.1 bar, 30 min hold.
(Same before and after thermal cycle)



[Visual test for deformation of welding]
Visual and Form3-based dimension inspection of welded parts
(Measured after the thermal cycle to compare spec compliance and data)

Supply Chain ESG Management

Supporting Improvement Activities in Manufacturing and Inspection Process

Doosan Fuel Cell has been providing support activities for suppliers to improve their manufacturing and inspection processes since 2022.

1) Hose Clamping improvement activities for TMS parts production suppliers

In order to prevent the occurrence of leakage due to unstable working conditions of suppliers, the optimal clamping criteria were selected by supporting process data analysis(process capability analysis, etc.) activities, and the management standards were set to be maintained continuously.

CMs Clamp EAR Process Capability Analysis Results

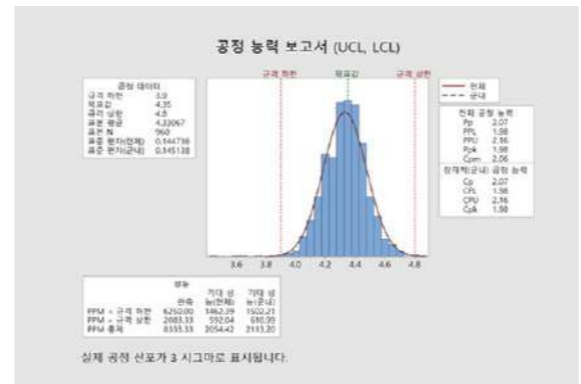
1) Analysis results (UCL, LCL applied)

EAR external diameter > UCL: 2EA

EAR external diameter < LCL: 6 EA

- Can be derived within the range of administrative permits (Cpk = 1.98)

⇒ Create a Go-No-Gage that filters out values that deviate from UCL and LCL.

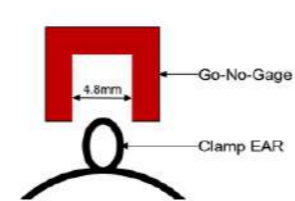


2) Conclusion of capability analysis

1. It is recommended to set the clamp EAR management specification jig 4.8 mm
2. If the clamp EAR is less than 3.9 mm after measuring the external diameter in case of excessive compression(bending), rework is required



EAR bending case



2) Supporting Leak Test improvement of MBOP module production suppliers

1) Improvement of Reformer tube leakage test facilities and methods

To improve the excessive M/H due to equipment problems and inefficiencies in the Leak Test method, we have reduced the process time by 80% by supporting technology for facility changes and inspection processes.

Delay in M/H process	Process delay details
<ol style="list-style-type: none"> 1) Catalyst tube water under leak test: Inspection time 3 to 4 hours 2) Endoscopic examination time: 1 hour 	<p>Failure occurs due to frequent leaks at the cap finish and pressurized installation of the tube</p>

Test verification check contents	Confirmation check content (Facilities)
<ol style="list-style-type: none"> 1) Verified Cap Jig's validity and durability: No unusual 2) Checked test method to identify problems with the assembly method of Jig and tube 3) 3 people required 	<p>The cap Jig of the tube interferes with the lower plate, causing stress in the tube and Jig and continuous failure due to the gap</p>

Test Jig and process improvement	Test Jig and process improvement details
<ol style="list-style-type: none"> 1) Catalyst tube cleaning, leak test, endoscopy process: Total M/H time: 3 days(10~12Hr) 2) Process order and Jig need to be improved to reduce process M/H: Total M/H time: 1.5 days(2~3Hr) 	<ol style="list-style-type: none"> 1) To prevent the tube and cap from interfering with the lower plate, the fixed jig is removed to reduce the inspection time for the verification process to 20 minutes compared to the previous 3~4Hr. A total of 2 people are required: 1 person for quality and 1 person for support 2) Process order change(Leak test & endoscopy): 1Hr cleaning → Leak test (With endoscopy simultaneously)

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Safety and Health Consultative Group and Labor-Management Joint Inspection



Doosan Fuel Cell operates a safety and health consultative group with internal and external suppliers. Based on this communication channel, we minimize the occurrence of issues by communicating actively and finding solutions to safety and health issues. We will continue to support suppliers in their efforts to improve safety and health response capability by complementing any safety and health inadequacies through periodic operation of the group.

Improvement of Safety and Health Management Level of Suppliers



Doosan Fuel Cell is conducting business contracts only for suppliers that have secured safety and health capabilities through a systematic safety and health evaluation process. We regularly evaluate various items such as safety and health management safety and health execution level, and disaster occurrence status system, safety and health execution level, and disaster occurrence status for previously contracted suppliers, and actively reward excellent suppliers. For insufficient suppliers, we continue to manage and induce the improvement of the level of safety and health management of our company and suppliers through strong sanctions.



Supporting Supplier Risk Assessment



Doosan Fuel Cell provides technical guidance on risk assessment for suppliers and reviews the field risks to minimize safety accidents. As a result of the risk assessment activities, there were no safety accidents related to external suppliers in 2022.

Safety Education for Employees of Suppliers



Doosan Fuel Cell periodically conducts education for suppliers' employees related to safety and health laws, standards, and accident cases. In addition, by producing and distributing Pocket Books on safety rules to be followed by outsourced suppliers, construction suppliers, we have improved our safety standards more visually and intuitively. In view of the enhanced laws related to safety, such as the Serious Accidents Punishment Act, we are continuously enhancing the safety mindset of suppliers' employees by strengthening supplier education, inspections, and support systems.



Supplier Safety and Health Reward System



Doosan Fuel Cell actively encourages suppliers to participate in field risk improvement activities by expanding the scope of the "Safety and Health Improvement" and "Near-miss Accident Discovery" reward systems used at Doosan Fuel Cell to include suppliers.

Supplier Meeting



Doosan Fuel Cell regularly holds meetings with critical suppliers. Doosan Fuel Cell's meeting with its suppliers is an opportunity to share Doosan Fuel Cell's business direction and plans to form a consensus with its suppliers, and to seek ways to maintain information exchange and cooperation between its suppliers. The 2022 meeting was held at Iksan headquarters on June 15 with representatives from 20 suppliers participating. Doosan Fuel Cell Information Security Officer participated in a lecture on how to maintain security as the need for compliance with security of suppliers emerged due to global IP issues and security trends.



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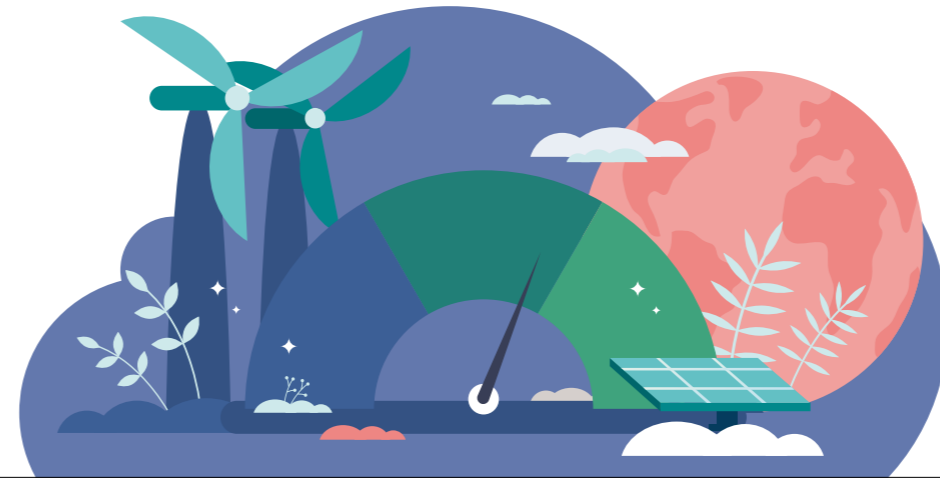
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Response to Climate Change



In order to fulfill its leading responsibilities related to climate change, Doosan Fuel Cell will implement climate change activities in accordance with the Climate Change Financial Information Disclosure Task Force (TCFD). TCFD, launched by the FSB(Financial Stability Board) in December 2015, announced TCFD Guidance 2.0 in July 2020. The TCFD, which includes corporations from more than 100 nations, is working to establish a standard for climate change disclosure. Doosan Fuel Cell intends to transparently disclose the activities under TCFD through this report and ensure reliability and transparency.

Strategy



- Identifying short- and medium- to long-term climate risks/opportunities
- Impact of climate-related risks/opportunities on an organization's business, strategy, and financial plans

Indicators and Reduction Targets



- Indicators used to assess risks/opportunities related to climate change
- Risks associated with GHG emissions
- Climate-related risk/opportunity and goal-to-performance indicators

Governance

Strategy

Risk Management

Indicators and Reduction Targets

Governance

- Board oversight of climate-related risks and opportunities
- Managing and assessing climate-related risks and opportunities



Risk Management

- Organizational processes to identify and assess climate-related risks
- Organizational processes for managing climate-related risks
- Integration of the organization's overall risk management and climate-related risk management processes





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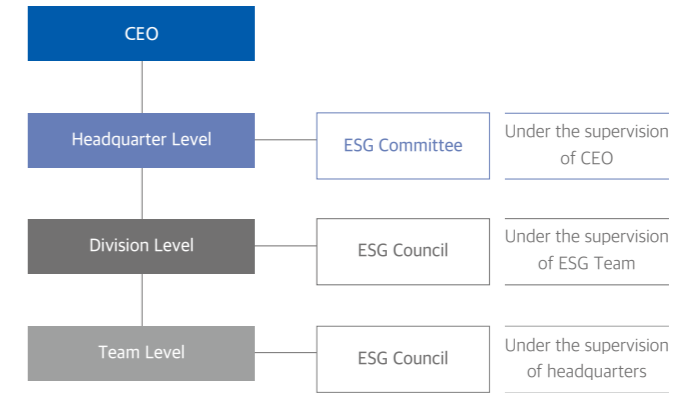
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Response to Climate Change

Governance

Roles and Responsibilities of the Board and CEO

Doosan Fuel Cell established an ESG dedicated organization in December 2021 and is implementing more active and practical ESG management in the areas of environment, society, economy, and governance, led by ESG Committee. The CEO of Doosan Fuel Cell is responsible for overseeing the environmental management agenda by integrating financial impact and business strategy, analyzing the significant financial impact of environmental risk and opportunity factors related to climate change and carbon neutrality, developing a response strategy, and managing climate financial information and management strategy. In addition, as ESG councils are run quarterly to facilitate the management and execution of ESG strategies, the division level is organized by ESG teams and the team level is organized by headquarters.



Strategy

Analyzing Risk and Opportunity Factors

Category	Factor	Financial impact	Countermeasures	Period	
Transition risk	Policy/law	· Carbon prices rise due to GHG emission trading system, carbon tax, and carbon border tax	High	· Introduction of renewable energy, operational efficiency of production facilities, and offset activities	Mid- to long-term
	Technology	· Risk of failure in the development and commercialization of alternative technologies for low-carbon products	Low	· Increasing efficiency and eco-friendliness of existing products and diversify product development portfolios to distribute the risk of commercialization failure	Mid- to long-term
	Market	· Increased financial burden on customers for carbon costs and increased demand for renewable energy conversion from stakeholders	Medium	· Development of non-carbon fuel cell products exclusively for hydrogen, expansion of supply of hydrogen-only models, and implementation of replacement of existing NG models to hydrogen models	Short term
	Reputation	· Reputation drops due to climate crisis-related issues response and climate risk disclosure	Medium	· Establishment/disclosure of mid- to long-term GHG reduction goals and road, and integration of climate change response strategies and corporate strategies	Short term
Physical risk	Acute	· Extreme weather events such as typhoons, floods, heat waves, and fires	Different by business site	· Securing alternative lines for parts supply failures, strengthening EHS training and management at workplaces	Short term
	Chronic	· Drought, forest fires, water shortages, persistent high temperatures, and flooding due to rising sea levels	Different by business site	· Analysis of heat index and flood threat according to climate change by major workplaces and preparation of countermeasures	Mid- to long-term
Opportunity	Energy resource	· Policy support such as subsidies for renewable energy generation facilities due to increased demand for eco-friendly energy · Establishing a CHPS organization, securing technology and cost competitiveness, and actively developing businesses	High	· Participating in and propose hydrogen energy policy establishment in collaboration with hydrogen power generation associations and organizations, and seek ways to develop the hydrogen industry · Establishing a CHPS organization, securing technology and cost competitiveness, and actively developing businesses	Mid- to long-term
	Products and Services	· Increased customer preference for eco-friendly low-carbon products that can respond to the climate crisis	High	· Development of hydrogen-only models, product efficiency, and competitiveness of power generation prices	Short term
	Market	· Securing brand value by activating eco-friendly businesses	Medium	· Obtaining eco-friendly certification for products/technology and disclose participation and activities of publicly available global initiatives	Long-term

Response to Climate Change

Risk Management

Doosan Fuel Cell has established the development of products and technologies that respond to carbon neutrality as a major growth task, and is discussing business goals to achieve this. Therefore, we would like to establish a systematic process optimized for responding to climate risks by identifying and managing climate change risks based on Doosan Fuel Cell's risk management system. The resulted climate risk management plans and strategies will be reported to ESG Committee.



Indicators and Targets

Doosan Fuel Cell manages key indicators along with strategies and strategic tasks for responding to climate change within the four major ESG strategies. This allows stakeholders to understand Doosan Fuel Cell's ability to respond to climate change by establishing detailed plans based on the results of measuring the performance of each task and monitoring strategy achievement.

Strategy	Strategic task	Key indicator
Strengthening eco-friendly competitiveness	Reducing GHG emissions at workplaces	<ul style="list-style-type: none"> • GHG emissions(Scope 1+2) • GHG emissions(Scope 3) • Total GHG emissions reduction
	Expansion of products/technology contributing to carbon neutrality	<ul style="list-style-type: none"> • Performance of improved sales of eco-friendly products • Performance of improved purchases of eco-friendly products
	Minimizing the impact of the entire product process	<ul style="list-style-type: none"> • Total waste generated • Annual waste generation goal and achievement • Amount of waste generated by treatment method
Expanding non-financial risk management	Strengthening ESG risk management in the supply chain	<ul style="list-style-type: none"> • Number of suppliers to assess ESG risk • Percentage of improvement agreements for high-risk suppliers • Percentage of suppliers rated as high risk and contracted
	Disclosure of climate change risk information	<ul style="list-style-type: none"> • Percentage of new suppliers reviewed by environmental standards • Number of suppliers subject to environmental impact assessment • Number of suppliers identified as high risk groups
	Improving workplace environmental performance	<ul style="list-style-type: none"> • Energy savings as a direct result of savings and efficiency planning • Percentage of water reused

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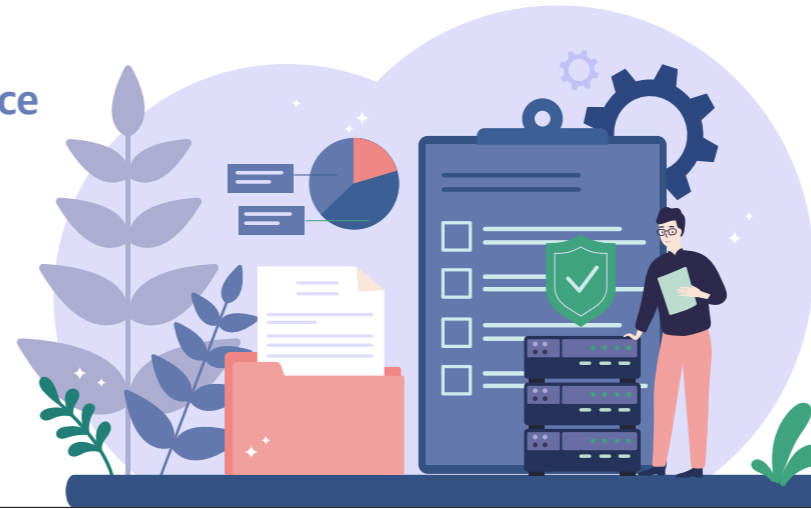
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Improving Workplace Environmental Performance



Eco-friendly Certification

Environmental Management System Certification

Doosan Fuel Cell established an environmental management system in 2022 and obtained ISO14001 certification, an international standard. We operate the environmental management system and strives to improve environmental performance by continuously improving the management level of the system.



Environmental Education

Doosan Fuel Cell establishes an annual plan for education and training and conducts quarterly programs to enhance employees' awareness on the environment and reinforce the environmental management capability. In 2022, a total of 255 employees completed environmental education four times. We will reinforce employees' ESH competency to achieve zero environmental accidents and the preservation of the community.



Violation of Environmental Laws

Doosan Fuel Cell did not violate any environmental laws in 2022. Pre-EHS evaluation is conducted to comply with environmental laws and regulations and compliance evaluation is conducted periodically. We reviewed legal matters related to licensing and established measures to prevent recurrence of issues and to follow environmental laws, and we are striving to ensure compliance with laws through strict management of our performance.

Assessment of Environmental Impact

Doosan Fuel Cell establishes and operates a process for identifying, preventing, and assessing the risks related to environment impacts in advance.

Sample question 1

Q. Is an environmental policy that reflects the CEO's opinions established and shared?

- ① An environmental policy is established and disclosed to internal and external stakeholders through various methods.
- ② An environmental policy is established but not sufficiently disclosed to internal and external stakeholders.
- ③ An environmental policy is not established.

Sample question 2

Q. Is there a dedicated division in charge of the environment?

- ① There is an environmental management division for each workplace.
- ② There is no environmental management division for each workplace, but we have appointed a person in charge of environmental management.
- ③ There is no environmental management division or a person in charge of environmental management.



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Improving Workplace Environmental Performance

Water/Waste Management

Water Management

In order to reduce water usage and wastewater generation, the water usage management system has been established, and the usage for each process is checked.

Total water used in 2022 is 31,681 tons, with a 5% reduction plan in 2023. In 2023, we plan to carry out activities to further increase the wastewater recycling rate by checking the amount of wastewater generated in each process. The wastewater generated is treated through a subcontracted wastewater treatment company and a wastewater treatment plant. The wastewater treatment company is selected based on transparent and fair internal standards, and relevant criteria such as licenses and on-site treatment facilities are checked to see if the company can treat wastewater based on the standards stipulated by the law.

Waste Management

Doosan Fuel Cell controls the waste generated in each process and selects recyclable waste to minimize the type of waste incinerated or reclaimed. In addition, we classify and store the generated waste by type to manage and handle the waste according to the related laws, and carry out activities to reduce and recycle waste. A subcontracted waste treatment company is selected based on transparent and fair internal standards, and relevant matters such as licenses and on-site treatment facilities are checked to see if the company can treat waste in accordance with the standards stipulated by the law. The details of waste generation and treatment are precisely managed through the 'Allbaro System,' the government's waste management system. Doosan Fuel Cell's waste generation increased in 2022 compared to 2021 due to the expansion of factory facilities. A total of 478.87 tons of disposed waste in 2022, down 1.2% from the target of 485 tons. Hazardous waste totaled 1.07 tons, a 1.8% reduction from the target of 1.09 tons. Through waste reduction activities and changes in treatment methods, we will continue to strive to discharge no hazardous waste.

Total waste treated	Total waste recycled/reused	Total waste disposed	Waste reclaimed	Waste incinerated with energy recovery	Waste incinerated without energy recovery	Stored on site	Waste with no record of the disposal method	Scope of data	Total waste generated in Basic unit
Unit	ton	ton	ton	ton	ton	ton	ton	%	ton/facility
2020	221.83	221.88	166.85	0	54.98	0	0	100	3.84
2021	291.54	235.73	212.39	0	23.34	0	0	100	4.19
2022	444.37	478.87	405.92	0	72.95	0	0	100	5.37

※ Unit/KRW for total Recycled/reused wastes and total waste generation in 2020 and 2021 was corrected by combining total wastes of tagged steel and paddle

Chemical Substance Management

Management of Hazardous Substances Status

Doosan Fuel Cell ensures safe handling of chemical substances, regardless of the amount, through lawful and transparent processes from purchase to disposal to prevent health hazards to employees and environmental pollution accidents related to hazardous chemical substances.

Before purchasing a new chemical, we are reviewing whether the chemical is subject to regulation in accordance with relevant domestic and overseas laws (Chemical Substances Control Act, Act on Registration and Evaluation, etc. of Chemicals, REACH, California, etc.) in terms of EHS.

We also continuously study whether the substance can be eliminated or changed. If the use of a hazardous substance is unavoidable, we prepare to meet all legal requirements and invest in facilities (local ventilator, sealing, personal protective gear, etc.) to protect the workers' health.



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Doosan Fuel Cell conducts quality control checks reflects on product and service improvement, develops programs to improve community negative impact, and provides various forms of non-financial information to facilitate stakeholders to find the information they want.

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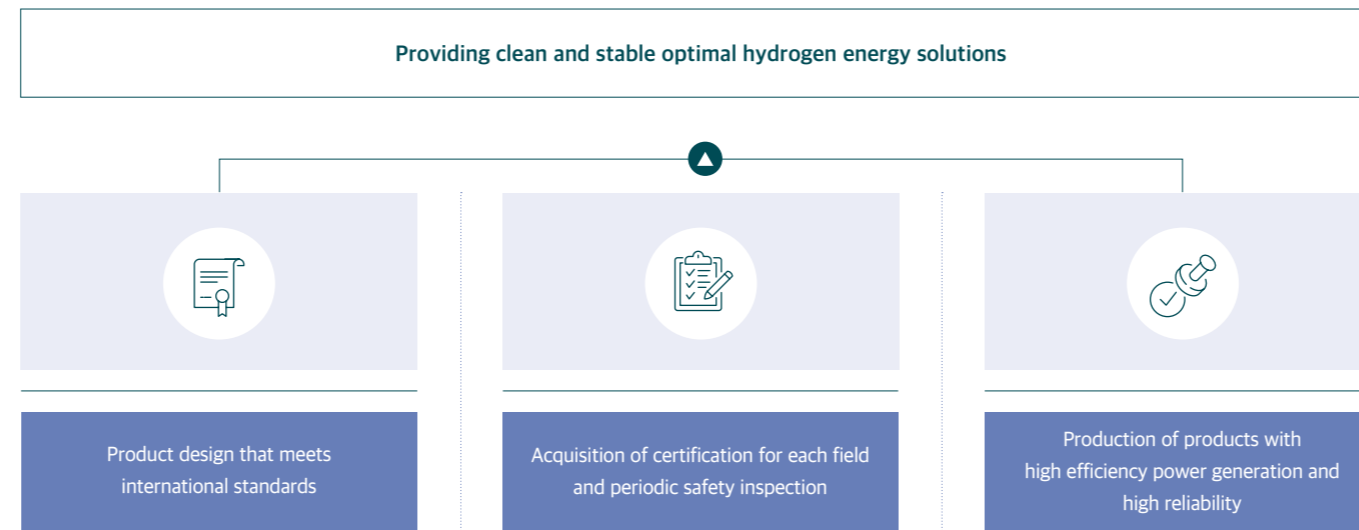


Quality Policy

All employees of Doosan Fuel Cell constantly work hard to provide a 'clean and stable optimized hydrogen energy solution' and achieve goals such as designs that meet international standards, acquisition of certifications in each field, passing periodic safety inspections, achieving highly efficient power generation, and manufacturing of products with high reliability.

Fuel cells have the strictest quality standards in all industry sectors as they were first applied in aerospace engineering, and Doosan Fuel Cell has been leading the fuel cell market based on stability and quality for decades - beginning with UTC in the United States.

In addition, we follow the quality process strictly, upholding the values of 'customer value creation,' 'high efficiency and low cost,' and 'promotion of sustainable growth.'

