



# Investor Relations

Global Power EPC Company

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# Disclaimer

This material has been produced to provide investors with various information in order for them to get more understanding about KEPCO E&C based on the objective facts as best as we can.

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# Company Overview



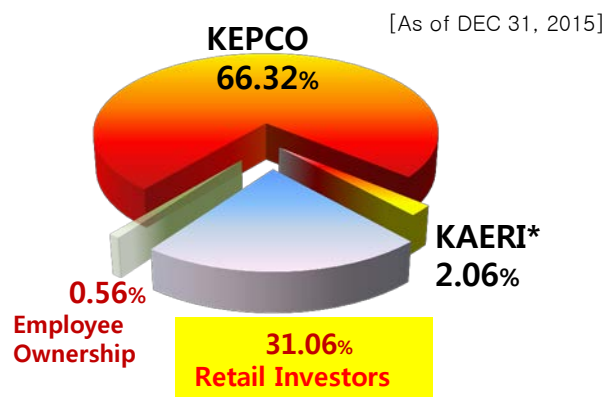
## Korea's Leading Power Plant Engineering Company

- Korea's leading provider of design and engineering for nuclear, thermal and hydro-electric plants with over 40 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	Park, Koo Woun <ul style="list-style-type: none"> <li>• Former nuclear power advisor, POSCO E&amp;C</li> <li>• Former Senior Vice President, KEPCO E&amp;C</li> </ul>
Foundation Date	October 1, 1975
Employees	2,260 (As of DEC. 31, 2015)
Business Area	Power plant design & engineering, etc.

### Ownership



### IPO Information

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

### Dividends

[Unit : KRW]

FY	2012	2013	2014	2015
Dividend Propensity*	55%	45%	40%	25%
Amount (per a share)	1,932	406	575	200

\* KAERI - Korea Atomic Energy Research Institute

\* Dividend Propensity – Dividend/Net Income \*100

# Business Overview



## Business Area

### • 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
- Experiences of Coal fired/ CFBC Coal fired/ Combined Cycle/ Cogeneration Design

## Major Project Experience

### • Nuclear power

Reactor	Project	Project Period	Client
<b>APR 1400</b>	Shin-Hanul #3,4	Mar '16 ~ Dec '23	KHNP
	Shin-Kori #5,6	Apr '14 ~ Mar '22	KHNP
	UAE #1,2,3,4	Mar '10 ~ May '20	KEPCO
	Shin-Hanul #1,2	Dec '07 ~ Dec '16	KHNP
	Shin-Kori #3,4	Aug '06 ~ May '16	KHNP
<b>SMART</b>	PPE BOP	Jun '16 ~ Nov '18	KAERI
	APR1400 US NRC DC design/licensing support - Stage 2	Aug '14 ~ Oct '17	KHNP

### • Thermal power

Capacity (MW)	Project	Project Period	Client
1000x2	Gosung Greenpower	May '14 ~ Jul '21	SK E&C
1000x2	Gangneung Anin	Feb '14 ~ Sep '20	Samsung C&T
1000	Shin-seocheon	Jun '14 ~ Dec '19	Korea Midland Power
400	Osan cogeneration EPC	Apr '13 ~ Mar '16	DS Power
540	Cote d'Ivoire IV CCPP Add-on EPC	Jul '13 ~ Mar '16	CIPREL
1000x2	Taeon #9,10	Jun '11 ~ Mar '17	Korea Western Power
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 ~ Sep '17	Korea Southern Power
300	Taeon *IGCC Pilot Plant	Apr '11 ~ Nov '16	Korea Western Power

