

CREATING FUTURESCAPE

Solutions for a Better Sustainable World



SAMSUNG C&T





Samsung C&T Overview



Samsung C&T Video – 2min

□ **SAMSUNG is the largest Group Company in South Korea**

- 3 Main Business Sectors – Electronics, Finance, and **Industrial & Service.**
- SAMSUNG C&T is **mother company** of SAMSUNG Group
- SAMSUNG C&T is **the second largest shareholder** of SAMSUNG Electronics



Electronics (6)

- **Samsung Electronics**
- Samsung SDI
- Samsung Electro-Mechanics
- Samsung SDS
- Samsung Display
- Samsung Corning Advanced Glass



Finance (6)

- Samsung Life Insurance
- Samsung Fire & Marine Insurance
- Samsung Card
- Samsung Securities
- Samsung Investment Trust Mgmt
- Samsung Venture Investment



Industrial & Service (14)

- **Samsung C&T**
- **Biz Groups: E&C, T&I, Fashion, Resort**
- Subsidiary: Biologics, Bioepis, Welstory
- Samsung Heavy Industries
- Samsung Engineering
- Hotel Shilla
- Cheil Worldwide
- S-1 Corporation
- Samsung Medical Center
- Samsung Economic Research Inst.

SAMSUNG C&T Overview



☐ Samsung C&T at a Glance

Samsung C&T has **4 Business Groups** (E&C, T&I, Fashion, and Resort) and subsidiaries, E&C group is Korea's **No 1** Engineering & Construction Contractor.

Business Group

Engineering & Construction	
Trade & Investment	
Resort	
Fashion	
Subsidiary	Bio - Medicine
	Food - Beverage

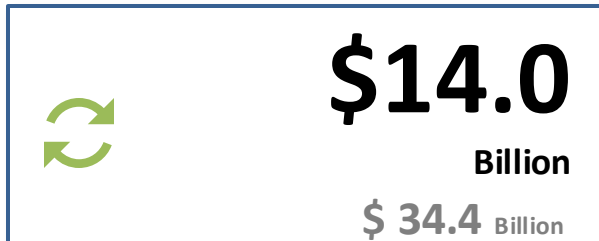
Korea Contractor Ranking



Operations in



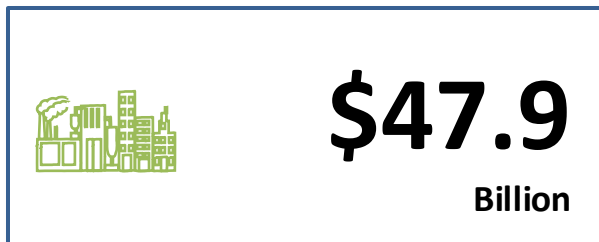
Annual Turnover (2023)



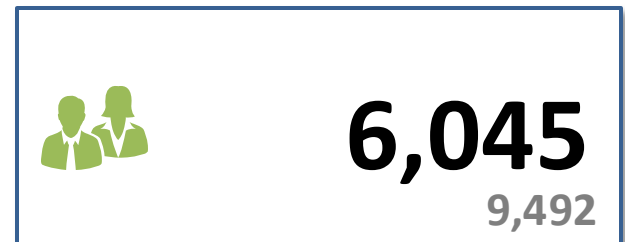
Credit Rating



Total Assets



Employees



SAMSUNG C&T Organisation

□ Organisation (2025)



Oh, Sechul

President & CEO
Samsung C&T, E&C Group

Business Units

- Energy Solution Business Unit
- Urban & Infrastructure Business Unit
- Residential & Development Business Unit
- High-Tech Business Unit

Administration & Support Divisions

- Overseas Business Development Division
- Global Operation Division
- Engineering & Innovation Division
- Quality Division
- HSE Division
- Corporate Management Division