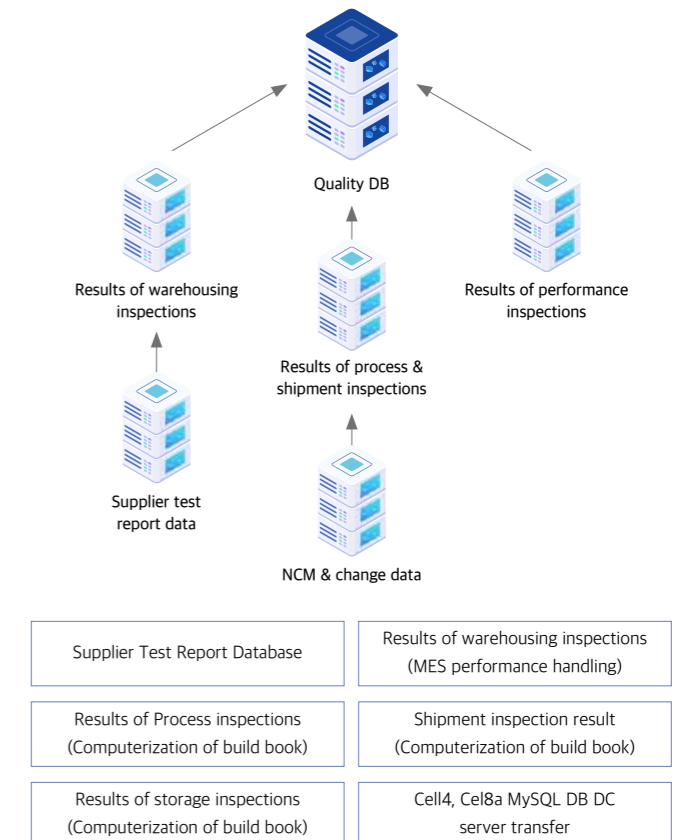


Quality Management Implementation System

We standardized all work and tasks based on the quality manual that reflects customer requests in product design, production, and service. We operate the Spec Center to browse and use the latest copy of the manuals.

In addition, we established the manufacturing/ operation system based on MES(Manufacturing Execution System) and built an integrated quality database based on real-time process management encompassing manufacturing and production result/ defect checks, plant inventory checks, supplier test reports, and shipment inspections. Based on this, we plan to implement the paperless process in 2023.

Establishment of an Integrated Quality DB



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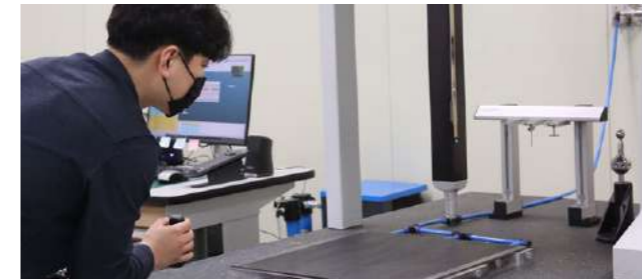
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Strengthening the Quality Management System

To boost the quality system's execution power, we perform overall PQC activities, including processes, on a regular basis and convey the supplemental needs obtained from them to the relevant departments in order to implement continuous improvement.

In addition, we regularly provide quality-related in-house training to improve the competency of internal operating personnel. Externally, we regularly hold quality meetings with critical suppliers to discuss changing the quality Mindset and improving the quality of the relevant personnel. In order to secure execution power, we periodically conduct a theme audit with each supplier's quality personnel to find and improve the deficiencies.



Ensuring Product Safety

Since it was first used to NASA programs in the United States as a safe technology that does not require high pressure or combustion in the course of power generation, it has been proven safe. It has been designed to meet international standards and has obtained various safety-related inspections and certifications to maintain a high level of safety management that is applicable to residential and used buildings. Not only during the manufacturing process, but also at sites where fuel cells are installed and operated, we conduct regular safety and operation-related inspections to ensure continuous stability.

Development of Customer Satisfaction Assessment Indicator and Satisfaction Survey

Doosan Fuel Cell is constantly listening to customers through various channels and making various efforts to satisfy customers by providing training to improve product understanding. In order to manage VOC more efficiently, we will develop indicators that can evaluate quality stability such as operation rate/efficiency, field operation and EHS, and communication efficiency with customers.



Expansion of the Quality Management System

Doosan Fuel Cell performs continuous quality management based on quality management system certifications such as ISO 9001, KGS design inspection, and KS. We applied for certification based on the early inspection of fuel cell generation facilities and registration of manufacturing facilities to establish a quality management system that conforms with the Electrical Safety Management Act enacted in 2021 and obtained related certification in a first for a domestic fuel cell company and maintain it.

Based on the ISO9001 certification-based quality system, we are expanding overall quality level management opportunities by continuously improving process and product quality to meet the requirements of the Korea Electrical Safety Corporation (KESCO).



ISO9001, Certificate of Early Inspection of KESCO Generation Facilities, Certificate of Manufacturing Facilities Registration

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CSR System and Direction

Doosan Fuel Cell implements strategic CSR activities in line with the group's common goal of 'Proud Global Doosan.' We support the development of local history to enhance future competitiveness and corporate value, and encourage sustainable growth and social integration in various fields such as education, culture, sports, and the environment to contribute to social and economic activities.

Mission	Enhancing future competitiveness and corporate values through strategic CSR activities		
Key strategies	Growth of people	Contribution to the community	Use of capabilities in the company's possession
Direction	<p>Supporting talent training and the creation of jobs</p> <ul style="list-style-type: none"> 1 Train hydrogen energy human resources 2 Develop education and provide opportunities for participation 3 Facilitate the disabled to strengthen self-reliance and pursue growth 	<p>Supporting underprivileged classes and contributing to the community</p> <ul style="list-style-type: none"> 1 Find solutions to social issues by supporting underprivileged groups 2 Participate in and contribute to the community 	<p>Leveraging technologies and capabilities in the company's possession</p> <ul style="list-style-type: none"> 1 Understand the hydrogen energy industry and products, provide training in engineering technologies 2 Use employees' talents
SDGs			
Enabler	CSR promotion system and employee commitment		
Business KPI	Contribute to cultivating human resources of future generations by providing training and education on hydrogen energy, targeting students of middle and high schools	Support underprivileged groups and reinforce communication with the community through activities associated with the green business	Enhance the company's image and expertise by contributing to the establishment of an industryacademy-institute cooperation system for cultivating and supporting the hydrogen industry
Social KPI	Forming sports teams comprised of people with disabilities	Conduct activities to recover the ecosystem, working with the communities surrounding the main customers	Transfer knowhow on hydrogen fuel cell principles and technology by utilizing capabilities

Mid and Long-term CSR Implementation Plan

Doosan Fuel Cell carries out CSR activities to achieve Doosan's vision of 'Leading global CSR.'

Phase1	
Establish a CSR promotion system(2022~ 2023)	
Create various conditions for CSR activities	
<p>Developing strategic CSR programs</p> <ul style="list-style-type: none"> Developing and implementing new programs 	<p>Establishing a CSR operation system</p> <ul style="list-style-type: none"> Suggesting the direction of CSR strategies and activities Selecting specialized organizations/ persons and establishing roles Establishing the system and operation processes
<p>Increasing employee engagement</p> <ul style="list-style-type: none"> Developing engagement policies and invigorating campaigns Providing motivation to increase engagement 	
Phase2	
Reinforce CSR promotion capabilities (2023~2025)	
Reinforce implementation and operational capabilities for CSR activities	
<p>Inigorating strategic CSR programs</p> <ul style="list-style-type: none"> Stabilizing the representative programs Developing and producing internal PR content 	<p>Expanding the CSR operational system</p> <ul style="list-style-type: none"> Developing and operating a performance measurement model Reinforcing the operational system through core capabilities
<p>Supporting communications and cooperation with stakeholders</p>	<ul style="list-style-type: none"> Forming a consultative group and using it as a platform to engage with the community Finding methods to communicate and cooperate with suppliers Supporting academic and industrial cooperation between the government and universities
Phase3	
Enhance the CSR promotion system (2026~2027)	
Establish a strategic CSR system and create positive outcomes	
<p>Expanding strategic CSR programs</p> <ul style="list-style-type: none"> Developing new programs and upgrading existing programs (linking to the SDGs, reflecting trends) Finding ways to solve social issues 	<p>Internalizing CSR activities</p> <ul style="list-style-type: none"> Establishing a platform for the voluntary participation of employees Establishing infrastructures to stimulate engagement of the community and suppliers
<p>Establishing a CSR operation system</p>	<ul style="list-style-type: none"> Measuring, analyzing, and disclosing data on the programs' performance Establishing a program monitoring system Associating creation and expansion of social values

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CSR Activities

‘Human Growth’ CSR Activity



Employment of disabled athletes | Doosan Fuel Cell signed an agreement with the Jeonbuk branch of the Korea Employment Agency for Persons with Disabilities and the Jeonbuk Sports Council to create employment for the vulnerable and directly hired eight disabled athletes in December 2022. According to the business agreement, the Jeonbuk Sports Council recommended excellent disabled athletes in the province and supported participation in various competitions, and the Jeonbuk branch of the Korea Employment Agency for Persons with Disabilities helped disabled athletes adapt to the company through pre-education. Doosan Fuel Cell directly employs disabled athletes and provides salaries and various welfare benefits so that they can focus only on training in a stable environment. Doosan Fuel Cell, headquartered in Iksan, Jeollabuk-do, expects the employment of disabled athletes to create employment and support self-reliance for the vulnerable in the community, while improving the performance of excellent athletes and preventing leakage to other regions.



Agreement on employment expansion for disabled athletes ('22.12.12)

Chung-Ang University donation | The Doosan Group has been donating funds for the development of Chung-Ang University since 2008. The donated funds are used to cover educational and facility expenses incurred by ChungAng University and as a financial source to foster talented human resources demanded by society. We donated KRW 1 billion, KRW 1.5 billion, and KRW 1.5 billion in 2021, 2022, and 2023, respectively.

‘Contribution to the Community’ CSR Activity



‘Dairoum Free Meal Car’, a sponsorship and regular volunteer work in Iksan | Doosan Fuel Cell, where its headquarters and factories are located in Iksan, Jeollabuk-do, is supporting the operation of the Dairoum Free Meal Car in Iksan to improve community welfare. The 'Dairoum Free Meal Car' is a vehicle that provides free meals to people who are concerned about not eating in low-income areas with low accessibility by region. In March 2023, Doosan Fuel Cell signed a sponsorship agreement with Iksan City to donate KRW 6 million in operating expenses, and employees participate as regular volunteers on the third Wednesday of every month to help distribute food.



‘Dairoum Free Meal Car’ donation ceremony in Iksan('23. 2. 21)

Green Walking Challenge & urban forest creation | Doosan Fuel Cell, a provider of safe and sustainable energy solutions, is running campaigns to encourage employees to walk and plant urban forests in order to produce eco-friendly goods and technology, practice carbon neutrality in everyday life, and preserve a healthy ecosystem. Every spring and fall, the mobile walking application accumulates the number of steps of employees, suppliers, and family participants, and converts them into donations and donate up to KRW 10 million to environmental organizations. This donation will be used for urban forest creation activities involving employees to experience the importance of forests and contribute to carbon neutrality. The Green Walking Challenge had 741 participants between October 2022 and April 2023, and the number of extra steps completed throughout the challenge is similar to the amount of carbon absorbed by 164 30-year-old pine trees in a year. Meanwhile, 25 employees participated in Anyangcheon Stream planting activities in October 2022, and 30 employees took the lead in creating urban forests and preserving biodiversity by planting hydrophilic shrubs in Salgoji Park near Jungnangcheon Stream.



Green Walking Challenge('22.10.4~10.17, '23.3.30~4.13)



Creating an urban forest in Anyangcheon Stream('22. 10. 14)

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‘Contribution to the Community’ CSR Activity



Energy efficiency support project for children’s welfare facilities |

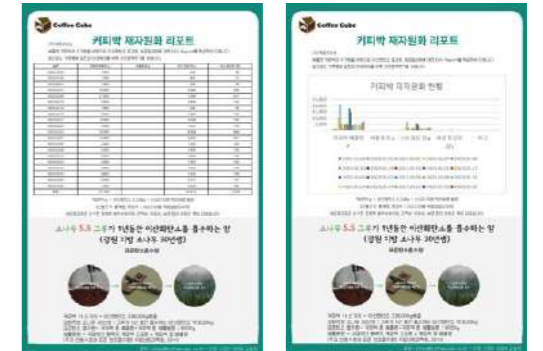
Doosan Fuel Cell delivered the donations gathered by the voluntary participation of employees to the Korea Council of Group Home for Children & Youth for Energy Efficiency Improvement through a project titled Fruit of Love. This project aims to replace deteriorated boilers, gas stoves, etc. at social welfare organizations with safe, ecofriendly products for the improvement of the atmosphere, reduction of GHGs, prevention of safety accidents, and enhancement of the living environment. We supported the improvement of facilities in 40 group homes in 2022, and aims to support 50 locations in 2023.(Delivered KRW 30 million on January, 2023)



Before and after energy efficiency improvement projects in 2022

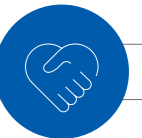
OA donations | We donated 74 laptops, 4 monitors, and 13 desktops, which are disused OA assets, as part of the Love PC Sharing Project run by the Korean Information Office for the Disabled. Furthermore, 7 recyclable devices from the donated OA assets were repaired and provided for children and youth with disability. Unusable OA assets were disposed of and used for the business of the Korea Association for Child Welfare and expenses for child support.

Coffee grounds recycling | Coffee waste(coffee grounds) is a domestic waste that was previously disposed of by coffee machines used for staff wellness in the Doota office. However, Doosan Fuel Cell has been regularly delivering coffee grounds to Coffee Cube, a company specializing in recycling coffee grounds, since 2022 to revitalize resource circulation and reduce carbon generated during waste disposal. In addition, DooSan Fuel Cell regularly purchases products produced by Coffee Cube as coffee grounds to help create a stable virtuous cycle of collection, production, and sales.



Doosan Fuel Cell's coffee park recycling report

‘Utilization of Capabilities’ CSR Activity



Industry-academic cooperation | Doosan Fuel Cell, a hydrogen corporation, actively promotes the hydrogen energy industry, which is being promoted as a means of achieving carbon neutrality and reducing climate change. To this end, Doosan Fuel Cell is developing, operating educational programs, or conducting joint research by participating in curricula related to green hydrogen production, hydrogen mobility, and fuel cells at major universities in Korea. In 2022, we ran an eight-week field training semester system with the Gyeonggi University Industry-Academic Cooperation Foundation to support students with Sustaining and CSA-related thesis analysis and data statistics analysis, and had a topic presentation and feedback time. In 2023, the ‘Jungang University’s Human Resources Development Industry-Academic Research Project’ is underway as a new industry-academic cooperation project. We participated in the project of establishing EV Smart Charging Platform Innovation Research Center with Chung-Ang University Industry-Academic Cooperation Group and major external organizations and companies to establish a convergence energy infrastructure linking hydrogen fuel cells and electric vehicle charging facilities.



Theme presentation of the 2022 Gyeonggi University Field Practice Semester System

Participation of employees in funding | Employees of Doosan Fuel Cell voluntarily participate in monthly donations. The company matches the amount donated by employees to raise a fund to conduct CSR activities. Thanks to the enthusiastic participation of employees, we have accomplished a 42% participation rate. Annual donations are spent on projects to improve energy efficiencies and help socially neglected neighbors.



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Impact on the Local Community

Negative Impact on the Local Community

Fuel cells can be installed and operated close to the city center as a representative distributed power source, which reduces the cost of building large-scale transmission networks and minimizes power loss during transmission. However, we recognize that all products have potential negative aspects that can affect society, and we strive to eliminate or reduce negative effects on local communities and increase management levels of inevitable effects.

Identifying and Acting against the Negative Impacts on the Local Community

Doosan Fuel Cell's fuel cells are also installed in U.S. schools and hospitals, which are famous for their strict safety standards, and are operated stably by applying strict safety standards, such as operating as power sources in skyscrapers in Korea. In addition, we strive to reduce the negative impact on the local community by strictly managing noise when installing and operating products.

Agreement and Regulation of the Social Contribution Committee

Article 1 Purpose | The purpose of this regulation is to define the composition, operation, procedure, and standards of an organization that ensures the transparent and appropriate contribution and execution of donations made by [company name] ("company").

Article 2 Definitions | Definitions of the terms used in this regulation are as follows. "Donation" refers to money provided by the company to an individual, organization, or institution without seeking a benefit in return, whether it is called a sponsorship, donation, or otherwise. "Regular donation" refers to the sum or collection of all donations that are expected to occur during a business year, including donations made to regular recipients of donations made every year. "Non-regular donation" refers to a donation that is contributed upon receiving an individual request other than the regular donations. "Social Contribution Committee"("Committee") refers to a non-permanent meeting group composed of employees of the company and its affiliates, formed to decide donation-related policies, select recipient entities for each affiliate, and discuss the distribution of donation amount according to separate agreements or stipulations.

Article 3 Installation, Composition, and Targets of the Social Contribution Committee | The company installed the Social Contribution Committee("Committee") as a body to review and decide donation-related matters, such as the status of donation, places of donation, and donation amount. The Committee comprises the chairperson of the CSR Committee, CFO, and employees in charge of legal affairs. The chairperson of the CSR Committee shall be the chairperson of the Committee. Targets to be reviewed by the Committee include donations of KRW 10 million or more made to a single place of donation. The company shall appoint a secretary to assist the Committee with its duties and implement the decisions. The secretary shall be appointed among employees of a department deemed appropriate based on the division of duties.

Article 4 Method of Arriving at Committee Resolutions | The Committee shall form a resolution of its decisions if voted for by the majority of participating members, with the majority of members present. The Committee may conduct its meetings in a way by which all members participate using a communication means that can send and receive voices at the same time, even if all members are not physically present at the meeting. In this case, the corresponding members are deemed to have participated in the meeting. If a member has difficulty attending the Committee for an inevitable reason, the member may designate an employee to attend on their behalf and exercise voting rights.

Article 5 Procedure for Handling Regular Donations | The Committee shall compile a budget for regular donations based on the amount of donations determined for each place of donation selected by the company to contribute during the corresponding business year, according to the results of the annual Committee meeting. When compiling the budget under Paragraph 1, the Committee may separately review and set aside a reserve fund with an appropriate limit to cover non-regular donations. If there are cases that exceed an amount of KRW 500 million

contributed by the company among the donations included in the budget under Paragraph 1, the Committee shall submit all such cases to the Board of Directors for approval. If the total amount of donation contributed jointly with affiliates exceeds KRW 500 million but the amount contributed by the company is less than KRW 500 million, the case may be submitted to the Board of Directors if approval is deemed necessary considering the purpose of donation and relevance to the business.

Article 6 Procedure for Handling Non-regular Donations | If the company receives a separate request to make a donation not included in the regular donation budget, the Committee shall review and decide whether to approve the donation and the amount if approved, considering the circumstances, such as the purpose or details of businesses operated by the requesting body, uses of the donation, relevance to the company's businesses, public interest, and financial conditions of the company. If the case falls under any of the following subparagraphs, the Committee may call a Council meeting to deliberate on approving the donation, amount, and share of each affiliate. If the amount requested exceeds KRW 100 million and it is deemed that affiliates need to share the amount jointly or the Committee needs to discuss the matter in view of the accompanying circumstances such as the purpose and details of businesses operated by the requesting body, uses of the donation, business relevance, and financial conditions of the company, the Committee shall review and decide the contribution or share of the company by referring to the balance of the reserve fund. If the amount of donations to be contributed by the company according to Paragraphs 1 to 3 exceeds KRW 500 million, the cases shall be submitted to the Board of Directors for approval. If the total amount of donation contributed jointly with affiliates exceeds KRW 500 million but the amount contributed by the company is less than KRW 500 million, the case may be submitted to the Board of Directors if approval is deemed necessary considering the purpose of donation and relevance to the business. Notwithstanding Paragraph 4, if there is an urgent circumstance where it is difficult to carry out the processes of calling and resolution of the Board of Directors in order to accomplish the purpose of the donation, the donation may be contributed by the discretion of the Committee without calling the Board of Directors for resolution. In this case, the purpose of the donation, place of donation, amount, and uses shall be reported at the first Board of Directors meeting called after the contribution.

Article 7 Minutes | Minutes shall be prepared to record the proceedings of the Committee. Minutes shall include the agendas, proceedings, and outcomes and be sealed or signed by the participating members.

Article 8 Relation to Other Regulations | If this regulation does not accord with other in-house regulations, this regulation shall take precedence.

Supplementary Provisions

1. This regulation shall come into effect on 1. 1. 2020.



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Creating an ESG Management Culture

All departments are structured and systematically taught to build a culture of human rights, safety, and ethics management, as well as setting operational standards for the board to review and examine ESG issues. In addition, we plan to make structural changes, such as improving the operating regulations to ensure that the Board of Directors reviews and deliberates on ESG issues.

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Human Resource Management



Recruitment

Doosan Fuel Cell hires human resources with knowledge and talent based on the Doosan ‘Credo,’ which stipulates the management philosophy and business methods of Doosan. We invest a lot of time and effort in developing a system for fair employment, and we use Doosan’s unique interview tools to hire talents who are a good fit for Doosan.

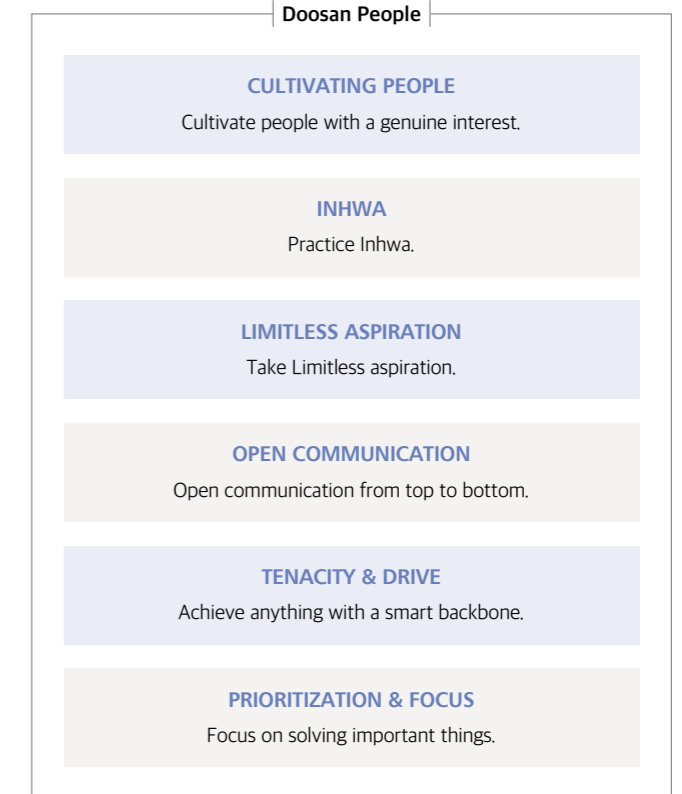
Recruitment Process



01	02	03	04
<p>Document screening</p> <p>First judgment on the applicant’s job understanding and job suitability, such as motivation for application and career details(including DBS* examination)</p> <p>* Doosan BioData Survey: Selection tool to measure whether applicants meet Doosan’s ideal talent</p>	<p>Personality test(DCAT)</p> <p>Doosan’s unique diagnostic tool examines competency and basic job competency for successful job performance</p>	<p>Practical interview (SI, DISE, job suitability)</p> <p>Structured interviews that assess the applicant’s overall competence and professional evaluation of the job</p> <p>* SI(Structured Interview): A structured interview to evaluate Doosan’s competency</p> <p>Doosan Integrated Simulation Excellence(DISE): Conducts PT and Q&A by analyzing virtual business cases to assess applicant’s analytical thinking and problem-solving skills</p> <p>Job suitability: Identify the ability to actually perform the job after joining the company</p>	<p>Final interview</p> <p>Through interviews with the Group’s management, evaluation of talent that meets Doosan’s values and culture</p>

Doosan People

Doosan Group’s ideal talent, ‘Doosan People,’ means all employees who practice with the ability and will to contribute to the organization and constantly strive to improve their abilities.



