

# The 135-Day Miracle

Climate Risk Resilience in Steelmaking

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# 01

## The Dawn of the Crisis

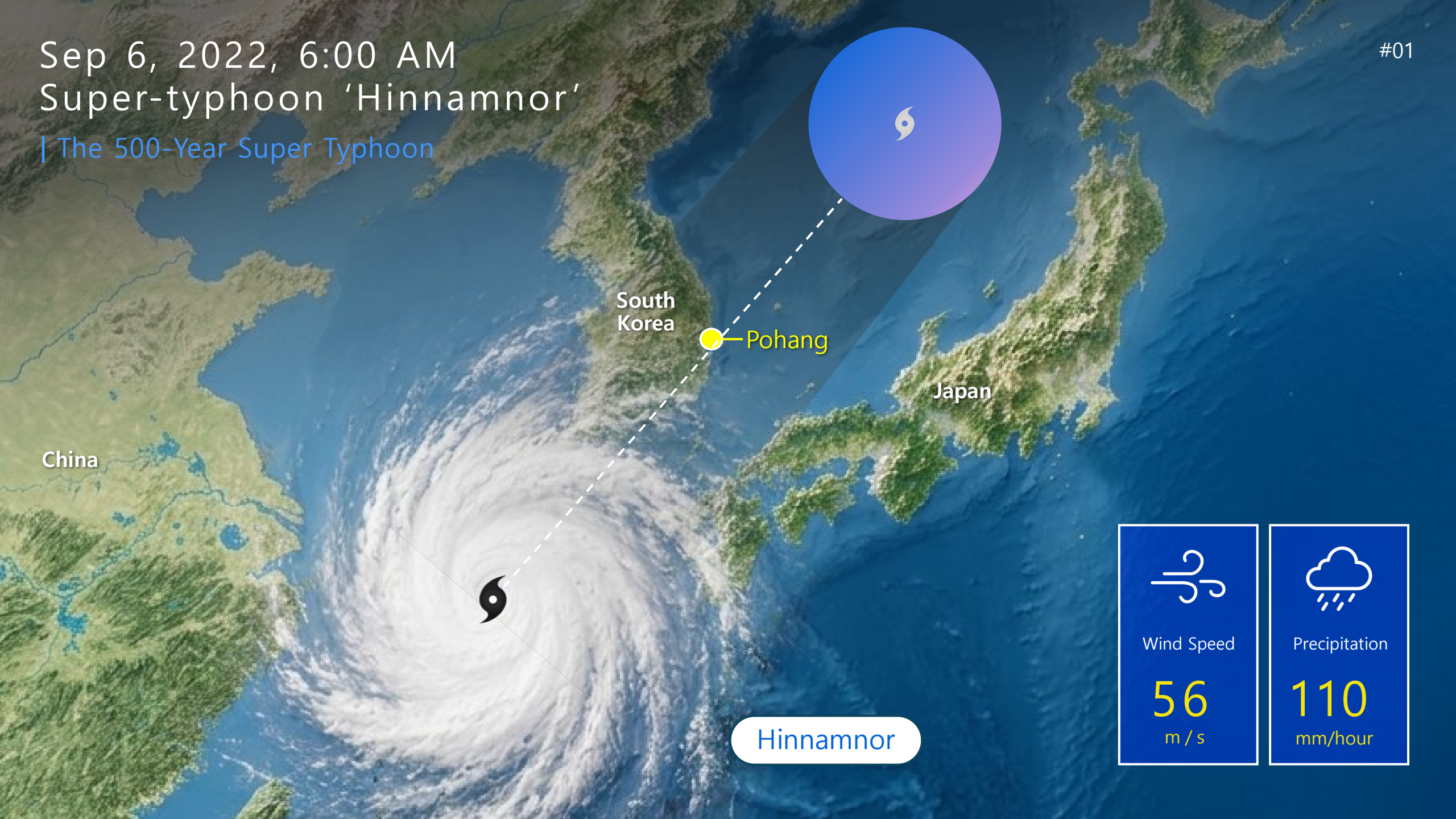
- 1) Super-typhoon 'Hinnamnor'
- 2) The Masterstroke



