

Underwriting Survey Report

May , 2025

Insured: Gyeonggi Green Energy Co., Ltd

Headquater address: # 77 Barangongdan-ro 3-gil, Hyangnam-eup, Hwaseong-si, Gyeonggi-do,
s.korea

The surveyed address: # 77 Barangongdan-ro 3-gil, Hyangnam-eup, Hwaseong-si, Gyeonggi-do,
s.korea

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Disclaimers

This report does not indicate that all possible hazards have been identified, or no other harzards exist. We does not make any warranty concerning the contents of this report or disclaims, whatsoever, for any errors or omissions in the information given or the consequences of reliance thereon. Any advice contained herein is solely for the assisting the insured regarding loss control and safety

Introduction

Surveyed Place name: Gyeonggi Green Energy Co., Ltd

Policy Period: 20250628~

Main Business: hydrogen fuel cell power plant

Company Introduction

Gyeonggi Green Energy Co., Ltd. is a company that operates a fuel cell power plant and sells hot water through power generation and waste heat recovery.

Recent Changes

none

Future Plan

none

General Information

Participants:

Department:

Management Office

Job title:

Manager

Name:

Hyuck-Jin Kwon

Establishment Year:

2011

Year of business start in this site:

2013

Sales Revenue:

61

Billion won

Ownership:

Owner Occupied

Raw Materials:

LNG, catalyst

Main Products:

electricity and heat

Number of Employees:

11

(for this site)

Work Hour:

Hours/day:

12 hours

Days/week:

5 days

Security Guards:

Guard's work hour:

All days

Number of guards:

0

Security System:

Unmanned security system CCTV

Loss Exposure Summary

Construction:	<input type="radio"/> Excellent	<input type="radio"/> Good	<input checked="" type="radio"/> Average	<input type="radio"/> Poor	<input type="radio"/> Very poor
Occupation Risk:	<input type="radio"/> Very low	<input checked="" type="radio"/> Low	<input type="radio"/> Moderate	<input type="radio"/> High	<input type="radio"/> Very high
Fire Protection:	<input type="radio"/> Excellent	<input type="radio"/> Good	<input checked="" type="radio"/> Average	<input type="radio"/> Poor	<input type="radio"/> Very poor
Surrounding Exposures:	<input type="radio"/> Very low	<input type="radio"/> Low	<input type="radio"/> Moderate	<input checked="" type="radio"/> High	<input type="radio"/> Very high
Maintenance:	<input type="radio"/> Excellent	<input type="radio"/> Good	<input type="radio"/> Average	<input checked="" type="radio"/> Poor	<input type="radio"/> Very poor
Business interruption:	<input type="radio"/> Very low	<input type="radio"/> Low	<input checked="" type="radio"/> Moderate	<input type="radio"/> High	<input type="radio"/> Very High
Machinery Breakdown:	<input type="radio"/> Very low	<input type="radio"/> Low	<input checked="" type="radio"/> Moderate	<input type="radio"/> High	<input type="radio"/> Very high
Natural Hazard:	<input type="radio"/> Very low	<input type="radio"/> Low	<input checked="" type="radio"/> Moderate	<input type="radio"/> High	<input type="radio"/> Very high
Theft Risk:	<input checked="" type="radio"/> Very low	<input type="radio"/> Low	<input type="radio"/> Moderate	<input type="radio"/> High	<input type="radio"/> Very high
Liability Risk:	<input type="radio"/> Very low	<input type="radio"/> Low	<input checked="" type="radio"/> Moderate	<input type="radio"/> High	<input type="radio"/> Very high
Moral Risk:	<input type="radio"/> Very low	<input type="radio"/> Low	<input checked="" type="radio"/> Moderate	<input type="radio"/> High	<input type="radio"/> Very high
Others (PL, Environment, etc):	<input type="radio"/> Very low	<input checked="" type="radio"/> Low	<input type="radio"/> Moderate	<input type="radio"/> High	<input type="radio"/> Very High
Probable Maximum Loss	Ratio	60.0 %	Amount(Won)	239,160,904,854	
Estimated Maximum Loss	Ratio	45.51 %	Amount(Won)	181,391,588,287	

Insurance Value

		Current Sum Insured (Won)	Insurable Value (Won)
I. PAR	Building	4,863,630,253	4,863,630,253
	Structure	39,013,271,910	39,013,271,910
	Facilities	-	-
	Machinery	354,469,141,314	354,469,141,314
	Equipment	-	-
	Fixture & Furniture	255,464,613	255,464,613
	Vehicle	-	-
	Inventory	-	-
	Others	-	-
	Total Sum	398,601,508,090	398,601,508,090
Calculation base for insurable value		Provided from insured	
II. MB	Insuring (Yes/No)	Yes	267,533,753,746
III-1. BI	Insuring (Yes/No)	No	22,266,500,000
III-2. MLOP	Insuring (Yes/No)	No	-
IV. GL	Insuring (Yes/No)	No	-
V. PL	Insuring (Yes/No)	No	-