Changwook Lee
/ EVP, Head of
ES Business Unit



Bruce Lee
/ EVP, Head of
Overseas BD Division

Energy Solution Business Unit

- Engineering Division
- Power Biz Division (PM)
- Renewable Biz Division (PM)
- Nuclear Biz Division (PM)**
- Quality & HSE Team
- Scheduling & Contract Team
- Business Support Team



WS Gu / SVP
Leader of
Nuclear Project



Jung E. Kim / SVP
Leader of
Nuclear BD

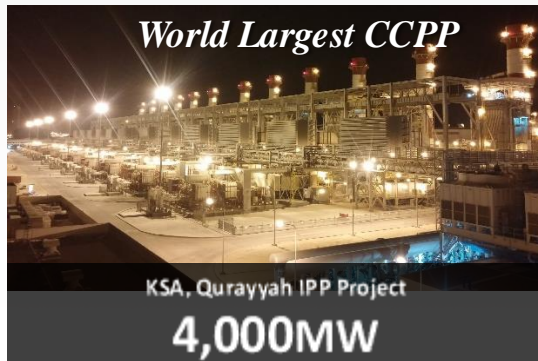
- Nuclear Plant BD/Sales Team**
* Conventional Nuclear, SMR
- Power Plant BD Team
- Renewable BD Team
- Civil BD Team
- Building BD Team



Samsung C&T – E&C Group has **3 business areas: Building, Civil Infrastructure, and Plant**

Plant

- Nuclear Power plant
- Combined Cycle Power Plant
- Renewable Energy
- LNG Storage & Terminal



Civil Infrastructure

- Road, Bridge & Tunnel
- Railway & Metro
- Harbor & Marine
- Water Infrastructure



Building

- High-rise Buildings
- Mixed-use Buildings
- Airports
- High-tech Factories



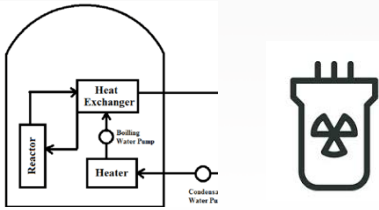
SAMSUNG C&T New Business

☐ New Business Area

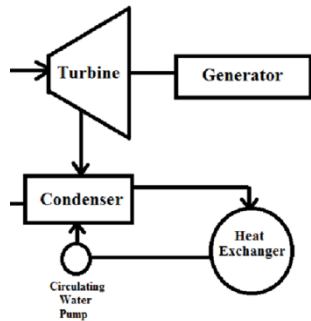
SMR

- SMR is complement of renewable energy

Nuclear Island



Turbine/Utility Island



PV+ESS

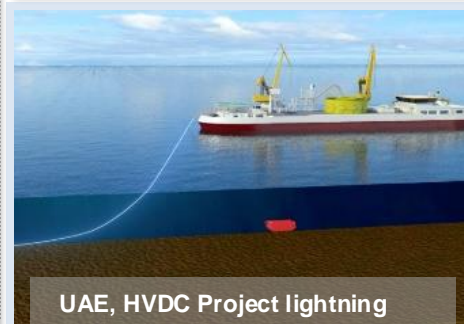
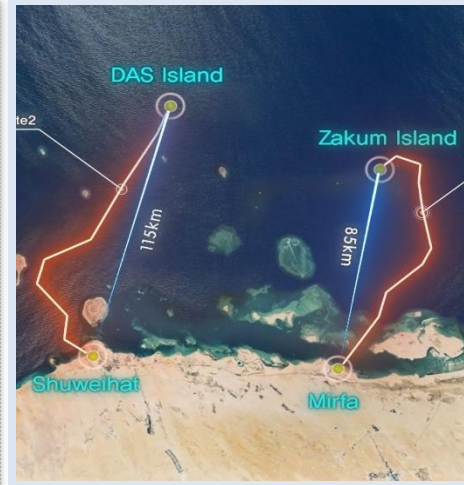
- Life cycle cost optimization
- Procurement strategy
- Compatibility & Stability



USA, Guam Mangilao PV+ ESS

HVDC

- High efficiency of transmission
- Advantageous for super grid



UAE, HVDC Project lightning

Hydrogen

- Green Hydrogen/Ammonia
- System Optimization
- Green Certificate

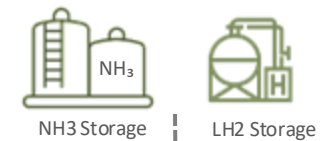
Renewable Energy



NH3/LH2 Production/Export



NH3/LH2 Import/Regas.



