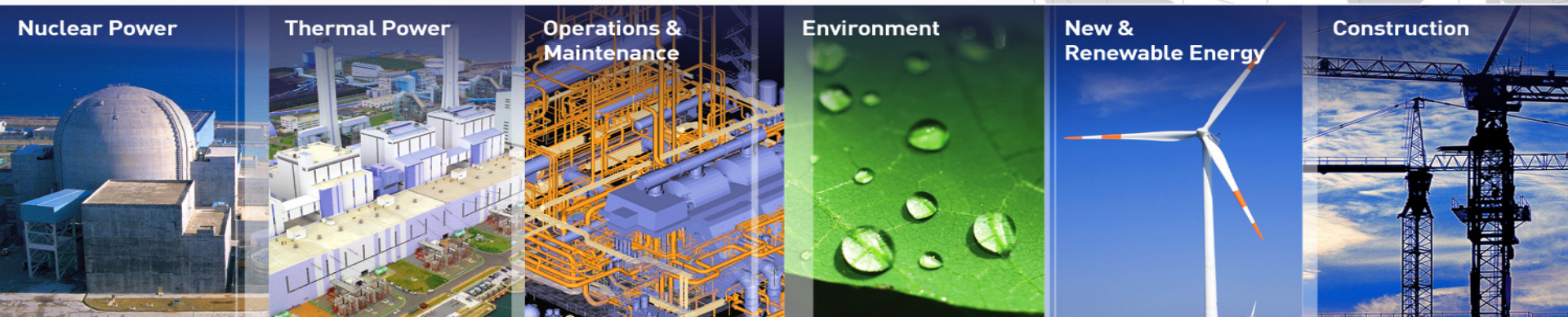


KEPCO E&C

Global Power EPC Company



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- 1 _ Company Information
- 2 _ Business Area
 - 2-1. Nuclear Power
 - 2-2. Thermal Power
 - 2-3. O&M/Environment/PM•CM
- 3 _ Our Performance

Company Overview



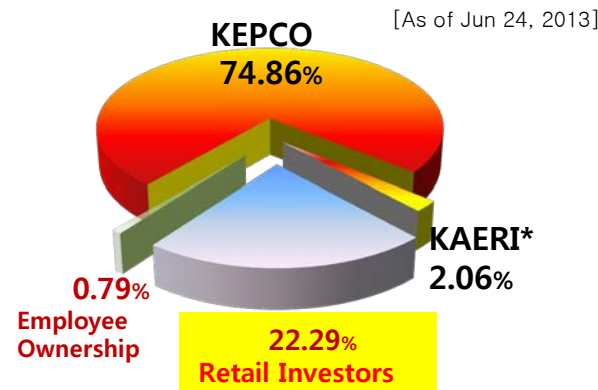
Korea's Leading Power Plant Engineering Company

- Korea's leading provider of design and engineering for nuclear, thermal and hydro-electric plants with over 35 years of experience
- Current 100% market share in nuclear power plant design in Korea
- The world's most competitive engineering company specialized in the two sectors: A/E and NSSS
- Expanding its business to Thermal EPC, energy-related business, environment-friendly business, etc.

Corporate Information

CEO & President	An, Seung Kyoo (Former Vice Chairman, Hyundai Engineering)
Foundation Date	October 1, 1975
Employees	2,337 (As of JAN 1, 2013)
Business Area	Power plant design & engineering, etc.

Ownership



IPO Information

Shares Outstanding (Common shares 100%)	38,220,000
Listing Date	December 14, 2009
Offered Shares	7,644,000

Year	2009	2010	2011	2012
Dividend Propensity*	50%	50%	70%	55%

* KAERI - Korea Atomic Energy Research Institute

* Dividend Propensity – Dividend/Net Income *100



Business Areas

• Design & Engineering

- Nuclear Power Plant
- Thermal Power Plant
- Combined Cycle Power Plant
- Cogeneration Power Plant

• O&M (Operations & Maintenance)

- Technology & Engineering Support for Operating Power Plants

• Environmentally-friendly Biz.

- FGD System / DeNOx System
- ESCO, Renewable Energy
- Water Pollution Control
- Wastewater Treatment Facilities



• PM/CM

- SOC
- Private SOC
- Power Plants
- International Plants

Business Area – Design & Engineering

All of the local nuclear power plants have been independently designed by KEPCO E&C since 1993, Ulchin Unit 3.