Supplemental Narratives about Insurance cost

Insured value is Replacement cost evaluated by DB Insurance in 2025

Surrounding Exposures

Site Location: Ground level compared to the surrounding
 Site Area(m²): latitude: longitude:

Distance to neighbor

East:	<input type="text" value="Below 5m"/>	Occupation:	<input type="text" value="other factory"/>
West:	<input type="text" value="Below 5m"/>	Occupation:	<input type="text" value="other factory"/>
South:	<input type="text" value="10 ~ 15m"/>	Occupation:	<input type="text" value="rice field"/>
North:	<input type="text" value="15 ~ 25m"/>	Occupation:	<input type="text" value="rice field"/>

The distance to

Sea: River, Stream: Mountain:

Natural Hazard (1/2)

Basement: Total floor area of basement Ratio
 Ground State: Flood zone (Yes/No)
 Land subsidence / Uneven settlement:

Additional checklist fo natural hazard

	Yes / No
☉ The retaining wall may be collapsed due to heavy rain because the site lo located on sloped geomorphic surface	<input type="text" value="No"/>
☉ There is a "Tidal wave risk" in case of the rain with storm at high tide because this site is nearby the sea.	<input type="text" value="No"/>
☉ There is a "Strong wind risk" because most of buildings are too old.	<input type="text" value="No"/>
☉ There is a "Flooding risk" due to lack of draining system such as drain pump.	<input type="text" value="No"/>
☉ There is a "Earthquake risk" because of many cracks on the wall of most buildings.	<input type="text" value="No"/>

Supplemental Narratives about natural hazard

[Flood]

The site is located somewhat close to the dried stream , and there is no history of water damage such as a flood of waves, and the risk of water damage is not high , so theres low risk of floodingwell also equipped with a drainage way. Accordingly, there was no flood damage at the site. The exposure of flood is low to medium

< Windstorm (Typhoon) >

Generally typhoon comes from south to north east passing Korean Peninsula. Accordingly, it strength will be weakened arriving this region. The exposure of windstorm is low to medium.

< Snowfall & low temperature >

According to the regional climate characteristics, heavy snowfall is not happened nearly. it goes down to minus 15 centigrade maximum in winter. there is a lot of damage caused by wet snow, and the risk is somewhat high because there are some tent warehouses in the area. So exposure of windstorm is medium

According to the Munich Re's "World Map of Natural Hazard" there is a low exposure to earthquakes. The area is categorized as earthquake Zone 1.

< Lightning >

Electrical storms are not experienced in this area. Buildings, Structures and Storage Tanks are equipped with lightning conductors or grounding facilities, installed according to regulations.

Natural Hazard (2/2)

Nearest weather station:

Suwon

Weather station

Analysis of Natural Hazard

Heavy Rain Hazard

Max. of 1hr rainfall amount (mm/hr):

92.50

Hazard grade:

C

S class: Since 1973, Regional Max. of 1hr rainfall amount is 70mm/hr or less

A class: Since 1973, Regional Max. of 1hr rainfall amount is 70~80mm/hr

B class: Since 1973, Regional Max. of 1hr rainfall amount is 80~90mm/hr

C class: Since 1973, Regional Max. of 1hr rainfall amount is 90~100mm/hr

D class: Since 1973, Regional Max. of 1hr rainfall amount is 100mm or more

Strong Wind Hazard

Max. wind speed (m/s):

26.00

Hazard grade:

S

S class: Since 1973, Regional Max. wind speed is 30m/s or less in non typhoon season

A class: Since 1973, Regional Max. wind speed is 30~40m/s in non typhoon season

B class: Since 1973, Regional Max. wind speed is 40~50m/s in non typhoon season

C class: Since 1973, Regional Max. wind speed is 50~60m/s in non typhoon season

D class: Since 1973, Regional Max. wind speed is 60m/s or more in non typhoon season

Typhoon Hazard

Max. wind speed (m/s):

30.50

Hazard grade:

A

S class: Since 1973, Regional Max. wind speed is 30m/s or less in typhoon season

A class: Since 1973, Regional Max. wind speed is 30~40m/s in typhoon season

B class: Since 1973, Regional Max. wind speed is 40~50m/s in typhoon season

C class: Since 1973, Regional Max. wind speed is 50~60m/s in typhoon season

D class: Since 1973, Regional Max. wind speed is 60m/s or more in typhoon season

Snowfall Hazard

The severest snowfall (cm):

28.30

Hazard grade:

S

S class: Since 1973, Regional Max. snowfall is 50cm or less

A class: Since 1973, Regional Max. snowfall is 50~80cm

B class: Since 1973, Regional Max. snowfall is 80~100cm

C class: Since 1973, Regional Max. snowfall is 100~120cm

D class: Since 1973, Regional Max. snowfall is 120cm or more

Earthquake Hazard

Magnitude (Expectation):

3.09

Hazard grade:

B

(1~1.9): Micro earthquakes, not felt, or felt rarely. Recorded by seismographs

(2~2.9): Felt slightly by some people. No damage to buildings

(3.0~3.9): Often felt by people, but rarely causes damage. Shaking of indoor objects can be noticeable.