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

\* CFB - Circulating Fluidized Bed Combustion Boiler

### 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

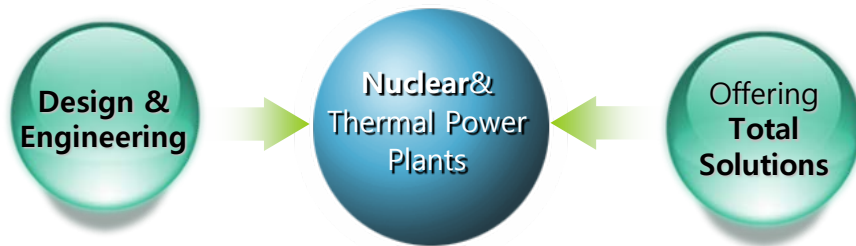


# Business Area – O&M



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

### • O&M (Operations & Maintenance)



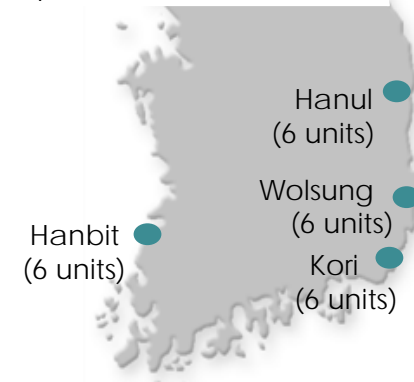
### Services performed

- 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



### • Nuclear Power Plants in Operation in Korea

Reactor	Project	First Power	Design
<b>OPR 1000+</b>	Shin-Wolsung #1,2	2012 / 2015	KEPCOE&C
	Shin-Kori #1,2	2011 / 2012	KEPCOE&C
<b>OPR 1000</b>	Hanul #5,6	2004 / 2005	KEPCOE&C
	Hanbit #5,6	2002 / 2002	KEPCOE&C
	Hanul #3,4	1998 / 1999	KEPCOE&C
	Hanbit #3,4	1995 / 1996	KEPCOE&C-WEC
<b>CANDU PHWR</b>	Wolsung #3,4	1998 / 1999	AECL-KEPCOE&C
	Wolsung #2	1997	AECL-KEPCOE&C
	Wolsung #1	1983	AECL-CANATOM
<b>PWR</b>	Hanul #1,2	1988 / 1989	Framatome
	Hanbit #1,2	1986 / 1987	WEC-Bechtel
	Kori #3,4	1985 / 1985	WEC-Bechtel
	Kori #1,2	1978 / 1983	WEC-Gilbert



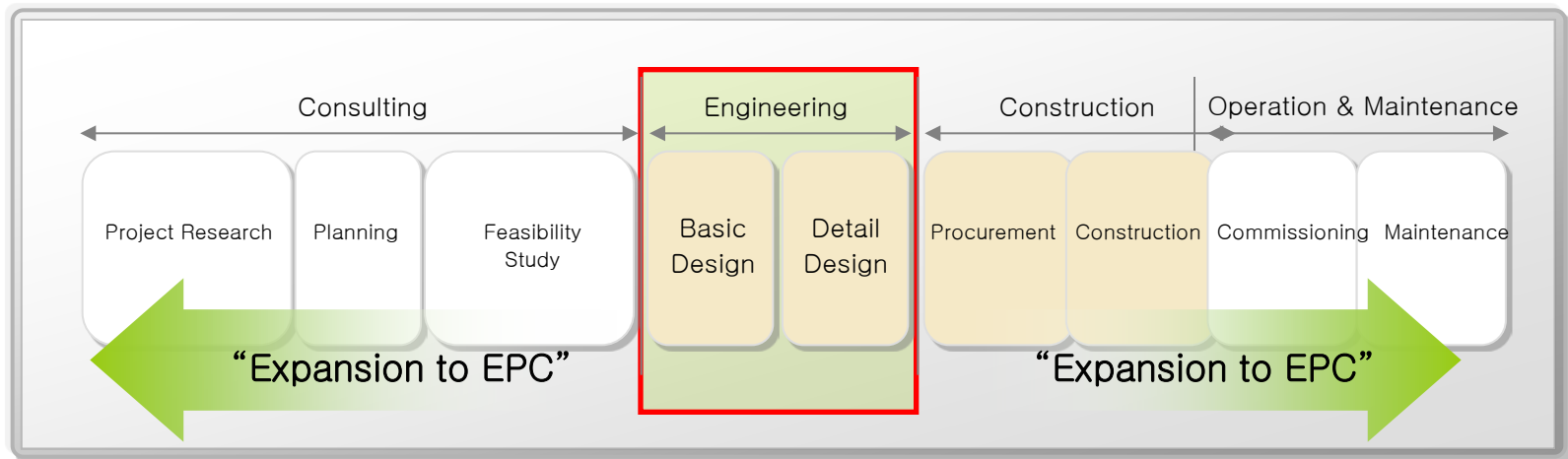
\*The Uljin was renamed Hanul

\*WEC – WestingHouse Electric.