Nuclear Power Plant

Services performed

- Site selection and feasibility survey
- Engineering and design
- Construction/Project management, licensing support, quality assurance and inspection
- Support for purchasing, owner support, education/training

Major Project Experience

• Projects in Progress

Reactor	Project	Project Period	Client
	UAE #1,2,3,4	Jan '10 ~ May '20	KEPCO
APR 1400	Shin-Ulchin #1,2	Dec '07 ~ Dec '16	KHNP
	Shin-Kori #3,4	Aug '06 ~ Sep '14	KHNP
OPR 1000+	Shin-Wolsung #2	Aug '02 ~ Oct '13	KHNP
	APR1400 US NRC DC design/licensing support	Mar '11 ~ Jul '13	KEPCO

• Projects Completed

Reactor	Project	First Power	Design
OPR 1000+	Shin-Wolsung #1	2012	KEPCOE&C
	Shin-Kori #1,2	2011 / 2012	KEPCOE&C
	Ulchin #5,6	2004 / 2005	KEPCOE&C
OPR 1000	Yonggwang #5,6	2002 / 2002	KEPCOE&C
	Ulchin #3,4	1998 / 1999	KEPCOE&C
	Yonggwang #3,4	1995 / 1996	KEPCOE&C-WEC
	Wolsung #3,4	1998 / 1999	AECL-KEPCOE&C
CANDU PHWR	Wolsung #2	1997	AECL-KEPCOE&C
	Wolsung #1	1983	AECL-CANATOM

*KHNP – Korea Hydro & Nuclear Power co. LTD. (The sole nuclear power plant operator in Korea)

*WEC – WestingHouse Electric.

*AECL – Atomic Energy of Canada Limited

*CANDU PHWR – CANada Deuterium Uranium Pressurised Heavy Water Reactor

Technology – Nuclear Power Plant



Korean Nuclear Power Plant Design Development

OPR 1000 Optimized Power Reactor

- Improved Safety
- Improved Operability, Maintainability and Accessibility
- Yonggwang Units 5,6
Ulchin Units 3~6

OPR+ Improved OPR

- Optimization of plant arrangement
- Optimization of system design and Equipment capacity
- Shin-Wolsong Units 1,2
Shin-Kori Units 1,2

APR 1400 Advanced Power Reactor

- 1,400MW Class large capacity
- A Korean nuclear power reactor improved economic factor
- Shin-Kori Units 3,4
Shin-Ulchin Units 1,2
BNPP(UAE) Units 1~4

• Under Development

APR 1400 (For Europe)

APR+ Improved APR

- 1,500MW
- New light water nuclear reactor

APR 1400 (US NRC DC*)

SMART System-integrated Modular Advanced Reactor

- 90MW
- Reactor, steam generator, pressurizer & coolant pumps integrated in one vessel

VHTR
Very High
Temperature Reactor

SFR
Sodium Cooled
Fast Reactor

2020s - GEN. IV

2010s - GEN. III+

• The Competing Reactors

France
AREVA
EPR1600

USA
WH-Toshiba
AP1000

Japan
Mitsubishi
APWR+

Russia
ASE
VVER-1500

※ All of the reactors in this box are PWR type reactors.

* US NRC DC: United States Nuclear Regulatory Commission Design Certification

Strength of Korean Nuclear Power Plants

APR1400 - The best reliability, economic efficiency and operability



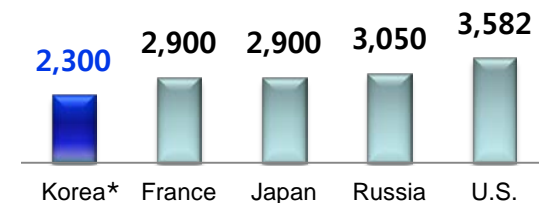
APR 1400 in Detail

<Source : www.apr1400.co.kr ; Comparison with other reactors>

	OPR 1000	APR 1400	EPR 1600
Capacity (MWe)	1000	1,400	1,600~1700
Design Life Time	40	60	60
Seismic Design Basis	0.2g	0.3g	0.25g
Refueling Interval (month)	12~18	18	18
Construction Period (month)	Over 60	54	57
Construction cost (\$/Kw)	-	2,300	2,900

• The World's Most Economical and the Safest Reactor

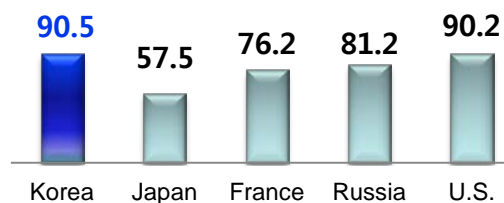
Cost of Building Nuclear Power Plant (\$/Kw)



*APR1400

※ World Nuclear News
(World Nuclear Association, 2008)

Energy Availability Factor(%)

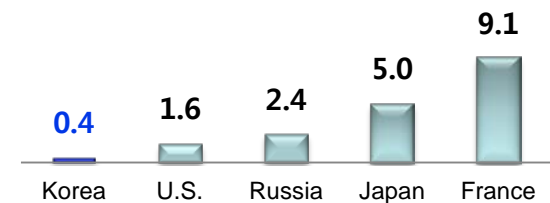


■ EAF = (REG-PEL-UEL-XEL)/REG x100

□ REG : Reference Energy Generation □ PEL : Planned Energy Loss □ UEL : Unplanned Energy Loss □ XEL : External Energy Loss

※ IAEA PRIS (Power Reactor Information System), A three-year average (2009~2011)

Unplanned Capacity Loss Factor (%)



• Exporting technology to the world (Below is recent overseas projects)

- ITER Electrical Installation Support (Client : ITER)
- AP1000 COL Demonstration & Design Finalization (Client : WEC)
- Technical Support for Bechtel (Client : Bechtel)