Sep 6, 2022, 6:00 AM  
Super-typhoon 'Hinnamnor'

| The 500-Year Super Typhoon

#01



South  
Korea

Pohang

Japan

China

Hinnamnor



Wind Speed

56  
m / s



Precipitation

110  
mm/hour



For the first time in our 54-year history  
All plants were powered off at Pohang Works

# The Masterstroke

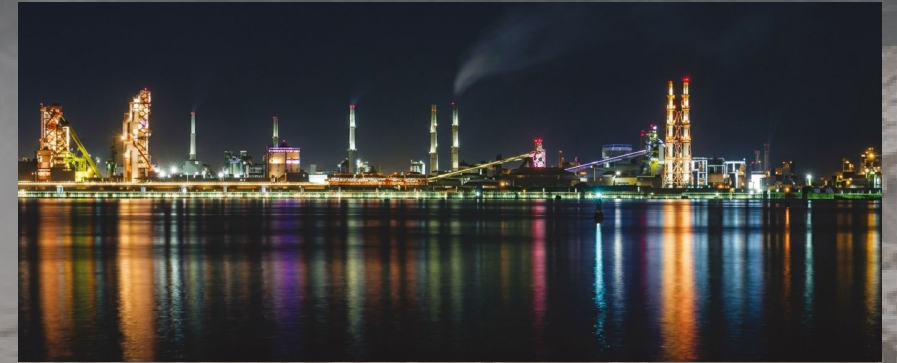
# Force Majeure

September 6, 6:00 AM

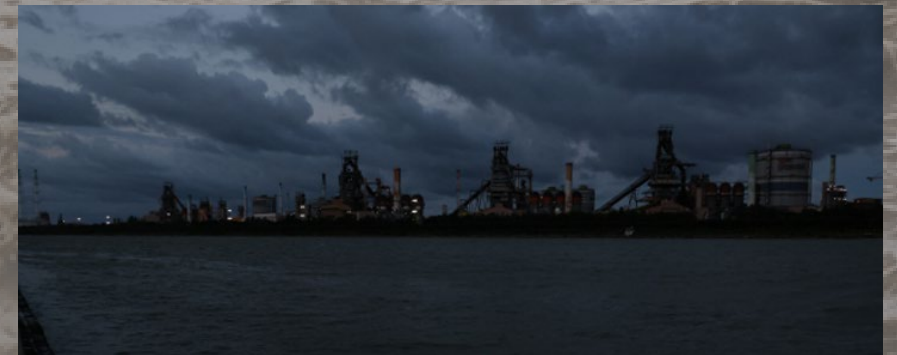
**! Reservoir Gates Opened**

Muddy Water Flash Flooded

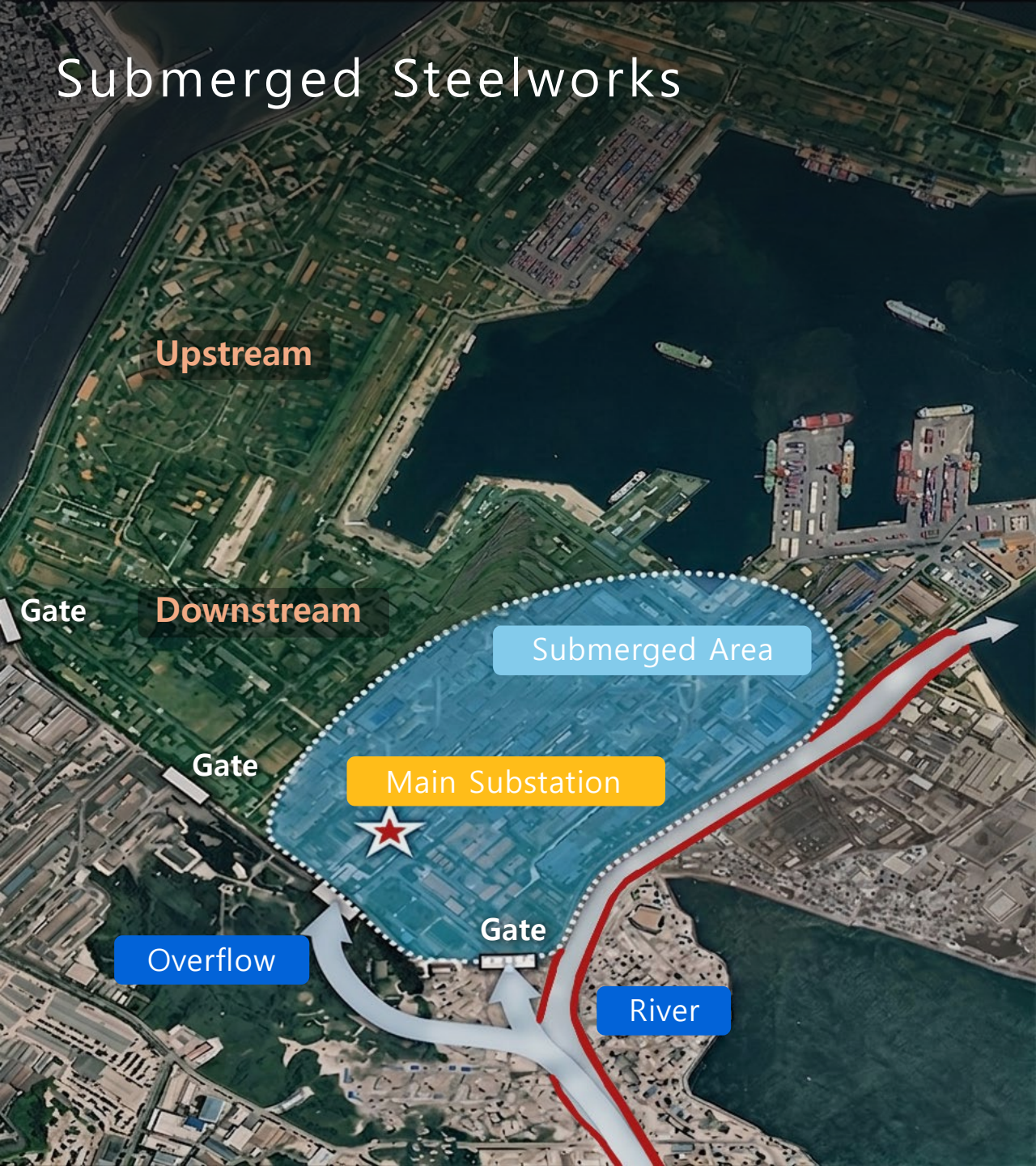
The Calm Before the Storm



Unstoppable Super-disaster



# Submerged Steelworks



## ! One-third under water



Inundated Area  
Soccer field  
**470**



Water Level  
**2.1 m**



Flood Damage  
**36** Factories  
**118** Line



Submerged Products  
**1M** tons





**24**  
NEWS

Source Pohang MBC

**UP TO 505mm OF RAIN FLOODED POHANG**

But,  
**ZERO** Casualty  
**ZERO** Explosion

HOW?



All plants  
shut down



Power  
Switched off

