

# KC Cottrell Co., Ltd.

### **Head Office**

(Donggyo-dong) 151 Yanghwa-ro, Mapo-gu, Seoul, 121-898, Korea TEL +82 2 320 6114 FAX +82 2 320 6100 www.kc-cottrell.com

### Factory

16 -180 Seoun-Singigil, Seoun-myeon, Anseong-si, Gyeonggi-do, 456-853, Korea TEL +82 31 674 9660 FAX +82 31 674 9670

### KC Cottrell Inc.

Head Office 2319 Timberloch Place, Suite E, The Woodlands, TX, 77380, USA TEL +1 281 465 9498 FAX +1 281 465 9366

### NJ Office

8 Bartles Corner Road, Suite 204 Flemington, NJ 08822, USA TEL +1 902 923 0700 FAX +1 908 824 7056 www.kccottrell.us

# KC Cottrell China Co., Ltd.

No.9576 Donghuancheng Rd., Changchun Economy & Development Zone, Changchun City, Jilin Province, 130033, P.R. China www.cckc.com.cn

### KC Cottrell Co., Ltd. Beijing Branch

Room1002 Tianheng Bldg, No.46 Dongzhimenwai Rd., DongchengQu, Beijing, 100027, P.R.China TEL +86 10 8460 8738/9 FAX +86 10 8460 8732

# KC Envirotech Engineering &

# Construction(fushun) Co.,Ltd

Chuangxin Second Road 1, Economic Development Zone, Fushun City, Liaoning Province, 113122, China. Tel +86 024 56608669 Fax +86 024 56608660

# KC Cottrell Vietnam Co., Ltd.

3rd floor, SIMCO building, 28 Pham Hung, Tu Liem, Hanoi, Vietnam TEL +84 4 768 9904/5 FAX +84 4 768 9902

# KC Cottrell Co., Ltd. Taiwan Branch

15F-7, No.77, Sec.1, Shintai 5th Rd., Shijr City, (Far East World Center) Taipei, 22101 Taiwan TEL +886 2 2698 8300 FAX +886 2 2698 8100

# KC Cottrell Kazakhstan LLP.

office 122, 4 floor, 5A, Nurly Tau Business Center Almaty city, 050059, Republic of Kazakhstan TEL +7 7187 340905

# Lodge Cottrell

# Lodge Cottrell Ltd.

6th Floor Trinity Point East, Halesowen, B63 3HY, **United Kingdom** TEL +44 121 504 9200 FAX +44 121 439 1920 www. LodgeCottrell.com

# Lodge Cottrell India Pvt. Ltd.

Spazedge, Tower-B, 5F, Suite No. 502-504 Sector-47, Sohna Road, Gurgaon, Haryana, 122002, India TEL +91 124 487 4800 FAX +91 124 487 4820

### NOL-TEC Systems, Inc.

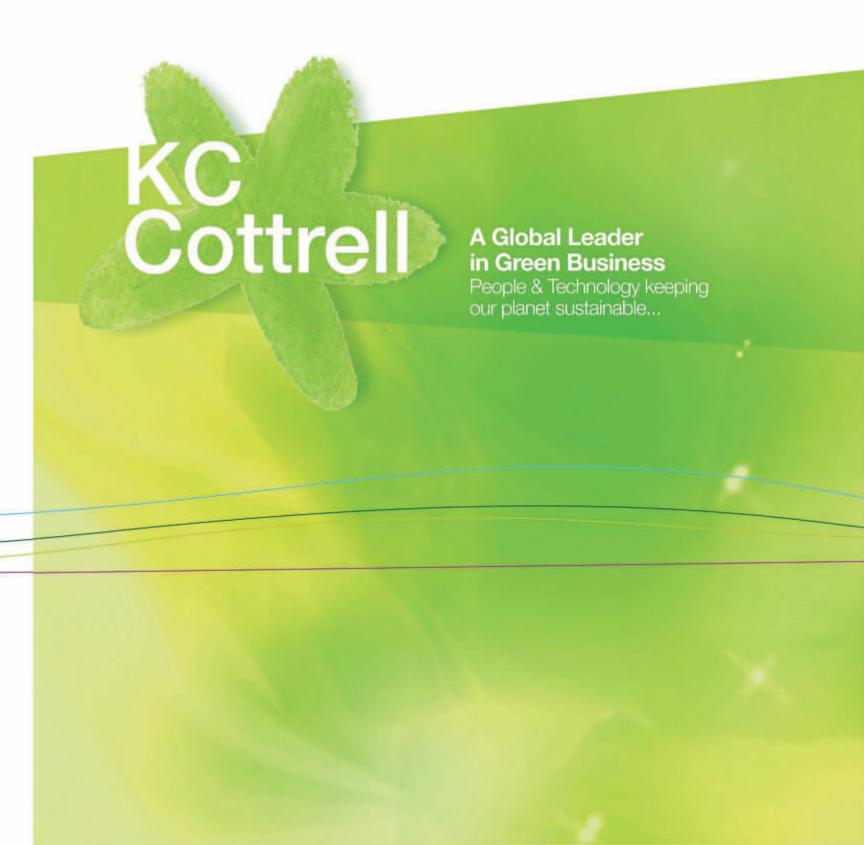
425 Apollo Drive Lino Lakes, MN 55014, USA TEL+1 651 780 8600 FAX +1 651 780 4400 www.nol-tec.com