Market Opportunities

Focus on New Opportunities at Home & Abroad

Growth of Nuclear Power

• Domestic

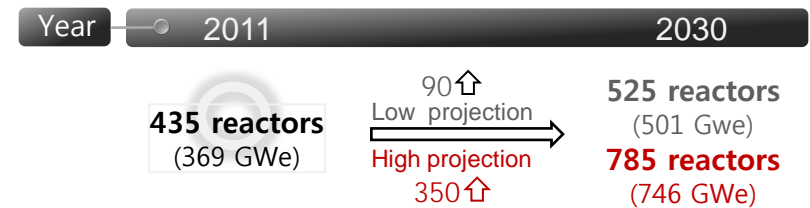
*Timeline for Completion of Nuclear power plant construction ('13~'24)

Year	Project [capacity (MW)]
2013	Shin-Kori #3 [1400]
2014	Shin-Kori #4 [1400]
2017	Shin-Ulchin #1 [1400]
2018	Shin-Ulchin #2 [1400]
2019	Shin-Kori #5 [1400]
2020	Shin-Kori #6 [1400]
2021	Shin-Ulchin #3 [1400]
2022	Shin-Ulchin #4 [1400]
2023	Shin-Kori #7 [1500]
2024	Shin-Kori #8 [1500]

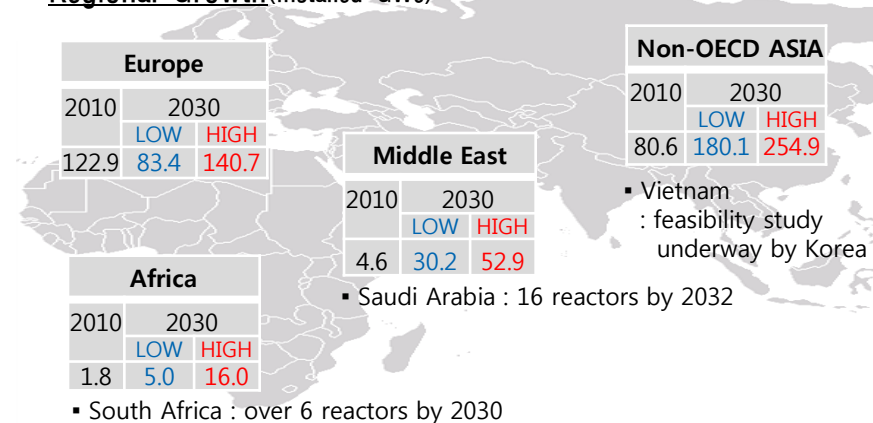
*This timeline was based on "The 6th Basic Plan of Long-term Electricity Supply" of The Ministry of Knowledge Economy(Feb 2013)

• Overseas

*Projected Growth for World Nuclear Power



*Regional Growth(Installed GWe)



Business Area – Design & Engineering

Experiences of Coal fired/ CFBC Coal fired/ Combined Cycle/ Cogeneration Design

Thermal Power Plant

Services performed

- Feasibility studies, environmental impact assessments, site survey
- Design standardization, basic and detail design of construction work
- Support for the purchase of equipment and materials
- Project management, supervision, test operation
- Quality assurance and control support
- Preparation, review and approval of documentation

Major Project Experience

• Projects in Progress

Capacity (MW)	Project	Project Period	Client
540	Cote d'Ivoire CIPREL IV Add-on EPC	Jul '13 ~ Dec '15	CIPREL
340	Ghana Takoradi T2 EPC	Dec '11 ~ Oct '14	Takoradi Int'l Company
1000x2	Taeon #9,10	Jun '11 ~ Mar '17	Korea Western Power
150 x3	Turkey Turfanbeyli (Including Procurement)	Apr '11 ~ Feb '15	SK E&C
1000x2	Shin-Boryeong #1,2	Jan '11 ~ Sep '17	Korea Midland Power
1000x2	Dangjin #9,10	Oct '07 ~ Sep '16	Korea East-West Power
1000x2	Samchok #1,2	Sep '09 ~ Mar '16	Korea Southern Power
300	Taeon *IGCC Pilot Plant	Apr '11 ~ Jul '16	Korea Western Power

