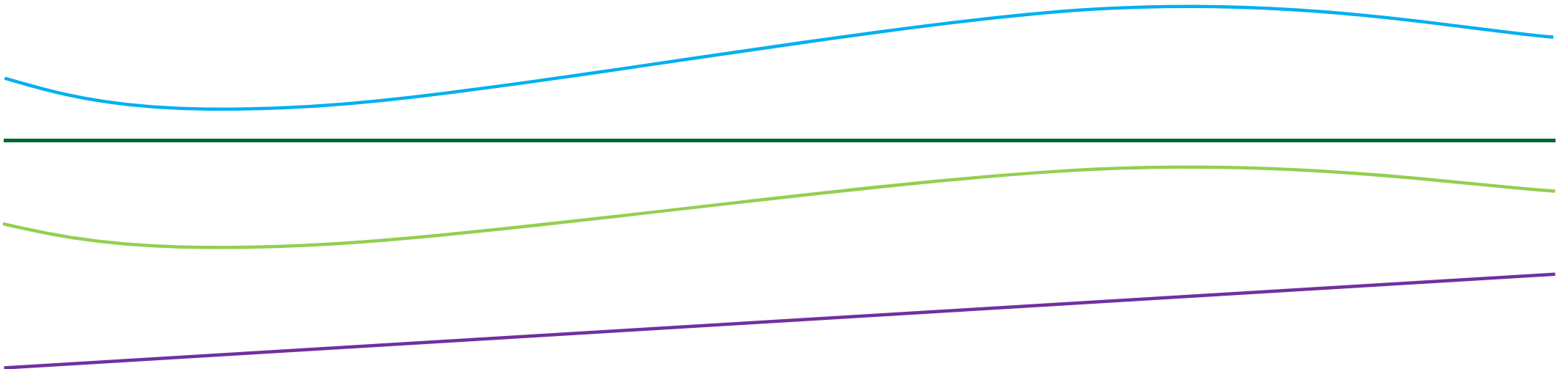


Global Leader in Green Business

KC Cottrell



# **The Clean Air Company** **Global Leader in the Environmental Industry**

A company safeguards the natural beauty of our planet

A company protects future dreams

KC Cottrell prepares for the future, with a firm commitment to the environment

# Contents

1. Company Introduction
2. Affiliated Companies



# 1<sup>-1</sup> Company profile

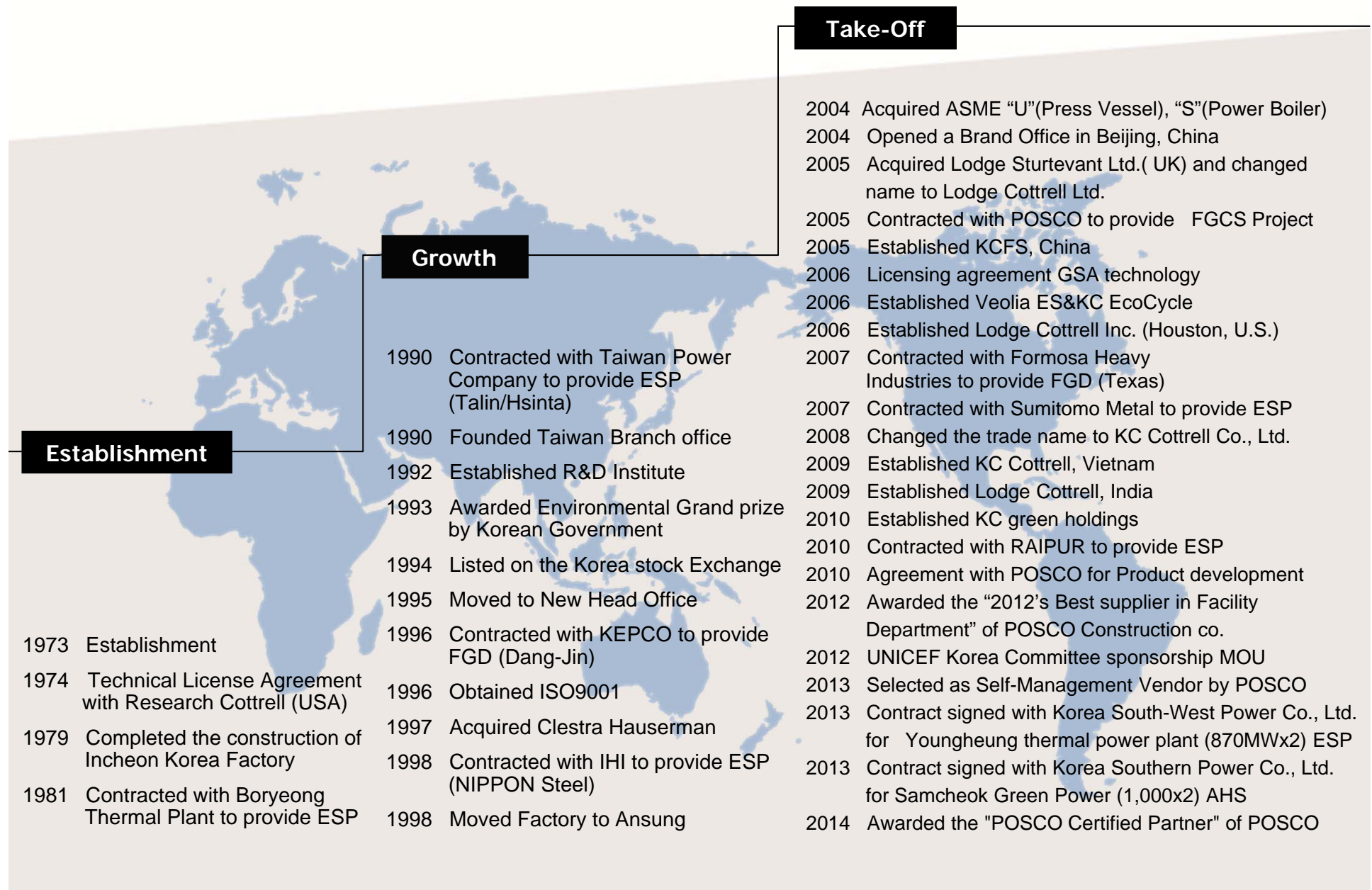


**“The Clean Air Company,  
Global Leader in the Environmental Industry”**

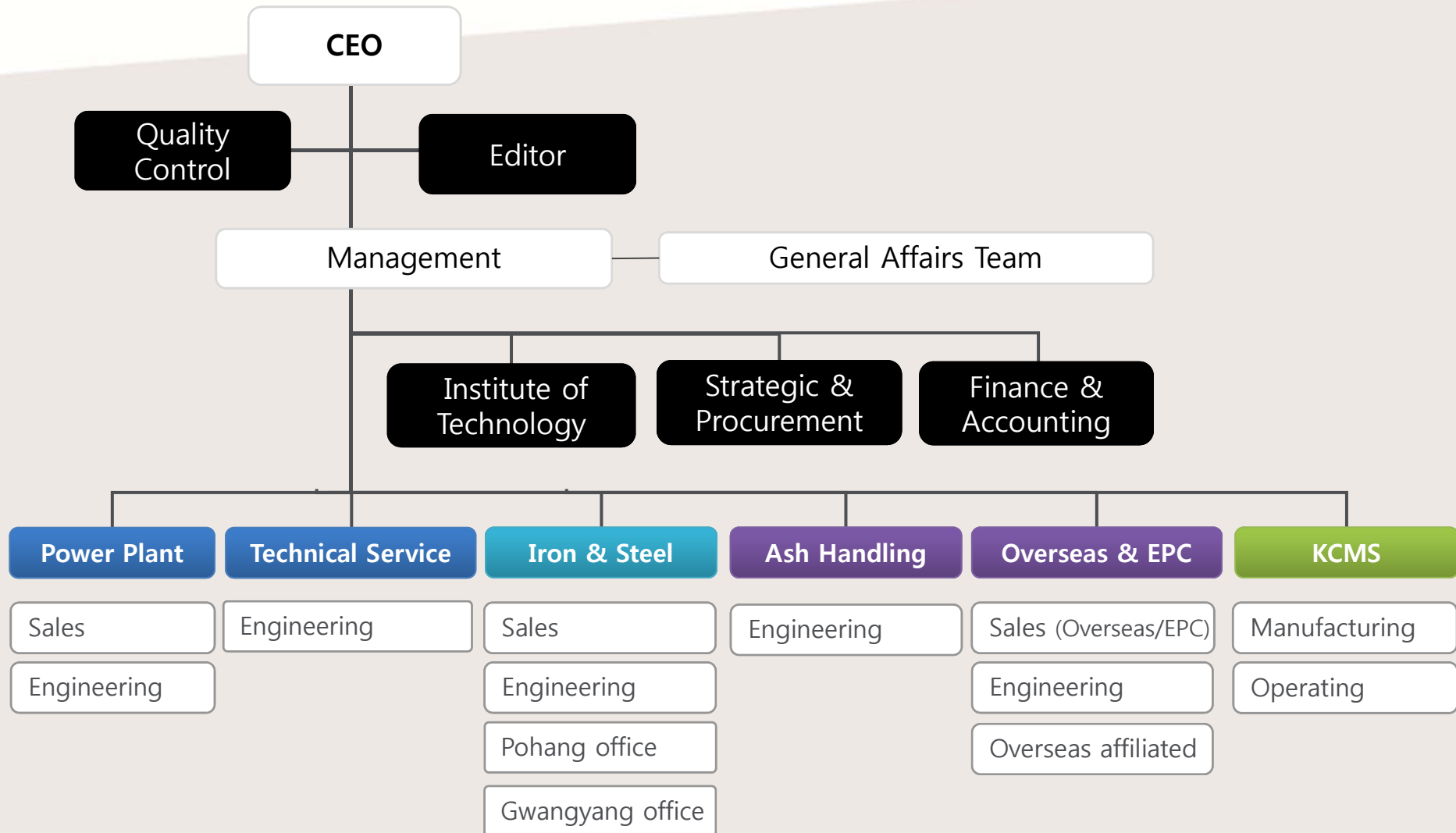
Establishment	27 <sup>th</sup> Nov. 1973
Business Area	<ul style="list-style-type: none"> <li>• Dust Collection System</li> <li>• Flue Gas Treatment System</li> <li>• Industrial Machinery</li> </ul>
Head office	12F DigitalCube, (Sangam-dong) 34, Mapo-gu, Seoul, 121-817, Korea
Factory	253 Singi-ri Seoun-myeon, Anseong si, Gyeonggi-do, 456-853, Korea

Employees	245 (2013)
Capital	KRW 8.5 Billion
Homepage	<a href="http://www.kc-cottrell.com">www.kc-cottrell.com</a>
CEO & President	Lee, Tae Young

# 1<sup>-2</sup> Brief History



# 1<sup>-3</sup> Organization Chart



# 1<sup>-4</sup> Business Item

Electrostatic Precipitator