# NOL-TEC EUROPE s.r.l

www.nol-teceurope.com

Via Milano, 14/N 20064 Gorgonzola (MI) Italy TEL +39 02 9516875 FAX +39 02 9511473







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# Part 1

# A leading global company with environmental technology

KC Cottrell has been a world leader in environmental technology for over 40 years. At a time when the term, environment industry, had yet to enter the vernacular, an electrical engineer's curiosity for electrostatic precipitators and his determination to localize technology led to the launch of KC Cottrell.

The company has consistently been at the forefront of preserving the environment. As foremost environmental specialist in Korea, KC Cottrell offers total solutions related to the environment, ranging from plant facilities to services.

With 40 years of unrivalled know-how, KC Cottrell is expanding its reach to keep the environment clean in every corner of the globe.



- History
- Company Overview



Nov. 1973

Founded Korea Cottrell Co., Ltd.

Jul. 1983

Contract signed with Korea Electric Power Company for Boryeong thermal power plant ESP(Electrostatic Precipitator)

Jul. 199

Contract signed with Taiwan Power Company for Talin and Hsinta thermal power plants ESP in Taiwan

Jun. 1992

Contract signed with Taiwan Power Company for Shenao thermal power plant ESP in Taiwan

Nov. 1994

Listed on the Korea Stock Exchange

Apr. 1996

Contract signed with Korea Electric Power Corporation for Dangjn thermal power plant FGD(Flue Gas Desulfurization)

Jul. 1997

Contract signed with POSCO for Gwangyang steel works blast furnace ESP

Feb 1998

Contract signed with IHI (Ishikawajima-Harima Heavy Industry Co., Ltd.) for Nippon Steel Co., Ltd. Kamaisi power plant ESP in Japan

Aug. 1999

First Commercialized PPCP (Pulse-corona induced Plasma Chemical Process)

Apr. 2000

Contract signed with Korea District Heating Corporation for Chungju district heating plant

Aug. 2000

Contract signed for Shijiazhuang thermal power plant ESP in China



Nov. 2000

Contract signed for Matou thermal power plant ESP in China

Dec. 2000

Contract signed with Taiwan Power Company for Taichung thermal power plant ESP in Taiwan

May. 2002

Contract signed with Korea Southern Power Co., Ltd. for Youngnam thermal power plant Orimulsion fuel conversion

Jun. 2002

Contract signed with Korea Southern Power Co., Ltd. for Samchunpo thermal power plant FGD

Jan. 2003

Contract signed with Ssangyong Cement Industrial Co., Ltd. for Yeongwol plant kiln e-BF(electrostatic bag filters)

Mar. 2003

Contract signed with Thai Tokai Carbon Product Co., Ltd. for FGD in Thailand

Jun. 2003

Contract signed with Korea East-West Power Co., Ltd. for Dangjin thermal power plant AHS(Ash Handling Systems)

Apr. 2004

Acquired ASME U(Pressure Valve) and S(Power Boiler) STAMP

Nov. 2004

Contract signed with Korea Western Power Co., Ltd. for Taean thermal power plant ESP