• Projects Completed

■ Coal Fired Power Plant

- 500MW 34 Units
- 800MW 4 Units

■ Large Scale *CFB Coal Fired Power Plant

- 200MW 2 Units
- 340MW 1 Unit

■ Combined Cycle /Cogeneration

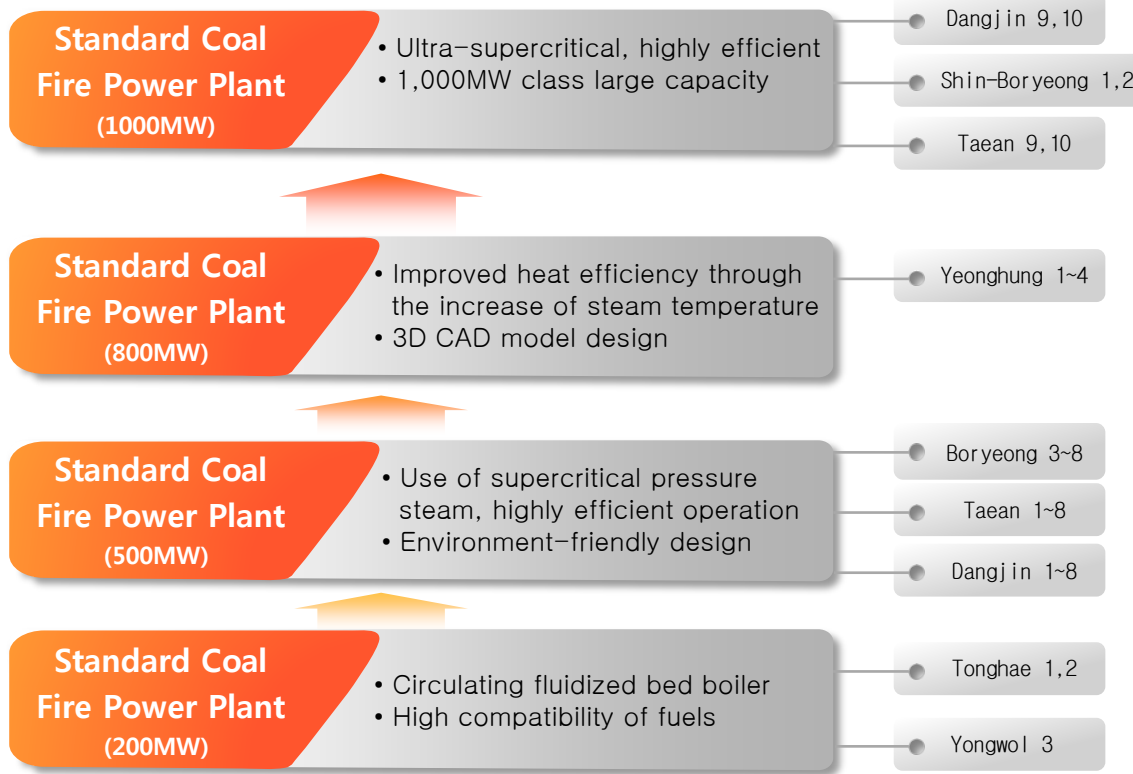
- 38 Units

* IGCC - Integrated Gasification Combined Cycle
(Producing electricity by burning coal gas regarded as clean as natural gas)