\*AECL – Atomic Energy of Canada Limited

# Business Area – PM/CM

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

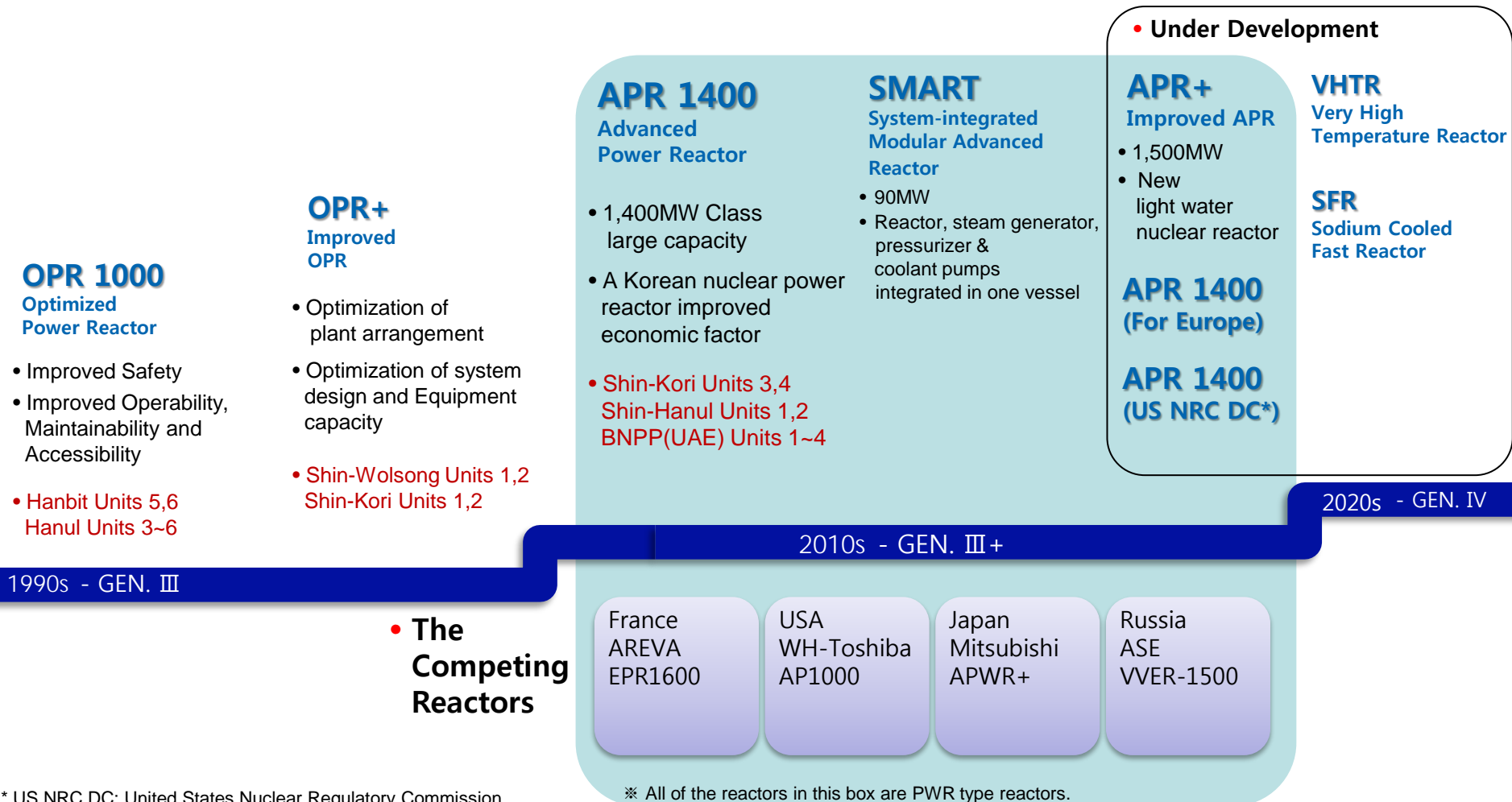


## • Involved Projects

SOC		POWER PLANTS		PRIVATE SOC	
					
KTX Project	Incheon Int'l Airport	Nuclear	Thermal	Incheon Int'l Airport Rail	Bridge of Busan-Gejei