May. 2005

Contract signed with POSCO for Gwangyang Steel Works Sinter Plant FGCS (Flue Gas Cleaning System)

I-- 000/

Jan. 2006
Contract signed with Korea Midland Power Co.,
Ltd. For Boryeong thermal power plant ESP and

May. 2006

Contract signed with Korea South East Power Co., Ltd. for Hadong thermal power plant FGD



Sep. 2006

Acquired SEL (Special Equipment License) certification for manufacturing Pressure Vessel in China

Nov. 2006

Contract signed with Korea South East Power Co., Ltd. for Youngheung 1MWp solar power system

Mar. 2007

Contract signed with Formosa Heavy Industries Corp. for Formosa Plastics Corp. US Thermal power plant GSA(Gas Suspension Absorption) in Texas, US

Apr. 2008

Changed company name to KC Cottrell Co., Ltd.

Feb. 2008

Contact signed with Mitsubishi Heavy Industries Ltd. for Guacolda power plant No.1–5 Coal Fired Boiler ESP in Chile

Sep. 2008

Contact signed for Ekibastuz power plant ESP/AHS in Kazakhstan

Jan. 2009

Contact signed with Taiwan Power Company for Hsinta power plant No.1~2 FGD, ESP, AHS in Taiwan

May 2010

Contact signed with Formosa Heavy Industries, Ltd. for GSA/BF in Petron, Philippines

Sep. 2010

Contact signed with Doosan HI&C for Raipur power plant ESP in India

Oct. 2010

Contact signed with POSCO Engineering for Merak power plant ESP in Indonesia

Mar. 2011

Contact signed with NTPC Ltd. for Badarpur thermal power plant ESP in India

# KC Cottrell living history of the environmental industry



Jun. 2011

Contact signed with Doosan HI&C for Rabigh No.2 power plant ESP/SCR/AHS in Saudi Arabia

Aug. 2011

Contact signed with Doosan HI&C for EVN, Vietnam Electricity Mong Duong thermal power plant ESP in Vietnam

Sep. 201

Contact signed with PT Krakatau Engineering for BF in Krakatau, Indonesia

Oct. 2011

Contact signed with SK E&C/Energi SA for FGD/ESP/LIS in Tufanbeyli, Turkey

Nov. 2011

Contact signed with Hyundai Heavy Industry/Panama Canal Authority (ACP) for ESP in Panama

Jan. 2012

Contact signed with Samsung Heavy Industries for Ma'aden Alumina refinery steam plant ESP, FGD, AHS in Saudi Arabia

Jan. 2012

Contact signed with Dangjin thermal power plant(1000MW x 2)for ESP

Apr. 2012

Contact signed with POSCO E&C for CSP sinter plant ESP in Brazil

Apr. 2012

Contact signed with FLSmith / OCP S.A. for Morocco Phosphate Flash Dryer No.1 FGD in Morocco



May 2012

Contact signed with Meja Urja Nigam Pvt.Ltd. for Meja thermal power plant ESP in India

Jul. 201

Contact signed with Renault Samsung Motors for 20MWp solar power system in Busan, Korea

Nov. 2012

Contact signed with Korea Southern Power Co., Ltd. for SamCheok Green Power (1000MW x 2) ESP (One of the largest CFBC boilers in the world)

Dec. 2012

Contact signed with Hanhwa E&C for Yanbu II ESP in Saudi Arabia

Feb. 2013

Contact signed with Korea South-West power plant for Youngheung thermal power plant (870MW x 2) ESP

May 2013 Contact signs

Contact signed with POSCO E&C for Krakow waste thermal treatment plant FGCS in Poland

technologies

**Company Overview** 

Keeping our sky clean for tomorrow

# Environment, technology, future – KC Cottrell, an environmental leader on the global stage







# In order to pass on clear skies to future generations,

KC Cottrell has been developing innovative technologies to protect our surrounding environment. Since our inception in 1973, We have led Korea's environmental industry by establishing ourselves as premier providers of environmental plant facilities and services.

We are now reaching out to a wider market and competing against global peers. We established a branch office in Taiwan in 1990 and have ventured into North America and Europe. 2002 saw the establishment of a joint venture in China, a country fast emerging as a major force in the Asian economy. Thus, we are laying the foundation for a new period of growth as the leader of the environmental industry.