* CFB - Circulating Fluidized Bed Combustion Boiler

Technology – Thermal Power Plant

Coal-Fired Power Plant Design Development



- **Dangjin #1~4- World Best Project Awarded**
<US, Power Engineering, 2001>

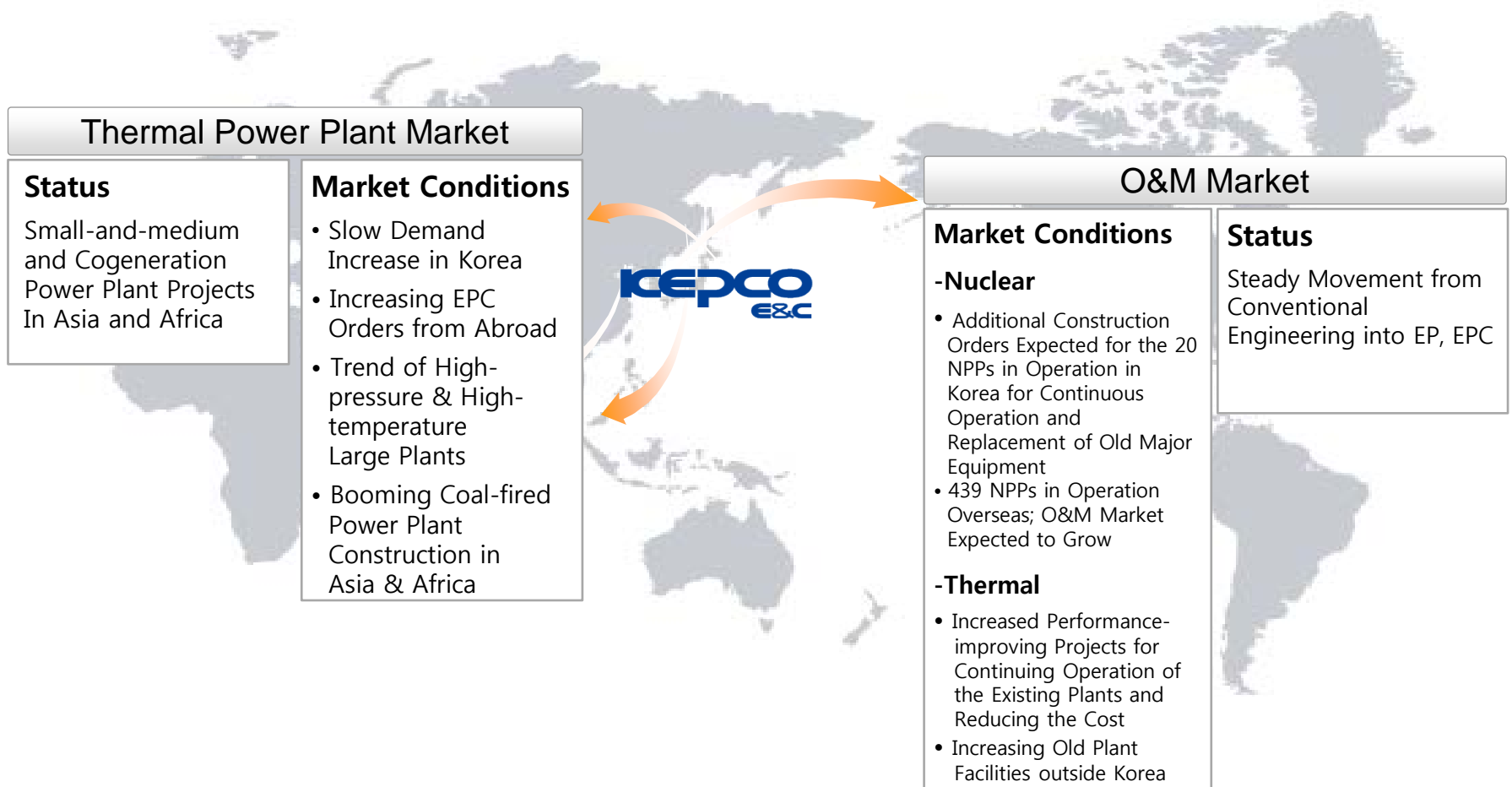


- **Boryeong #3,4 – World Best Project Awarded**
<US, Electric Power International, 1996>

EPC Business Expansion

Developing Overseas EPC Projects toward Global Top 5 Power EPC Leader

EPC Strategy



Business Area – O&M

Contribution to the Improvement of the Operating Power Plants' Operability, Efficiency and Safety

O&M (Operation & Maintenance)

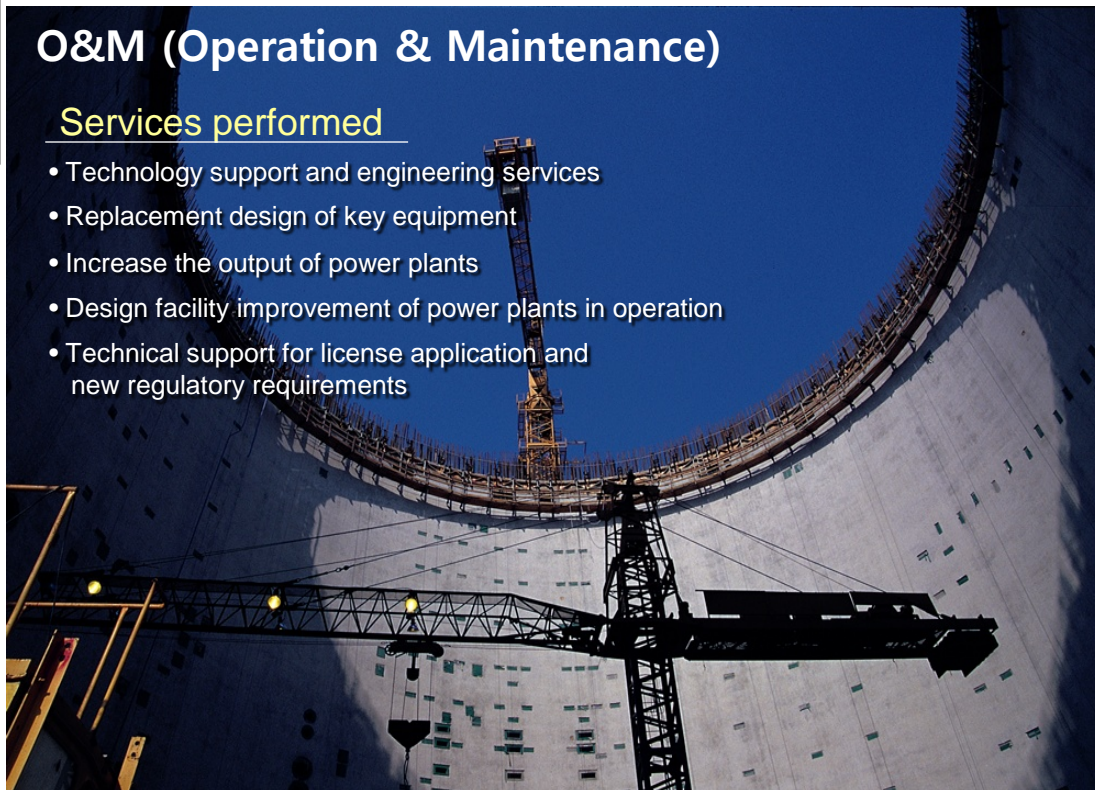
Services performed

- Technology support and engineering services
- Replacement design of key equipment
- Increase the output of power plants
- Design facility improvement of power plants in operation
- Technical support for license application and new regulatory requirements

Major Project Experience

• Recent Projects

- Technical support for license application to replace the steam generator for Unchin #1,2
- Technical consulting for license application to increase the output for Ulchin #1,2
- Improvement of facilities at Yeosu #2
- hundreds of small projects are in progress



Business Area – O&M

The O&M market is growing
due to the old operating nuclear power plants.