# 02

## Road to Recovery

- 3) The 6-Day Critical Deadline
- 4) The 135-Day Miracle



# Upsteam Recovery

| The 6-Day Critical Deadline

## Utilities



Electricity



Water



Gas



Steam

By Day 6






# Downstream Recovery


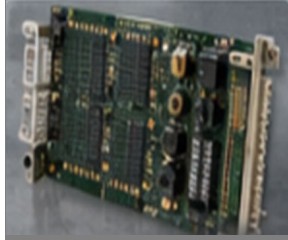
| Battle Against the Mud and Long Lead Time

Lead Time : **Over 1 year**

**!** Underground Culvert  
Submerged

 Length <b>68km</b>	 Width <b>10m</b>	 Depth <b>3~10m</b>	 <b>300K</b> tons
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Drive	Motor	Rolling Mill
		

Main Parts		
		
Drive Panel	PLC Card	I/O Card

## Drainage & Cleaning

In total, 1.4 million people participated over 30 days to drain the plant of the floodwater.

Employees



Personal EVs  
power the pumps

Local residents



Local community  
volunteers

Government



Reverse operation  
to pump water out

Military



First Marine Division  
is deployed

## Equipment Sourcing

Torpedo ladle cars offered by a local competitor.  
High-capacity pumps offered by key shipbuilders.