Fabric Filter

FGC(Flue Gas Conditioning) System

Scrubber

Cyclones

Flue Gas Desulfurization System

Flue Gas Denitrification System

Semi Dry Reactor System

De-Dioxin System

Fly Ash system

(Pressure / Vacuum type)

Bottom Ash system

(SDCC / T-DAC)

Sludge Incineration

Solid Waste Incineration

GGH(Gas Gas Heater)

Dampers, Expansion Joints

Air Cooled Heat Exchanger



## 2<sup>-1</sup> Affiliated Companies

### Environmental Engineering & Construction

#### \* KC Cottrell Co., Ltd.

KCMS

KC Cottrell China Co., Ltd.

KC Cottrell Vietnam Co., Ltd.

KC Cottrell Taiwan Co., Ltd.

Lodge Cottrell Ltd. (UK)

Lodge Cottrell Inc. (USA)

Lodge Cottrell India Pvt. Ltd.

NOL-TEC System, Inc.

NOL-TEC Korea Co., Ltd.

KC Air Filtertech Co., Ltd.

### Environmental Services

KC EnviroServices Co., Ltd.

KC Landfill Service Co., Ltd.

KC Hanmi Environment Co., Ltd.

### Environmental Manufacturing

KC Envirotech E&C(FuShun)Co., Ltd.

Jord KC Co., Ltd.

Clestra Hauserman Ltd.

NWL Pacific Co., Ltd.

### Renewable Energy

KC SolarEnergy Co., Ltd.

KC Energia Co., Ltd.

KC INVALL Green Energy Co., Ltd.

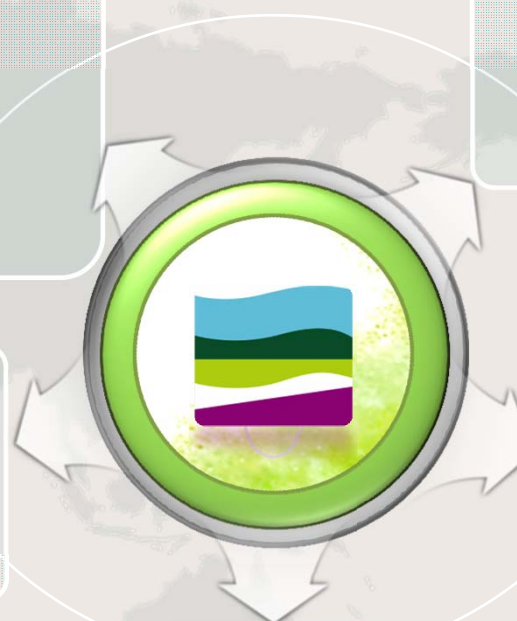
### Material Recycling

KC Glass Co., Ltd.