(4.0~4.9): Noticeable shaking of indoor objects and rattling noises. Felt by most people in the affected area. Slightly felt outside. Generally causes none to minimal damage. Moderate to significant damage very unlikely. Some objects may fall off shelves or be knocked over.

(5.0~5.9): Can cause damage of varying severity to poorly constructed buildings. At most, none to slight damage to all other buildings. Felt by everyone.

(6.0~6.9): Damage to a moderate number of well-built structures in populated areas. Earthquake-resistance structures survive with slight to moderate damage. Felt in wider areas up to hundreds of miles/kilometers from the epicenter. Strong to violent shaking epicentral area.

(7.0~6.9): Causes damage to most buildings, some to partially or completely collapse or receive severe damage. Well-designed structures are likely to receive damage. Felt great distances with major damage mostly limited to 250km from epicenter.

Construction Risk

Total Floor Area: 6,258.76 m²

The Information of Buildings

No.	Building Name	YR Built	Story	Building Structure			Class	TOP RISK	Floor Area(m ²)
				Column	Roof	Ex. Wall			
1	Mahcine room	2009	0/2	STL	SPOST	SP	Class 3	O	2,475.19
2	electric room	2013	1/1	RC	Slab	BR	Class 1	O	654.19

Abbreviations:

RC: Reinforced Concrete / SRC: Steel framed Reinforced Concrete / PC: Precast concrete
MBS: Masonary Brick Structure / STL: Steel structure / FR STL: Fire Resistance Steel structure
BL: Block / BR: Bick / SP: Sandwich Panel / FR SP: Fire Resistance Panel
EPS: Expanded Plystylene foam Sandwich Panel
SL: Slate / CS: Colored Steel Sheet / SPOST: Sandwich Panel On Steel Truss
Class 1: Fire resistance building / Class 2: Noncombustible building / Class 3: Combustible building(Steel, Panel)
Class 4: Combustible building(Wooden, Tent, Vinyl)

Main building Year Built: 2009

The ground height is Similar than its neighboring land.

Ratio of construction classification in entire buildings:

Class 1: 10.4 %

Class 2: 0.0 %

Class 3: 39.5 %

Class 4: 0.0 %

Top Risk Zone

Area: 3,129.38 m²

Ratio: 50.00 %

Supplemental Narratives about construction risk:

A total of 2 buildings with a floor area of 3,129.38m2 It consists of one machine room and electric room. Machine is used for office area and machine room area and constructed with steel-frame panel exterior walls, electric room is constructed with reinforced concrete.

Occupancy Risk

Raw Materials:

LNG, catalyst

Main Products:

electricity and heat

Use of Hazardous Material

Combustible gas / Explosion proof

Use combustible gas, and explosion proof is applied

Flammable liquid / Explosion proof

There is no flammable liquid in any process line

Combustible dust / Explosion proof

There is no combustible dust in any process line

Handling Hazardous Materials (Grade):

Normal material

Process Flow or Operation Status

Melt carbonate fuel cell power generation process can be largely divided into three stages: fuel preparation, reaction, and power generation. First, fuel is prepared, then fuel and oxygen are mixed to react, and finally, power is generated using the generated current. Melt carbonate fuel cells operate at high temperatures (550°C to 650°C) and use molten carbonate as an electrolyte.

1. Fuel preparation:

Fuel (usually city gas) is put into the fuel reforming unit, and hydrogen gas is produced. The generated hydrogen gas is supplied to the anode.

2. Reaction:

Hydrogen gas and molten carbonate react at the anode to form electrons. Oxygen reacts with hydrogen ions at the anode to form electrons. This reaction creates electrons and current flows through an external circuit.

3. Power generation:

Electric power is generated by current flowing through an external circuit connected to the electrode.

Supplies the generated power to the outside world.