Employment of the Disabled

Doosan Fuel Cell has provided education to improve awareness of the disabled every year for all employees. In addition, we continue to find talented people with excellent skills regardless of disability according to the non-discriminatory recruitment process, while hiring eight disabled athletes in December 2022 to actually expand the employment of the disabled.

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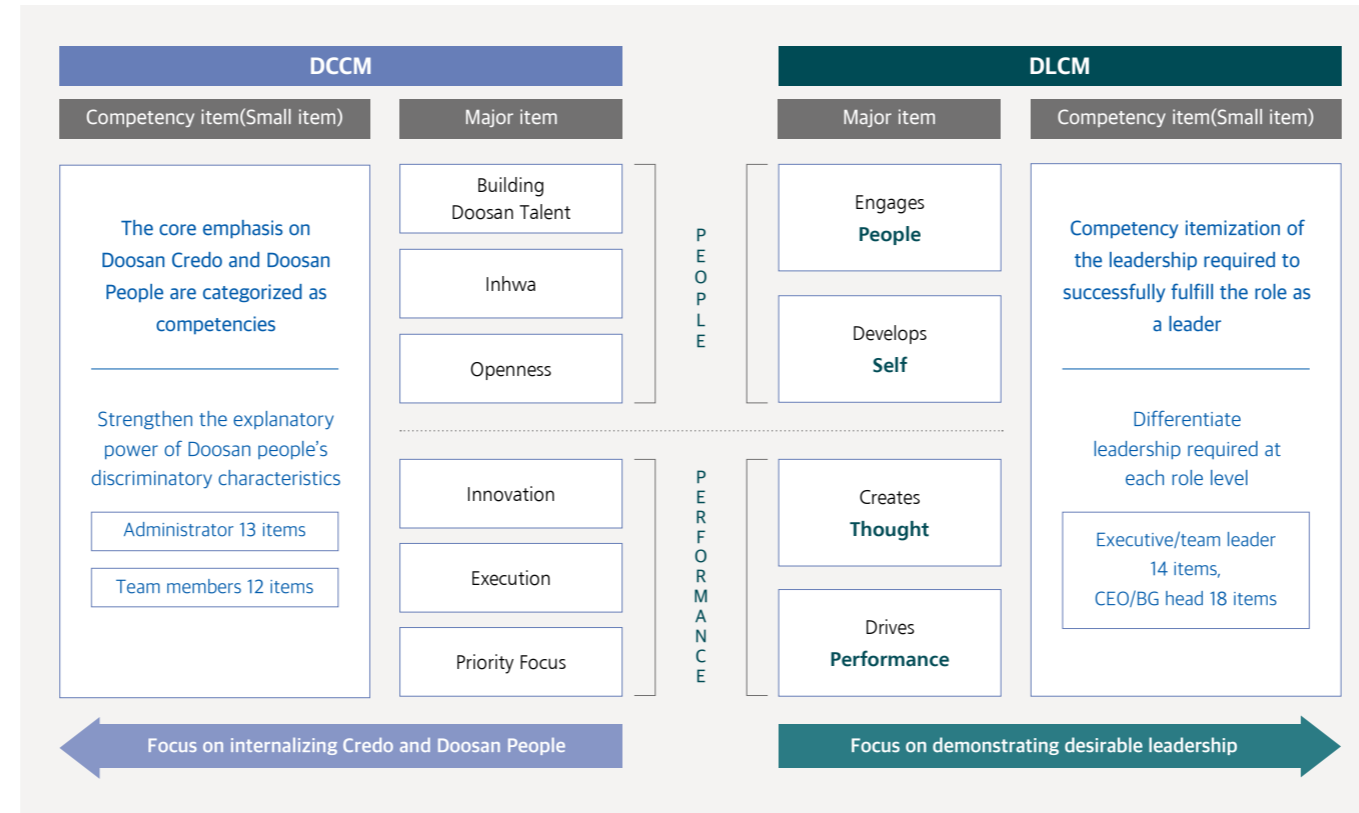
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Human Resources Training

Doosan Fuel Cell fosters human resources with leadership and job expertise. Each employee establishes a differentiated development plan according to his or her strengths and competency level identified through Doosan Group's competency evaluation model, DCM(Doosan Competency Model), and participates in various education programs that meet his or her growth path.



Strategic Human Resources Analysis

We aim to establish a strategic human resources plan by calculating the operating scale of company human resources in connection with the management goals and business strategies of the company and each sector. For this, we will perform an analysis of human resources. Doosan Fuel Cell plans to identify and review the status of company human resources through 'recruitment and employment process,' 'measurement of job change and resignation rate,' and 'identification of employees with a high likelihood of job change.' Based on this data, we will operate human resources effectively by controlling recruitment for the vacancies arising from new businesses. We will continue to address insufficient competencies for creating new business performance through 'measurement of employee performance,' a 'strategic human resources plan,' 'identification of the competency gap of the current human resources,' and 'competition information.' We are establishing a plan to hire key human resources for growth areas including SOFC fuel cells, mobility, and vessels.

Ability and Performance Diagnosis

Doosan Fuel Cell diagnoses the performance and ability of office employees every year based on detailed facts and results, and uses the resulting data to improve individual performance and ability.

Analysis of ability and performance



We evaluate individual performance and ability across 5 stages and arrange the evaluation results as a matrix to comprehensively analyze ability-performance levels. Once the evaluation is completed, the evaluator and subject of evaluation have a 1:1 feedback meeting to discuss long-term evaluation results and implications, in addition to the detailed methods and direction to improve the level of performance achievement. The results of individual evaluations are used for determining promotions, salary increases, and incentives.

Analysis of job capabilities



We identified and developed a set of job-related capabilities, including knowledge and skills required for each, job to secure competitiveness through training of experts. Further, we evaluate individuals' job expertise across 5 stages through the job capability analysis. The evaluation results are provided to individuals as feedback to reflect on individual training plans.

Leadership analysis



To train proactive and systematic leaders, we diagnose the leadership level required for senior roles objectively and scientifically using the External Assessment Center for Executives and Team Managers. Leadership diagnosis is designed to check senior managers' level of leadership performance through verified methods that are widely used by major global and Korean companies. It verifies the leader's capability, attributes, leadership potential, etc. through diagnostic tools such as simulation, interview, tendency test, and multiphasic diagnosis. The results of leadership diagnosis are used for selecting leaders and candidates from the People Session and providing systematic training.

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Work Engagement of Employees

Doosan Fuel Cell listens to employees' opinions through various channels such as meetings, surveys, CA(Change Agent), and interviews with retired employees to create a better working environment. In early 2022, we measured employees' engagement based on factors that are highly correlated to organizational commitment. We evaluated the perception level of employees under 4 categories of personal emotion, team effectiveness, organizational effectiveness, and organizational engagement. The evaluation result for each factor was converted and analyzed based on a perfect score of 100 points. Doosan Fuel Cell will continue to periodically conduct an employee engagement survey to support employees and increase their motivation and engagement.

Category		Team effectiveness	Organizational effectiveness	Organizational engagement	Overall average
Company average		72	63	69	69
By gender	Male	73	64	71	70
	Female	69	54	61	63
By position	Above manager	71	62	69	68
	Assistant manager	73	63	70	69
	More than three years	70	61	67	67
By position	One to three years	73	61	69	68
	Less than a year	79	72	76	76

Creating a Pleasant Working Environment

The new business lounge at the Seoul office is designed to combine business centers and cafes to create a pleasant working environment and help employees improve their work productivity and efficiency by forming a space for comfortable relaxation and free communication.



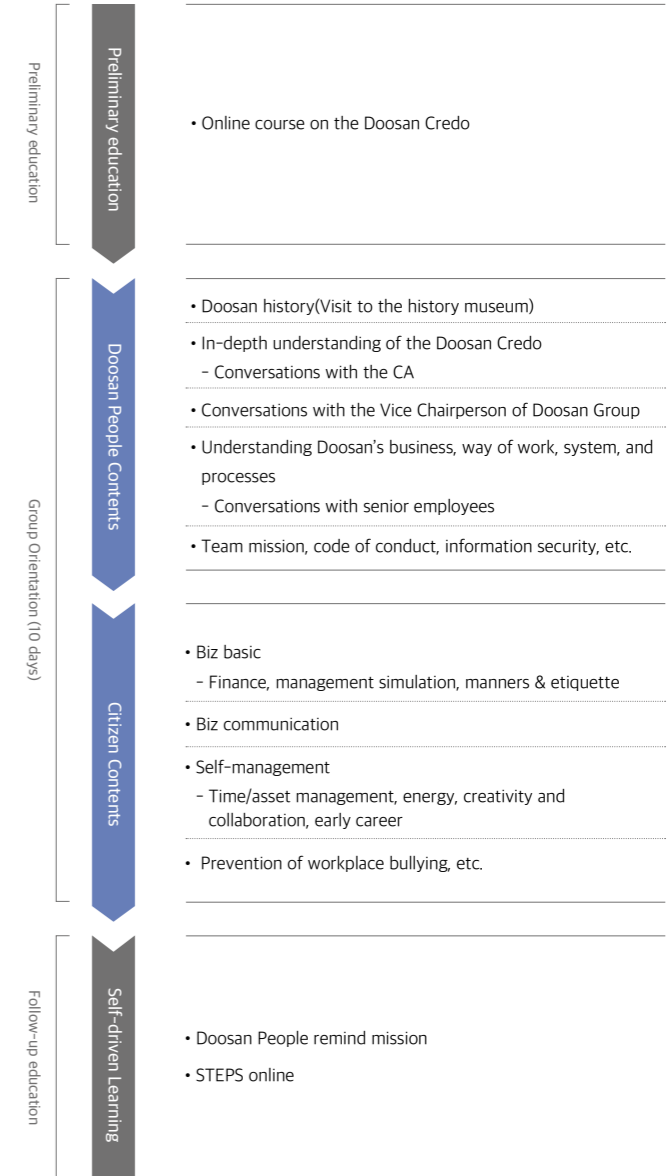
Employee Development Program

Service Field Tainting Course

Doosan Fuel Cell newly launched the "Service Field Training Course" in 2021 to systematically manage work performance abilities and improve the maintenance abilities of workers in the service field. The course is comprised of core theories and work procedures by stage and level of difficulty, and is organized according to the position and experience. It aims to systematically train field experts with professional work capabilities. We held the basic course two times in 2021 and 24 people completed the course. In 2022, we upgraded the contents and expanded the course to an intermediate level.

Introductory Education and Mentoring Program for New Employees

We offer an introductory course on a frequent basis to help interns, as well as new/experienced employees who join our company, to understand the organization and develop basic competencies. We also have various programs to help employees understand the company and products, field safety, business etiquette, and the company system. In addition, we operate the Mentoring Program that matches a senior employee with experience and work know-how with a new employee to provide support and to promote the onboarding of new employees. The company actively supports mentors and mentees to carry out activities for 3 months according to a pre-established plan, which helps new employees to adapt to the company stably.



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Job Academy

Employees of Doosan Fuel Cell participate in Job Academy Courses to train experts for each value chain.

The Job Academy Courses are categorized into job types, including quality, EHS, HR, and digital. They include lectures provided by external instructors and internal experts with rich knowledge and experience. Participants can acquire the knowledge required for hands-on work and strengthen their field implementation capabilities through activities such as market analysis, corporate case studies, the establishment of response strategies by issue, and enhancement of leadership skills.

Category	Course Title	Target	Description
Orientation	Doosan Orientation	Newly hired employees	Introduction to the company, Introduction to the HR system, basic communication skills, etc.
	New Employee Introduction Course	New employees	Same as above
	Course for New Assistant Managers	New assistant managers	Understanding roles as a new assistant manager and obtaining effective communication skills
Business Fundamentals	Junior MBA	Employees with 3 years of experience- assistant managers	Strategy, accounting, finance, marketing, HR, DT, management simulation
	Finance/Strategy Course	Deputy managers~ Department managers	Understanding of strategy, finance/management and accounting, innovative cases of price reduction, analysis of present and future opportunities and risk factors
Quality Academy	Quality Academy Basic Course	Quality managers	Understanding quality standard processes and problem-solving processes
	Quality Academy Advanced Course	Quality managers	SPEED FMEA, function modeling, Root Cause Analysis, etc.
Purchase Academy	Purchase Academy Advanced Course	Purchase managers	Case practice based on hands-on training in purchasing and on-site cases for purchase managers
Production Academy	Production Academy Basic Course	Production managers	Understanding of manufacturing, field improvement, productivity improvement, digital transformation, etc.

Junior MBA

Employees, assistant managers, and managers who are set to grow as the next leaders participate in “Doosan Junior MBA” to acquire basic knowledge, develop business insights, and improve people leadership and mindset.

Employees can acquire knowledge on strategic management, digital

transformation, accounting/finance, marketing, human resources organization, management simulation, and so on from many distinguished professors, and experience strategic analysis and overall decision-making processes required for running a business by completing tasks related to the company’s business strategies. Five employees in 2021 and four employees in 2022 completed the program with outstanding results, and we will continue to offer the program in 2023.

Preliminary Online Learning	Course Title
• Strategic Management (8 hours)	Strategic Management(24 hours): Strategic management, new growth engines of the Doosan Group
	Accounting and Finance(20 hours): Management accounting, cost accounting, finance accounting DT(4 hours): DT Mindset Workshop
• Finance and Accounting (8 hours)	HR organization(8 hours): Human resources management, workshop on building understanding between generations
	Marketing(11 hours): Understanding of marketing, digital marketing
	Management simulation(16 hours): 1~8 rounds

Expanding Association with Professional Human Resources Training Institutions

The company is reinforcing the connection with external institutions to train energy experts by signing an MOU with H2KOREA and a consortium agreement with the Korea Plant Industries Association. Doosan people can participate in the advanced energy industry talent training program to attend lectures by outside experts and find joint research opportunities with universities. We are expanding activities to enhance employees’ work competitiveness by jointly developing and operating education and training courses.

Operation of Learning Organization

By institutionalizing and supporting field-oriented unstructured learning organizations, we create an autonomous learning atmosphere and enhance not only the skills of each employee but also the job competencies of the entire organization. Through learning organization activities, we derive solutions to problems found in the field, share the knowledge and trends necessary for job performance, and obtain job-related certificates. Furthermore,

we provide assistance in developing teaching aids or giving lectures by paying for activities required for learning activities.

In the 1st phase of the learning organization, eight learning organizations were formed, with a total of 60 employees participating, with around 25% of office workers willingly learning topics of interest and enhancing job competency through the learning organization. Currently, we have completed the 2nd recruitment and started the activity, and we plan to continue operating in 2024.



ESG Education

Since 2023, we have been conducting in-house training to enhance employees’ understanding of ESG and to strengthen the ESG management foundation based on it. ESG education conducted by in-house instructors covers the definition, components, and trends of ESG, as well as the overall environmental, social, and governance, including climate change, industrial safety, and ethical management.



Reinforcing Remote Education

With the prolonged COVID-19 pandemic, remote education is emerging as a new method of education - beyond a temporary measure. In view of such a trend, we redesigned our leadership and job education to align with real-time remote education using online tools. In addition, we offer phone language courses and mobile learning to support the learning and self-driven growth of employees. We will add more diverse remote education courses to provide quality content more effectively.

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Family-friendly Certification

Doosan Fuel Cell is reviewing cases of certified companies and checking minimum requirements for meeting laws to obtain certification of excellent family-friendly companies. In addition, we conduct self-diagnosis of family-friendly certification and establish improvement plans for insufficient items to obtain certification as an excellent family-friendly company, and strive for an environment where employees and their families can work safely and happily.

Balancing Work and Life

Doosan Fuel Cell are providing various employee support programs to balance work and life. We create a flexible working environment and spread the way employees work efficiently through staggered commuting and Remote Work* operations.

In addition, we actively practice maternal protection by operating nursing rooms and workplace childcare facilities(Future Tree Daycare Center) to support pregnancy, childbirth, and childcare for employees.

* Remote Work

Operating principles	Determining implementation and Ground Rules considering the characteristics of each department
Place of work	Home, in-house base office(Dongdaemun/Bundang Doosan Tower, Yeongangwon), Fast Five

Main programs

01	02	03
PC Shutdown system	Half-and-half(2H) system	Summer paid vacation (5 days)
04	05	
Staggered commuting system	Spouse maternity leave, reduced working hours during childcare/pregnancy	

Establishment of a Sound Labor-management Culture

Doosan Fuel Cell's labor and management are communicating continuously through various channels and pursuing a rational labor management culture based on mutual trust through communication.

Doosan Fuel Cell hosts regular labor-management meetings and ensures collective bargaining rights guaranteed by labor laws, such as the Trade Union and Labor Relations Adjustment Act and the Act on the Promotion of Employees' Participation and Cooperation. In 2022, we are providing an opportunity to reflect employees' opinions on company management through the operation of 00 labor-management councils, a total of 13 cases being submitted and 13 cases being processed, and transparently communicating the company's management status and vision through a quarterly management briefing for all employees. We are actively building a horizontal organizational culture by responding to human rights issues through grievance handling activities and the technical position CA system.

Based on the culture of trust, Doosan Fuel Cell's labor and management have settled collective bargaining matters without dispute for three consecutive years since the establishment of the labor union in 2019. Doosan Fuel Cell's labor union decided the delegation of negotiation with the company management in 2022, continuing the win-win labor-management relationship.

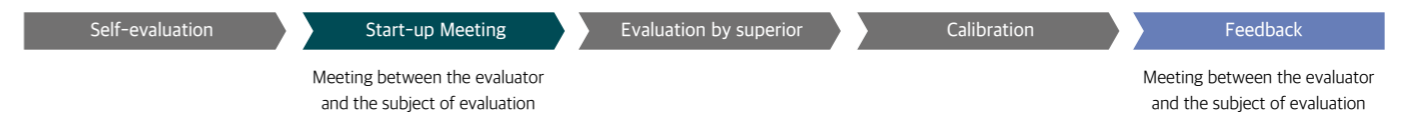
Fair Performance Evaluation and Rewards

Doosan Fuel Cell operates a capability and performance evaluation system to improve employees' performance and capabilities. Capability evaluations are classified into leadership capability evaluations for training global leaders, based on the philosophy of Doosan People, and job capability evaluations for training job experts. We use the evaluations to assess and cultivate employees' level of capabilities.

When evaluating the personal performance of employees, we assess achievement levels against goals based on the MBO(Management By Objective) method, and share and receive feedback on the progress between the evaluator and the subject of evaluation. For effective exchange of opinions between the evaluator and the subject of evaluation in the evaluation process, we operate start-up meetings and feedback meetings and reinforce the fairness of evaluation through discussions between the primary evaluator and secondary evaluator. We encourage employees to improve performance and capabilities by deciding on promotion, job appointment, salary raise, incentives, etc. based on the results of evaluation.

The long-term incentives provided to employees of positions lower than senior management are paid to the executive officers(1.7% of the total employees) as cash incentives over an average period of 3 years. Incentives can be given within 20~40% of the annual salary according to the regulations, and they are paid based on the results of evaluating metric indexes(MBO), including financial performance tasks, and non-metric indexes(qualitative evaluation), including growth, market situation, portfolio improvement, and appropriateness of the design level over the 3-year performance measurement period after 3 years from the given time.

Evaluation Process



2022 Collective Bargaining Delegation Ceremony

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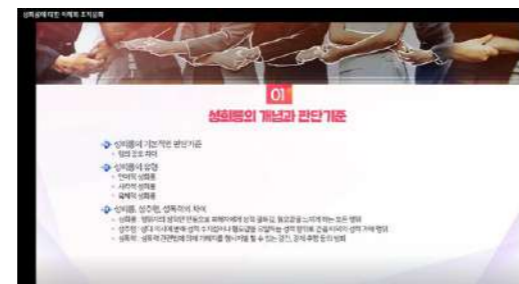
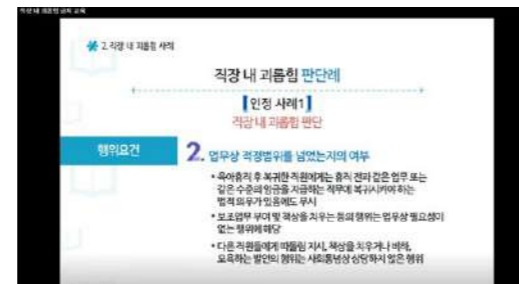
Prohibition of Discrimination and Harassment Against Employees

Doosan Fuel Cell does not allow any form of sexual harassment, bullying, and discrimination, and is enacting various guidelines to prevent sexual harassment, bullying, and discrimination in the workplace. Doosan Fuel Cell specifies the procedures and measures for handling such acts through these guidelines. We will work hard to implement proper handling measures and protect victims.

Doosan Fuel Cell identified one case of discrimination and bullying in 2022 and took necessary measures to prevent recurrence.

Education for Prevention of Discrimination and Sexual Harassment /Bullying

Doosan Fuel Cell offers education to prevent workplace sexual harassment and bullying, as well as education to improve disability awareness for all employees more than once a year according to the legal requirements. We work hard to prevent sexual harassment and bullying and strive to correct prejudices against the disabled.



Education for prevention of discrimination and sexual harassment

Guidelines for preventing discrimination and harassment

Prohibition of workplace sexual harassment, bullying, and discrimination

Prohibition of sexual harassment in the workplace | Business owners, managers, or members shall not subject other members to sexual harassment by taking advantage of their positions or in the process of performing their jobs. In addition, no unfair action in labor conditions and employment shall be taken as a result of a person not complying with prohibited sexual behavior or other related requests.

Prohibition of workplace bullying | Doosan Fuel Cell prohibits all acts causing physical and mental distress to other members, or acts that aggravate the working environment, using position or relational superiority beyond the allowable scope of work. Acts of workplace bullying include physical bullying, positional bullying, work-related bullying, verbal bullying, and personal bullying, as well as aggravation of the working environment.

Prohibition of discrimination | No discriminative treatment shall be given on account of gender, race, ethnicity, nationality, county, religion, age, political stance, or country of origin.

Measures for handling

Receipt of report(Doosan Fuel Cell Human Rights Center and Internal and External Report Centers of the Doosan Group) | In the event of experiencing or witnessing instances of sexual harassment, bullying, and discrimination at the workplace, anyone can report such actions. Once the report is received, we take proper measures, such as initiating an investigation.

Investigation and deliberation of factual grounds(Investigation division) | We investigate acts of sexual harassment, bullying, or discrimination to find factual grounds while maintaining the confidentiality of the investigator. At this point, we listen to the victim's opinions about the handling method and take proper measures, such as a change of workplace and offering leave if requested by the victim.

Measures(Human Resources Committee Division) | If the facts of damage caused by such acts are confirmed, we take disciplinary action or equivalent measures. The employee who reported the act of workplace sexual harassment, bullying or discrimination, or the employee who claims damage, is protected.

Monitoring(Human Rights Center, HR) | We monitor if proper measures have been taken and if there are instances of additional harassment. We strive to prevent any disadvantageous treatment of the victim.

Confidentiality

Employees who participated in the investigative process regarding sexual harassment, bullying, or discrimination at the workplace shall not disclose any secrets discovered during the investigation.

Measures to prevent recurrence

The company may ask the offender to take counseling or education to prevent the recurrence of workplace sexual harassment, bullying, or discrimination actions.

Prevention education

The company conducts education to prevent workplace sexual harassment, bullying, and discrimination more than once a year. In addition, we take preventive measures by conducting additional education for prevention or publishing and distributing relevant materials.

Roles and responsibilities

Business owners | Business owners shall strive to eradicate workplace sexual harassment, bullying, and discrimination by taking necessary measures to prevent such acts, protect the victim, and handle the case.

Managers | The manager shall not handle the case in an arbitrary manner when he or she receives a report about the occurrence of workplace sexual harassment, bullying, or discrimination. The manager shall not take arbitrary measures against the victim's will, expose the victim to secondary damage, or blame the victim. The manager shall respect the victim's intention to take measures for handling the case. The manager shall cooperate with the handling process and measures taken by the responsible division and work hard to protect the victim and prevent any recurrence.