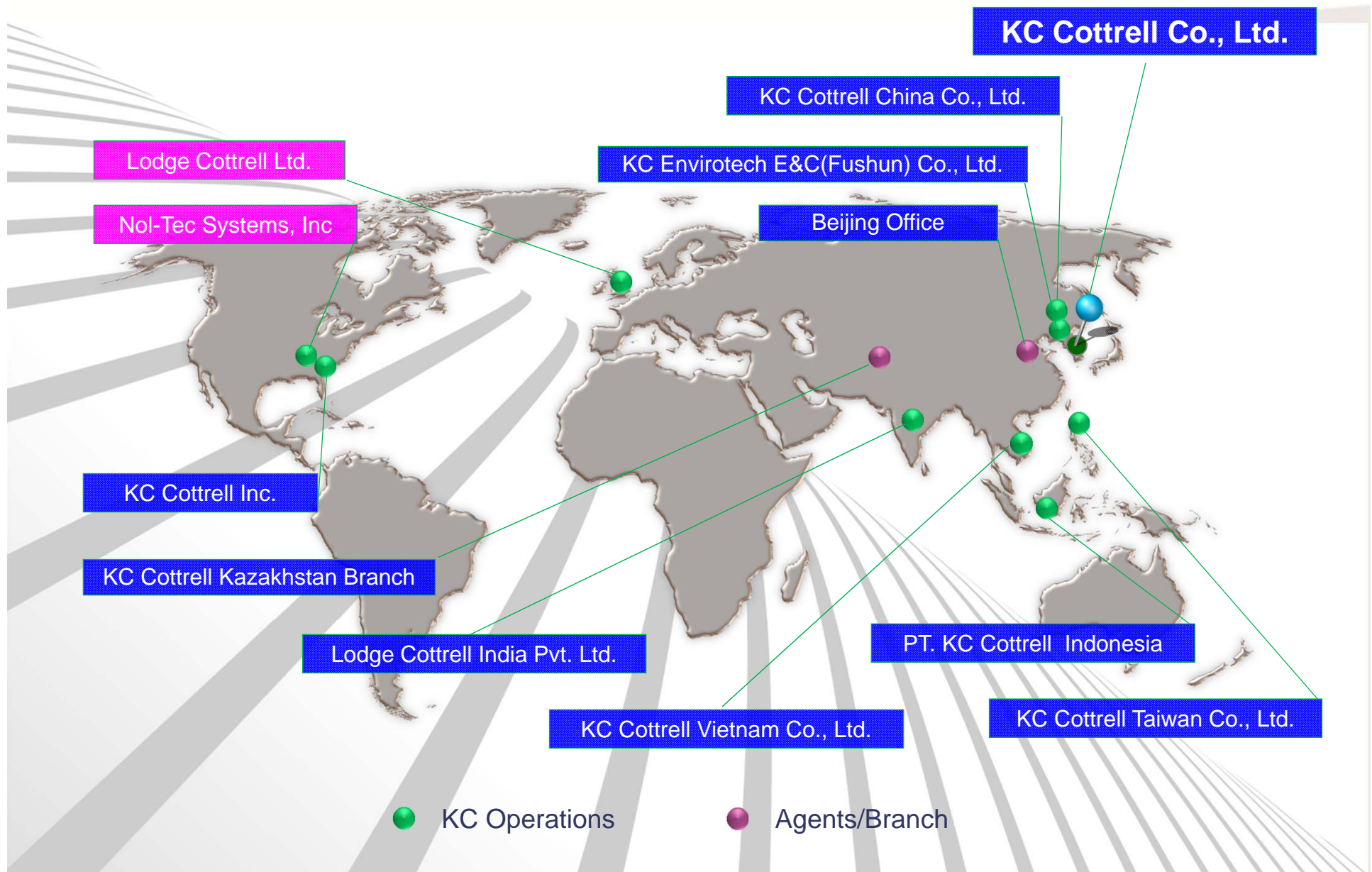
Veolia ES&KC EcoCycle Co., Ltd.

KC Enviro Construction Co., Ltd.

KC EcoEnergy Co., Ltd.