• Domestic Operating Nuclear Power Plants (23 units)

Plant		Capacity (MW)	Commercial Date	NSSS Supplier	Plant A/E	Reactor Type (Model)
Kori	#1,2	587/650	Apr `78/ Jul `83	WEC	Gilbert	PWR
	#3,4	950	Sep `85 / Apr `85	WEC	Bechtel/KEPCO E&C	
Wolsung	#1,2	679 /700	Apr `83 / Jul `98	AECL/	AECL	PHWR
	#3,4	700	Jul `98 / Oct `99	AECL/DOOSAN	AECL/KEPCO E&C	
Yonggwang	#1,2	950	Aug `86 / Jun `87	WEC	Bechtel/KEPCO E&C	PWR
	#3,4	1,000	Mar `95 / Jan `96	DOOSAN	KEPCO E&C	PWR (OPR1000)
	#5,6	1,000	May `02 / Dec `02	DOOSAN	KEPCO E&C	
Ulchin	#1,2	950	Sep `89 / Sep `88	Framatome	Framatome	PWR
	#3,4	1,000	Aug `98 / Dec `99	DOOSAN	KEPCO E&C	PWR (OPR1000)
	#5,6	1,000	Jul `04 / Apr `05	DOOSAN	KEPCO E&C	
Shin-Kori	#1,2	1,000	Feb `11 / Jul `12	DOOSAN	KEPCO E&C	PWR (OPR1000+)
Shin-Wolsung	#1	1,000	Jul `12	DOOSAN	KEPCO E&C	



• Developing Canada PHWR O&M Market

- MOU with SNC-Lavalin Nuclear (Mar `12)
- MOU with CANDU Energy (May `12)
- Established the Office in Toronto, Canada (Dec `12)

- * CANDU Energy
 - created in 2011 when parent company SNC-Lavalin purchased the commercial reactor division of AECL(Atomic Energy of Canada Limited), along with CANDU reactor technology
- * CANDU reactor
 - CANada Deuterium Uranium PHWR(Pressurised Heavy Water Reactor)

Business Area – Environmentally-friendly Biz.

• Environmental Business

Advanced air pollution prevention facilities

- Flue gas desulfurization system
- Flue gas denitrification(DeNOx) system



Site selection and environmental assessment



Water quality pollution prevention facilities

- Wastewater treatment facilities
- Sewage, manure, and livestock wastewater treatment facilities



Greenhouse gas reduction systems

- Development of technologies for capturing carbon dioxide
- CDM(Clean Development Mechanism) projects



• New and Renewable Energy

ESCO(Energy Service Company)

- ◆ Improvement of output of power plants
- ◆ Installation of energy-saving facilities
- ◆ Improvement of productivity of manufacturing industries

11 Projects

ESCO projects performed by KEPCO E&C

117,369

TOE Annual energy saving by ESCO projects

321,899

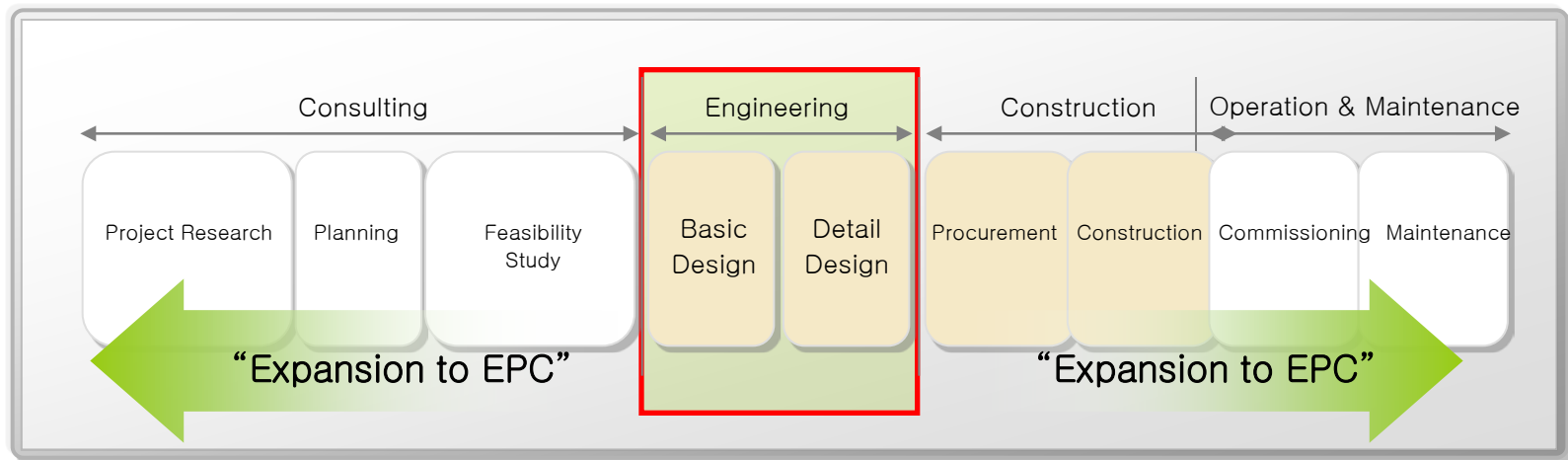
t Annual CO₂ reduction by ESCO projects

63,165,560

US\$ Annual energy saving value
by ESCO projects

Business Area – PM/CM

Management of the Entire or Parts of a Construction Project
(Consulting, Engineering, Construction, O&M , etc.)