Members | Anyone who discovers an act of workplace sexual harassment and bullying shall advise the victim to report the matter. The reporter, offender, and other members shall not force measures for handling the case against the victim's will, disclose the identity of the persons involved in the case or related facts, or spread false information. The member shall cooperate with the handling of the case and avoid blaming the victim.

Division in charge

Management Support Headquarters HR Team

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Human Rights Policy

Doosan Fuel Cell respects the human rights of all stakeholders with which it engages in business activities, and encourages third parties such as suppliers to maintain the same level of human rights management.

Doosan Fuel Cell has established and implemented a human rights management system to prevent the violation of human rights that may occur in the business process as below. We follow regulations with the utmost effort in case of human rights violations and we promise to grow with society through continuous improvement activities.

Since 2021, we have been performing activities to improve risk factors related to human rights, such as the expansion of human rights education, improvement of the grievance handling processes, and establishment of a risk mitigation plan. We disclose the company’s human rights policies on our website.

<p>Non-discrimination in employment and guarantee of the freedom of collective bargaining</p>	<p>Prohibition of forced labor and child labor</p>
<p>We do not engage in unjust discrimination based on gender, religion, disability, age, social status, place of origin and so on in providing employment. We also guarantee equal wages for workers and the freedom of association and collective bargaining. We ensure that no employee suffers disadvantages on account of union activities.</p>	<p>Doosan Fuel Cell disapproves any forced labor and human trafficking that may occur in business activities, and complies with the national minimum employment age. We follow the minimum employment age set by the laws of each country where we operate. If we find out that a minor is hired, we will take immediate relief measures and do our utmost to prevent wrongful labor practices.</p>
<p>Guarantee of occupational safety and responsible management of the supply network</p>	<p>Protection of the human rights and environmental rights of local residents</p>
<p>We maintain the safety of the working environment and follow the laws and standards related to the environment, health, and safety applicable to workplaces. We implement separate safety and health measures for pregnant women, the disabled, and other vulnerable classes of workers. We will establish and continuously inspect policies and guidelines for managing CSR risks along the supply chain, and monitor the compliance status of all business partners. In addition, we will discontinue transactions with partners that fail to correct serious violations of human rights.</p>	<p>We respect the right to life, freedom of residential mobility, personal safety rights, and property rights of the residents of countries in which we conduct business. In addition, we pursue a preventive approach to environmental issues and will establish and implement plans to prevent, mitigate, and control serious environmental damages and disasters.</p>

Protection of Customers’ Human Rights

We pay close attention to the design, manufacturing, and labeling of products according to legal standards to prevent any damage to the life, health, and safety of customers due to defective products. In case of damage, we notify customers of the risk and execute prompt product recalls.

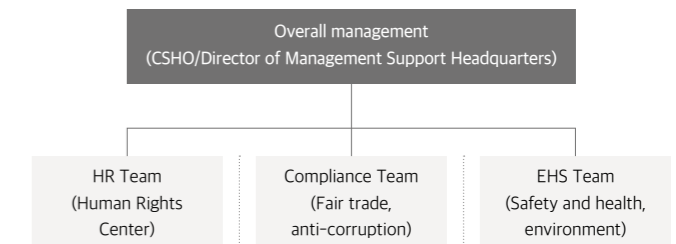
In addition, we respect customers’ privacy and take necessary measures to ensure the security of personal information collected by the company. Doosan Fuel Cell operates a Cyber Report Center on its website to prevent violations of human rights that may occur in the business process, and handles any case quickly and fairly by protecting the reporter’s interests through maintaining confidentiality.

We will take the lead in the support and observance of human rights principles to become a proud global Doosan.

Human Rights Management Organization

Doosan Fuel Cell operates the Human Rights Center to actively perform human rights management and reinforce the human rights risk management system. The Human Rights Center is an organization comprised of the CSHO/Director of Management Support Headquarters and the Internal Human Rights Management Division. The Center plans and operates human rights management activities at a company level and executes the human rights impact assessment process.

In case of a human rights issue, the Human Rights Center takes quick action according to the internal grievance handling process and the principle of confidentiality and reporter protection.



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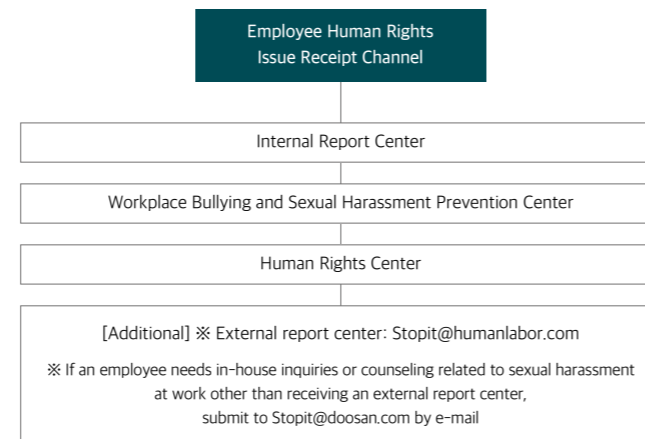
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Human Rights Education

Doosan Fuel Cell conducts human rights education more than once a year for all employees to establish a culture of respect for the human rights of its members and increase awareness regarding human rights management. Human rights education includes modules related to the prevention of sexual harassment, workplace bullying, and education to improve disability awareness. We also plan to minimize the risk of human rights violations by conducting education on the roles and attitudes leaders must take on to spread the culture of respect for human rights. We will also use the education programs to illustrate specific cases that can be interpreted as a violation of human rights.

Human Rights Issue Reporting Channel

Doosan Fuel Cell operates the Cyber Report Center on its website for all stakeholders, including employees, to report any violation of human rights and other unethical actions. The reporting can be made in secret according to the principle of confidentiality and the details of the report are strictly protected and handled quickly and fairly according to internal procedures. In case of human rights issues involving employees, the victim or witness can report the matter through the Internal Report Center, Workplace Bullying and Sexual Harassment Prevention Center, or the Human Rights Center.



Process for Handling Human Rights Grievances

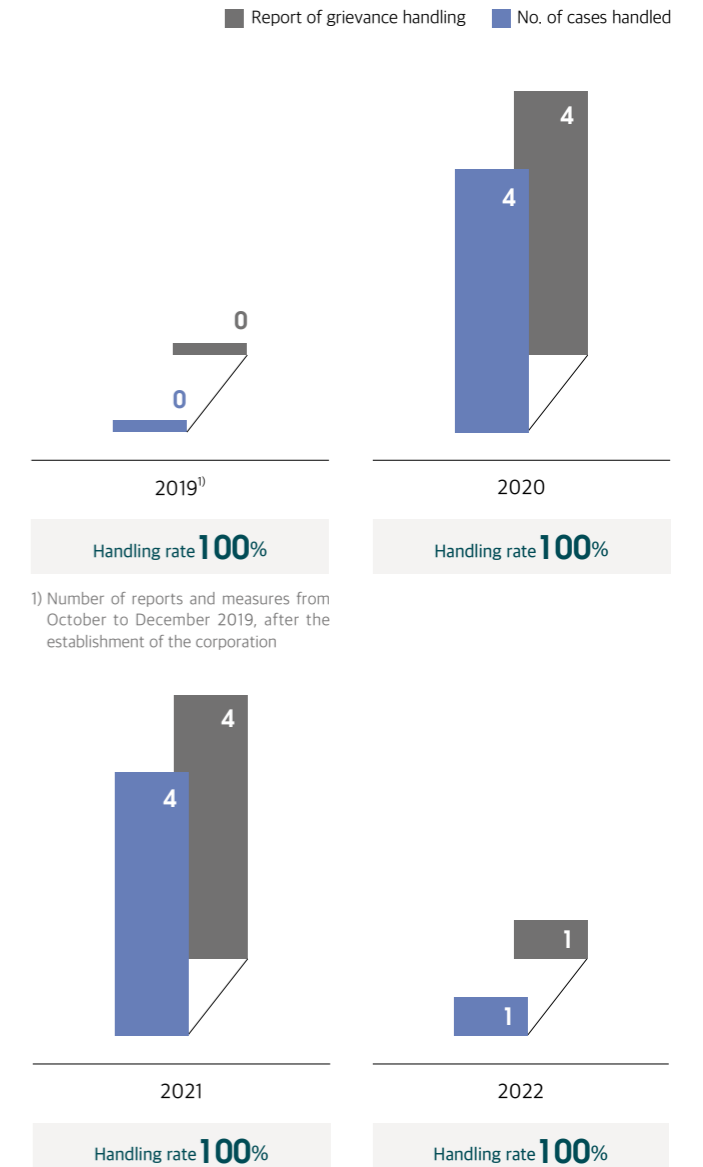
Doosan Fuel Cell operates a grievance handling system and relief system to help employees who have had a negative experience regarding human rights. All processes are handled according to the three principles of grievance handling, including the protection of anonymity, prevention of disadvantages, and feedback.

Handling Process



Grievances Related to Human Rights

Unit: Number



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Assessment of Human Rights Impacts

Doosan Fuel Cell conducts human rights impact assessments and human rights inspections to investigate negative impacts and key vulnerable areas regarding human rights issues.

A total 75% of employees participated in the human rights assessment conducted in early 2022, and no serious human rights issues were found in the assessment. However, we confirmed that the positive perception of members is relatively low regarding the establishment of the human rights management system, guarantee of environmental rights, and respect and communication, and we therefore selected these areas for improvement.

We will check if there is a potential risk of human rights violations in the areas with low positive perception and prepare mid and long-term measures through cooperation between responsible divisions.

Human Rights Assessment Items

<p>Assessment items were set by reflecting the human rights guideline of the National Human Rights Commission of Korea and the business characteristics of the company.</p>
New business relations in the value chain
Establishment of a human rights management system
Guarantee of freedom of association/collective bargaining
Prohibition of child labor
Responsible management of the supply chain
Guarantee of environmental rights
Non-discrimination in employment
Prohibition of forced labor
Guarantee of occupational safety
Protection of customers' human rights
Respect and communication

Plan for the Mitigation of Human Rights Risks

Respect for Human Rights

Doosan Fuel Cell respects the human rights of comprehensive stakeholders, including employees and suppliers, based on our human rights policy declared in 2021. We do not accept improper language or behavior, such as verbal abuse, violence, and sexual harassment, that violate the Inhwa philosophy internally or with suppliers. Any related issue can be reported through the Human Rights Center helpline or the Internal Report Center. When there is a case of human rights violation, we take prompt measures according to the handling process and manuals.

We conduct continuous education to prevent recurrence and enhance human rights awareness among business owners, managers, and members.

Mitigation of Human Rights Risks

Doosan Fuel Cell established and operates a Human Rights Center to raise awareness of employees' respect for human rights, and conducts education every year to prevent sexual harassment, improve awareness of the disabled, and prevent bullying in the workplace.

In September 2021, we developed the Human Rights Policy Declaration based on the government guidelines and declared it internally and externally through the labor and management agreement. In March 2022, we conducted a human rights assessment comprised of 25 questions in 10 areas based on the human rights management checklist of the National Human Rights Commission of Korea.

We performed focus group interviews with employees as part of a human rights inspection to check major human rights risks identified through the results of the human rights evaluation and to establish a mitigation plan. Based on the human rights assessment and inspection, we determined the level of awareness of members and identified potential risks prior to issue occurrence. In 2022, one case of discrimination and bullying violations was detected, and measures were taken to mitigate human rights risks, such as trying to prevent a recurrence.

We also established an action plan for preemptive prevention and a human rights risk mitigation plan for all workplaces. We will select the establishment and operation of a human rights risk management system as an 'ESG strategic task' and implement it at a company-wide level to fulfill responsibilities related to human rights and build a sound corporate culture. We established the mitigation plan and relief plan for the lower assessment category based on the human rights assessment. We will select and monitor the plans as a ESG strategic task at a company-wide level and identify additional items requiring management to strengthen our human rights management.

- First, the announcement of the in-house human rights management process will be selected as a strategic task, and human rights policies, regulations, and reporting channels will be reminded so that employees can be aware of the grievance handling process.

- Second, in order to improve leaders' awareness of human rights, we plan to provide separate offline human rights education for those in charge in addition to legal education. In addition, we will regularly send human rights management letters containing bullying precedents in the workplace and revisions to related laws to recognize the importance of human rights awareness in daily life.



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Safety and Health



Health and Safety Management Goals



Direction of Safety and Health Management

- Compliance with laws and regulations and prevention of serious accidents by strengthening the safety and health management system
- Expressing an intention to operate health and safety-oriented operations and enhancing safety awareness for employees through leadership actions such as safety and health inspections and meetings organized by management
- Preventing serious industrial accidents and establishing an autonomous safety and health system through the operation of PSM(Process Safety Management) at the workplace
- Establishing safety and health regulations, preventing accidents by complying with principles, and operating an effective risk assessment system by strengthening the risk assessment capabilities of related parties
- Operation of risk management through active discovery and improvement of potential risk factors for safety and health
- Establish and operate the safety and health management processes for suppliers systematically to improve the management level of the workplace and realize shared growth in safety and health

Safety and Health Policy

Doosan Fuel Cell is fully committed to creating a safe and clean environment in accordance with the Doosan Credo to fulfill our responsibility toward society and adhere to our core values. We have developed an Environment, Health and Safety(EHS) management system, and do our utmost to comply with global standards.

1. Based on the ideology of respect for human beings, the life and health of all people who work together are considered the top priority, and all employees actively practice safety and health activities in an exemplary manner.
2. Establish a safety and health management system, improve the management level of the system, and actively comply with relevant laws and regulations.
3. With the participation of all employees, prevent safety accidents fundamentally by effectively identifying and improving possible risk factors.
4. Raise safety awareness and improve risk management skills through regular safety and health education and emergency response activities for employees of our company and suppliers.
5. Secure the safest working environment and facility operation capabilities through continuous investment and development in safety and health.
6. Practice open communication horizontally and vertically with stakeholders based on honesty and transparency, and fulfill our social responsibility to the community.

Health and Safety Education Performance

Doosan Fuel Cell regularly conducts safety and health education on various topics to raise safety and health awareness among all workers and to spread a safety culture. In addition, in order to respond quickly in the event of an emergency and minimize human and material damage in the event of an accident, education and training based on emergency scenarios are conducted more than once a year.

Training name	Training target	Training period
Regular safety and health education	R&D, service, technical job	Quarterly
New employee training	New employees	At the time of recruitment
Management supervisor training		16hr/year
Job training	Safety and health management officer	6hr/2years
	Health and safety manager	24hr/2years
PSM training	PSM process worker	2hr/year

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Mid- to Long-term Roadmap for Safety and Health Management

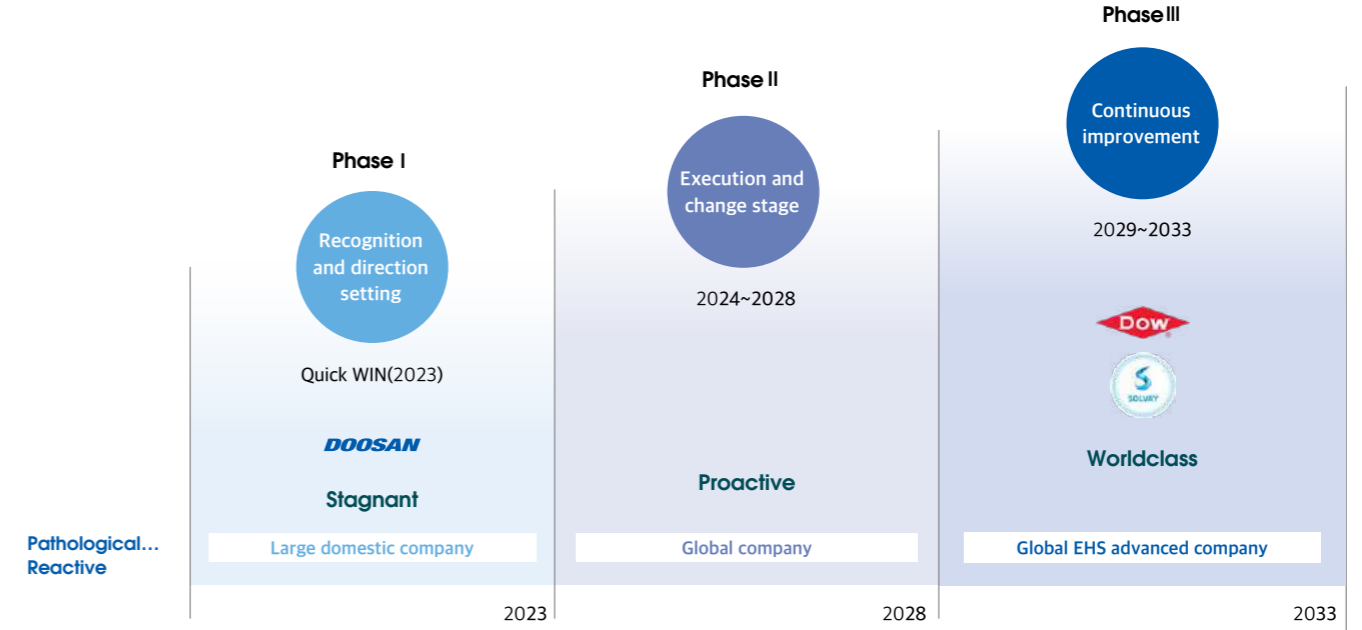
Doosan Fuel Cell puts safety and health first, and does its best to ensure the safety of its employees and communities. Doosan Fuel Cell has established a Key Performance Index(KPI) based on the mid- to long-term road map for safety and health and established detailed safety and health implementation plans for each year to effectively achieve its goals and implement continuous improvement. The roadmap is divided into three stages: Phase 1(recognition and direction setting), Phase 2(execution and change stage), and Phase 3(continuous improvement). As a final goal, all employees are systematically setting and implementing step-by-step goals from a mid- to long-term perspective.

Safety and Health Management System Certification

Doosan Fuel Cell is a major domestic eco-friendly hydrogen fuel cell company that gained ISO 45001 international accreditation at its Iksan factory in December 2022 to develop an international workplace safety and health system. In particular, in the process of obtaining this certification, the safety and health management manual, regulations, and guidelines were revised to a high level based on the DSRS(Doosan EHS Rating System), an EHS tool developed by Doosan Group.



ISO 45001 international accreditation



KPI	Employee safety accidents and occupational diseases "Zero" DSRS quantitative assessment level 65%↑	Employee safety accidents and occupational diseases "Zero" DSRS quantitative assessment level 75%↑	Employee safety accidents and occupational diseases "Zero" DSRS quantitative assessment level 85%↑
	Quick WIN	Mid-term Initiatives	Long-term Initiatives
Implementation plan	<p>EHS mind improvement, prioritization task resolution</p> <ul style="list-style-type: none"> Strengthening the execution of EHS leadership activities EHS Staff / on-site EHS capacity enhancement EHS communication program activation Early establishment of ISO45001 safety and health management system Strengthening safety management of SOFC large construction sites 	<p>Establishment of an EHS implementation culture focused on the site</p> <ul style="list-style-type: none"> Reestablishing EHS R&R and strengthening the execution of site-led EHS activities Expansion of EHS evaluation and compensation system(Including penalties) Increasing and internalizing ISO45001/ DSRS operational level Strengthening EHS capabilities and management of internal and external suppliers Enabling worker health care programs 	<p>Advancement/proactive EHS activities</p> <ul style="list-style-type: none"> Introduction and activation of behavioral observation techniques EHS IT System execution/securing efficiency (Advancement) Introduction of Visual Safety Strengthening SMART EHS(Applying advanced safety technologies such as AI) Establishment of criteria for evaluating financial effects of EHS activities

* DSRS(Doosan EHS Rating System): An EHS evaluation system developed with the support of DNV by modifying ISRS based on Global EHS Standard and reflecting Doosan's business characteristics



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Safety and Health Management Activities

Doosan Fuel Cell puts the safety and health of employees as its top priority and conducts management activities based on respect for humanity. We operate various procedures and systems such as assessment, inspection, and emergency response systems to eliminate and minimize risks related to EHS in advance, and continues to strengthen independent implementation of safety activities among executives and leaders.

Safety and health leadership activities

Doosan Fuel Cell's management has demonstrated a strong will for safety and health and performs safety and health activities based on initiative and an exemplary attitude.

We carry out various safety and health leadership activities such as safety and health inspections, meetings of the consultative group, discussions, and Leadership Tour by establishing our own plan beyond the requirements of the law. Based on these activities, we effectively enhance safety awareness among all employees and contribute to the prevention of safety accidents and the continuous growth of the workplace.

Observance of safety and health principles and guidelines for accident prevention

Doosan Fuel Cell has established and follows regulations related to safety, health, and the environment to prevent disasters and serious occupational accidents.

We also identify and evaluate risk factors at workplaces through the risk evaluation activities to clarify risks and establish effective measures. Education and inspections are carried out to prevent accidents.

Establishment of a safety and health organization and goals

Doosan Fuel Cell sets and fulfills the safety and health goals of the company and workplaces based on its EHS policy.

To prevent safety accidents and achieve the safety and health goals of the organization effectively, we have installed and continue to operate a safety and health division. We also appoint management supervisors and safety and health managers for each site for effective operations.

Management of potential safety and health risks

All employees of Doosan Fuel Cell actively strive to identify and improve potential EHS risk factors in the field, and a regular reward system is applied to increase engagement and implementation capabilities among employees.

We have established a guideline to manage near-miss accident cases that do not cause human and material damage to ensure field safety.

Safety management of outsourced projects and establishment of cooperative relationships

Doosan Fuel Cell enacts management regulations to prevent accidents occurring at workplaces related to outsourced projects, and has established a systematic safety management process for internal construction and maintenance service sites to prevent safety-related accidents.

In addition, we operate a consultative group with suppliers periodically to communicate and solve necessary issues.

Response to emergencies

Doosan Fuel Cell has prepared a quick response system against emergencies to protect the lives and assets of employees, suppliers, and residents of the neighborhood.

To minimize damage from accidents that may occur from process errors or natural disasters, we establish response and evacuation procedures for training and maintain a close response relationship with our stakeholders.

Promotion of employee health

Doosan Fuel Cell carries out periodic and systemic medical checkups to promote employees' health and prevent occupational diseases. In particular, we provide continuous health counseling and followup management for employees with medical diagnoses. We make active efforts to ensure employees' health through various health improvement activities.

Safety and health management for customer service

Doosan Fuel Cell establishes and operates an autonomous safety and health management system for fuel cell operation service sites, and fulfills its promised safety and health obligations with customers by identifying and improving potential risks during maintenance activities.

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Ethical Management



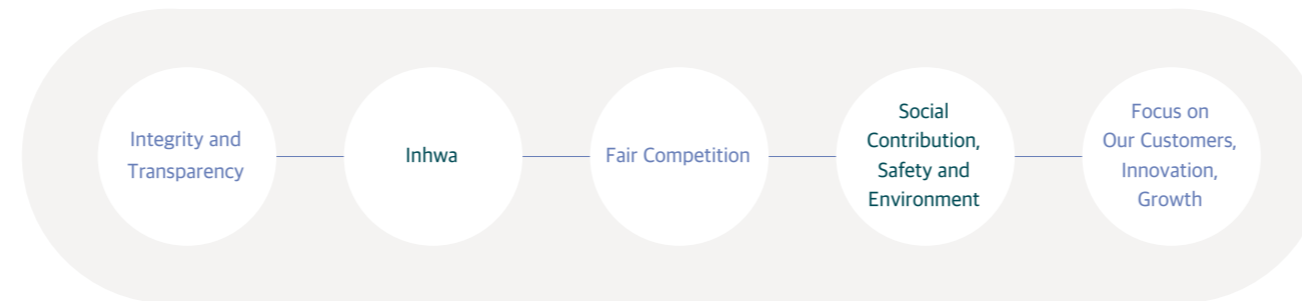
Code of Conduct

Doosan Fuel Cell is committed to improving competitiveness and fulfilling its corporate social responsibility through Inhwa, the Doosan Group’s customer-focused business philosophy, transparent business operations and innovation, to foster Doosan’s continuous growth. To this end, we have adopted and implemented the Code of Conduct as our guiding principles. This Code of Conduct(the “Code”) applies to all employees(“Doosan people”) of Doosan Fuel Cell, and third parties working with Doosan Fuel Cell are also encouraged to comply with the Code.