## 2<sup>-2</sup> Global Network



# # -1 The head office building



# -1 KCMS



# # -1 KCMS



# # -1 KCMS Test tower



## # -2 Dust Collection System



**Taichung Power Plant EP**



**Taichung Power Plant #9, #10**

## # -2 Dust Collection System



Namjeju Power Plant EP

## # -2 Dust Collection System



Tae-an Power Plant EP



## # -3 Flue Gas Treatment System



Dangjin Power Plant FGD

# # -3 Flue Gas Treatment System



**Dangjin Power Plant FGD**

## # -3 Flue Gas Treatment System



Hadong Power Plant FGD

# # -3 Flue Gas Treatment System



**POSCO Gwangyang  
FGCS #1, #2**

# # -3 Flue Gas Treatment System



**POSCO Gwangyang  
FGCS #1, #2**

## # -3 Flue Gas Treatment System



Cheongju District Heating Corp. FGD

# # -3 Flue Gas Treatment System



**Samchunpo Power Plant FGD**

# # -3 Flue Gas Treatment System



**Taishan Power Plant SCR**

# # -4 Industrial Machinery



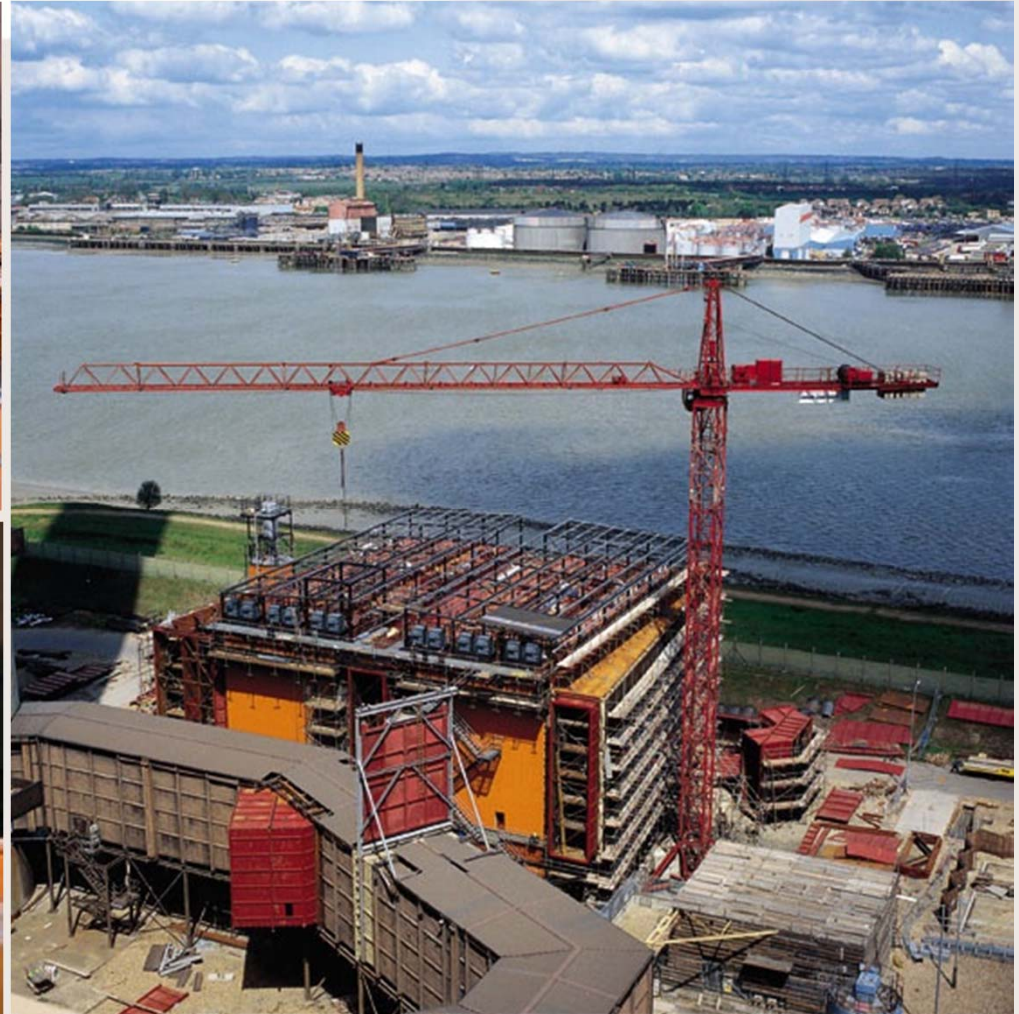
Heat exchanger, DAMPER, CVD Reactor



# # -6 KC Cottrell China Co., Ltd.



# # -6 Lodge Cottrell Ltd.



# # -6 Jord KC Co., Ltd.



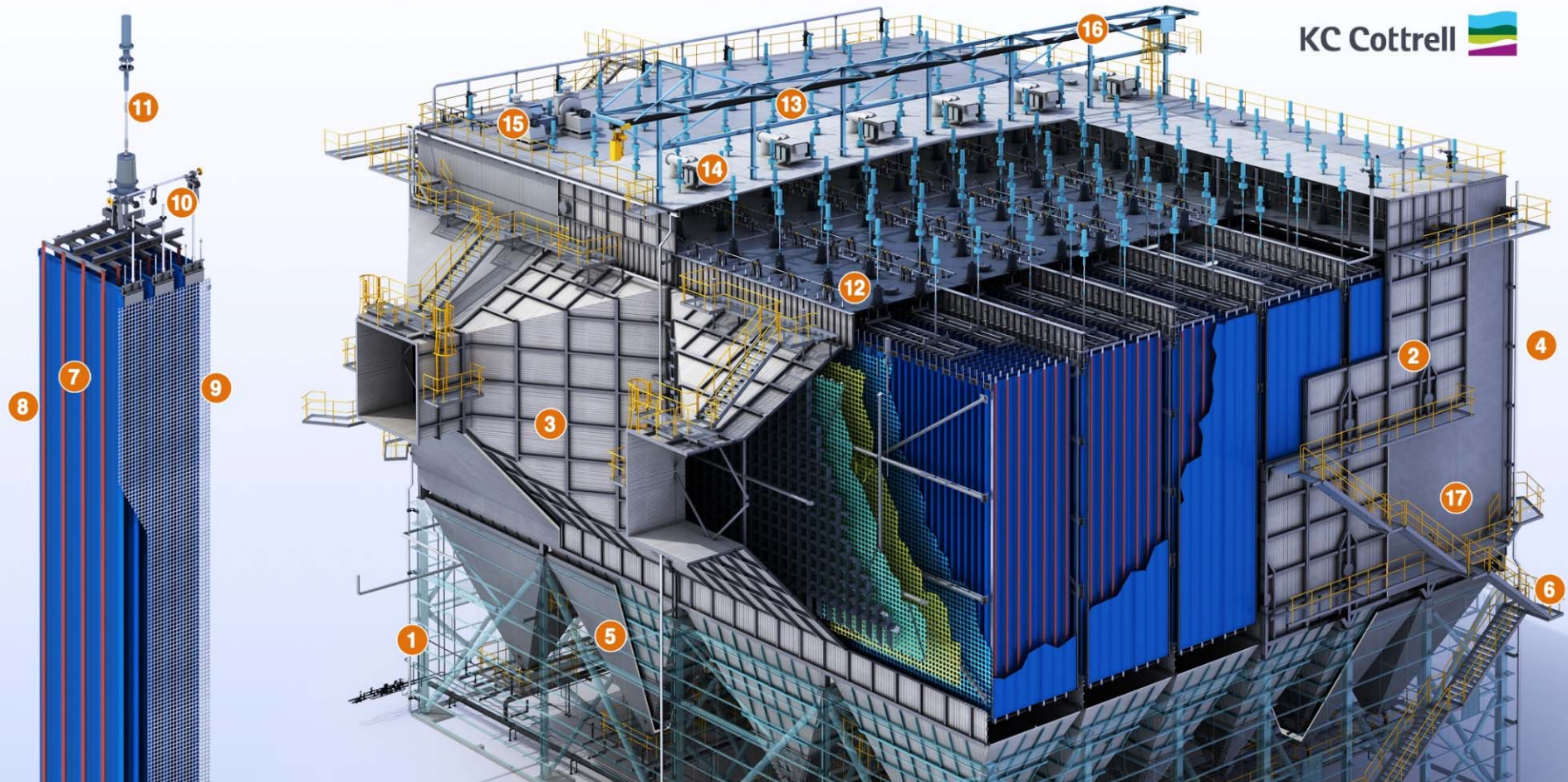
# # -6 Clestra Hauserman Ltd.



