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KC Cottel Protecting our planet with new technologies





A company co-existing with the environment

A company that researches ways to safeguard the natural beauty of our planet. A company whose mission is to keep our environment green to protect future dreams. A company that co-exists with nature, recognizing that the environment is the most valuable asset. KC Cottrell is preparing for the future with a firm commitment to the environment.



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Part 1

Make A global company with leading environmental technology

The 35 year history of KC Cottrell is in sum, the history of environmental technology.

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 Korea's foremost environmental specialist, KC Cottrell offers total solutions related to the environment, ranging from plant facilities to services. With 35 years of unrivalled know-how, KC Cottrell is expanding its reach to keep

the environment clean in every corner of the globe.

Environment



- History
- Company Overview

6 **KC** Cottrell History

Keeping our skies clear for tomorrow

KC Cottrell is living history of the environment industry



Nov. 1973 Founded Korea Cottrell Co., Ltd.

Jul. 1983 Contract signed with Korea Electric Power Company for Boryeong Thermal Power Station **ESP** Project

Jan. 1986 Contract signed with POSCO for Pohang Steel Works Sinter Plant ESP Project

Jul. 1990 Contract signed with Taiwan Power Company for Talin and Hsinta Thermal Power Stations ESP Projects

Sept. 1990 Opened a Branch Office in Taipei, Taiwan

Jun. 1992 Contract signed with Taiwan Power Company for Shenao Thermal Power Station ESP Project

Jun. 1993 Awarded 1st Environmental Grand Prize of Technology Development by the Korean Government

Nov. 1994 Listed on the Korea Stock Exchange

Apr. 1996 Contract signed with Korea Electric Power Corporation for Dangin Thermal Power Station FGD Project

Jul. 1996 Acquired ISO 9001 International Quality Management System Certification from BVQI (Bureau Veritas Quality International)



Nov. 1996 Established CNP Industries Inc. in Manila. Philippines

Jul. 1997 Contract signed with POSCO for Gwangyang Steel Works Blast Furnace ESP Project

Feb. 1998 Contract signed with IHI (Ishikawajima-Harima

Heavy Industry Co., Ltd.) for Nippon Steel Co., Ltd. Kamaishi Power Plant ESP Project

Aug. 1999 First Commercialized PPCP (Pulse-corona induced Plasma Chemical Process)

Apr. 2000 Contract signed with Korea District Heating Corporation for Chongju District Heating Plant FGD Project

Aug. 2000 Contract signed for Shijiazhuang Thermal Power Station ESP Project in China

Nov. 2000 Contract signed for Matou Thermal Power Station

ESP Project in China

Dec. 2000 Contract signed with Taiwan Electric Power Corporation for Taichung Thermal Power Station ESP Project

Oct. 2001 Contract signed with KCES for Yeochun Incinerator Project



May. 2002 Contract signed with Korea Southern Power Co., Ltd. for Youngnam Thermal Power Plant Orimulsion Fuel Conversion Project

Jun. 2002 Contract signed with Korea Southern Power Co., Ltd. for Samchunpo Thermal Power Station **FGD** Project

Jun. 2002 Established CCKC Envirotech Co., Ltd. in Changchun, China

Jan. 2003 Contract signed with Ssangyong Cement for Yeongwol plant kiln e-BF Project

Mar. 2003 Contract signed with Thai Tokai Carbon Product Co., Ltd. for FGD Project in Thailand

Jun. 2003 Contract signed with Korea East-West Power Co., Ltd. for Dangjin Thermal Power Station Ash Handling System Project

Apr. 2004 Acquired ASME U(Pressure Valve) and S(Power Boiler) STAMP

Nov. 2004 Opened a Branch Office in Beijing, China

Nov. 2004 Contract signed with Korea Western Power Co., Ltd. for Taean Thermal Power Station ESP Project



Mar. 2005 Acquired Lodge Sturtevant Ltd. in Birmingham, UK

May. 2005 Contract signed with POSCO for Gwangyang Steel Works Sinter Plant FGCS (Flue Gas Cleaning System) Project

Jan. 2006 Contract signed with Korea Midland Power Co., Ltd. for Boryeong Thermal Power Station ESP and Ash Handling System Project

Apr. 2006 Established Lodge Cottrell Inc., a joint venture with Lodge Sturtevant Ltd. in Texas, US

May. 2006 Contract signed with Korea South East Power Co., Ltd. for Hadong Thermal Power Station FGD Project