Doosan people are responsible for understanding and complying with internal regulations, including the Code and related laws. Matters not covered by the Code or parts that require detailed explanation are set forth in supplementary policies, which can be found on the Company’s intranet or obtained from the Legal Team. To the extent any provision of this Code comes into conflict with applicable laws, the latter shall take precedence.

If you believe that such violations have occurred, you are requested to report the matter in accordance with the procedure established by each company. The identity and other information of the reporter shall remain anonymous and any form of retaliation against Doosan people for their reporting in good faith of such violations is strictly prohibited.

Doosan Code of Conduct



Inhwa | Respect, Teamwork, and Openness

Our people are at the heart of our growth and success. We recognize individual differences and treat each other with respect. We define “Inhwa” as teamwork in the truest sense based on the spirit of fairness, openness, and camaraderie.

- We are unreservedly committed to the principle of non-discrimination with respect to race, color, gender, age, disability, religion, ideology, political opinion, nationality, ethnicity, health, physical appearance, sexual orientation, education and social, family, or marital status.
- Words and conduct detrimental to Inhwa, including offensive remarks, verbal and physical abuse, and sexual harassment, have no place at our workplace.
- The fairness, transparent criteria and sound principles guide how we hire, evaluate, develop, and promote our people.
- We will create and foster an environment of open communication where everyone is encouraged to share reasoned ideas and good-faith opinions.
- We do not treat each other unfairly based on regionalism, school relations, and personal intimacy. We pursue solid teamwork based on fairness and warmth. We treat one another in accordance with fair and equitable standards and principles.

Integrity and Transparency

Integrity and transparency must be applied to every aspect of Doosan’s organization and business.

- We must not, directly or indirectly, offer, give, promise to give, receive, agree to receive, or request improper financial or other advantages (including gifts, meals, and entertainment) in our dealings with public officials or individuals in the private sector.
- We must ensure the integrity and accuracy of our business and financial records, consistent with applicable laws, accounting principles and our supplementary policies.
- We must provide material information to our investors in a truthful, reliable, and timely manner consistent with applicable laws.
- We must not engage in any activities, including activities outside of our employment, which may undermine Doosan’s interests and reputation.
- We must not use internal information for the trading of marketable securities such as stocks and personal interests or provide such information to third parties.
- We must safeguard Doosan’s assets from loss, damage, theft, misuse, and abuse.
- We must comply with laws related to anti-corruption and anti-bribery and meet international standards in this regard.
- Doosan’s assets must be used only for proper business purposes and for the benefit of the Company. They shall not be used for political purposes or the interests of individuals or third parties.
- We must protect Doosan’s confidential or proprietary information and must not share such information with any third party without the Company’s permission.
- We must safeguard the security and confidentiality of personal information in Doosan’s possession in accordance with applicable laws.



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Fair competition

Doosan engages in fair competition. Doosan is committed to complying with relevant antitrust and competition laws and regulations where it conducts business.

- We value our suppliers, contractors, and distributors as our business partners, and strive to build relationships of trust with them for mutual growth.
- Doosan is committed to conducting business in ways that do not restrict fair and free competition. We will not unfairly restrict competition by agreeing with, or exchanging information or opinions with, our competitors regarding prices, types and standards of the products and services, supply levels, markets and territories, customers, suppliers, distributors, terms and conditions of transactions, and bidding conditions and methods.
- We will not use Doosan's dominant market position to exert undue influence on those who deal with us.

Innovation & Growth

We pursue sustainable growth through continuous innovation.

- We are committed to improving our technologies, products, services, processes, and systems continuously.
- To this end, we will actively pursue new and diverse technologies, knowledge, ideas, and information.
- We will constantly set new and challenging goals, thereby improving our individual capabilities, and sustaining Doosan's growth.

Focus on Our Customers

Our customers are the reason we exist. Our business decisions and activities are thoroughly customer-focused.

- We are driven to offer the best value to our customers by understanding and satisfying their needs. We will listen to our customers and treat them fairly and respectfully.
- We will provide our customers with truthful information about our products and services.

Community Development, Safety and Environment

We are committed to building Doosan as a trusted company that grows with our community. As responsible members of our communities, it is our solemn duty to safeguard the life and safety of everyone in our communities and protect the environment.

- Doosan takes corporate social responsibility seriously. We will contribute to the development of our community by carrying out corporate activities and actively fulfilling our corporate social responsibilities.
- Doosan is dedicated to maintaining a safe working environment and complying with all applicable environmental, health, and safety standards and regulations.
- We are committed to safeguarding the health and safety of our people, our customers, and the members of our communities in all aspects of our business, including product development, manufacturing, and sales activities.
- We are committed to achieving environmentally-friendly growth by actively improving our technology and pursuing innovation.

Help Desk Operation

We have opened a Help Desk on our website to provide counseling and guidelines for inquiries or questions related to ethical management policies, details of the Code of Conduct, or other reports. We have been able to successfully enhance the understanding of employees and outside stakeholders of Doosan Fuel Cell regarding the principles of ethics management and work policies.

Contact the person in charge(phone, email, fax, post, etc.) if you have any inquiries or need help regarding a violation of the Code of Conduct and ethics.

Mailing address	Doosan Fuel Cell, 17F, Doosan Tower, 275 Jangchungdan-ro, Jung-gu, Seoul, Republic of Korea
Tel	02) 3398-3894
Email	sangjun@doosan.com
Managing Division	Compliance Team, Doosan Fuel Cell

Operation of the Internal Reporting System

Doosan Fuel Cell operates an internal reporting system to establish a transparent and fair ethics management system. Complete anonymity is maintained to avoid any disadvantages to the person making the report. The main issues investigated are reported to the CEO and Audit Committee. Doosan Fuel Cell also operates the Cyber Report Center on the website where anyone can submit a report under his or her name or anonymously.

Violation of Ethics Management and Measures

In 2022, three reports were received, with a total of two ethical standard infractions(one case under the investigation). In this regard, one warning and one resignation were issued, with the contents focusing on infractions of regulations and procedures as well as verbal abuse. In the case that a violation of the Code of Conduct is verified, we prevent recurrences of similar cases through sharing of information about the unethical act among employees, excluding personal information, through white papers, ethics education case studies, ethics management letters, etc., according to the 'Personal Information Protection Guide' of the Ministry of Employment and Labor. We decide on rewards and disciplinary actions according to the employee evaluation by linking compliance and employee reward based on the reward and punishment regulations.



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Operation Policy of the Cyber Report Center

Operation Policy

1. The Cyber Report Center of Doosan Fuel Cell is open to employees and outsiders. Violations of internal regulations such as Doosan Fuel Cell Credo and the Code of Conduct and other unfair acts are the subject of reporting.
2. Reports can be made anonymously or under one's name. However, the company may not investigate anonymous reports that fail to present concrete evidence.
3. The company guarantees the confidentiality of the reporter's identity and details of the report. We prohibit causing any disadvantages to a person who submits a report in good faith.
4. The operating regulations of the internal reporting system are applicable to reports made by employees, and these regulations can be checked through DoDream or the responsible division.
5. The company receives reports through various routes including post, phone, fax, email, and visit to the division in addition to the Cyber Report Center.

Education on Anti-corruption and Code of Conduct

Doosan Fuel Cell is expanding employees' awareness on ethics management through Code of Ethics education every year. In addition, all employees express their willingness to comply with ethical values and perform their duties honestly and transparently by signing a pledge to comply with the Code of Ethics and a statement of interest. In addition, the company regularly sends CEO messages to all employees to emphasize the importance of the Code of Ethics.

Anti-corruption Survey of Suppliers and Employees

Doosan Fuel Cell conducts surveys on employees and suppliers to investigate Doosan Fuel Cell's standard of ethics management. We used the survey results to identify the current status of ethics management, establish plans to prevent corruption, and complement insufficiencies.

Major Activities of Fair Trade

Distribution of fair trade guidelines



Doosan Fuel Cell distributed the Guidelines to Prevent Violation of Prohibition against Unfair Special Agreements of the Subcontracting Act. The guidelines include Guidelines for Prevention of Unfair Support and Related-Party Transactions, Technical Data Provision Consent, and Guidelines for Preparation and Issuance of Confidentiality Agreement when requesting data from subcontractors to help employees to understand the changing regulatory environment and prevent unintended violation of related laws.

Operation of fair trade education



Doosan Fuel Cell conducted online education on the Subcontracting Act and an online presentation about the job manual for preventing unfair support and related-party transactions to enable employees apply the laws and guidelines related to fair trade in actual work. We raised the level of education and presentation from simple delivery of knowledge through the Q&A sessions, and minimized the occurrence of trials and errors by sharing actual cases.

Reinforcement of monitoring on internal fair trade



To ensure compliance with the Fair Trade Act, Doosan Fuel Cell included the legal manager in the approval line for internal transactions of affiliates to review any unjust support in advance and prevent violations of laws. To comply with the Subcontracting Act, we reinforced internal monitoring by checking the compliance status through the issuance of data provision consent when investigating any report on unjust contract and requesting data from subcontractors.

Future plans



Doosan Fuel Cell is planning to operate various fair trade compliance programs according to the main policy direction of the Fair Trade Commission for 2023. We are currently planning a fair trade compliance manual and declaration of the CEO's commitment, and are preparing to appoint a compliance manager. We will make sure employees are fully aware of the related laws and follow them thoroughly through guidebooks customized for particular divisions that are directly affected by fair trade laws and education.

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Joining UNGC

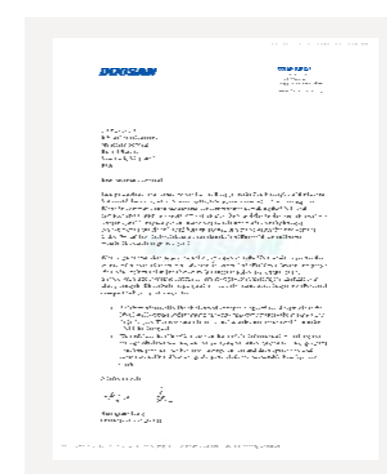
The United Nations Global Compact(UNGC) is the world's largest corporate sustainability initiative that offers practical action measures to ensure that companies adhere to the ten principles of human rights, labor, environment, and anti-corruption as responsible members of society. With more than 20,000 companies and organizations in more than 160 countries, multinational corporations are increasingly encouraging their suppliers to join the UNGC, and continuing to qualify is considered a key measure of their ESG management commitment and sustainability.

In June 2023, Doosan Fuel Cell voluntarily joined UNGC, a representative corporate social responsibility initiative, and declared its support for the ten principles. In the future, we will fulfill our role as a responsible corporate citizen by conducting ten principles compliance activities every year and disclosing the results to internalize a higher level of human rights, labor, environment, and anti-corruption awareness throughout the company.

Four sectors Ten principles

Human right	<ol style="list-style-type: none"> 1. Businesses should support and respect the protection of internationally proclaimed human rights, 2. make sure that they are not complicit in human rights abuses.
Labor	<ol style="list-style-type: none"> 3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining, 4. the elimination of all forms of forced and compulsory labour, 5. the effective abolition of child labour, 6. the elimination of discrimination in respect of employment and occupation.
Environment	<ol style="list-style-type: none"> 7. Businesses should support a precautionary approach to environmental challenges, 8. undertake initiatives to promote greater environmental responsibility, 9. encourage the development and diffusion of environmentally friendly technologies.
Anti-corruption	<ol style="list-style-type: none"> 10. Businesses should work against corruption in all its forms, including extortion and bribery.

UNGC Commitment Letter



UNGC Commitment Letter



A certificate of membership ceremony

Activities of Associations Related to Carbon Neutrality

In order to contribute to the implementation of the Paris Climate Agreement and carbon neutrality, we have participated as a major member in the association/organization to revitalize fuel cells for power generation that generate electricity and heat using hydrogen. As chairman of the 'Korea Hydrogen Fuel Cell Industry Association,' which was founded in November 2022, we are developing policy ideas, proposals for enacting and updating related regulations, academic research, and seminars with 23 member businesses.



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Doosan Fuel Cell strives to establish a transparent and sound governance structure and pursues innovative management through efficient and eco-friendly R&D investment. In addition, we are establishing a thorough information protection system and various risk response systems to protect assets and customers within the organization.

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Governance



Operation of the Board of Directors

The Board of Directors(BOD) deliberates on and resolves important management matters concerning the company, and decides on matters defined by the laws or articles of association, matters delegated by the general meeting of shareholders, and important matters related to the basic principles of company management and business execution.

As of the end of December 2022, the BOD of Doosan Fuel Cell is comprised of two internal directors and three outside directors. Hooseok Che is the chairperson of the BOD and convening authority. He was appointed as the chairperson of the BOD considering his expertise in terms of job execution and efficiency in BOD operations. The Audit Committee, the Outside Director Candidate Recommendation Committee, and the Internal Transaction Committee, comprised entirely of outside directors, have been established and operate within the BOD.

The term of a director is about three years until the end of the general meeting of shareholders for the final account settlement period within three years from the date of appointment. The average tenure of a BOD member is 29 months.

Current status of the board of directors (as of the end of December 2022)

Category	Name	Career	Position	Date of Appointment	Tenure
Internal Directors	Hyungrak Chung	· CEO of Doosan Fuel Cell	· CEO	2022	9 months
	Hooseok Che	· CEO, COO of Doosan Fuel Cell	· Chairperson of BOD	2019	39 months
Outside Directors	Changhyeon Ko	· Lawyer at Kim & Chang · Director of Korean Securities Law Association	· Member of Audit Committee · Member of Internal Trade Committee · Member of Outside Director Candidate Recommendation Committee	2019	39 months
	Dongsu Kim	· Chair Professor at Korea University · Chairperson of Fair Trade Commission (Former) · President of Export-Import Bank of Korea (Former)	· Chairperson of Audit Committee · Member of Internal Trade Committee · Member of Outside Director Candidate Recommendation Committee	2021	21 months
	Kwanyoung Lee	· Professor at the Department of Chemical and Biological Engineering at Korea University · Executive Vice President for Research at Korea University	· Member of Audit Committee · Member of Internal Trade Committee · Chairperson of Outside Director Candidate Recommendation Committee	2019	39 months

We decide on main agenda through the BOD and reflect shareholders' opinions in the decision-making process. Participation using a communication device that concurrently sends and receives the voices of all directors is approved by law and considered direct attendance at the BOD.

The BOD is classified into regular board meetings held every March, from the starting date of the business year, and temporary board meetings. Temporary board meetings can be hosted frequently, as needed. Approvals and deliberations of the BOD are settled through the attendance of a majority of members and an agreement of the majority of the attending directors. The BOD convened eight times in 2022 and the average attendance rate of the directors was 86%.

The ratio of outside directors was 60% in 2020, 67% in 2021, and 60% as of the end of 2022. No female director has been appointed and all members of the BOD are over 50 years old. It is stipulated in the articles of association to notify the convening of the BOD at least one day before. There is no outside director with a low attendance rate(less than 75%) and the ratio of outside directors with experience in the same industry was 25% in 2021, which increased to 33% in 2022.

There was no case of objection or modification of opinions raised by outside directors. The ownership percentage of registered members, excluding the largest shareholder and affiliated parties, is 0%, and the ownership percentage of the affiliates was 30.33% from 2020 to 2022. The total investment amount of affiliates against equity and credit offering of affiliates against equity capital are 0, respectively. The amount of business transactions with affiliates and transactions that support the largest shareholder and affiliated parties* was 410,971 / 302,580 / 313,516 in 2020, 2021, and 2022, respectively.

The number of voluntary disclosures was 7, 1, and 3 in 2020, 2021, and 2022, respectively. The number of outside directors with expertise in risk management was 2 in 2020, which decreased to 1 in 2022. Risk management of the company is performed on-site and reported to the Board of Directors and the Audit Committee. There are no particulars related to the establishment and operation of additional committees.

Among Doosan Fuel Cell's outside directors, there are two directors who serve as directors of less than four other companies.

* Excluding the amount of transactions with Daesan Green Energy other than Doosan affiliates from the total amount of transactions with affiliated parties under the Financial Statement Annex

2022 Status of Doosan Fuel Cell Share

Total percentage of shares owned by government institutions (National Pension Service)	5.84%
Percentage of shares owned by the owner family and foundation	6.34%
Number of shares without voting rights	12,564
Number of shares with one voting right per share	81,831,662



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Assessments and Rewards

Remuneration for directors is paid according to the company regulations for executives within the remuneration limit for directors set at the general meeting of shareholders. Remuneration for internal directors is classified into base salary and incentives reflecting management performance according to the 'Executive Officer HR Management Regulations,' and only base salary is paid to outside directors.

We pay the directors' remuneration fairly and transparently and disclose relevant information according to the related laws. Remuneration for the management is paid according to the results of performance evaluation on metric indexes(MBO), including financial performance tasks and strategic performance tasks, and non-metric indexes(qualitative evaluation), including growth, market situation, portfolio improvement, and design level.

Independence of the BOD

Doosan Fuel Cell ensures the independence of the BOD by setting a goal to have outside directors constitute the majority of the total number of directors and by appointing more than three outside directors. We conduct periodic reviews and take appropriate measures to facilitate the supervisory role of the BOD while allowing balanced and objective decision-making.

The voting right of directors affiliated with particular entities is restricted according to the applicable law. The BOD operates three committees including the Audit Committee, and each committee is comprised of outside directors to secure the independence and transparency of decision-making.

Committees under the Board of Directors (as of the end of Dec. 2022)

Category	Audit Committee	Internal Trade Committee	Outside Director Candidate Recommendation Committee
Composition	Changhyeon Ko, Dongsu Kim, Kwanyoung Lee	Changhyeon Ko, Dongsu Kim, Kwanyoung Lee	Changhyeon Ko, Dongsu Kim, Kwanyoung Lee
Role	Auditing the accounting and business of the company	Screening and approval of internal trades according to the Fair Trade Act	Recommending candidates for the position of outside directors
Activity	Selecting outside auditors, reporting the accounting audit results, etc.	Approval of affiliate trades, etc.	Recommending candidates for the position of outside directors

Procedure and Criteria for Appointing Outside Directors

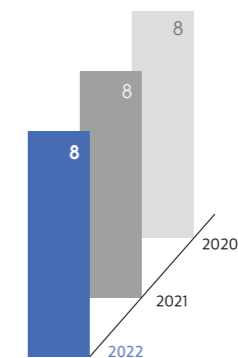
Doosan Fuel Cell appoints outside directors according to the strict requirements set by the related laws and company regulations in order to enable the BOD to fulfil its role of supervision and balancing. Outside directors are appointed by selecting candidates based on their qualifications and job expertise, which is carried out by the Outside Director Candidate Recommendation Committee that is comprised entirely of outside directors, and by obtaining the approval of the BOD and the general meeting of shareholders.

Major Resolutions of the BOD

The BOD decides important matters of company management, such as the disposal and transfer of important assets and the borrowing of large properties, in accordance with the relevant laws and internal regulations. A total of eight BOD meetings were convened in 2022 and 28 reports and agenda, such as the approval of the 4th term financial statement and sales report, were proposed and resolved.

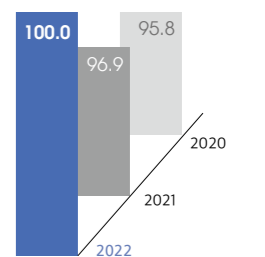
Board of Directors Meetings Convened

Unit: No. of times



Participation of Outside Directors

Unit: %



Diversity of Outside Directors

Doosan Fuel Cell does not engage in discrimination based on religion, gender, race, age, disability, political stance, region, and country when appointing directors. We consider diversity when composing the BOD.



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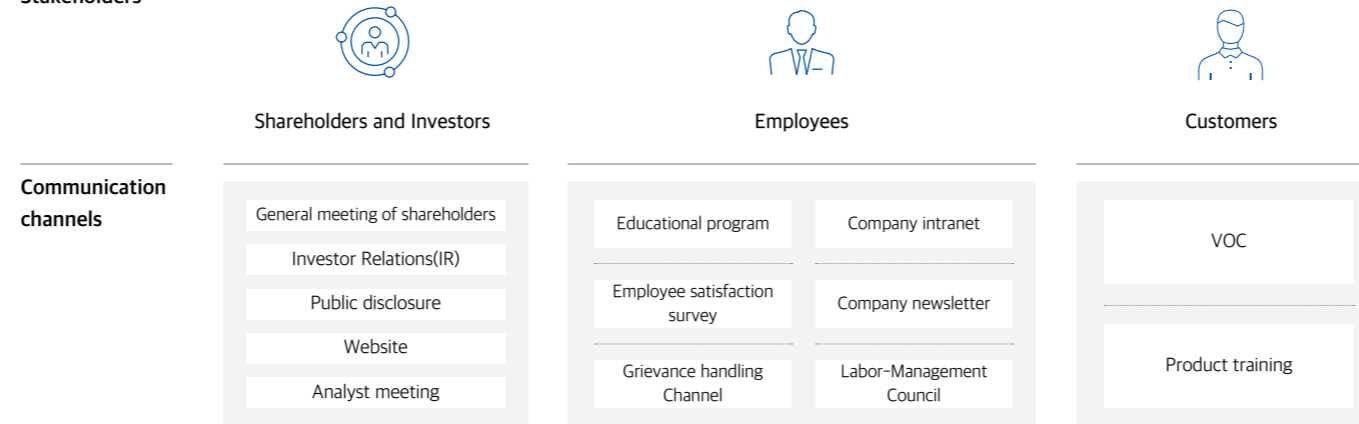
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Stakeholder Communication

The BOD communicates internally and externally with stakeholders through various communication channels, including disclosure and IR activity. In addition, the BOD immediately discloses decisions made at the general meetings of shareholders and matters pertaining to key managerial decisions to provide management information to shareholders and stakeholders. The general meeting of shareholders was announced 14 days before the meeting date from 2019 to 2021 and 21 days before the meeting date in 2022.

Stakeholders



Stakeholders

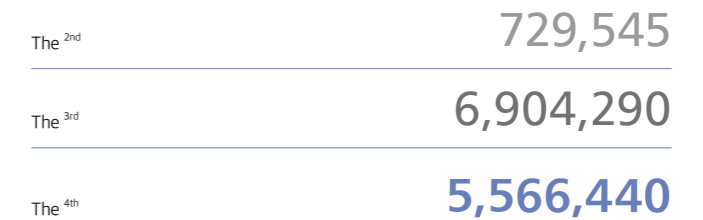


Electronic Voting and Paper Voting

Doosan Fuel Cell operates a paper voting system, according to Article 35 of the Articles of Association, to safeguard the voting rights of minority shareholders. In addition, we have introduced an electronic voting system from the regular general shareholders' meeting for the settlement of accounts in 2020, according to Article 368-4 of the Commercial Act, to increase convenience for our shareholders. Shareholders can exercise their voting rights electronically without attending the meeting. Meanwhile, at the regular general shareholders' meeting at the 2022 settlement of accounts, the voting rights proxy exercise recommendation system was adopted and implemented.