# # -6 KC Enviro Services Co., Ltd.



# 01 | TECHNOLOGY : Electrostatic Precipitator

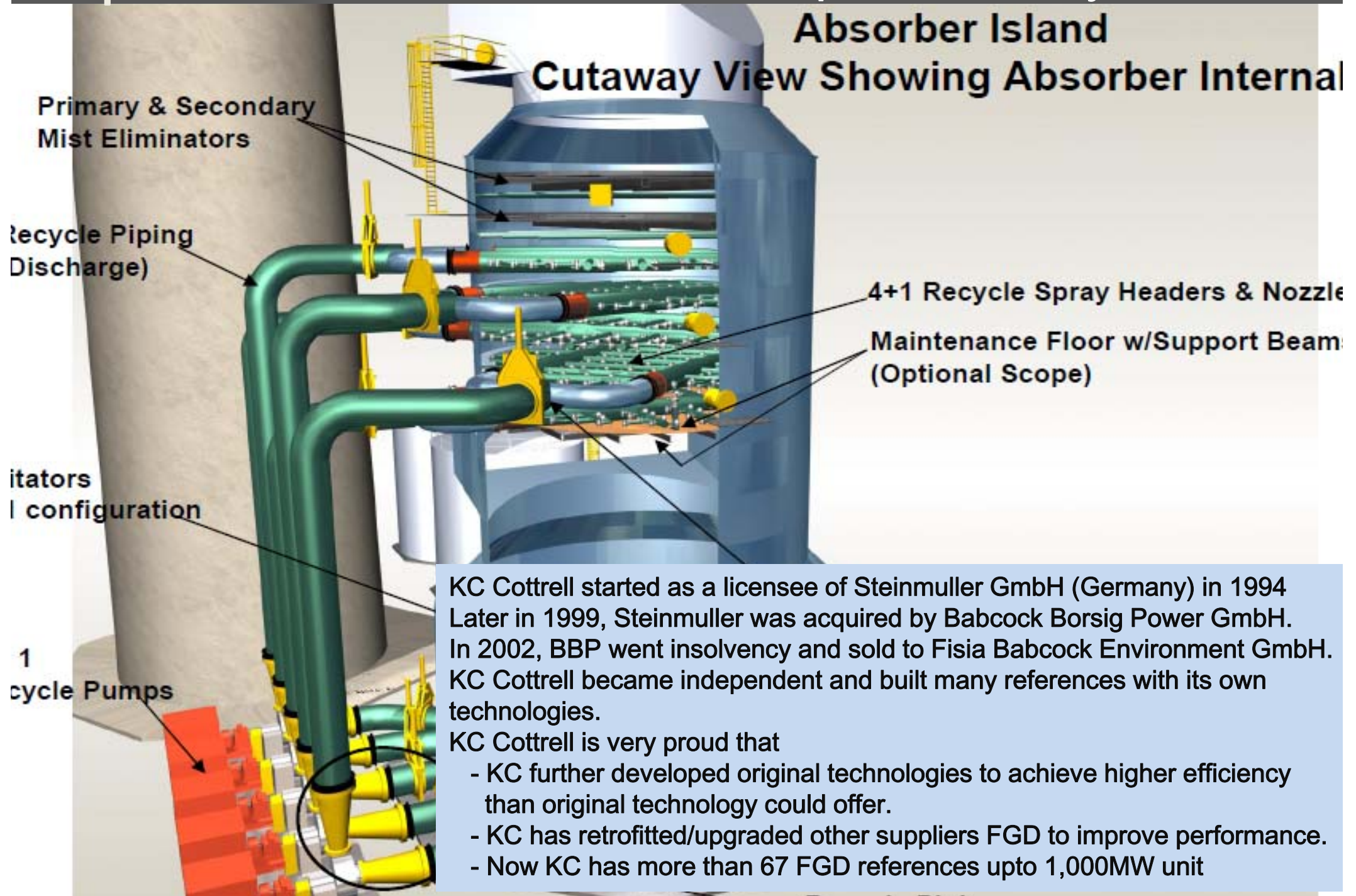


**ELECTROSTATIC  
PRECIPITATOR**

KC Cottrell started as a licensee of Research Cottrell (USA)  
After Research Cottrell got bankrupt in '90s, RC was acquired by Hamon.  
KC Cottrell became independent and later acquired Lodge Cottrell (UK)  
KC Cottrell is very proud that

- KC inherited both US and UK technologies
- KC further developed original technologies
- KC has various experiences with different coal, emission requirements from global references.
- Now KC can offer better / flexible designs than previous licensors

# 01 | TECHNOLOGY : Flue Gas Desulphurization System

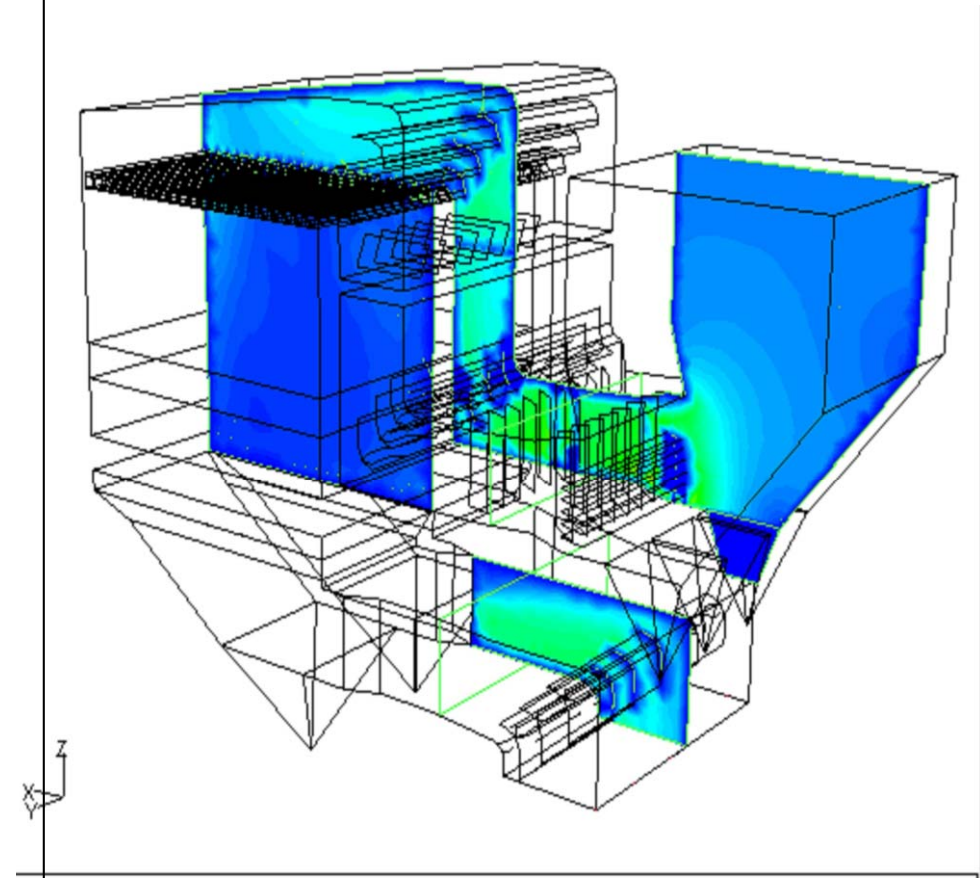
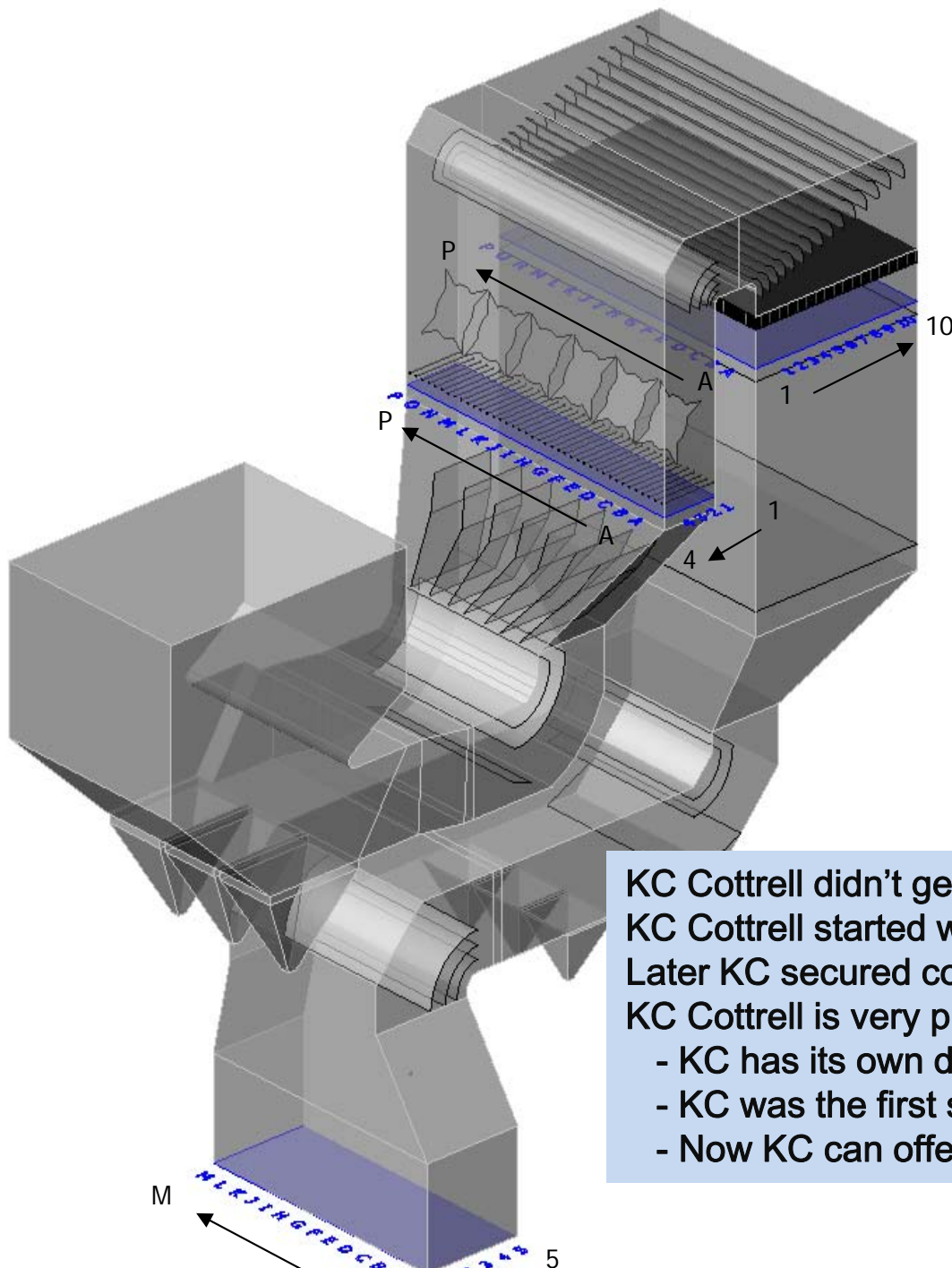