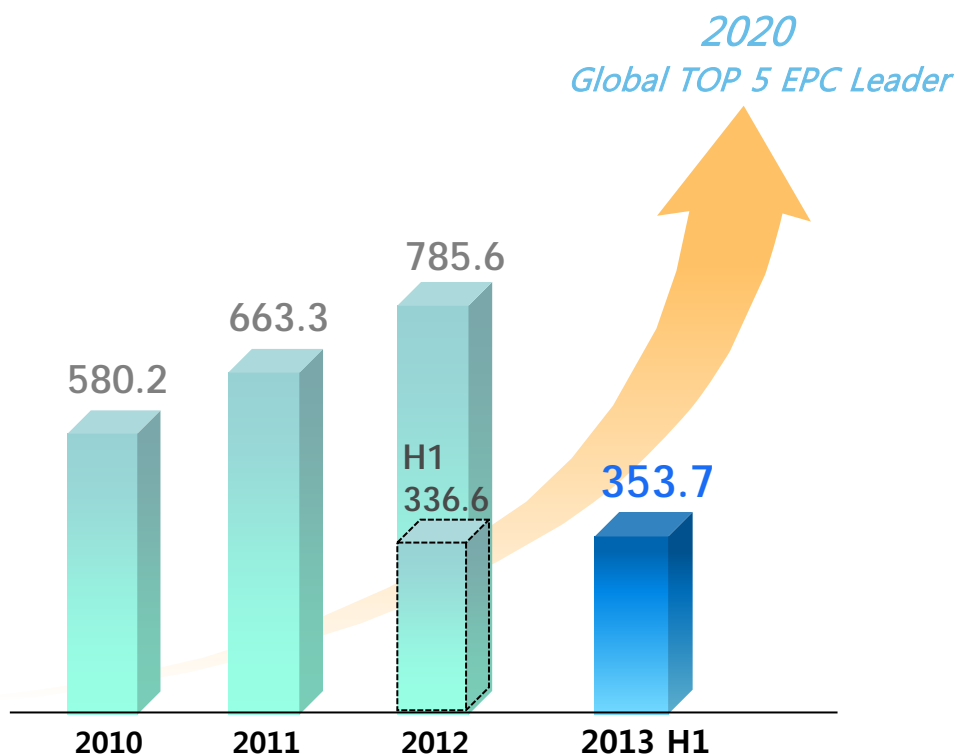
• Involved Projects



First Half 2013 : Revenue

• Revenue

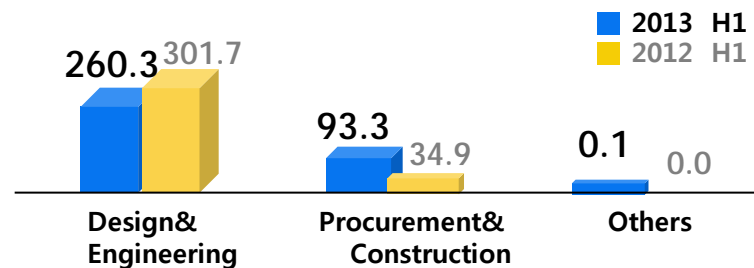
[Unit: KRW bn.]



• Revenue Breakdown

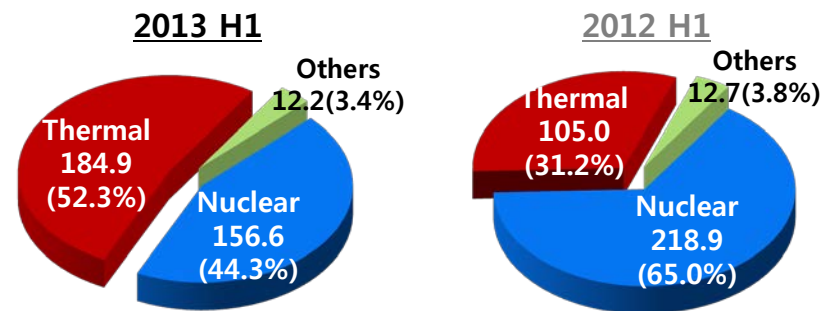
■ By Business Area

[Unit: KRW bn.]



■ By Division

[Unit: KRW bn.]