# With green technology to safeguard tomorrow's environment,

KC Cottrell is striving to reinforce its specialty in the following three areas: environmental systems (e.g. FGD treatment, dust collection and incineration), environmental service(e.g. recycling, environmental incineration and reclamation of waste), and manufacturing of high-quality industrial facilities based on our diverse experience.

# Guided by our vision to lead the global environment industry,

KC Cottrell is pursuing a management objective to turn 40 years of know-how into core competitiveness and technology into assets. We are making consistent and bold investments to attract the best global talents and to innovate our systems.

As we enter this exciting stage of growth, KC Cottrell will not only stabilize new businesses, but also boost global competitiveness to become a recognized leader of the world environment industry in the 21st century.

# Part 2 Technology that looks 10 years into the future and cares for the next 100 years Make With our unique technology for the environment, KC Cottrell is boldly expanding into overseas markets. With our vast experience and know-how in pollution prevention technology, we are a company that also promotes health by removing various pollutants. While the world worries about today's environment, KC Cottrell is already drawing up plans for a greener tomorrow. A company that grows in harmony with our planet, KC Cottrell is poised for a brighter future as a global leader in the environmental industry. **Technology**

- Dust Collection Systems
- De-SOx Systems
- De-NOx Systems
- Ash Handling Systems
- Waste & Biomass To Energy Systems
- Industrial Machinery
- Air Cooled Heat Exchangers
- Solar Power Systems
- Technical Services

Make Technology

# **Dust Collection Systems**









- 01 **Dry Type Electrostatic Precipitators** Top Rapping
- Side Rapping
- 02 Wet Type Electrostatic Precipitators
- Vertical
- Horizontal
- 03 DeTar Electrostatic Precipitators
- 04 Fabric Filters
- Pulse Jet Fabric Filter
- · Reverse Air Fabric Filter
- 06 FGC(Flue Gas Conditioning) Systems

05 Wet Scrubber & Multi Cyclones

- NH₃ Injection System
   SO₃ Injection System
- 07 e-BF
- 08 Ash Handling Systems



**Dust Collection Systems** 

Customers know they can trust our dust collection systems.

With over 40 years of know-how combined with our experience in applying systems to diverse emission sources, we are building up a reputation for excellence in dust collection.

By considering cost effectiveness, durability and convenience in the design, manufacturing, purchasing and construction stages, we are striving to provide speedier solutions to customers' problems. KC Cottrell is working to keep tomorrow's skies blue.













### 01 Wet Process

- Wet Limestone-Gypsum Process
- Wet Elffestorie-Gypsum Process
   Wet Magnesium Hydroxide Process
   Alkali Waste Water Process
   NaOH Sodium Hydroxide Process

- 02 Semi-dry Process

  GSA(Gas Suspension Absorber System)

  SDR(Semi Dry Reactor) System

# 03 Dry Process

- NaHCO<sub>3</sub> Process
   Alkali Powder Injection System



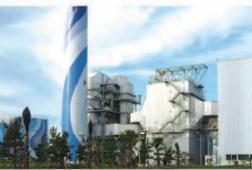
# FGD(Flue Gas Desulphurization) Systems

Fossil fuels, used in various industrial facilities, produce

sulphuric acid(SOx) when burned. If the harmful and toxic sulphuric acid is released in the atmosphere, it poses another threat to our lives in the form of secondary pollutants, such as acid rain.

KC Cottrell removes sulphuric acid with a highly efficient FGD system to protect the environment.



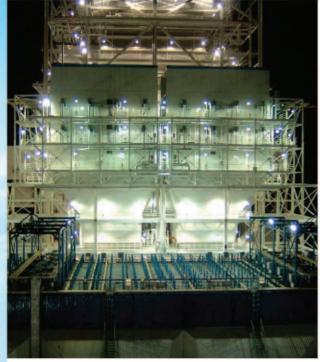


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# De-NOx Systems

Keeping our sky clean for tomorrow









- 01 SCR(Selective Catalytic Reduction)
- 02 SNCR(Selective Non Catalytic Reduction)
- 03 Hybrid
- 04 SCR Catalyst Regeneration

# De-NOx (NOx reduction) Systems

Interest in air pollutants is growing along with the increasing damage from acid rain and photochemical smog, as shown in the rise in respiratory diseases. We are facing the pressing task of removing nitrous oxide (NOx) and other major air pollutants, such as sulphuric acid, carbon monoxide and dioxin. KC Cottrell has the experience and engineering skills related to various industrial facilities-power plants, combustion plants, steel-making facilities, glass melting furnace and cement manufacturing facilities-to provide diverse systems for eliminating nitrous oxide. In this way, we are help to keeping the air we breathe cleaner.