KC Cottrell started as a licensee of Steinmuller GmbH (Germany) in 1994. Later in 1999, Steinmuller was acquired by Babcock Borsig Power GmbH. In 2002, BBP went insolvency and sold to Fisia Babcock Environment GmbH. KC Cottrell became independent and built many references with its own technologies.

KC Cottrell is very proud that

- KC further developed original technologies to achieve higher efficiency than original technology could offer.
- KC has retrofitted/upgraded other suppliers FGD to improve performance.
- Now KC has more than 67 FGD references upto 1,000MW unit

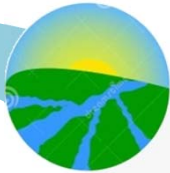
# 01 | TECHNOLOGY : De-NOx (Selective Catalytic Reactor) System



KC Cottrell didn't get a technology license from any other supplier. KC Cottrell started with small incineration plant with its own technology. Later KC secured coal fired power plant project in mid 2000. KC Cottrell is very proud that

- KC has its own design and technologies
- KC was the first supplier of SCR to China (Taishan
- Now KC can offer better / flexible designs than previous licensors

# Air Pollution Control Worldwide Reference




A Global Leader in Air Pollution Control  
- People & Technology Keeping Our Planet



A photograph of the Dangjin Thermal Plant, showing a large industrial structure with a complex steel framework on the left and several tall, light blue buildings with arched windows on the right. A tall, thin white chimney is visible in the background. The sky is blue with some clouds.

Dangjin Thermal Plant  
#1-4 (500 MW) De-NOx, De-Sox  
#5&6 AHS  
#9&10 (1,000 MW) ESP

Installed all of KC's key environmental  
facilities, De-Sox, De-Nox, AHS, and  
ESP



Dangjin Thermal Plant  
#1-4 (500 MW) De-NOx, De-Sox  
#5&6 AHS  
#9&10 (1,000 MW) ESP

Installed all of KC's key environmental  
facilities, De-Sox, De-Nox, AHS, and  
ESP