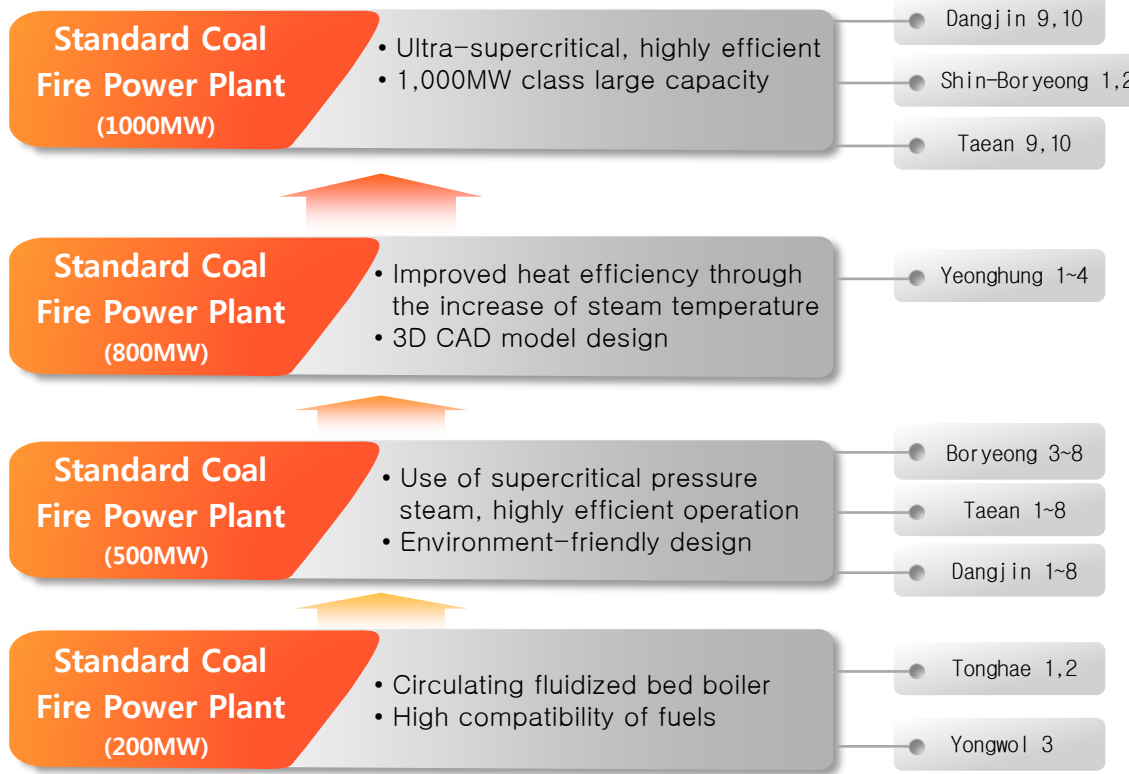
# Technology – Nuclear Power Plant

## Korean Nuclear Power Plant Design Development



# 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>

# Nuclear power plans – Large Units



## • New Domestic Reactors to be constructed

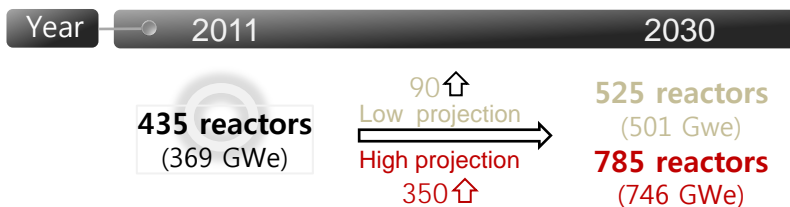
Year On-line	Project [capacity (MW)]
2022	Shin-Hanul #3 [1400]
2023	Shin-Hanul #4 [1400]
2026	Chunji #1 [1500]
2027	Chunji #2 [1500]
2028	New #1 [1500]
2029	New #2 [1500]