Ash Handling System

AHS refers to the method to collect, convey, store and extract various types of ash residue left over from fossil fuel combustion processes.

The most common types of ash include bottom ash, bed ash, fly ash and ash clinkers resulting from the combustion of coal, wood and other solid fuels.

Ash handling systems may employ pneumatic ash conveying or mechanical ash conveyors.

# 01 BOTTOM ASH SYSTEM

- Bottom Ash Hopper System
   Submerged Drag Chain Conveyor System
   Dry Ash Extraction Conveyor System
   Ash Water & Slurry System

- 02 PYRITES HANDLING SYSTEM

   Hydraulic System Utilizing Hydro-ejectors

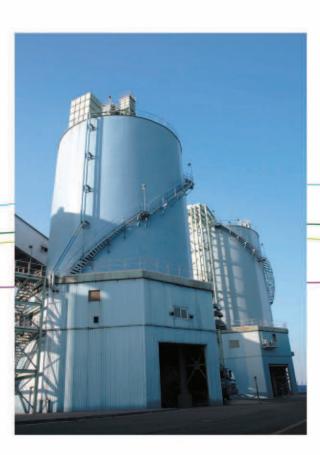
   Mechnical System Utilizing Conveyors

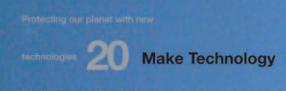
- Old FLY ASH SYSTEM
  Positive Pressurized Conveying System
  Lean(Dilute) Phase System
  Medium Phase System
  Dense Phase System
  Regative Pressurized Conveying System
  Combination System
  Economizer & Air Preheater Ash Handling-System

# 04 Ash Disposal System

- Ash Slurry Pump System
   HCSD(High Concentration Slurry Disposal) System

# O5 ASH STORAGE SILO SYSTEM Ash Dry Unloading System Ash Wet Unloading System





# **Waste & Biomass To Energy Systems**

future dream for the environmental energy.







- 01 Fluidized Bed combustion system (PYROFLUID®)
- 02 Rotary Kiln type
- 03 Rotary Kiln type + Stoker type

# Waste & Biomass To Energy Systems

Waste disposal is becoming a threatening problem to the natural environment. To protect the environment from the hazardous waste, efficient and reliable incineration systems are the only feasible solution. KC Cottrell's product line covers a wide range of combustion systems ranging from Fluidized Bed combustion type to rotary Kiln type for both solid and fluid wastes such as sludge, waste-oils, waste-oil materials, waste-paint, waste-plastic, as well as municipal wastes and biomass. Waste & biomass to energy systems can be designed and supplied as per customer requirement.













- Dampers
  Louver Damper
  Stack Isolation Damper
  Guillotine Damper
  Radial Vane Damper
  Diverter Damper
  PoPPet Damper
  Wafer Damper