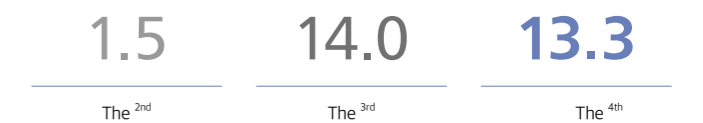
Shares that Participated via Electronic Voting Unit: Share

- The 4th general meeting of shareholders (Mar 29, 2023)
- The 3rd general meeting of shareholders (Mar 29, 2022)
- The 2nd general meeting of shareholders (Mar 29, 2021)



Percentage of Electronic Voting against Total Shares Unit: %

- The 4th general meeting of shareholders (Mar 29, 2023)
- The 3rd general meeting of shareholders (Mar 29, 2022)
- The 2nd general meeting of shareholders (Mar 29, 2021)



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R&D Investment

Doosan Fuel Cell Technology Competitiveness

Doosan Fuel Cell is working on the development of innovative technologies and making continuous investment in technologies to secure future markets through improved product competitiveness and the development of new power fuel cell products. We make an effort to develop technologies that can lead the market toward the hydrogen economy.



Safe Technology | Doosan Fuel Cell's technology is safe in that it does not require high pressure and combustion in the power generation process. It has been proven safe ever since its first application in a project by NASA in the United States. Doosan Fuel Cell maintains high-level safety that can be used for a wide range of building types by developing designs that meet international standards and implementing inspections and safety certifications.



High Durability | The system lifespan can be maintained for longer based on the operating temperature of less than 200 °C and stable stack technology.



Easy Installation | Thanks to its container size(dimension: 8.3m x 2.5m x 3.0m), Doosan Fuel Cell's PAFC fuel cell is easy to transfer and enables excellent space utilization. It has no locational restrictions according to the environment and climate conditions. Thus, it is possible to minimize installation area and initial investment costs compared to renewable energy technologies of the same capacity.



Fuel Flexibility | We can address customers' demands and field conditions flexibly because natural gas and LPG can be used as fuel, in addition to hydrogen.



Fast Response and High Capacity Ratio | We offer a flexible power system that responds to load changes in real-time through the output adjustment at the speed of 10kW/ sec for ramp up and 20kW/ sec for ramp down of 440kW rated output. This guarantees energy production under any circumstances with durability that allows an average capacity ratio of over 95% rated output for 365 days a year. Furthermore, it supports excellent system restoration in emergencies such as outside blackouts. There is no emission of hazardous substances compared to the conventional combustion generation method, and it can be operated in residential areas with less than 60dB of noise.



Electricity + Hot Water Supply | It is a highly efficient energy conversion technology that supplies electricity and heat for heating and cooling requirements for industrial facilities with up to 90% efficiency.

Development of Green Products

Green Model | Fuel cells of Doosan Fuel Cell do not generate nitrogen oxides as they do not involve a combustion process and sulfide compounds are eliminated inside the device. They can reduce CO₂ emissions based on high power generation efficiency, and do not require separate kinetic energy, thereby avoiding damage from noise and dust. A hydrogen model fuel cell using hydrogen fuels is an eco-friendly product that does not generate CO₂ emissions. It is a 100% green energy source that can use byproduct hydrogen generated from petrochemical and steel processes. Thanks to their higher power efficiency(495) compared to the conventional natural gas model, fuel cells will be used as energy facilities that do not discharge pollutants when the production of green hydrogen becomes generalized with the development of hydrogen technologies.

Response to Global Environmental Regulation | Doosan Fuel Cell actively responds to GHG reduction policies that are becoming more stringent globally. We are developing a PAFC system technology linked with CCUS(Carbon Capture, Utilization, and Storage) to convert the gray hydrogen economy, which is extracted from hydrocarbon fuels(natural gas, LPG, etc.), to a blue hydrogen system through CO₂ capture. The CO₂ capture technology is being demonstrated in thermoelectric power plants and cement/ steel industries with wet, dry, and separator technology for combustion gas, but there is no case of applying and running this technology in the long-term within the fuel cell industry. Doosan Fuel Cell is expecting a substantial reduction of up to 70% of CO₂ emissions compared to conventional PAFC through the development and demonstration of a CCS-linked process for fuel cell plants in operation.

Development of High Efficiency Products

High Efficiency Model | Doosan Fuel Cell is securing SOFC(Solid Oxide Fuel Cell) technology, in addition to the conventional PAFC(Phosphoric Acid Fuel Cell) technology, to reinforce its market dominance through a diversified portfolio of technologies. The SOFC system for power generation has good power efficiency but a short lifetime because it is operated at a high temperature of over 800 °C. Doosan Fuel Cell aims to secure market competitiveness by developing a low-temperature SOFC system that can complement these drawbacks. We are currently developing a mid-temperature SOFC system for power generation as the national project, and are also working on the mass-production of a core component, Celstec, in cooperation with Ceres Power, a fuel cell technical company in the United Kingdom. KRW 72.4 billion will be invested in production facilities until 2023 for the scale of 50MW, and mass production will begin in 2024.



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Development of Technologies to Reduce Power Generation Costs

With the increasing supply of renewable energy, there is increasing demand for the reduction of power generation costs associated with PAFC products. Doosan Fuel Cell now aims to achieve LCOE reduction through continuous development of cost reduction technologies.

Domestic Production of Parts | As of 2019, we achieved 98% of domestic production working with 280 suppliers in Korea. We perform manufacturing, test, maintenance, and performance improvements of all key parts, including cell and stack, domestically.

Metal Separator | The cost ratio of a separator in a stack, the core part of phosphoric fuel cells, is about 30%, which is a key factor in determining the total cost. For this reason, the separator is very important in terms of performance. Doosan Fuel Cell is developing a cost-effective, long-life separator that can apply low-cost materials and processes by replacing expensive graphite with metal.

Next-generation Catalysts | Phosphoric acid fuel cells use platinum electrode catalysts, an affiliation of precious metals that have been commercialized. Since platinum catalysts come with a high cost ratio and their availability is highly dependent on imports, Doosan Fuel Cell is developing a next-generation catalyst with high performance and durability that can be produced domestically in cooperation with domestic suppliers and institutions.

Product Development for New Markets

We plan to expand to various businesses by developing SOFC, PEMFC, and PEMEC technologies based on the PAFC technology.



SOFC

Fuel Cell for Vessels(SOFC)

As the fuel cell market for vessels operates under IMO(International Maritime Organization) regulations to achieve the 2050 GHG reduction goals, we are developing fuel cells for vessels based on power generation SOFC. We will sign a consortium LOI with Shell and Korea Shipbuilding & Offshore Engineering for auxiliary propulsion and complete commercialization to preoccupy the market.



PEMFC

Commercial Vehicle Mobility Power Pack(PEMFC)

Considering the enhanced regulations on combustion engine emissions and policies restricting sale in each country, we plan to develop and commercialize a power pack for large commercial vehicles to ensure competitiveness compared to batteryrun electric cars with limited energy density in the electric car market.



PAFC

High-output Hydrogen Model(PAFC)

The high-output hydrogen model(PAFC) is a clean hydrogen-based cogeneration system to respond to the hydrogen society, an output increase model(from the current 440 kW class to 550 kW or more) of the existing PAFC hydrogen model, and is under development with the goal of completing development in 2024. It is expected to secure product competitiveness through efficiency improvement, cost reduction, and installation area reduction.



Tri-gen

Tri-gen

The Tri-gen model is a model that can produce electricity, heat, and hydrogen simultaneously, and technology verification has been completed at the demonstration site in Hwaseong. Since the Tri-gen model can supply electricity and heat as a distributed power source and function as a hydrogen charging station in the city at the same time, business opportunities to build an on-site hydrogen production base in 2023 are expanding. It is expected to be used as an infrastructure for implementing the hydrogen economy.



PEM / PEMEC

PEM(polymer electrolyte) Water Electrolysis(PEMEC)

As the high growth of the water electrolysis market is expected due to the local large-scale surplus power generation of renewable energy and the acceleration of green hydrogen policies in each country, PEM-based water electrolysis production facilities are being developed with the goal of completing development in 2023, and there are currently two water electrolysis national projects in progress Through this, by 2025, we plan to accelerate the water electrolysis business and enter into various hydrogen supply markets by producing, evaluating, and demonstrating water electrolysis systems at home and abroad.



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Open Innovation

Doosan Fuel Cell aims to secure technological competitiveness and establish a hydrogen economy by collaborating with external cooperative organizations, specialized institutions, and central administrative organizations.

Type of open innovation	Benefits from a human resource/technology perspective
Agreements with external partners	<ul style="list-style-type: none"> • Securing technological competitiveness to build a hydrogen economy in cooperation with external partners, specialized agencies and central administrative agencies • Securing technological competitiveness in the early stage by identifying core technologies from the short-term and long-term perspectives, cooperating with external agencies for commercialization, and pursuing joint growth
Joint development agreement with Ceres Power on SOFC for buildings	<ul style="list-style-type: none"> • Introducing the Solid Oxide Fuel Cell(SOFC) stack manufacturing technologies of Ceres Power Limited to secure competitiveness in SOFC technology, which is the core of the E-only market • Concluding a license agreement to invest in mass production facilities in South Korea and sell mass produced products
Agreement with Yonsei University	<ul style="list-style-type: none"> • Developing and operating master's, doctorate, and integrated degree courses based on cooperative research with Yonsei University to train R&D workers, with one researcher participating as of 2022
Industry-Academic Research Projects for human resources development at Chung-Ang University	<ul style="list-style-type: none"> • Joongang University's Industry-Academic Cooperation Foundation, major external organizations, and companies are participating in the project to establish an EV smart charging platform innovation research center • Cooperation in the establishment of convergence energy infrastructure linking hydrogen fuel cells and electric vehicle charging facilities and systematic training of related R&D personnel

Product Innovation

We improve and develop existing PAFC NG models to accelerate growth and secure the future market, promoting the development of new products like LPG fuel models and tri-gen models.

LPG fuel models enable efficient power generation depending on the fuel prices and fuel use characteristics in the installed region by using NG and LPG together. We have completed the development, demonstration, and commercialization of these models.

Tri-gen models can produce electricity, heat, and hydrogen. They are under development through a national task and will be commercialized after a pilot project. Tri-gen models can be used in infrastructures to implement the hydrogen economy in the future as they can function as HV/EV charging stations in cities while supplying electricity and heat as distributed power.

In addition, our company is developing SOFC technologies, besides the existing Phosphoric Acid Fuel Cell(PAFC) technologies, to ensure competitiveness in the power generation market. The SOFC system for power generation shows high power efficiency at high temperatures above 800 °C, but has the disadvantage of a short life expectancy. Our company is developing a medium- and low-temperature SOFC system to make up for this shortcoming. To do so, we are developing the mass-production technology for cell stacks, which are the core parts of fuel cells, in cooperation with Ceres Power, an English company specializing in fuel cell technologies. By investing KRW 72.4 billion until 2023, we will install production facilities on a scale of 50 MW. The mass production will begin in 2024.

Doosan Fuel Cell defines innovative products as products that undergo significant improvements with regard to major parts and modules that account for over 10% of the material cost and changes in the fuels or fuel compositions used(mixed use of two or more fuel types), apart from producing new product models. Innovative products accounted for sales that occurred for five years, including the year in which improvements were made. The ratio was 90% of total sales in 2020, 100% in 2021, and 100% in 2022.



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Process Innovation

Doosan Fuel Cell improved business efficiency and secured visibility by switching fuel cell manufacturing sites and service sites operating products installed at customers' sites into digital-based operations. In addition, we linked the systems to ensure that data can organically flow into a single information channel without discontinuation.

Manufacturing sites introduced the Manufacturing Execution System(MES) to standardize and carry out duties based on the system, from process operation to manufacturing. When materials are warehoused, the information about warehousing and the quality of semi-finished products and products is stored in a single database, allowing us to track quality information of finished products and raw materials. Production, quality, and equipment information is saved in the database, and we have built an environment to identify and operate the current status by providing visibility using a visualization tool.

In order to improve service operation efficiency, parts logistics information, which was previously delivered through e-mail, was converted to information delivered through the new TMS (Transportation Management System) system. Through this, we have minimized the transmission of incorrect information or unnecessary communication and, at the same time, improved work efficiency by establishing a process that enables agile response even in emergency situations.

Major tasks for process innovation

Major Tasks
1. Reinforcing maintenance and analysis of reference service information
2. Embodying BOM by PPLT number
3. Improving management of retrofit targets and progress
4. Creating S/D cases in real-time and tracking status of S/D PPLT
5. Providing S/D reports and detailed analytical data to customers
6. Supporting replacement of parts(search, release, replacement) based on system
7. Normalizing case-WO types and diversifying WO generation methods
8. Embodying features to manage performance and the installation status of major parts
9. Creating preventive maintenance cases and massive WO

Effects
Preparation of the basis for data analysis through the system
Improved level of handling shutdowns
Strengthened communication with customers
Increased efficiency of internal communication through single view
Reinforced management of the major parts system
Securement of time to execute duties by enhancing work convenience

1. Reference Information By standardizing the service reference information(products, accounts, location, contact, contracts) managed by each manager and integrating systems, we enabled the provision of analytical information with increased diversity and accuracy.

2. BOM of Each Product Installed We have prepared a system to provide separate Bill of Material(BOM) for each product installed at customer companies to manage the information on shipped parts and replaced parts. By doing so, we have been able to enhance our service level for customers by easily identifying and managing products subject to replacement in Korea and overseas when retrofits occur in specific parts.

3. Automation of the Maintenance Order When abnormal operating information is detected by the Remote Monitoring System(RMS) that monitors products installed at customers' sites, a signal is sent to the CRM system. The CRM system issues a work order for service technicians to perform maintenance, thereby shortening the processing time.

4. Request for Release of Parts In the past, replacement parts had to be requested via phone or email for the person in charge at the head office to handle the matter. We prevented manual errors and increased the work efficiency by utilizing the CRM system to share parts release requests from service sites with the person in charge at the head office and the logistics manager, automatically releasing service parts to the sites.

5. Management of Conditions of Core Parts By providing real-time performance and replacement history of major parts installed on each product, we can easily check the conditions without having to visit the actual site.

6. Automatic Preventive Maintenance Order We issued adequate preventive maintenance orders based on the operating time of products so that our service technicians at each site were able to operate the products stably without omissions.

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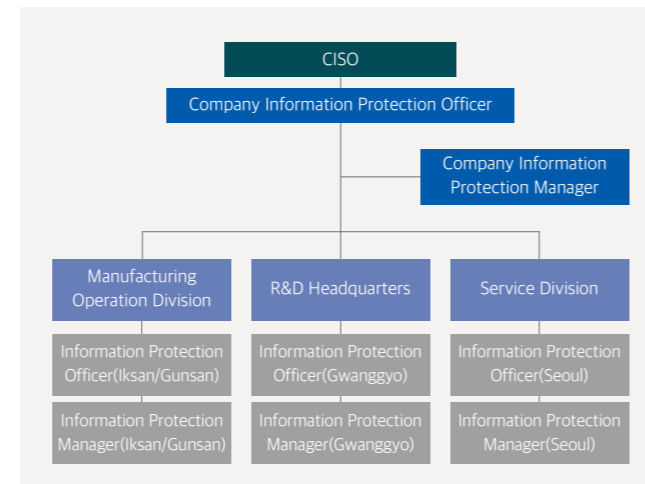


Information Security Operating System

Doosan Fuel Cell promotes company-wide security management systems through the security department that is managed under the Chief Information Security Officer(CISO) and the Chief Privacy Officer(CPO). We protect the company's assets against internal and external security threats.

As an affiliate of the Doosan Group, we acquired the ISMS, an information security certification, from Doosan. Doosan Fuel Cell strives to strengthen its information security by participating in simulated hacker training programs hosted by Doosan.

Information Security Organization



Information Security Policy



Security Management System

We established security regulations(HR and suppliers, IT systems, security audits, security management, responses to security accidents, facility security, protection of business secrets, information assets, information devices, cloud security policy) in 2020 and review them every year to introduce necessary revisions. We share our security policies with employees by posting them on the in-house portal.

The security system of Doosan Fuel Cell and Doosan Group responds proactively to security threats by detecting and analyzing invasion attempts. Our 24/7 monitoring solutions safely protect internal information assets.

Multi Factor Authentication(MFA) was applied to the in-house system access solutions, VPN1) and VDI2), to use One Time Passwords(OTP) when accessing internal systems from the outside. Using these methods, we prevent outsiders from accessing our internal systems by stealing accounts.

- 1) Virtual Private Network(VPN): A solution that allows users to use a public network, such as the Internet, in the same manner as an intranet
- 2) Virtual Desktop Infrastructure(VDI): A solution that provides a virtual desktop and data storage to each user by utilizing resources of a server operated by virtualization technology



Protection of Corporate Information

We make a list of business secrets and update it every year to legally protect and manage the security of important business secrets. A policy to detect leakage history and block leakages has been applied to minimize the risk of business secrets reaching unscrupulous entities. We have introduced measures to raise the security awareness of departments. We appointed the security officer and manager for each department to collaborate with the security department when a security accident or sign occurs.

When an employee retires, we check the history of emails sent out by the retiree in the last six months to check for the leakage of business secrets.

To prevent leakage of in-house business secrets in the event of personal PC theft or loss, BitLocker(remote hard disk encryption) is applied to all employees' PCs for management.

We are conducting preemptive risk management by subscribing to personal information protection damage insurance.

We established security regulations(HR and suppliers, IT systems, security audits, security management, responses to security accidents, facility security, protection of business secrets, information assets, information devices, cloud security policy) in 2020 and review them every year to introduce necessary revisions. We share our security policies with employees by posting them on the in-house portal so that all employees can freely access and utilize them.

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Information Security & Protection of Customer Information

Training Progress

- All employees must annually receive online security education on the prevention of information leakage, protection of business secrets, management of information devices, and protection of personal information.
- We conducted simulated trainings every quarter (four times a year) (3 simulated hacking email training and 1 personal information protection simulated training for leakage) to prevent damage from ransomware, remittance fraud, and information leakage using phishing emails that are intended to steal accounts. By following up a campaign, we improved the response capability of employees by educating them on how to identify and report hacking emails. (ex. Security issue report, processing report, report to the department in charge, post-processing, etc.)
- Security Diagnosis Days are designated six times a year to deliver security-related news and important announcements, and checklists and guidelines are provided so that employees can self-check their security status.
- Regular maintenance training for security officers/persons in charge in each department
- Conducting mandatory security training when new/experienced employees join the company

Security Diagnosis Day

Security inspections and measures	PC, VDI, everyday security	Individuals
	Information system	Departments
	Business secrets and documents	
	Facilities, areas, access	Persons in charge of security
Focused security management		
Raising awareness	Security newsletter	

Internal Information Security Reporting Process

Initial Response

- 1 Employees shall refrain from responding discretionally, immediately report any risks/incidents to the security department, and follow the instructions of the security department. If there is a concern of any damage spreading through the company's network via ransomware, the affected computer equipment shall be removed from wired and wireless corporate networks and immediately reported to the security department.
- 2 The security department shall provide information on the security accident or risk to the information system managing department in each area, operating department, and related departments, have them take initial actions to prevent the spread of damage, and evaluate the seriousness of the accident. The security department shall determine the seriousness of the accident, report the matter to the executive in charge of security, isolate the accident site if necessary, and secure the body, evidence, and traces of related persons.
- 3 If a security accident occurs and has a serious adverse impact on the company, the head of the security department shall report the matter to the executive in charge of security and senior management, call an "emergency accident response organization," and discuss response measures. If external communication is necessary, the channels shall be combined into one channel, such as the PR Department, to prevent additional damage from communication errors.

Accident Investigation and Report

- 1 The security department or emergency accident response organization shall investigate the security accident after taking initial actions to prevent collected evidence and traces from losing their evidential power. If necessary, the department or organization may seek cooperation from external agencies.
- 2 Preemptive actions can be taken during the investigation if necessary to prevent the spread of damage.
- 3 Upon completion of the accident investigation, the security department or emergency accident response organization shall prepare a report containing the following matters and submit the report to the executive in charge of security, depending on the seriousness of the accident. If necessary, these matters may be reported to the executive in charge of security even during the investigation.
 - 1) Person who caused the accident and personal profile;
 - 2) Date, time, and place of occurrence;
 - 3) Details and course of the accident;
 - 4) Judgment on the investigation results; and
 - 5) Follow-up measures and recommendations for improvement
- 4 Details of the security accident shall not be disclosed until the investigation is concluded. The investigation results are only disclosed to the relevant employees, the executive in charge of security, and the top management.

Follow-up Actions on Security Accidents

- 1 If actions are required to prevent the recurrence of the security accident, persons in charge of the target department shall take preventive actions or establish an action plan within two weeks from the date notified of the results and report the measures to the security department.
- 2 Members of the security department shall confirm that the persons in charge of the target department took appropriate preventive actions. However, the time of confirmation may be changed according to the urgency and importance of the matter.
- 3 The company may take disciplinary actions or punish related employees and persons in charge based on the investigation results, taking legal action as necessary.



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Protection of Customer Information

Reinforcement of Personal Information Protection

Doosan Fuel Cell continuously monitors the enactment and revision of laws to protect personal information safely and ensure compliance with domestic and overseas laws related to personal information protection, as well as to disseminate and apply best practices to internal management plans and personal information protection regulations. In addition, we conduct inspection on implementation status, consignor/consignee education, and internal auditing of the main areas every year for the personal information handlers and personal information handling system, and improve and manage vulnerabilities discovered.

- In order to raise the level of awareness and management of personal information protection at companies entrusted with our personal information, we designate a person in charge to take information protection training and conduct internal diagnosis once a year.
- The trustee who fails to complete the training or does not submit the relevant grounds is subject to a penalty, such as termination of the consignment contract.
- The current status of personal information protection is audited once a year by Doosan Co., Ltd.(the external auditor), and matters pointed out are being improved within the year.
- The person in charge of personal information protection installs 'Personal Information Encryption SW' to prevent issues related to personal information from occurring even in cases of leakage.

Internalization of Personal Information Protection Culture

Doosan Fuel Cell conducts annual education programs for personal information protection managers and handlers who are the subjects of compulsory education on personal information protection. In addition, we are carrying out various activities and releasing material protection such as posters, newsletters, and PC screen savers to strengthen the culture of personal information protection.