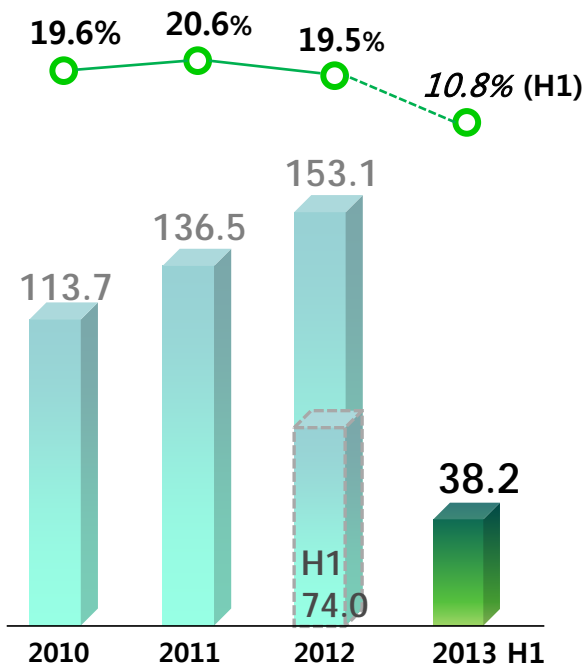
■ By Region



First Half 2013 : Financial Highlights

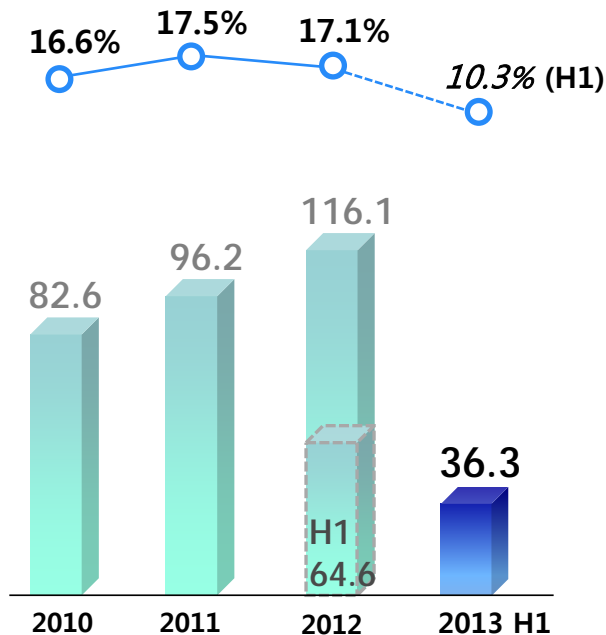
• Operating Income /Margin

[Unit : KRW bn.]



• Net Income /Margin

[Unit : KRW bn.]

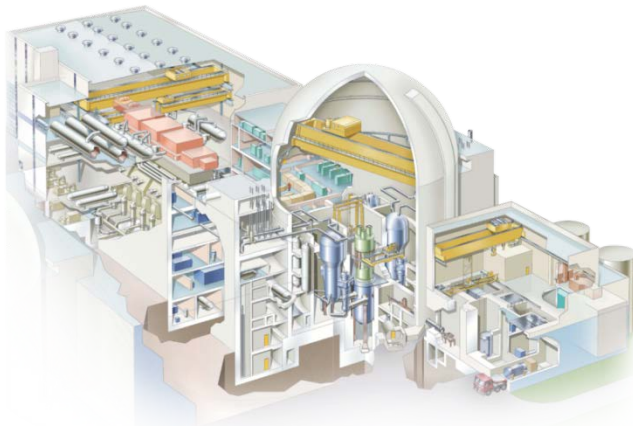


• 2013 Q2 Overview

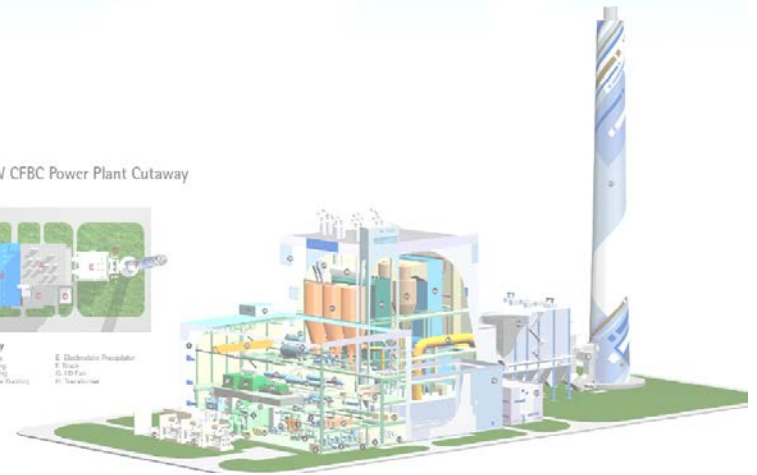
[Unit : KRW bn.]

	2013 Q2	2013 Q1	2012 Q2
Revenue	186.0	167.7	172.1
Operating Income	14.6	23.6	28.6
Net Income	14.1	22.2	22.0

Vision 2020 – Global TOP 5 Power EPC Leader



200MW CFBC Power Plant Cutaway



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