- Wafer Damper
- 02 Expansion Joints
- 03 Pressure Vessels



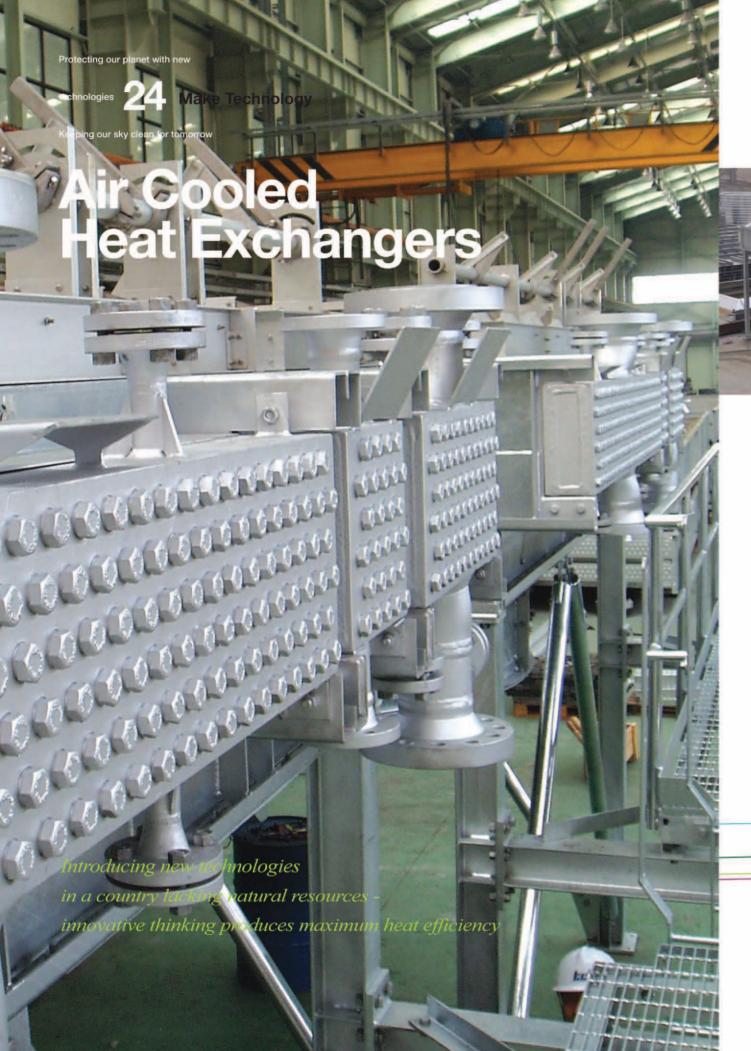


Industrial Machinery By drawing upon its experience and technology in pollution prevention, KC Cottrell designs and manufactures industrial machinery such as dampers to control gas flow, expansion joints and pressure vessels. We offer customers the latest technology and machinery needed for power plants, steel works, cement plants, petrochemical factories, semiconductor processing and incinerators.

KC Cottrell has built up a diverse and specialized system to effectively respond to the constantly changing and developing environmental industry. We are doing our part for a cleaner and brighter environment.













- 01 ACHE(Air Cool Heat Exchanger) 02 ACC(Air Cool Condensor)
- Air Cooled Heat Exchangers

KC Cottrell's air cooled heat exchanger (ACHE) systems are indispensable features at various industrial facilities, including petrochemical, oil refining and power plants. The use of air as a cooling medium eliminates the problems of erosion and water supply associated with water-cooled heat exchangers. Furthermore, it is an eco-friendly method that addresses the problem of warming seawater that results when seawater is used. In particular, our ACHEs are ideal for regions like the Middle East where there is a drastic shortage of industrial water. KC Cottrell is helping to save resources and the environment with its unique way of thinking.











- 01 Home PV systems design and construction
- 02 Turn-key system supply for large-scale commercial PV projects
- 03 Project development and operation of large-scale commercial PV projects
- 04 BIPV(Building Integrated Photovoltaic System) development



# Solar Power Systems

From small-scale generators for the home to MW-level systems for industrial use, KC Cottrell has been maximizing customer profits with its differentiated planning, building and operating management capabilities. Turning natural resources into energy is an important business for global environmental specialist KC Cottrell, as it not only functions as an alternative energy source but also prevents pollution.











- 01 Inspection and Diagnosis
- 02 System Efficiency Improvements
- 03 Maintenance and Repair Service Contract
- 04 FGD & ESP Engineering Consulting

Technical Services

Using our experience in clean air technology gained over 3 decades, KC Cottrell is able to provide a wide range of technical services to the power, steel, cement and many other industries, both within Korea and overseas. KC Cottrell will carry out a comprehensive analysis of the process efficiency, operating parameters and equipment condition. Based on this diagnosis we will carry out works to optimize the process efficiency, operability and long term reliability. KC Cottrell also provides routine process checks and maintenance as well as machine part

exchanges.