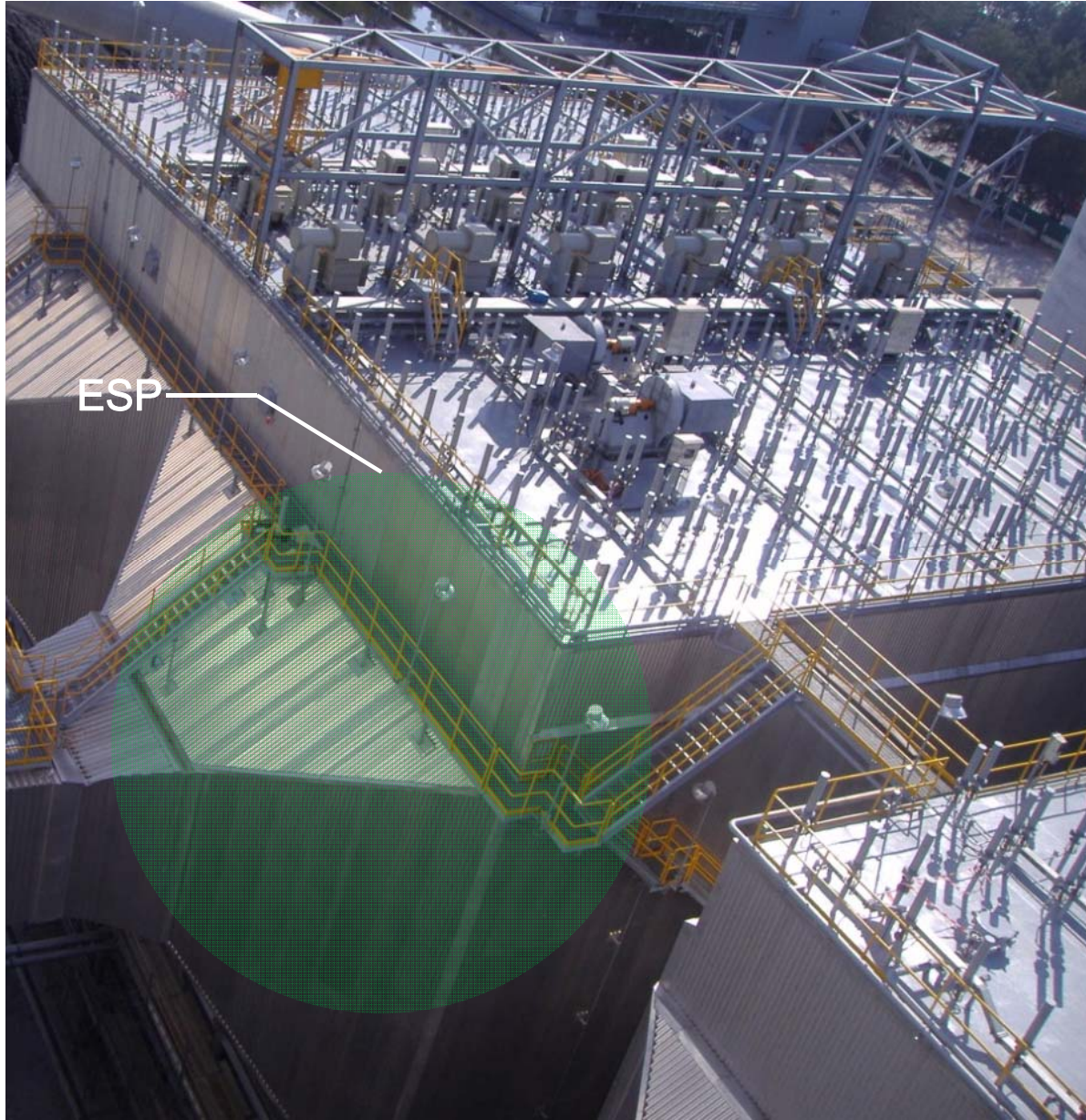


Yongheung Thermal Plant  
#5&6 (870 MW) ESP, De-SO<sub>x</sub>

Over 98.9% of De-Sox efficiency by  
applying Non-Leaking Type GGH  
LowLow EP

# Gheco Power Plant (Thailand)

600MW ESP, AHS - First Entry project which is over 500MW in Thailand





**Mong Duong 2 Thermal Power Plant (Vietnam)**  
Ash Handling System revamping 2 Unit\*600MW

# Ha Tinh Steel Mill Plant (Vietnam)

6 Unit\*Bag filter, 1 unit\*WET ESP - First project which is apply long bag in Vietnam



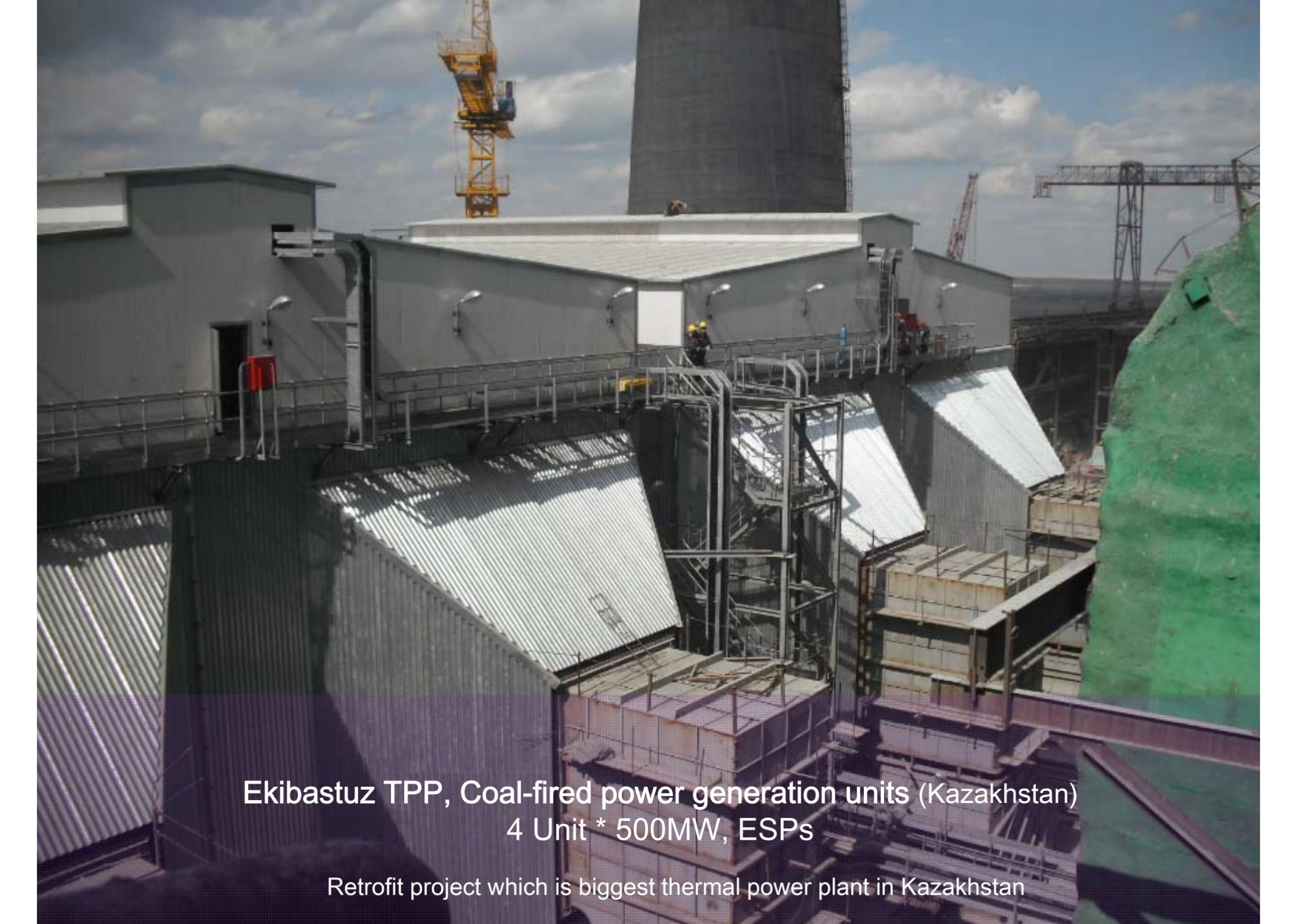
# Taiwan Power Station (Taiwan)

#1 & #2 550MW - First overseas retrofit project which is over 500MW



A low-angle photograph of a large industrial power station undergoing retrofit work. The structure is a multi-story building with a complex network of steel beams and scaffolding. A large crane is positioned on the roof, lifting a component. The sky is blue with scattered white clouds. In the foreground, there are various pipes and structural elements of the power station.