Coal/Gas/H2 Power Plant

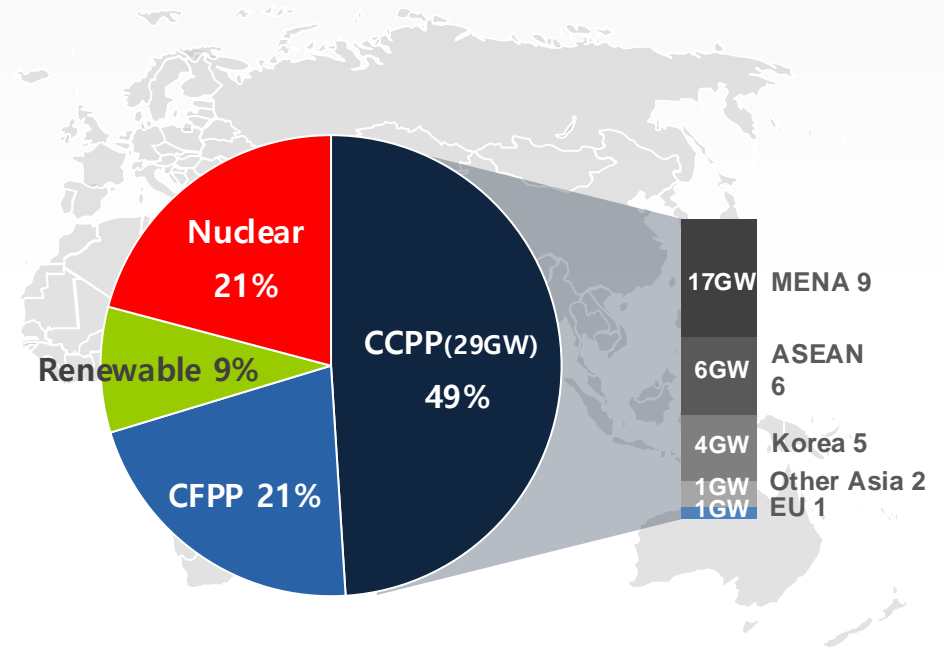
Power Plant Experiences (EPC contractor)

Samsung has delivered almost 60GW or 76 projects around world

Global Power Plant Experiences			
Type	On-going (# PJT)	Completed	Sum
Nuclear (Construction only)	2.8 GW (2)	9.6 GW (8)	12.4 GW (10)
CCPP	8.4 GW (6)	20.7 GW (17)	29.1GW (23)
CFPP	5.2 GW (3)	7.5 GW (7)	12.7 GW (10)
Renewables	1.6 GW (4)	3.7 GW (35)	5.3 GW (39)
TOTAL	19.4 GW (15)	40.1 GW (61)	59.5 GW (76)

Global Presence

Experienced Capacity (59GW)



Flexible Financing Solution

- For our customers' satisfaction, Samsung is expanding relationship with financial investors to provide financing solutions via direct equity investment, strategic investment, project financing via ECAs, MLAs, and Commercial Banks.
- Samsung group has in-house financial investors including Samsung life insurance, Samsung fire and marine insurance.