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Keeping our sky clean for tomorrow

Over the years, KC Cottrell's research and development programs have served to strengthen existing product technologies and to lead the company into new fields.





# 10MW Dry Post-combustion Carbon Capture Plant(CCS)

The world's first postcombustion Carbon Capture Plant using dry sorbent base is also and uses regenerable solid sorbents in the carbonator to capture CO2 from the flue gas. The carbon capture plant can extract approximately 700,000 tons (2% of the flue gas) of CO2 every year from Hadong thermal power plant unit 8. A 300MW carbon capture plant in KOSPO's Samcheok Green Power Complex will be scheduled to design and construct.



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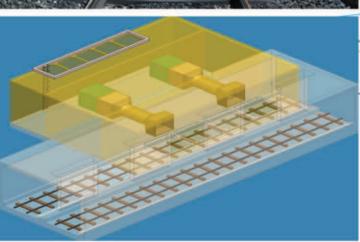
Keeping our sky clean for tomorrow



### RHDS catalyst regeneration Domestic refineries produce about 23,000 tons of used desulfurization catalysts as waste every year. Most of the waste catalysts are then collected for metals or calcinated, and the re-processed products are exported abroad. However, catalyst regeneration technology can feed the waste catalyst back into the reaction process and reduce such unnecessary inefficiencies.







# Ambient Air Control (ESPs in Subway Tunnels)

High efficiency ESPs are being developed for underground public transit with the aim of reducing particulate matter in subway tunnels to 30% below the allowable standard.



Protection our planet with new



Mission & Vision / Network

Kesping our sky plean for tomorrow

A Global Leader in Green Business People & Technology keeping our planet sustainable...

# Mission

To provide the best environmental technology and services, promote selfimprovement and growth, and contribute to the next generation's sustainable future.

# **Vision**

Continue to evolve as a global leader in Air Pollution Control by 2013. To have the most extensive geographic coverage, relying on independent but closely networked local operations.

To efficiently share resources (technology, experience, human resources) throughout KC companies, overcoming cultural barriers through open communications, leadership by everyone, and respect for each other.

# **Value**

**People** We believe in people's potential for growth, goodwill and determination to fulfill their role as global citizens. Our people honor integrity and take responsibility for their own work. We respect each other, regardless of age, gender, and cultural backgrounds. We believe in the power of teamwork based on this respect for each other.

**Value Creation** We believe that the company can exist only so long as it can continue to deliver value to our customers and shareholders. We create value through our knowledge; our experience from thousands of projects, development of new technology, and creativity in engineering, production, procurement and construction. We appreciate the importance of all stakeholders such as our suppliers and subcontractors who are our partners in this value creation process.

**Challenge** We constantly extend our limits, trying out new technologies, projects and markets. There are always even more things to try than those that have been accomplished. We renew ourselves and grow through challenges, with risk management in place. We believe that we can build a better tomorrow through our efforts today.



# Air Pollution Control(APC)

- KC Cottrell China Co., Ltd.
- KC Cottrell Taiwan Co., Ltd.
- KC Cottrell Inc.
- KC Cottrell Vietnam Co., Ltd.
- KC Cottrell Kazakhstan Co., Ltd.
- KC Air Filtertech Co., Ltd.
- PT. KC Cottrell Indonesia
- Lodge Cottrell Ltd.
- Lodge Cottrell India Pvt. Ltd.
- NOL-TEC Systems, Inc.
- NOL-TEC Korea Co., Ltd.

# **Environmental Services**

# **Industrial Waste Treatment**

- KC EnviroServices Co., Ltd.
- KC Landfill Service Co., Ltd.
- KC Hanmi Environment Co., Ltd.
- KC Enviro Construction Co., Ltd.

# **Material Recycling**

- KC Glass & Materials Co., Ltd.
- KC Honam Environment Co., Ltd.
- Veolia ES & KC EcoCycle Co., Ltd.

# **Manufacturing Services**

- KC Envirotech E&C (Fushun) Co., Ltd.
- Jord KC Co., Ltd.
- Clestra Hauserman Ltd.

# **New & Renewable Energy**

- · KC Solar Energy Co., Ltd.
- KC Energia Co., Lcc
- KC Green Energy Co., Ltd
- Busan-Shinho Solar Power Generation Co., Ltd.