01. Scope of gathering personal information	We do not collect sensitive information(race, religion, ideology, place of origin, domicile, political stance, criminal record, health condition, sexual life, etc.) that may violate basic human rights or ask for unique identification information of the subject.	
02. Items of personal information collected and method of collection	1) Handling of complaints - Required items: Name, email address 2) Service analysis and service level - Service use history, access log, cookie, access IP information 3) Recruitment screening/decision - General information: Name(Korean/Chinese/English), birthdate, gender, photograph, password, etc. - Sensitive information: Disability status and disability type/rating	
03. Provision of personal information to a third-party	When receiving separate consent from the subject of information - When there are specific regulations under the law or it is unavoidable to comply with legal obligations - When prior consent cannot be received because the subject of information or a legal representative is unable to express one's intention or the address is unknown	
04. Purpose of collection and use of personal information	1) Customer related - Enhancing the service analysis and service level: Providing better services through the analysis of service use and improving the level of the website's usability(improving service analysis and service level), etc. - Handling grievances/ complaints: Checking the complaint, notice of contact for fact finding, notice of the handling result, etc. 2) Recruitment related - Recruitment screening/decision: Identification and name verification, employment screening, contact with the applicant, referring to matters related to employment(veteran, disability information, etc.) such as the Act on the Honorable Treatment of and Support for Persons of Distinguished Service to the State and the Act on the Employment Promotion and Vocational Rehabilitation of Persons with Disabilities	
05. Personal information protection officer and manager	A. Personal information protection officer - Name: Joonyoung Park, Executive Director	B. Personal information managing division - Name: Doosan Fuel Cell Operation Innovation Team - Tel: +82-2-3398-3865 - Fax: +82-2-3398-3858 - Email: donghyun28.kim@doosan.com

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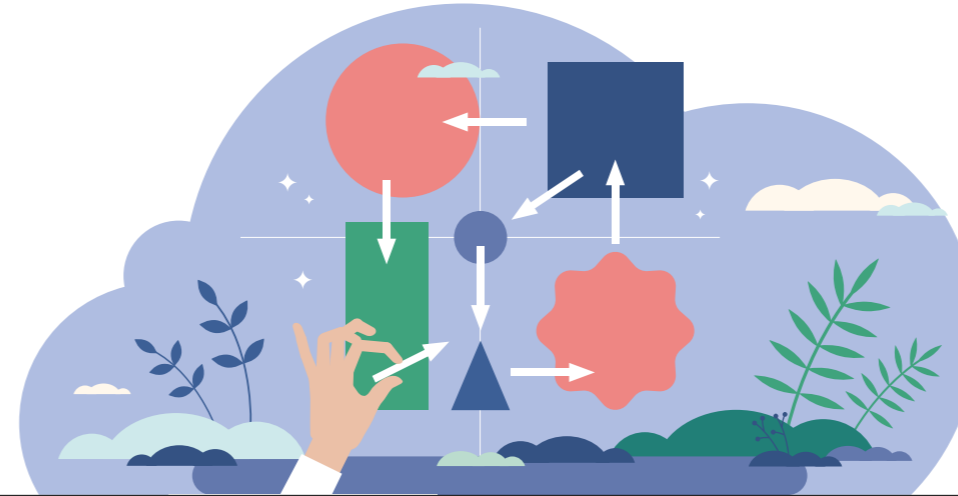
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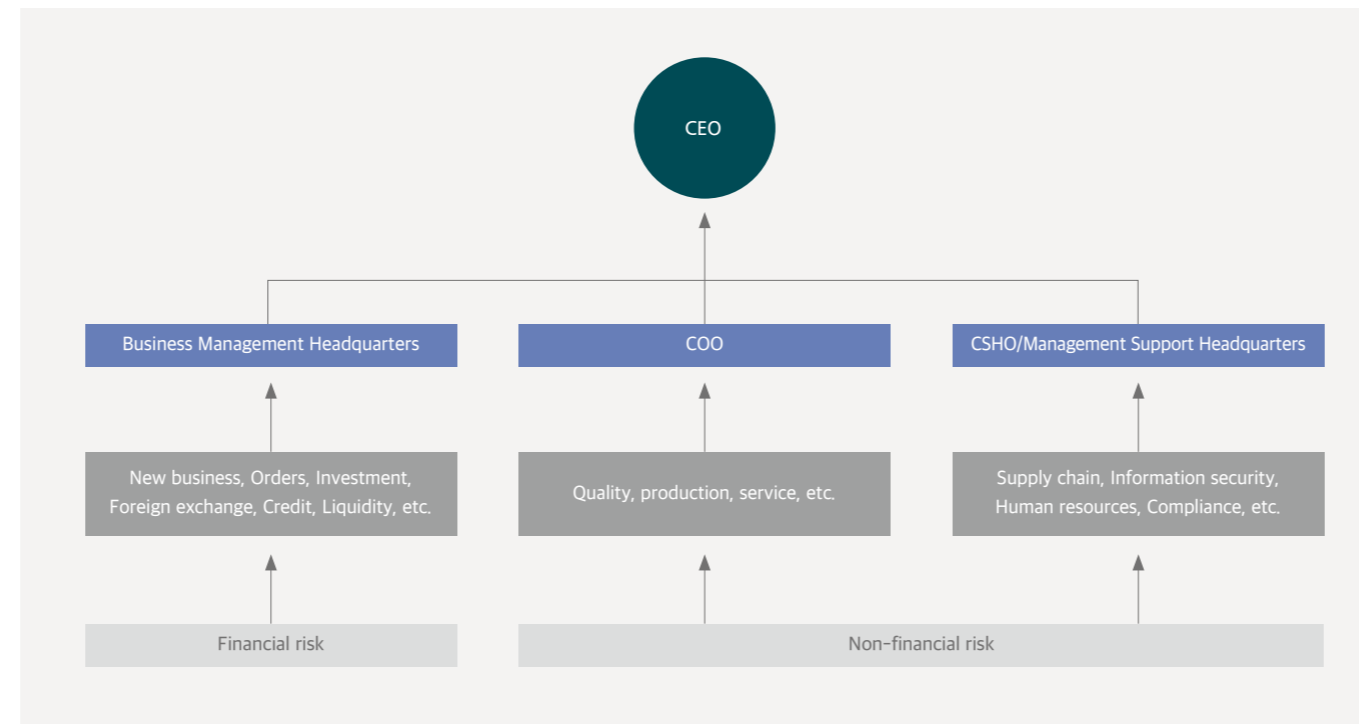
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Risk Management



Risk Management System

Organization



Risk Management Governance

Category	Name and position of the person responsible for each field	Final reporting line
Chief officers in charge of risk management	<ul style="list-style-type: none"> Financial risks: Jooeon Park, Director of Business Management Headquarters Business risks: Hooseok Che, COO Sustainability risks: Joonyoung Park, CSHO/Director of Management Support Headquarters 	Officer in charge of each area → Report to CEO
Chief officers in charge of monitoring and auditing of risk management performances	<ul style="list-style-type: none"> Joonyoung Park, CSHO/Director of Management Support Headquarters 	CSHO/ Director of Management Support Headquarters → Report to CEO
Outside directors with expertise in risk management of the company	<ul style="list-style-type: none"> One outside director(Dongsoo Kim, Outside Director) is an expert in accounting and finance with experience related to finance and government institutes according to Article 542-11 of the Commercial Act. 	
Periodic risk management education for outside directors	<ul style="list-style-type: none"> Inviting outside experts such as accountants and conduct education for the Audit Committee on current issues and accounting supervision trends more than once a year Education related to the key inspection accounting issues in 2023 and IFRS sustainability disclosure standards was carried out in 2022. 	
Sensitivity analysis and stress test	<ul style="list-style-type: none"> Analyzing financial risks in areas including sales, capital, credit interest, liquidity, exchange rate, and investment and business aspects including strategy, customers, competitors, investors, and technology changes. Defining macroscopic market environment/legal regulation risks, to respond preemptively to the mid and longterm risks of the company. 	



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Risk Management

Identify and Respond to Financial/Non-financial Risks

Financial Risk

Category	Description	Potential Impact on the Doosan Fuel Cell		Doosan Fuel Cell response
		Positive	Negative	
Business risk	• Risk due to new product development, business contracts, investment, etc. due to technological development and increased demand	• Improve image as a leading hydrogen fuel cell company and increase sales	• Increased financial burden due to investment expansion	<ul style="list-style-type: none"> Began construction of the Saemangeum plant for mass production of next-generation SOFC Prepare for commercialization of the Tri-gen model in terms of product diversification Strengthening competitiveness of existing businesses
Foreign exchange risk	• Exposure to the risk of environmental change due to international business activities	• Increase in net profit before tax when the exchange rate rises	• Uncertainty and profit/loss fluctuations due to exchange rate fluctuations	<ul style="list-style-type: none"> Offset the amount of foreign exchange exposure with Natural Hedge by responding to export and import currencies Exchange risk management is conducted in accordance with the exchange risk management regulations, and foreign exchange management for speculative purposes is prohibited in accordance with the regulations.
Price risk	• Changes in the fair value of financial instruments or future cash flows due to changes in market prices in relation to listed equity instruments	• Increase in the fair value of financial investment products due to market price fluctuations	• Decrease in the fair value of financial investment products due to market price fluctuations	<ul style="list-style-type: none"> Management regularly measures the price fluctuation risk of listed equity instruments Individual management of important investments within the portfolio Prepare a process that requires the approval of the board of directors for all acquisition and sale decisions
Credit risk	• Financial loss that occurs when one of the parties to a financial instrument fails to fulfill its obligations	• Strengthen management capabilities such as establishing a credit rating system for new customers	• Incurrence of company losses, such as unexpected insolvency	<ul style="list-style-type: none"> Evaluate credit quality using financial information and information from credit rating agencies when contracting with new customers, determine a credit limit, and receive collateral or a payment guarantee. Periodic re-evaluation of customer credit rating and readjustment of credit limit
Liquidity risk	• Satisfy obligations related to financial liabilities	• Reinforcement of fund balance planning capability through cash flow management	• The company's credit rating fell due to insolvency caused by a mismatch between the repayment of funds and the procurement period	<ul style="list-style-type: none"> Establish a response system to respond to the maturity structure of financial liabilities and financial assets by regularly predicting the balance of funds in sales, investment, and finance activities

Non-financial Risk

Category	Description	Economic impact on the Doosan Fuel Cell		Doosan Fuel Cell response
		Positive	Negative	
Operational risk	• Quality/production and service related risks	• Improve quality and production efficiency	<ul style="list-style-type: none"> Customer claims due to quality issues Delivery disruptions and company losses due to production schedule disruptions 	<ul style="list-style-type: none"> Improvement of work capabilities by dispatching manufacturing engineers to R&D Secure rapid production and quality systems by reducing the lead time for design changes
Supply chain risk	• The risk of the occurrence of risks in terms of business continuity for parts suppliers	<ul style="list-style-type: none"> Provide an opportunity to establish a supply chain risk management system Strengthen suppliers' ESG risk management capabilities 	<ul style="list-style-type: none"> Disruptions in product production and delivery and company losses due to the inability to procure parts 	<ul style="list-style-type: none"> Grouping of primary parts suppliers according to business impact and purchase risk, development of an ESG evaluation index for each group, and self-diagnosis Reflect on follow-up measures (support or penalty) and purchase policies based on self-diagnosis results
Information security risk	• Threat of internal system through hacking	• Advanced information security system and internalization of employees	• Economic loss due to exposure of business secrets	<ul style="list-style-type: none"> Protection of in-house information assets with a 24-hour monitoring solution Simulated training to prevent damage from information leakage 4 times a year
Human risk	• Risk due to securing, maintaining, and leaking outstanding human resources	• Create a better work environment and strengthen learning programs	<ul style="list-style-type: none"> Increased uncertainty due to delays in hiring key personnel 	<ul style="list-style-type: none"> Establishment of strategic manpower plan in connection with company-wide business strategy Establishment and execution of core talent recruitment plans to create new business performance
Legal/ethical Risk	• Risk due to corruption and violations of fair trade	• Securing corporate trust through fair and transparent management	<ul style="list-style-type: none"> Increased criminal/administrative penalties and response costs for law violations Corporate image decline 	<ul style="list-style-type: none"> Operation of ethics regulations and the cyber/Internal Report Center Fair trade, anti-corruption/ethics education Introduction to the Fair Trade Compliance Program



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ESG Data

Environmental Data

Environmental Management

Classification	Unit	2020	2021	2022	
Environmental law violation	Number of violations	Case	0	0	0
Environmental management and eco-friendly product certification	Number of business places certified with ISO14001	EA	0	0	1
	Total number of business sites ¹⁾	EA	3	3	3
	Ratio of business places certified with ISO14001 ²⁾	%	0	0	100
Environmental investment	Capital investment	KRW million	0	22.9	408.1
	Operating costs	KRW million	105.1	126.2	200.7
	Cost reduction(profit, tax benefits)	KRW million	1,860.0	4,154.6	8,920.0

1) Iksan 2 was added in April 2022 but merged with the Iksan 1 business site and reported
 2) ISO 14001 Certified Workplace Sales / Company-wide Sales

Environmental Education

Classification	Unit	2020	2021	2022	
Environmental Education	Number of Participating Employees	Person	97	116	117
	Education hours per person	Hour	1	1	4

Supply Chain Environmental Impact Assessment

Classification	Unit	2020	2021	2022
Number of new suppliers ¹⁾	EA	28	68	153
Number of new suppliers that passed environmental standards evaluation ²⁾	EA	0	1	14
Number of suppliers subject to environmental impact assessment ³⁾	EA	8	0	2
Number of high-risk suppliers ⁴⁾	EA	0	0	0

1) Number of new partners in 2022 extracted from JDE(excluding services)
 2) The chemical company is basically evaluating and managing EHS. For the first order, a preliminary impact assessment is conducted, and the order quantity / storage quantity, etc. are closely managed.
 3) Corresponds to suppliers that handle one each of existing chemical substances and new chemical substances that require K-REACH reporting. EHS is managed through outsourcing consulting.
 4) None(managed under plan)

Greenhouse Gases ¹⁾

Classification	Unit	2020	2021	2022	
Scope 1(direct emissions)	Emissions	tCO ₂ -eq	788	948	1,267
Scope 2(indirect emissions) ²⁾	Emissions	tCO ₂ -eq	2,604	2,592	5,026
Total emissions of reporting organization(Scope 1+2)	Emissions	tCO ₂ -eq	3,392	3,540	6,293
Total emissions of reporting organization(Scope 1+2)	Emission intensities	tCO ₂ -eq/facility	22.463	28.095	36.590

1) Reported as third-party verification of GHG emissions from 2022(voluntary verification)
 2) Change in scope 2 emissions and intensity in 2020 and 2021: Application of change in external steam emission coefficient

Energy Usage ¹⁾

Classification	Unit	2020	2021	2022	
Consumption	Electricity ²⁾	TJ	53,220	52,987	103,705
	Steam ²⁾	TJ	5,581	5,939	18,952
	LNG ²⁾	TJ	6,256	7,671	12,585
	Total non-renewable energy consumption	TOE	1,553.9	1,590.6	3,230.2
		MWh	18,071.4	18,499.2	37,567.3
	Total renewable energy consumption ³⁾	MWh	744.4	1,047.6	1,105.7
	Total energy consumption	MWh	18,815.8	19,546.8	38,673.0
	Energy intensity	MWh / billion	40.7	51.2	123.9
	Data scope	%	100	100	100

1) Partially corrected energy usage by changes of 2023 data calculation criteria
 2) Modification of usage by applying energy usage unit conversion coefficient changes in 2020 and 2021
 3) Consumed electric power generated during fuel cell test process at Iksan factory

Pollutants

Classification	Unit	2020	2021	2022	
Hazardous chemical generation	ton	0	0	0	
Hazardous chemical usage	ton	0.004	0.004	0.005	
Water pollutant emissions ¹⁾	Chemical oxygen demand(COD) ²⁾	mg/L	10	7	5.1
	Biochemical oxygen demand(BOD)	mg/L	10	7	5.1
	Suspensions(SS)	mg/L	4	6	3.3
	Total organic carbon(TOC)	mg/L	-	-	3.4
Air pollutant emissions ³⁾	Dust(PM) ⁴⁾	mg/S m'	4	3	2
	NOx emissions	ppm	N/A	N/A	N/A
	SOx emissions	ppm	N/A	N/A	N/A

1) Legal standard: Chemical oxygen requirements of 30 mg/L, biochemical oxygen requirements of 40 mg/L, suspended solids of 30 mg/L or less
 2) Calculated based on the average number 3) Legal standard: Dust 30mg/Sm³, SOx 200ppm, NOx 150ppm or less
 4) Calculated based on average number of 2 air outlets since 2020

Water

Classification	Unit	2020	2021	2022	
Amount of water used	Water and sewage usage ¹⁾	ton	30,359	30,622	31,681
	Fresh water(lake, river, etc.) usage	ton	0	0	0
	Underground water usage	ton	0	0	0
	Total	ton	30,359	30,622	31,681
Amount of water reused	Water recycling rate	%	0	0	0
Amount of wastewater discharged	Discharge rate	ton	241	161	283
	Recycling rate	ton	2,615	4,083	8,769
	Total discharge rate	ton	2,856	4,244	9,052

1) Doosan Fuel Cell(RO water + water supply flowmeter value) (RO: used in the production process, water supply: drinking water and toilet use)

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Waste

Classification	Unit	2020	2021	2022	
Total waste throughput	Total waste recycled/reused ¹⁾	ton	357.88	291.54	444.37
	Total waste disposed	ton	221.83	235.73	478.87
	Waste reclaimed	ton	166.85	212.39	405.92
	Waste incinerated with energy recovery	ton	0	0	0
	Waste incinerated without energy recovery	ton	54.98	23.34	72.95
	Hazardous waste treated with different methods(on-site storage)	ton	0	0	0
	aste with no record of disposal method	ton	0	0	0
	Data scope	%	100	100	100
	Total waste generated in KWR unit	ton/facility	3.84	4.19	5.37

1) Including waste paper and scrap emissions in total recycled or reused waste('20 and '21 data are also corrected by adding waste paper and scrap)

Hazardous Waste

Classification	Unit	2020	2021	2022	
Total waste throughput	Total hazardous waste recycled/reused	ton	19.25	4.34	6.34
	Total hazardous waste disposed	ton	0	1.15	1.07
	Hazardous waste reclaimed	ton	0	0	0
	Hazardous waste incinerated with energy recovery	ton	0	0	0
	Hazardous waste incinerated without energy recovery	ton	0	0.3	0.11
	Hazardous waste treated with different methods(on-site storage)	ton	0	0.85	0.96
	Hazardous waste with no record of disposal method	ton	0	0	0
	Data scope	%	100	100	100

Product Responsibility

Classification	Unit	2020	2021	2022	
Improvement performance of green products and services	Sales	KRW million	461,839	381,412	312,149
	Percentage of total sales	%	100	100	100
	Purchase	KRW million	0	0	0
	Percentage of total purchases	%	0	0	0

Status of Green Vehicles ¹⁾ (such as electric cars)

Classification	Unit	2020	2021	2022
Number of green vehicles owned	Unit	0	0	5
Green vehicle ownership rate	%	0	0	15.2

1) Electric vehicles, hybrid vehicles, hydrogen vehicles, etc.

Material Usage

Classification	Unit	2020	2021	2022	
Usage	Total usage	ton	3,925	3,265	4,183
	Non-renewable material usage	ton	3,925	3,265	4,183
	Renewable material usage	ton	0	0	0



ESG Data

Society Data

Status of Employees

Classification	Unit	2020	2021	2022
Total number of employees	Person	408	481	471
Number of employees	Male	359	425	418
	Female	49	56	53
Full-time employee status	Number of male	341	411	407
	Number of female	49	55	45
	Total number	390	466	452 ¹⁾
	Ratio of male	83.6	85.4	86.4
	Ratio of female	12	11.4	9.6
	Ratio of total number of employees	95.6	96.9	96.0
Contract employee status ²⁾	Number of male	18	14	11
	Number of female	0	1	8
	Total number	18	15	19
	Ratio of male	4.4	2.9	2.3
	Ratio of female	0	0.2	1.7
Number of employees by age	Ratio of total number of employees	4.4	3.1	4.0
	Number under 30	168	208	153
	Number of 30~50	233	263	287
	Number over 50	7	10	31
	Total number	408	481	471
	Ratio of under 30	43.08	43.24	32.48
Number of employees by region, nationality	Ratio of 30~50	59.74	53.43	60.93
	Ratio of over 50	1.79	3.33	6.58
	Ratio of domestic and overseas employees	0.5	0.41	0.21
	Domestic nationality(Regular position)	388	464	451
	Domestic nationality(Temporary position)	18	15	19
	Total number of employees with domestic nationality	406	479	470
	Overseas nationality(Regular position) ³⁾	2	2	1
	Overseas nationality(Temporary position)	0	0	0
Total number of employees with overseas nationality	2	2	1	

1) Full-time and executive (446), unregistered executive, advisory (6)
 2) Dispatched, special service, and contract workers
 3) There is only one Canadian employee with a nationality other than Korea.

Turnover

Classification	Unit	2020	2021	2022	
Job change status ¹⁾	Domestic	Person	28	56	99
	Overseas	Person	0	0	0
Job change status ¹⁾	Male	Person	24	51	81
	Female	Person	4	5	18
	Under 30	Person	5	31	54
	30~50	Person	22	21	44
	Over 50	Person	1	4	1
	Total	Person	28	56	99
	Voluntary turnover rate ²⁾	%	6.86	11.64	21.02
	Voluntary turnover	Person	28	56	99
	Turnover	%	6.86	11.64	21.02

1) The total turnover rate increased as some of the R&D personnel in the R&D headquarters moved from Doosan Fuel Cell to H2I, a newly established corporation, in October 2022.
 2) Excluding affiliate transfers, the turnover rates for 2020 ~ 2022 were 6.13%, 9.56%, and 12.53%, respectively.

New Hires

Classification	Unit	2020	2021	2022	
Gender	Male	Person	65	110	79
	Female	Person	14	12	9
	Total	Person	79	122	88
By age	Under 30	Person	57	76	41
	30~50	Person	22	42	39
	Over 50	Person	0	4	8
Number of new hires	Person	79	122	88	
Number of persons transferring division	Person	165	98	114	
Employment of experienced employees	Person	26	44	35	
Fixed-time workers	Person	1	2	5	
Total employment costs	KRW million	60.9	36.8	47.1	
Average employment costs	KRW million	1.77	0.54	0.36	
Open positions filled by inside candidates	%	86	69	53	



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Diversity of Employees

Classification	Unit	2020	2021	2022	
Female	Ratio of female employees	%	12	11.6	11.25
	Ratio of all female managers	%	6.2	7	2.97
	Ratio of female executives	%	0	0	12.5
	Ratio of all female entry-level managers ¹⁾	%	2	2.5	2.97
	Ratio of female employees within profit-making divisions	%	0	0	6.6
	Ratio of female employees within STEM division	%	56	59	8.2
Disabled persons	Number	Person	2	1	9
	Ratio	%	0.49	0.21	1.91 ²⁾

1) Entry-level managers: Manager or higher positions

2) In accordance with 'Employment Promotion and Vocational Rehabilitation of Persons with Disabilities Act Article 28-3(Special Case for Calculating Number of Persons with Disabilities)', 2.97% when converting a person with severe disabilities into two persons with mild disabilities

Labor Union and Collective Agreement

Classification	Unit	2020	2021	2022
Ratio of employees with union membership	%	23.2	25.7	27.0

Performance Evaluation

Classification	Unit	2020	2021	2022
Ratio of senior executives with long-term incentives	%	100	100	100
Ratio of employees receiving long-term incentives among employees below senior management positions	%	0	0	0
Ratio of employees who received performance evaluations	%	100	100	100
Number of target employees of performance evaluations	Person	263	307	319
Number of employees who received performance evaluations	Person	263	307	319
Ratio of employees subject to MBO	%	-	70.7	62.7
Ratio of employees subject to multilateral performance evaluations	%	-	0	0
Ratio of employees subject to priority evaluation of same positions	%	-	70.7	62.7

Employee Satisfaction Survey ¹⁾

Classification	Unit	2020	2021	2022
Ratio of employees that participated in the employee satisfaction survey	%	54	75	75
Employee satisfaction survey score	%	-	69	69

1) The 2020 and 2021 employee satisfaction survey was evaluated qualitatively.

Safety and Health

Classification	Unit	2020	2021	2022	
Occupational accident rate	%	0	0.21	0	
Lost time incident rate(LTIR)	Employees	Occupational accident frequency per million hours	0	1.06	0
	Suppliers	Occupational accident frequency per million hours	0	0	0
Occupational illness frequency rate(OIFR)	Employees	Occupational accident frequency per million hours	0	0	0
Workers in charge of work and/or workplaces within the organization	Person	Person	58	89	61
Workers in charge of work and/or workplaces within the organization	Ratio	%	14	18	13
Workers subject to the occupational health and safety management system(Laws and systems) ¹⁾	Person	Person	430	506	485
Workers subject to the occupational health and safety management system(Laws and systems)	Ratio	%	100	100	100
Workers subject to the occupational health and safety management system(Internal audit) ²⁾	Person	Person	165	196	226
Workers subject to the occupational health and safety management system(Internal audit)	Ratio	%	38	39	47
Workers subject to the occupational health and safety management system(External audit or certification) ³⁾	Person	Person	165	196	226
Workers subject to the occupational health and safety management system(External audit or certification)	Ratio	%	38	39	47
Number of occupational deaths of employees	Person	0	0	0	
Number of recordable work-related injuries of employees	Person	0	1	0	
Ratio of recordable work-related injuries of employees	%	0	0.21	0	
Number of deaths of workers in charge of work and/or workplaces within the organization (excluding employees)	Person	0	0	0	
Site safety inspection(number of inspections per site) ⁴⁾	Inspection	28	9	18	

1) Number of employees + Number of employees in supplier

2) Number of people subject to DSRS evaluation (employees working in Iksan)

3) Number of people subject to ISO (employees working in Iksan)

4) Leadership inspection (once/quarter) + joint inspection by the council (once/quarter *2 (manufacturing + service)) + labor-management joint inspection (once/two months)

Human Resources Development

Classification	Unit	2020	2021	2022
Total number of education participants ¹⁾	Person	408	481	471
Total hours of education	Hour	16,322	13,568	4,053
Education hours per person ²⁾	Hour	40.0	28.2	8.6
Total educational expenses	KRW million	766	924	993
Educational expenses per person ²⁾	KRW million/Person	1.9	1.9	2.1
Educational satisfaction(business benefits/effects of education)	Point	99.0	98.8	88.0
Ratio of regular employees taking the Service Field Training course	%	0	5	2
Ratio of regular employees taking the Junior MBA	%	0	1	1

1) Corrected data based on full-time workers, including technical positions and etc.