Taiwan Cement Ho-Ping Power Station Retrofit  
660MW, FGD upgrading



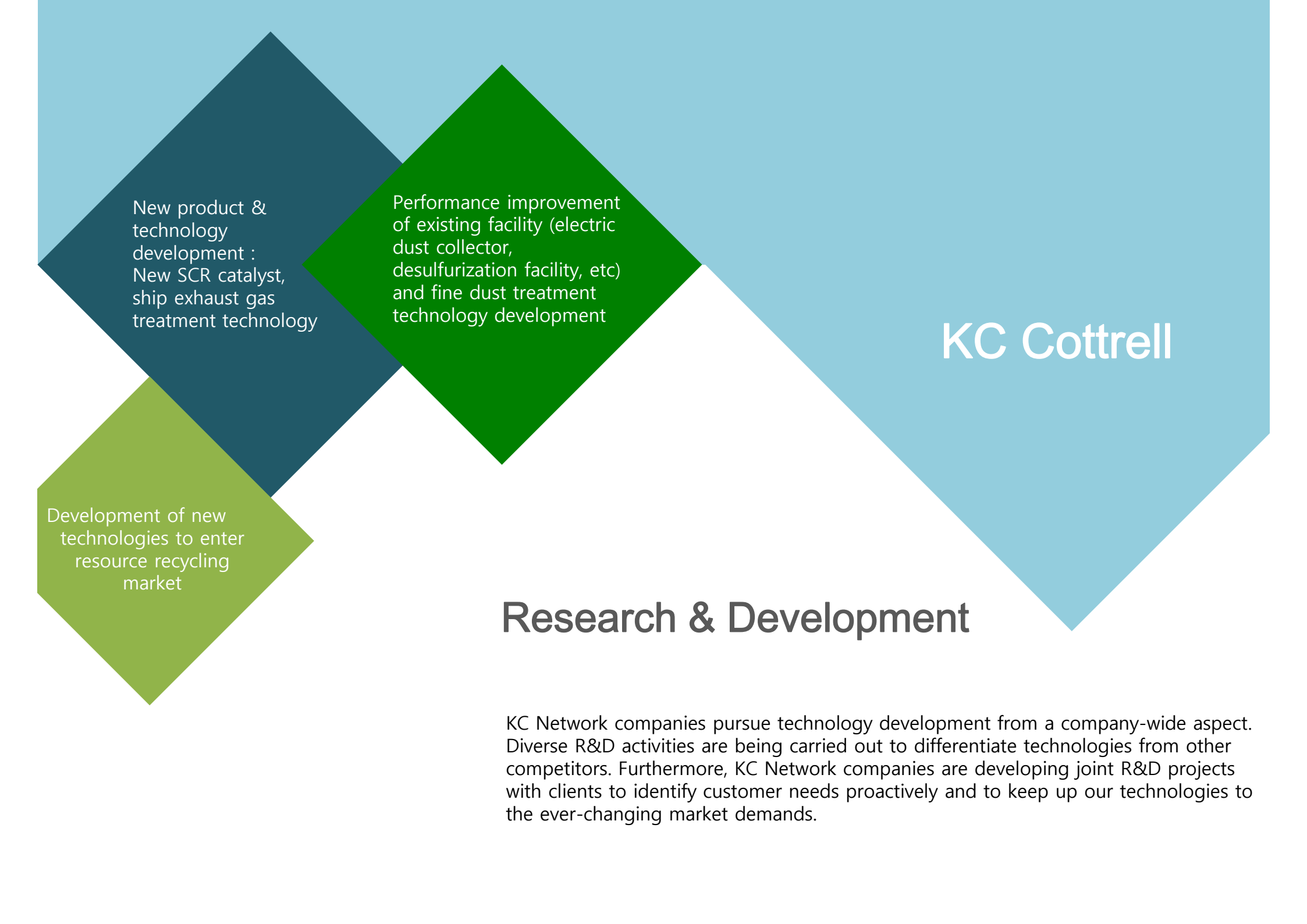
Ekibastuz TPP, Coal-fired power generation units (Kazakhstan)  
4 Unit \* 500MW, ESPs

Retrofit project which is biggest thermal power plant in Kazakhstan

A large industrial facility, the Taishan Thermal Power Plant, Unit No. 5. The image shows a massive, multi-story structure with a complex network of white steel scaffolding and walkways. The building has a blue roof and blue horizontal bands. A large, curved, metallic structure is visible on the left side. The sky is overcast.

Taishan Thermal Power Plant, 600MW (Unit No. 5)  
1 Unit \* 600MW, SCR

The first De-NO<sub>x</sub> installed in a Power Plant in Main land China

The diagram features a large light blue diamond on the right containing the text 'KC Cottrell'. To its left are three smaller diamonds: a dark blue one at the top left, a green one in the middle, and a light green one at the bottom left. Each of these three diamonds contains text describing different R&D activities. The overall background is white.

New product & technology development :  
New SCR catalyst, ship exhaust gas treatment technology

Performance improvement of existing facility (electric dust collector, desulfurization facility, etc) and fine dust treatment technology development

Development of new technologies to enter resource recycling market

KC Cottrell

## Research & Development

KC Network companies pursue technology development from a company-wide aspect. Diverse R&D activities are being carried out to differentiate technologies from other competitors. Furthermore, KC Network companies are developing joint R&D projects with clients to identify customer needs proactively and to keep up our technologies to the ever-changing market demands.



TEST TOWER

R&D

Set up 1000MW WET FGD Design program & Ensure efficient design technology



TEST TOWER

CARBON  
CAPTURE&STORAGE

TUNNEL ESP

RHDS

De-Sox Facility  
Performance improving  
program

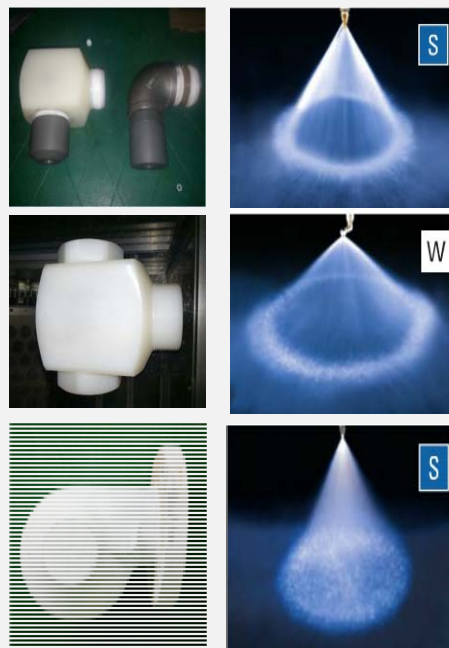


- Designing 99% efficiency de-Sox system applied 1000MW power plant / modeling KC-type absorption tower (MK-99)

Construction  
Test Facility



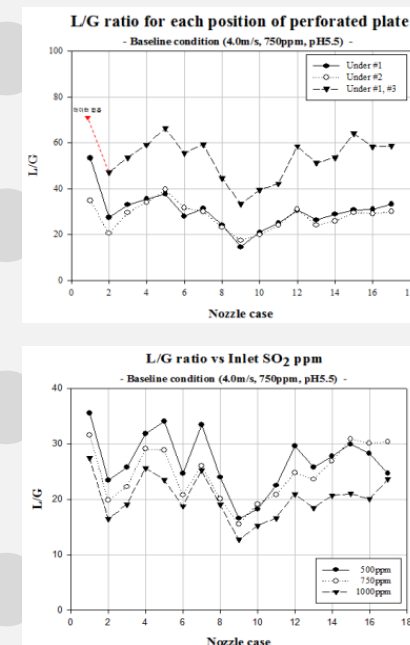
Performance test  
by nozzle type



Performance test  
by combination of nozzles



Test by  
different operating conditions



Combination of nozzles : By turning on and off 5 spray banks, spray slurry by 17 different kinds of combination

Operating conditions : slurry pH(5.2~5.8), flue gas SO<sub>2</sub> concentration(500~1,000ppm), velocity of flue gas(3.5~4.5m/s)

De-Sox Facility  
Performance improving  
program



*Thank You!*

APC OVERSEAS MARKETING & SALES TEAM  
[inquiry@kc-Cottrell.com](mailto:inquiry@kc-Cottrell.com)

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