Jun. 2006 Established KC Envirotech E&C (Fushun) Co., Ltd. in Fushun, China

Sept. 2006 Acquired SEL (Special Equipment License) certification for manufacturing Pressure Vessel in China

Project Mar. 2007

Project in Texas, US

Sep. 2007 Oct. 2007

Won Presidential Award of Superior Capital Goods Dec. 2007



Contract signed with Korea South East power Co., Ltd. for Youngheung Solar Power Station

Contract signed with Formosa Heavy Industries Corp. for Formosa Plastics Corp. US' Thermal Power Station GSA(Gas Suspension Absorption)

Acquired Anseong Glass Industrial Co., Ltd. for glass recycling business

Acquired ISO 14001 International Environmental Management System Certification from KFQ(Korean Foundation for Quality)



Keeping our skies clear for tomorrow

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



KC Cottrell to pass on clear skies to future generations.

and providing environmental services. an environmental leader.

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 35 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.

KC Cottrell has been developing proprietary technologies to protect our natural surroundings. Since our inception in 1973, we have led the way in Korea's environment industry by taking on the construction of environmental plant facilities

We are now reaching out to wider markets and competing against global peers. We established a branch office in Taiwan in 1990 and have ventured into the Americas and Europe. 2002 saw the establishment of a joint venture in China, fast emerging as a major force in the Asian economy. In this way, we are laying the foundation for a new period of growth as

Possessing green technology to safeguard tomorrow's environment,

Part **2**

MakeTechnology that looks
10 years into the future and
cares for the next 100 years

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 environment industry.

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Technology



- Dust Collection Systems
- Gas Cleaning System -De-SOx
- Gas Cleaning System -De-NOx
- Incineration System
- Industrial Machinery
- Air Cooled Heat Exchanger
- Solar Power System
- Technical Services

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technologies 12 Make Technology

Dust Collection Systems



- 01 Dry Type Electrostatic Precipitator
- Top RappingSide Rapping
- 02 Wet Type Electrostatic Precipitator
- Vertical
- Horizontal
- 03 DeTar Electrostatic Precipitator
- 04 Fabric Filters
- Pulse Jet Fabric Filter Reverse Air Fabric Filter
- 05 Wet Scrubber & Multi Cyclone
- 06 FGC(Flue Gas Conditioning) System
- NH₃ Injection System
- SO₃ Injection System

Dust Collection Systems

we are building up a reputation for excellence in dust collection. to keep tomorrow's skies blue.









Customers know they can trust our dust collection systems.

- With over 30 years of know-how combined with our experience in applying systems to diverse emission sources,
- 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

Keeping our skies clear for tomorrow

technologies 14 Make Technology

Gas Cleaning System De-SOx

Till the day we see clean rain a leader of highly efficient desulfurization fa





01 Wet Process

- Wet Linestone-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**NaHCO₃ Process
- Alkali Powder Injection System

FGD(Flue Gas Desulphurization) System Fossil fuels, used in various industrial facilities, produce sulphuric acid (SOx) when burned. If the harmful and toxic sulphuric acid (SOx) is released into the atmosphere, it poses another threat to our lives in the form of secondary pollutants, such as acid rain. KC Cottrell removes sulphuric acid (SOx) created during various processes with a highly efficient FGD system to protect the environment.





Protecting our planet with new

16 Make Technology technologies

Keeping our skies clear for tomorrow

Gas Cleaning System De-NOx

Breathing together with a clean world the best of De-NOx technology is born from rich experience



01 SCR(Selective Catalytic Reduction) 02 SNCR(Selective Non Catalytic Reduction) 03 Hybrid

De-NO x (De-Noxification) System

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, combustor, steel-making facilities, glass melting furnace and cement manufacturing facilities - to provide diverse systems for eliminating nitrous oxide. In this way, we are helping to keep the air we breathe cleaner.



technologies **18** Make Technology

Incineration System

from plentiful know-how, we're keeping the air we breathe cleaner

세계료 열린 행운의 도시 = 표税·

Pocheon of Fortune



01 Fluidized Bed Incinerator (PYROFLUID®) 02 Rotary Kiln Incinerator 03 Rotary Kiln Incinerator + Stocker Incinerator

Incineration System Waste disposal is becoming threatening problem to the Natural Environment. To protect the environment from the hazardous waste, efficient and reliable incinerating system is the only feasible solution. KC Cottrell's product line covers a wide range of incinerator systems ranging from Fluidized Bed Incinerator to Rotary Kiln Incinerator for both solid waste and fluid waste such as all kinds of sludge, waste-oils, waste-oil materials, waste-paint, waste-plastic, as well as municipal and infectious waste. Incinerator can be designed & installed as per customer requirement.