- "7<sup>th</sup> basic long-term power development plan of electricity supply and demand" was released by MOTIE in July 2015
- The plan has two more reactors than earlier planned.
- It contains 2030 target of reducing greenhouse gas emissions by 37percent from BAU levels, higher than its earlier plan for a 15-30 percent cut.
- In relation to greenhouse gas emissions, Nuclear power is one of the lowest among different energy sources.

\*MOTIE – The Ministry of Trade Industry and Energy

## • Overseas

\*Projected Growth for World Nuclear Power

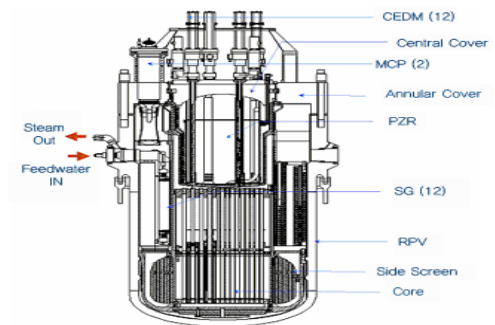
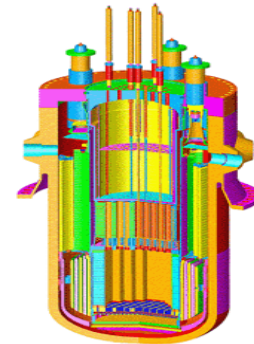


(Source ▫ IAEA Nuclear Technology Review 2012 ▫ World Nuclear Association country briefings)

# Nuclear power plans – Small Units & Others

## • SMART export plan

- **SMART - Integral type reactor**
  - steam generator, pressurizer, and coolant pump are all integrated into one vessel.
- 90MW of electricity output, 40,000ton/day of desalination capacity
  - can supply a city with a population of 100,000
- Year 2012 : Acquired SDA(standard design approval) in Korea.  
(the first SDA as integral type reactor in the world)
- Year 2013 : Cooperation agreement with Saudi Arabia on the introduction of SMART in Saudi Arabia
- Year 2015 : Signed a deal to jointly invest in studying the prospect of building at least two SMART in Saudi Arabia



## • Participation in the international project – ITER

- International Thermonuclear Experimental Reactor(ITER) Project
- 7 countries that run the project – EU, U.S., Russia, China, Japan, India and South Korea
- Total amount of orders KEPCO E&C has received : 57.3 KRW bn. (expecting more orders)

# Nuclear power plans – Decommissioning



## • Decommissioning

### ▫ The oldest reactors in Korea

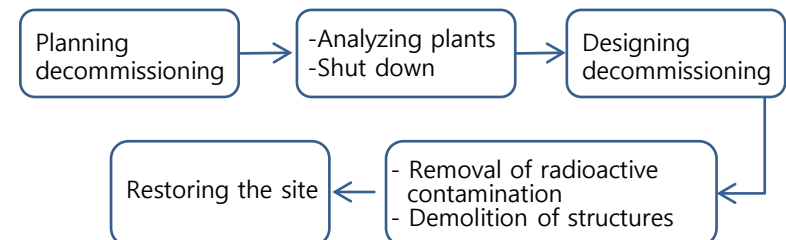
Plant	Commercial operation	Planned close	
KORI #1	1978	2017	license extended 2007 → 2017
Wolsung #1	1983	2012	license extended 2012 → 2022
KORI #2	1983	2023	
KORI #3	1985	2024	
KORI #4	1986	2025	

- Kori-1, the first nuclear power plant in Korea, is scheduled to become the first reactor to go dormant.
  - it had 30-year lifespan expired in 2007, but gained approval of additional 10-year operation.
- The Korean government announced in June, 2015 that the development of the 17 decommissioning techniques that have yet to be finished would be completed by 2021.