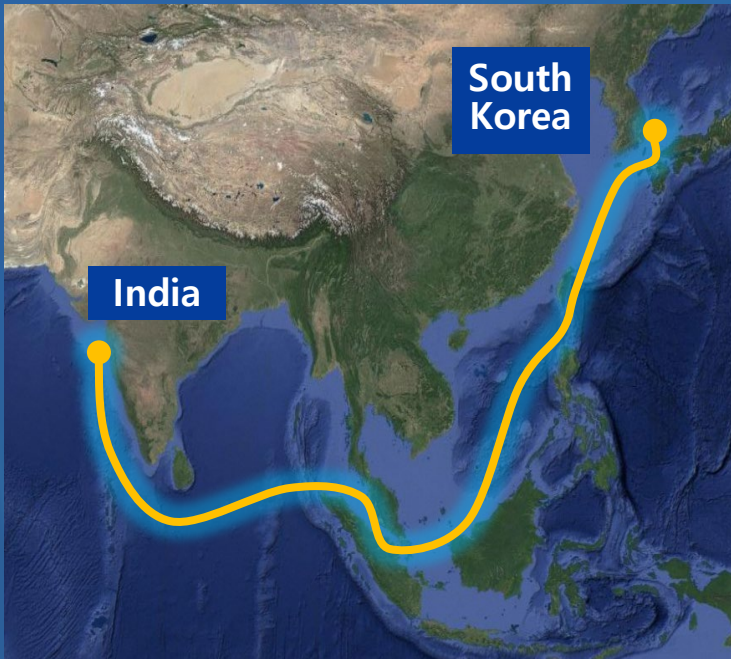
### Local Network



## Lead Time for Parts Replacement

By the generous support of our partner, JSW lead time was reduced from 1 year to 3 months.

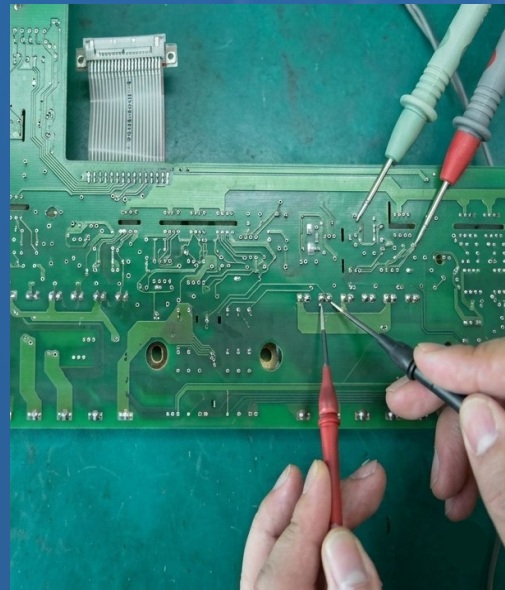
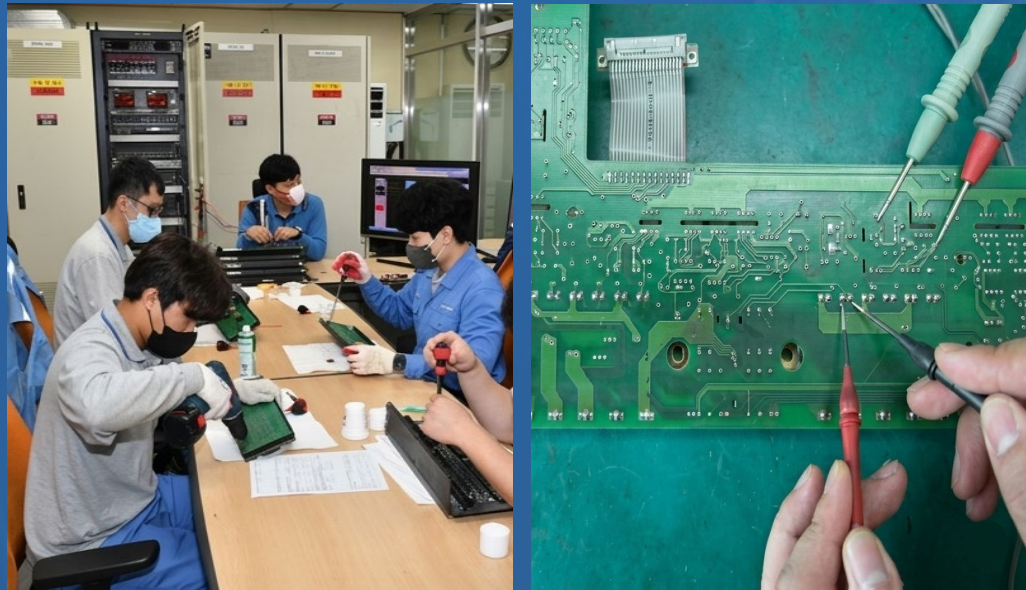
### Global Network



## Repair Work

Submerged electrical and electronic machines were repaired on-site.