2) Corrected average education hours and cost per person data based on full-time workers



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Society Data

Equal Compensation

Classification	Unit	2020	2021	2022	
Average base pay	Executive male	KRW million	219.6	220.4	228
	Executive female	KRW million	0	0	210
Average wage (base pay + incentive)	Executive male	KRW million	330.8	375.1	299
	Executive female	KRW million	0	0	408
Average base pay	Male in management(manager or higher)	KRW million	71.1	74.7	80
	Female in management(manager or higher)	KRW million	72.6	73.9	76
Average wage (base pay + incentive)	Male in management(manager or higher)	KRW million	82.2	89.7	91
	Female in management(manager or higher)	KRW million	80.9	88.1	87
Difference between male and female wages	Male in non-management	KRW million	41.7	50.8	51
	Female in non-management	KRW million	49	53.4	54
Difference between male and female median wage values	Ratio of total employees	%	102	99	95
Difference between male and female median wage values	Ratio of total employees	%	-0.3	20	20

Parental Leave

Classification	Unit	2020	2021	2022	
Number of employees with parental leave rights	Male	Person	94	103	190
	Female	Person	4	5	7
	Total	Person	98	108	197
Number of employees who received parental leave	Male	Person	4	2	1
	Female	Person	0	2	3
	Total	Person	4	4	4
Number of employees who returned after parental leave	Male	Person	2	1	1
	Female	Person	0	0	2
	Total	Person	2	1	3
Number of employees who worked for 12 months or longer after returning from parental leave	Male	Person	0	2	3
	Female	Person	0	0	0
	Total	Person	0	2	3
Work return rate after using parental leave	%	50	25	100	
Ratio of returners who worked for 12 months or longer	%	100	100	100	

Human Rights Management

Classification	Unit	2020	2021	2022	
Number of discrimination and harassment cases	Case	2	2	1	
Total human rights education	Time ¹⁾	Hour	1,116	1,704	1,413
	Total human rights education ²⁾	%	100	100	100
Total number of workplaces that performed human rights reviews or human rights impact evaluations	EA	0	3	3	
Total ratio of workplaces that performed human rights reviews or human rights impact evaluations	%	0	100	100	

1) Based on the Code of Conduct

2) Based on the Code of Conduct (number of office positions completed + number of technical positions at the end of the year) / education target at the end of the year

CSR

Classification	Unit	2020	2021	2022
Ratio of workplaces operating community participation, impact evaluation, or development programs	%	100	100	100
CSR expenditures	KRW million	4	1,076	1,713
Charitable donations(Ratio to total expenditures)	%	0	0	0.1
Investment in community(Ratio to total expenditures)	%	100	7	12.0
Commercial initiatives(public marketing, etc.) (Ratio to total expenditures)	%	0	93	87.9
Donation in cash	KRW million	4	1,076	1,706.4
Employee voluntary activities during working hours (excluding weekends)	KRW million(conversion to the amount of money)	0	0	4.6
Donation in kind: Products and services, projects/partnerships	KRW million(conversion to the amount of money)	0	0	0
CSR project costs	KRW million	0	0	2

Employee Engagement Survey

Classification	Unit	2020	2021	2022	
Ratio of actively engaged employees	%	-	-	75	
Gender	Male	Point	-	-	70
	Female	Point	-	-	63
By position	Manager or higher	Point	-	-	68
	Assistant managers and below	Point	-	-	69
Data scope	%	-	-	75	



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Consolidated Statement of Financial Position

Classification	Unit	2020	2021	2022
Revenue	KRW million	461,839	381,412	312,149
Total revenue	KRW million	50,623	48,202	44,679
Operating income	KRW million	26,033	17,990	7,222
Net income before income taxes	KRW million	18,267	18,630	4,277
Current net income	KRW million	14,190	8,695	3,864
Liabilities	KRW million	277,644	180,667	503,865
Capital	KRW million	512,544	518,188	523,064
Total assets	KRW million	790,188	698,855	1,026,930

Research and Development

Classification	Unit	2020	2021	2022	
Research and development	R&D investment	KRW million	3,923	13,452	11,229
	Percentage to sales ¹⁾	%	0.9	3.6	3.6
	Number of research personnel ²⁾	Person	45	62	21
	Number of development of new products/new technologies ³⁾	Case	1	4	4
Product innovation	Sales ratio of innovative product	%	94	100	100
Total assets	KRW million	790,188	698,855	1,026,930	

1) Total R&D expenses ÷ Sales of the current termx100 2) Excluding 48 of H2I (split in 2022)
 3) Changed to the same criteria as the selection criteria for innovative products (based on products that have generated sales among products developed within the last 5 years).4) Separated from Doosan and established in October 2019, the 5-year sales, including the initial year of selling Doosan Fuel Cell products produced since 2017, were used to calculate the sales of innovative products based on the total sales by year X the ratio of innovative products produced in the year.

Economic Results Distribution

Classification	Unit	2020	2021	2022
Dividends to shareholders(Dividend)	KRW million	0	0	0
Total tax paid to government(Corporate tax)	KRW million	4,076	9,934	3,842
Total amount provided to employees (Labor expense and welfare expense) ¹⁾	KRW million	28,869	37,745	42,330
Amount purchased from suppliers ²⁾	KRW million	243,199	257,467	374,860
Amount invested in the community ³⁾	KRW million	10	1,053	1,680
Expenditures on investors ⁴⁾	KRW million	4,826	5,764	5,649
Total economic results distributed	KRW million	626,662	596,911	428,361

1) Salary + other employee benefits + traveling expenses(commuting expenses)
 2) Amount paid to suppliers excluding intra-affiliate transactions(data for 2020 and 21 were also revised based on the same standard)
 3) Amount of donation 4) Cash flow statement: payment of interest

Confirmed Cases of Corruption and Unfair Trade and Countermeasures

Classification	Unit	2020	2021	2022
Number of corruption cases	Case	0	0	0
Number of workers who have taken training	Person	0	0	0
Violation of fair trading	Case	0	0	0

Notices and Training Relating to Anti-Corruption Policy and Procedure

Classification	Unit	2020	2021	2022	
Number of governance(BOD) members	Person	0	0	5	
Number of governance(BOD) members who have taken anti-corruption training	Person	0	0	0	
Ratio of governance members who have taken training	%	0	0	0	
Number of workers who have taken training(By employment type)	Regular worker	Person	390	466	445
Number of workers who have taken training(By employment type)	Contract worker	Person	0	0	0
Number of workers who have taken training(By employment type)	Total	Person	390	466	445
Ratio of workers who have taken training	Total	%	95.6	96.9	98.5
Ratio of workers who have taken training(By employment type)	Regular worker	%	100	100	98.5
Ratio of workers who have taken training(By employment type)	Contract worker	%	0	0	0
Number of workers who have taken training(Domestic)	Person	390	466	445	
Ratio of workers who have taken training(Domestic)	%	95.6	96.9	98.5	

Ethical Management

Classification	Unit	2020	2021	2022
Ratio of application of employee code of conduct	%	100	100	100
Ratio of signing of code of ethics by employees	%	68	97	100
Ratio of provision of employee code of conduct	%	68	97	98.5



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Policy Expenditures

Classification	Unit	2020	2021	2022
Lobby	KRW million	0	0	0
Political donations	KRW million	0	0	0
Membership costs of related organizations	KRW million	28	295	624

Main Policy-related Expenditures

Classification	Unit	2020	2021	2022
Korea Hydrogen Fuel Cell Industry Association	KRW million	-	-	400
Fuel Cell Industry Promotion Association	KRW million	-	257	157
Hydrogen Convergence Alliance	KRW million	-	10	50
Energy Alliance	KRW million	-	10	0
Energy Future Forum	KRW million	5	5	5
Energy Transition Forum	KRW million	-	8	5
Korea New & Renewable Energy	KRW million	-	5	5
Clean Fuel Ammonia Association	KRW million	-	-	2

IT Infrastructure Accidents

Classification	Unit	2020	2021	2022
Number of IT infrastructure accidents	KRW million	0	0	0
Amount of damage from IT infrastructure accidents	KRW million	0	0	0

Supply Chain Risk Management

Classification	Unit	2020	2021	2022
Total number of suppliers ¹⁾	EA	66	68	105
Number of key suppliers ²⁾	EA	5	13	13
ESuppliers subject to ESG risk evaluation ³⁾	%	-	13	13
High-risk suppliers	%	N/A	1	1

1) Limited to direct material suppliers(2020, 2021 data also modified)

2) Domestic suppliers with more than 1% of material costs

3) Domestic suppliers with more than 1% of material costs

Information Security

Classification	Unit	2020	2021	2022
Number of information security violations	Case	0	0	0
Ratio of information security investment (Compared to total IT costs) ¹⁾	%	-	5.04	6.95

1) Updated with KISA 'Information Security Disclosure General Portal' disclosure data

Composition of the Board of Directors

Classification	Unit	2020	2021	2022	
Board size	Number of inside directors	Person	2	2	2
	Number of outside directors	Person	3	4	3
Board expertise	Director with industry experience	Person	1	1	1
Board diversity	Number of female registered executives ¹⁾	Person	0	0	0

1) Number of female executives who are not controlling shareholders and their relatives

Operation of the Board of Directors

Classification	Unit	2020	2021	2022	
Average attendance rate of board meetings	Total	%	97.5%	95.8%	85.7%
	Inside directors	%	100.0%	93.8%	66.7%
	Number of outside directors	%	95.8%	96.9%	100.0%
Average tenure of directors	Total	year	1.3	2.0	2.5

Board Compensation

Classification	Unit	2020	2021	2022	
Outside director	Base salary	KRW million	198	246	216
	Incentives	KRW million	0	0	0

Stock Voting Rights

Classification	Unit	2020	2021	2022
Number of shares without voting rights	Share	5,432	5,432	12,564
Stock with voting rights	Share	81,838,794	81,838,794	81,831,662



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Classification	Index	Description	Page	
GRI 2 General Disclosures	2-1	Organizational details	7	
	2-2	Entities included in the organization's sustainability reporting	2	
	2-3	Reporting period, frequency and contact point	2	
	2-5	External assurance	96	
	2-6	Activities, value chain and other business relationships	8~12	
	2-7	Employees	86	
	2-9	Governance structure and composition	70~72	
	2-10	Nomination and selection of the highest governance body	70~72	
	2-11	Chair of the highest governance body	70~72	
	2-12	Role of the highest governance body in overseeing the management of impacts	14~15	
	2-13	Delegation of responsibility for managing impacts	14~15	
	2-14	Role of the highest governance body in sustainability reporting	14~15	
	2-15	Conflicts of interest	Business report	
	2-16	Communication of critical concerns	19	
	2-17	Collective knowledge of the highest governance body	14~15	
	2-18	Evaluation of the performance of the highest governance body	21	
	2-19	Remuneration policies	71	
	2-20	Process to determine remuneration	70	
	2-22	Statement on sustainable development strategy	5	
	2-23	Policy commitments	14~16	
	2-24	Embedding policy commitments	14, 81	
	2-25	Processes to remediate negative impacts	-	
	2-26	Mechanisms for seeking advice and raising concerns	44, 68, 84	
	2-27	Compliance with laws and regulations	94	
	2-28	Membership associations	17	
	2-29	Approach to stakeholder engagement	18~19	
	GRI 3 Material Issues	3-1	Process to determine material topics	18~19
		3-2	List of material topics	18~19
		3-3	Management of material topics	18~19



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Classification	Index	Description	Page
GRI 302 Energy	302-1	Energy consumption within the organization	84
GRI 305 Emissions	305-1	Direct GHG emissions	84
	305-2	Indirect GHG emissions	84
GRI 308 Supplier Environmental Assessment	308-2	Negative environmental impacts in the supply chain and actions taken	35~39
GRI 401 Employment	401-1	New employee hires and employee turnover	86
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	58, 87
	401-3	Parental leave	88
GRI 403 Occupational Health and Safety	403-1	Occupational health and safety management system	63~65
	403-2	Hazard identification, risk assessment, and incident investigation	63~65
	403-4	Worker participation, consultation, and communication on occupational health and safety	63~65
	403-5	Worker training on occupational health and safety	63~65
	403-6	Promotion of worker health	63~65
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	63~65
	403-9	Work-related injuries	87
GRI 404 Training and Education	404-1	Average hours of training per year per employee	87
	404-2	Programs for upgrading employee skills and transition assistance programs	55, 56, 87
GRI 414 Supplier Social Assessment	414-2	Assessment of the health and safety impacts of product and service categories	35~39
GRI 416 Customer Health and Safety	416-1	Negative social impacts in the supply chain and actions taken	48



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Topic	Accounting metric	Category	Unit	Code	Page
Energy Management	(1) Total energy consumed	Quantitative	Gigajoules (GJ)	RR-FC-130a.1	84
	(2) percentage grid electricity	Quantitative	Percentage (%)	-	N/A
	(3) percentage renewable	Quantitative	Percentage (%)	-	84
Workforce Health & Safety	(1) Total recordable incident rate (TRIR)	Quantitative	Rate	RR-FC-320a.1	87
	(2) Fatality rate	Quantitative	Rate	-	-
	Description of efforts to assess, monitor, and reduce exposure of workforce to human health hazards	Discussion and Analysis	n/a	RR-FC-320a.2	63~65
Product Efficiency	Average storage capacity of batteries, by product application and technology type	Quantitative	Specific energy (Wh/kg)	RR-FC-410a.1	N/A
	(1) Average energy efficiency of fuel cells as electrical efficiency	Quantitative	Percentage (%)	RR-FC-410a.2	12
	(2) Thermal efficiency, by product application and technology type	Quantitative	Percentage (%)	-	-
	Average storage capacity of batteries, by product application and technology type	Quantitative	Percentage (%)	RR-FC-410a.3	N/A
	Average operating lifetime of fuel cells, by product application and technology type	Quantitative	Hours (h)	RR-FC-410a.4	-
	Average operating lifetime of batteries, by product application and technology type	Quantitative	Number of cycles	RR-FC-410a.5	N/A
Product End-of-life Management	Percentage of products sold that are recyclable or reusable	Quantitative	Percentage by weight (%)	RR-FC-410b.1	-
	Weight of end-of-life material recovered, percentage recycled	Quantitative	Metric tons (t)	RR-FC-410b.2	-
		Quantitative	Percentage (%)	-	-
	Description of approach to manage use, reclamation, and disposal of hazardous materials	Discussion and Analysis	n/a	RR-FC-410b.3	25, 45
Materials Sourcing	Description of the management of risks associated with the use of critical materials	Discussion and Analysis	n/a	RR-FC-440a.1	37

Activity metric	Category	Unit	Code	Page
Number of units sold	Quantitative	Number	RR-FC-000.A	8
Total storage capacity of batteries sold	Quantitative	Megawatts (MW)	RR-FC-000.B	N/A
Total energy production capacity of fuel cells sold	Quantitative	Megawatts (MW)	RR-FC-000.C	8



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In order to fulfill its leading responsibilities related to climate change, Doosan Fuel Cell will promote climate change activities in accordance with the Task Force on Climate-related Financials Disclosures(TCFD). TCFD, launched by the FSB (Financial Stability Board) in December 2015, announced TCFD Guidance 2.0 in July 2020. TCFD, which has a large number of companies from more than 100 countries, is developing as a standard for climate change disclosure. Doosan Fuel Cell intends to transparently disclose the activities under TCFD through this report and ensure reliability and transparency.

TCFD Recommendations	Page
Governance	
a) Describe the board's oversight of climate-related risks and opportunities.	41p
b) Describe management's role in assessing and managing climate-related risks and opportunities.	41p
Strategy	
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	41p
b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	41p
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	-
Risk Management	
a) Describe the organization's processes for identifying and assessing climate-related risks.	42p
b) Describe the organization's processes for managing climate-related risks.	42p
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	42p
Metrics and Targets	
a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	42p
b) Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.	42p
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	42p



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Name of Organization

Fuel Cell Industry Promotion Association

Hydrogen Convergence Alliance

Korea New & Renewable Energy

Energy Future Forum

Energy Transition Forum

Energy Alliance

Clean Ammonia Council

Iksan Chamber of Commerce and Industry

Korea Project Management Association

Korea Listed Companies Association

Korea Investor Relations Service

Korea Plant Industries Association

Korea Industrial Technology Association

Korea Industrial Safety Association

UN Global Compact



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Third-party Assurance Statement

To the Management of DOOSAN FUEL CELL

We have undertaken a limited assurance engagement in respect of the selected sustainability information(the 'Identified Sustainability Information') in the DOOSAN FUEL CELL's Sustainability Report for the year ended 31 December 2022 and the first half of 2023('the Sustainability Report') listed below.

Identified Sustainability Information

The Identified Sustainability Information included in the DOOSAN FUEL CELL's Sustainability Report for the year ended 31 December 2022 and the first half of 2023 is summarized below:

- Global Reporting Initiative(GRI) Standards 2021 Index' stated on pages 80 ~ 90
- ESG DATA' within the 'ESG FACT BOOK' heading on pages 82 ~ 88
- Sustainability Accounting Standards Board(SASB)' heading on pages 91

Our assurance was with respect to the year ended 31 December 2022 and the first half of 2023 information only and we have not performed any procedures with respect to earlier periods or any other elements included in the Sustainability Report and, therefore, do not express any conclusion thereon.

Criteria

The criteria used by DOOSAN FUEL CELL to prepare the Identified Sustainability Information on 'GRI Standards 2021 and 'Sustainability Accounting Standard Board(SASB)' and' TCFD(Force on Climate-related Financial Disclosures)(the 'Criteria').

DOOSAN FUEL CELL's Responsibility for the Identified Sustainability Information

DOOSAN FUEL CELL is responsible for the preparation of the Identified Sustainability Information in accordance with the Criteria. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation of Identified Sustainability Information that is free from material misstatement, whether due to fraud or error.

Inherent Limitations

The absence of a significant body of established practice on which to draw to evaluate and measure non-financial information allows for different, but acceptable, measures and measurement techniques and can affect comparability

Our Independence and Quality Control

We have complied with the ethical requirements of the Republic of Korea, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. Our firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Identified Sustainability Information based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with International Standard on Assurance Engagements 3000 (Revised), Assurance Engagements other than Audits or Reviews of Historical Financial Information issued by the International Auditing and Assurance Standards Board. These standards require that we plan and perform this engagement to obtain limited assurance about whether the Identified Sustainability Information is free from material misstatement.

A limited assurance engagement involves assessing the suitability in the circumstances of DOOSAN FUEL CELL's use of the Criteria as the basis for the preparation of the Identified Sustainability Information, assessing the risks of material misstatement of the Identified Sustainability Information whether due to fraud or error, responding to the assessed risks as necessary in the circumstances, and evaluating the overall presentation of the Identified Sustainability Information. A limited assurance engagement is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks.

Given the circumstances of the engagement, in performing the procedures listed above we:

- Interview with the personnel responsible for internal reporting and data collection regarding DOOSAN FUEL CELL's Identified Sustainability Information to understand their approaches to managing material issues
- Understand the systems and processes in place for managing and reporting the Identified Sustainability Information of DOOSAN FUEL CELL's Seoul office
- Review documents relevant to output from the risk assessment process, sustainability-related policies and standards, materiality assessment, engagement activities of the stakeholders and others
- Perform inquiries and analytical reviews on the Identified Sustainability Information

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable assurance engagement. Accordingly, we do not express a reasonable assurance opinion about whether DOOSAN FUEL CELL's identified Sustainability Information has been prepared, in all material respects, in accordance with the Criteria.

Limited Assurance Conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that DOOSAN FUEL CELL's Identified Sustainability Information the year ended 31 December 2022 and the first half of 2023 is not prepared, in all material respects, in accordance with the Criteria.

Restricted Use

This Report is prepared solely for the management of DOOSAN FUEL CELL to assist in obtaining understanding of DOOSAN FUEL CELL's sustainable management performance and activities. Accordingly, we accept no liability or responsibility to any third party, other than DOOSAN FUEL CELL and its management, who gains access to this report.

28 June 2023



WITH Accounting Corporation
Seoul, Korea
YoungSuk Lee, Chief Executive Officer



This assurance report is valid as of the assurance report date (23 June 2023). This may result in events or situations that may have a significant impact on the company's web report between the date of the assurance report and the time it is viewed, which may result in modification of the verification report.



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GHG Verification Statement

Verification Target

Korean Foundation for Quality(hereinafter "KFQ") has conducted the verification of "2022 Report on Quantity of emitted Greenhouse gas Consumption(hereinafter 'Inventory Report") for domestic business worksites of Doosan Fuel Cell co., Ltd.(hereinafter "Doosan Fuel Cell")

※ Domestic business worksites: the headquarters of Doosan Fuel Cell in Iksan, the Seoul office, and the R&D Center in Gwanggyo

Verification Scope

KFQ's verification was focused on all the facilities which emitted the greenhouse gas(scope1,2) during the year of 2022 under Doosan Fuel Cell's operational control and or ganizational boundary.

Verification Criteria

The verification process was based on 'Rule for emission reporting and certification of greenhouse gas emission trading Scheme(Notification No. 2021-112 of Ministry of Environment)', 'Rules for verification of operating the greenhouse gas emission trading scheme(Notification No. 2021-278 of Ministry of Environment)' and 'ISO14064-3' for every applicable part.

Level of Assurance

The Verification has been planned and conducted as the 'Rules for verification of operating the greenhouse gas emission trading scheme', and the level of assurance for verification shall be satisfied as reasonable level of assurance. And it confirmed through the internal review whether the process before the verification conducted effectively.

Verification Limitation

The verification shall contain the potential inherent limitation in the process of application of the verification criteria and methodology.

Verification Opinions

Regarding to the data of the Greenhouse Gas Emission Consumption from the report through the verification, KFQ provides our verification opinions as below;

- 1) The Inventory Report has been stated in accordance with 'Rule for emission reporting and certification of greenhouse gas emission trading Scheme'
- 2) The data and information used in calculating the Greenhouse Gas emission were appropriate, reasonable, and no significant errors or omissions could affect verification statement were not found;
- 3) Thus, KFQ conclude that the Greenhouse Gas Emissions of Doosan Fuel Cell in 2022 is correctly calculated and stated in accordance with 'Rule for emission reporting and certification of greenhouse gas emission trading Scheme'.

※ Appendix A. Summary of GHG Emission Results

June 12th 2023

Ji Young Song

CEO Ji-Young Song
Korean Foundation for Quality

Appendix A. Summary of GHG Emission Results

Organization

Doosan Fuel Cell co., Ltd.

Emission calculation period

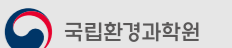
The emission data collection period is from January 1 to December 31, 2022.

Emission calculation results

tCO₂e_q

Corporate	Business	Scope1	Scope2	Total Emissions (scope1+2)
Doosan Fuel Cell	Iksan Factory	1,145.955	4,823.415	5,969
	Seoul office	121.803	109.638	231
	Gwanggyo R&D center	0	92.767	93
Total		1,267.757	5,025.820	6,293 ¹⁾

Note1) The above GHG emissions are cut in units of integer for each business and a difference of less than ±1 tCO₂-eq from the actual value of the system may occur.



DOOSAN

www.doosanfuelcell.com