Industrial Machinery



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- 01 **Damper** Louver Damper Stack Isolation Damper
- Stack isolation Dampi
 Guillotine Damper
 Radial Vane Damper
 Diverter Damper
 PoPPet Damper
 Wafer Damper

- 02 Expansion Joints

03 Pressure Vessel

Industrial Machinerv

petrochemical factories, semiconductor processing and incinerators.







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

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01 ACHE(Air Cool Heat Exchanger) 02 ACC(Air Cool Condensor)

Air Cooled Heat Exchanger

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.

nologies troducing ne in a countr inne

accontractor

natural resources

ative thinking produces maximur i heat efficiency









Solar Power System





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 System 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, operating and 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.

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ving energy created fro our natural environment



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Technical Services



01 Inspection and Diagnosis 02 System Efficiency Improvement 03 Maintenance and Repair Service Contract

Technical Services cement plants from the inside and outside of the country, will provide higher services.

With the solar power system, an all natural alternative energy source, we're safeguarding our environment for future generations.









- KC Cottrell based on our technology and experiences of over 3 decades as a Clean Air System Company, devoting ourselves to the satisfaction of various customers; power plants, refining plants and
- KC Cottrell makes a comprehensive diagnosis related to the processes, analyzes the efficiency and operation conditions of outworn equipments and devices by long time operation and executes the construction for efficiency
- improvement and durability extension and provides regular adjustments and machine parts exchanges.

Part 3

A company planning for the future environment

KC Cottrell is working to raise the level of Korea's environment industry to global standards. We are fully aware that the environment represents not only a precious resource, but also a major responsibility. We are constantly searching for better ways to protect the world we live in.

KC Cottrell is growing into an important axis of the worldwide environment industry with its global network, unique environmental technologies and know-how. A leader in the environment industry. The tireless efforts of global talents drive KC Cottrell.

Our dream of preserving our environment inspires KC Cottrell.

Tomorro



- R&D Institute
- Vision & Mission
- Network



Over the years, research and development programs of KC Cottrell have served to strengthen existing product technology and to lead the company into

Our R&D activities have recorded with several patents in the air pollution control area.

a new field.

Through our intensive research program, our development subjects extend to the pilot scale and sometimes turn into the full scale system. Our research team can also deliver their specialized services to identify and support customer needs.







Vision & Mission / Network

Vision & Mission

With our passion for taking on new challenges, KC Cottrell will make history in the global environment industry

We are not resting on our laurels as a leading environment company.

KC Cottrell is sparing no effort to remain current and central to the environment industry. Rather than merely relying on the past 35 years of success, we are harnessing our know-how and experience of making specialized machinery and facilities to power our future.

Our growth is the outcome of tireless effort and research. The determination and the will to pioneer a new field spurred us on.

As we look to the future, KC Cottrell will expand into new areas such as renewable energy and recycling of waste plastic, waste catalyst. In addition to developing unique technologies, we will maximize operating efficiency to enhance corporate value.

Korea's leading environment specialist is gaining recognition in the global market.

KC Cottrell promises to give back to society through its differentiated environmental technologies and protect our earth as a world leading air pollution control company.



Air Pollution Control

- Lodge Cottrell Ltd. UK
- Lodge Cottrell Inc. USA
- KC Cottrell (China) Co., Ltd.

Environmental Services

- Industrial Waste Treatment - KC Enviro Services Co., Ltd.
- KC Landfill Service Co., Ltd.

Material Recycling

- Anseong Glass Industrial Co., Ltd.
- Veolia ES&KC EcoCycle Co., Ltd.
- KC Jeongrim Environment Co., Ltd.

Manufacturing Services

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

Network

Our stage is the world –

Our global network allows us to always be by our customers' side. We will be attentive to our customers' needs and strive to better serve them.



KC Cottrell has the technology to protect nature and our planet.

Our focus is on finding ways to better preserve the environment as opposed to improving the bottom line. Look for KC Cottrell as it expands its overseas presence. We'll be keeping the skies blue for another