Electronic parts



Motor



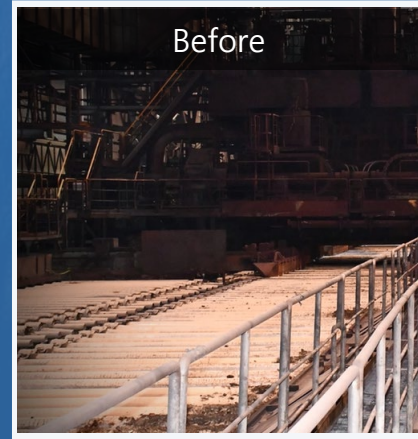
# Partnership + Ownership

135 Days to resume full operations

Hot Rolling Mill



Plate Mill



# 03

## Forging the Future

- 5) Structural Fortification
- 6) Systemic Resilience



# Triple-defense system



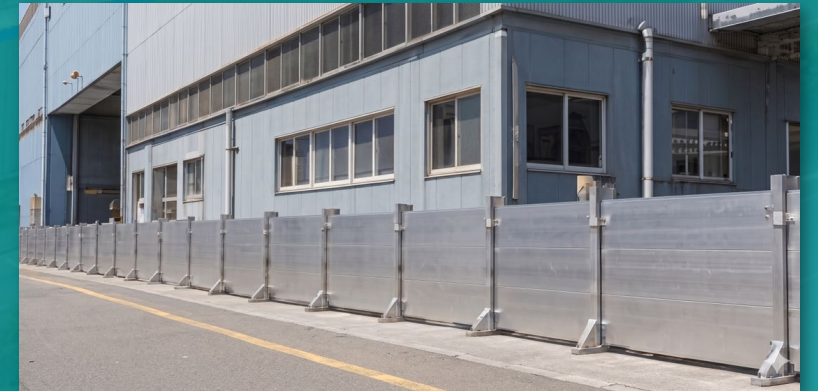
① Flood wall (3.6km-long, 2m-high)



③ Flood gates at plant entrance



② Flood barriers at all substations



## 35% Enhanced drainage

5 new pumping stations

36 drainage channels

250 high-capacity drainage pumps



## Self-generated power

Dualized power and gas lines

10MW starting generators



Insurance

35% total damage  
cost recovery

Business  
Continuity Plan  
(\*B.C.P)

Standard Manual

Super-Disaster Protocol  
+ Dual-Production System

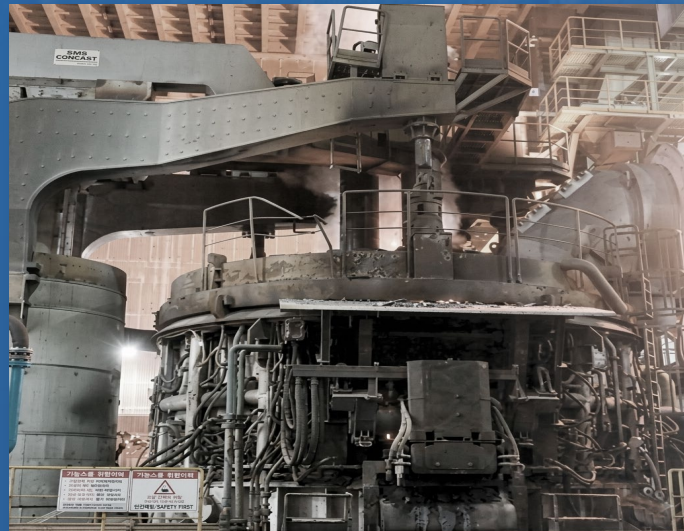
# ESG Management

## 2050 Carbon Neutrality

HyREX Plant



Electronic Furnace



## Community

Local Volunteering



# SUSTAINABILITY