### • Decommissioning?

- series of various follow-up processes upon the completion of operation regarding nuclear power plant facilities.
- Minimization of radioactive contamination from facilities after decontamination and decommissioning.
- Republic of Korea and UK have strengthen cooperation in the research on nuclear decommissioning.

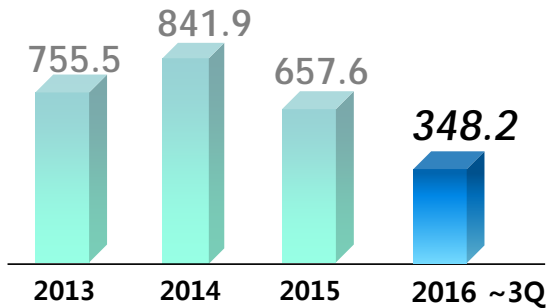
### • Decommissioning Flow



# 2016 3Q Financial Highlights

## • Revenue

[Unit : KRW bn.]



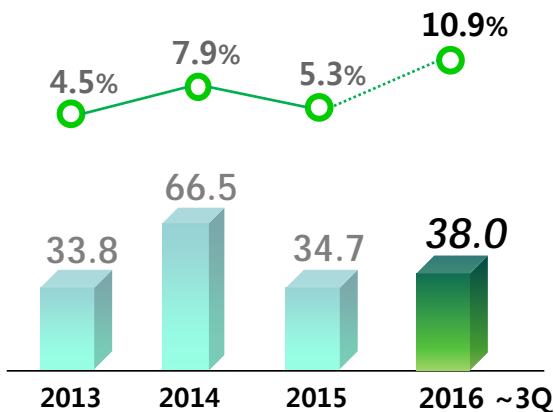
## • Revenue Breakdown

[Unit : KRW bn.]

		Design & Engineering	Procurement & Construction	Others
Business Area	2016 ~3Q	317.5	30.7	0
	2015 ~3Q	327.4	140.2	0
		Nuclear	Thermal	Others
Division	2016 ~3Q	234.7	108.1	5.4
	2015 ~3Q	229.7	236.1	1.8

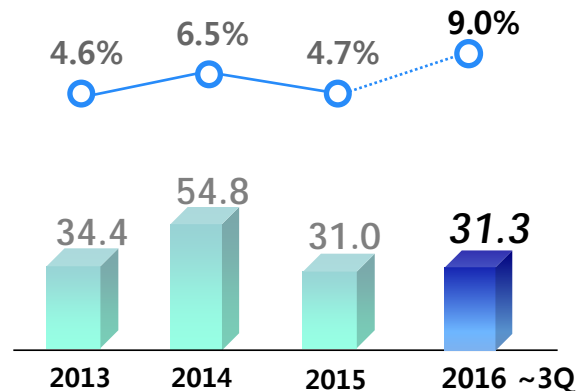
## • Operating Income /Margin

[Unit : KRW bn.]



## • Net Income /Margin

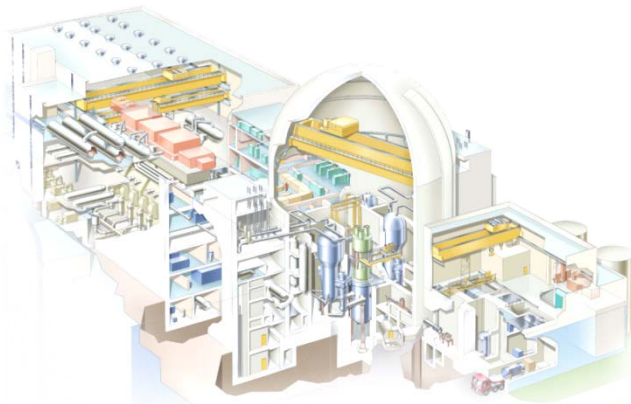
[Unit : KRW bn.]



## • Quarterly Overview

[Unit : KRW bn.]

	2016 3Q	2016 2Q	2015 3Q
Revenue (%Q/Q)	102.2 (-20.2)	128.0	145.6
Operating Income (%Q/Q)	-1.6	25.5	21.0
Net Income (%Q/Q)	-4.9	23.4	19.6



200MW CFBC Power Plant Cutaway