Molten carbonate fuel cells also generate heat due to high-temperature operation. They can be used for purposes such as heating and hot water supply using this heat

Operating temperature of main process:

650

°C

Existence of process above 1MPa For piping or Tank (Vessel, drum, column):

No

Elapsed year of main facilities installation:

10~20 years

Ratio of imported manufacturing machine:

30~70 %

production reduction ratio after bottleneck breakdown (failure, malfunction)

10~40%

Additional Check/Strongly out of focus

Supplemental Narratives about Process or Operation Status:

* It operates a total of 21 power generation modules. Six of them are in operation rest for replacement and are generating 15 units. Total power generation capacity is 58.8 MW (2.8 MW × 21) / Melt Carbonate Fuel Cell (MCFC)

*The heat generated from the chimney of each power generation module is generated through the heat exchanger. It goes through the Husses water pipe to make hot water and that hot water is recovered back to Husses

Harzard of utility facility

Worksite Conditions

No dust, Well ventilation, low humidity

Replacement year of electricity facilities (More than 70%):

10~15 years

Contracted demand (power):

1400 kW

Peak demand (%)

50~80%

Existence of earth leakage breaker on main distributing board:

Yes

Boiler (industrial use)

There is no boiler

Dust collector

There is no dust collector

Supplemental Narratives about utility

Electrical supply to the site is from the national grid, which is owned and operated by the Korean Electrical Power Company (KEPCO), via one 13.8kV from generation system and contract power is 1,400kVA.

- transformers (1,000 *1set, 400 *1 set)

Fire protection system

No.	Building name	Fire protection system		
		Fire Alarm (detector)	Automatic active system	Hydrant
1	Mahcine room	O	X	O
2	electric room	O	X	O

Width of main access road (m):

12

Arrival time for fire station:

5~10 minutes

Existence of fire brigade:

Yes

Maintenance:

engineer dispatched and managed

Fire drill/fire prevention education:

Drill:

properly consist

Education:

properly scheduled

Supplemental Narratives about Fire Protection System

Fire detectors(smoke, heat) and indoor fire hydrants are installed in production-building, and other small buildings are equipped with fire extinguishers. Fire alram panel is located in control room

Maintenance

Maintenance & Housekeeping

Cleaning condition is good and there is no dust around process area, electric facilities, ceiling and floors

Designed location for welding-work

There are some welding work but there is no particular welding zone

Smoking regulation

Smoking is strictly prohibited in the site and only permitted designated smoking zone

Application of PSM (Process Safety Management)

Grade M plus

Safety Operation Procedure

written and well kept

Safety work permit system

written and well kept

Emergency Action Plan

plan and fulfilled

Supplemental Narratives about Maintenance

The LTAS contract for power generation facilities is operated by signing with the US FCE from May to May 2023

Loss record

Fire Accidents during the last 5 years

Number of Fire accidents

0

Loss amount (Million Won)

0

Recurrence of same fire accident (Yes/No)

No

Natural Disaster during the last 5 years

Number of Natural disaster

0

Loss amount (Million Won)

0

Recurrence of same Natural disaster (Yes/No):

No

Supplemental Narratives about Loss Record

none for 5-yaers (in this site)

Post-accident Measures

n/a

PML & EML

PML:

PML(%)

60.0 %

Definition of Probable Maximum Loss (PML)

PML for fire loss is understood as the probable (not possible) maximum loss, i.e. the maximum loss that might be expected to occur as a result of a single loss event, taking into consideration all the circumstances of the risk.

Supplemental Narratives about PML

If the fire explosion accident of the generator module is set as a scenario due to the leakage of hydrogen gas from the power generation facility, the spread of damage caused by the fire explosion spreads to same block of the module, spreading the flame to the power generation facility and the surrounding buildings

EML:

EML(%)

45.51 %

Definition of Estimated Maximum Loss (EML)

As used herein, EML for property loss is defined as follows:

This considers the largest loss that could result from a single incident in the building. It assumes that active protection and the passive protection facilities, such as spacing and fireproofing, are effective.

Supplemental Narratives about EML

There are no sprinkler system is installed in process shop, so EML reduction effect is not efficient

Photograph 1



view of site



view of site



view of module



view of module

Photograph 2



transformers



transformer



lay-out



regulator



LNG governor chamber



flame detector



generation modules



nitrogen tanks

Photograph 3



control room



electric room



fire pumps



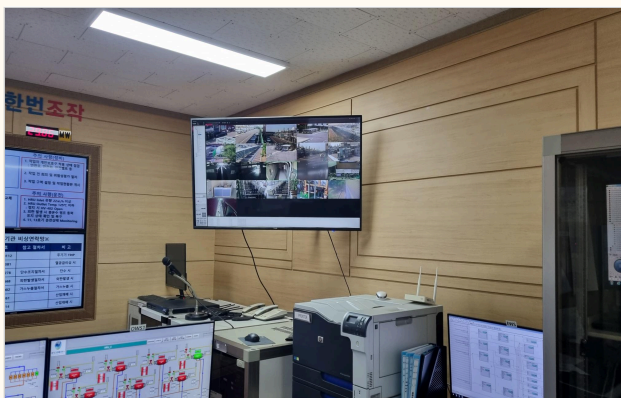
fire alarm receiver



gaseous fire-extinguishing agent bottles



indoor hydrant



cctv monitor



machine room