【 Network with Financial Investors 】

KOREA

Korean Sovereign Fund



Others



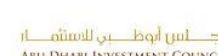
Foreign



J.P.Morgan



TEMASEK



Global Presence

Presence in **28** Countries as of Jan 2024

- Recent incorporation : Poland(2023), Romania(2024)





Our Nuclear Construction Experience

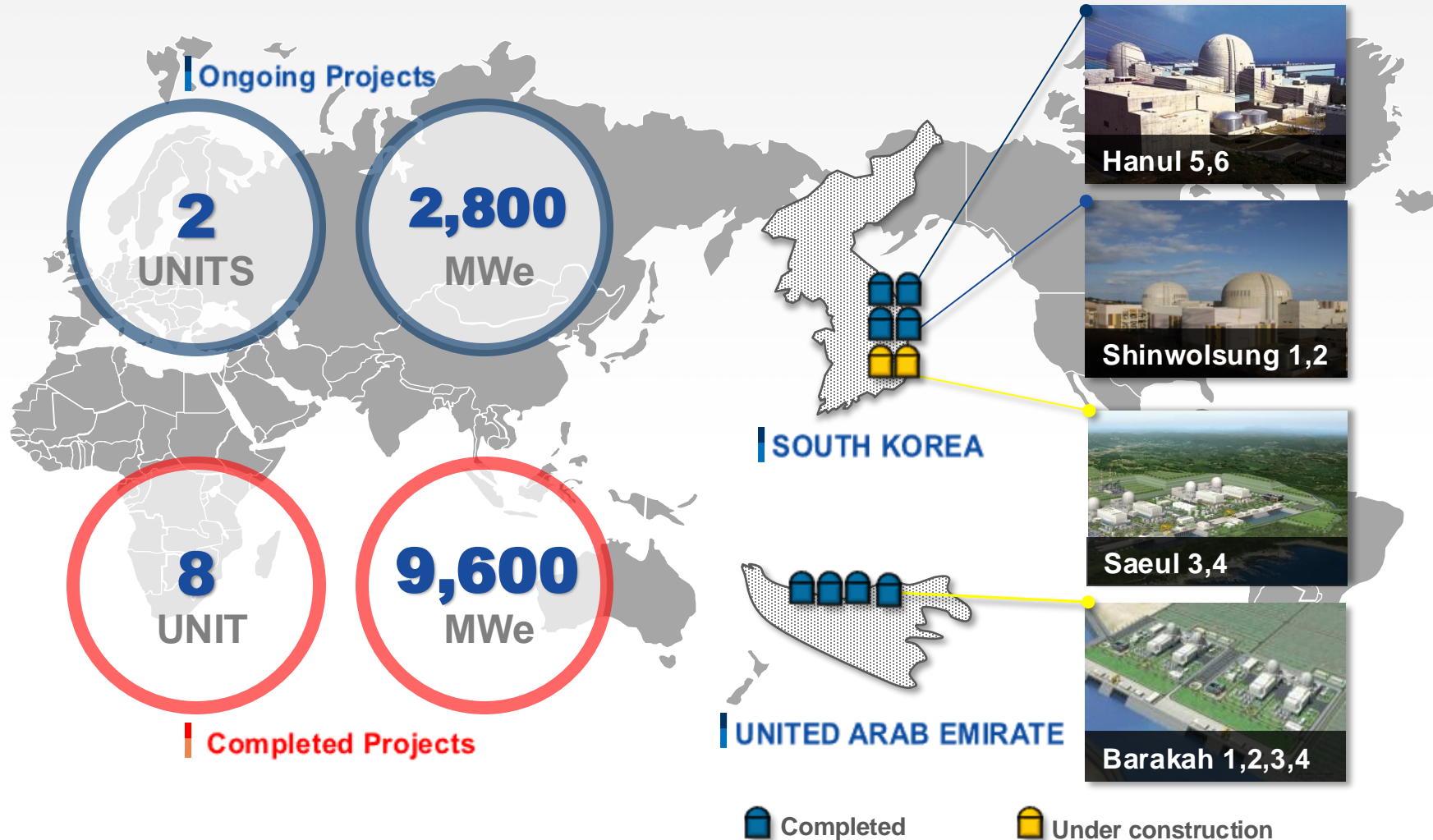
EXPERIENCE

Delivered Nuclear Power Plant Projects

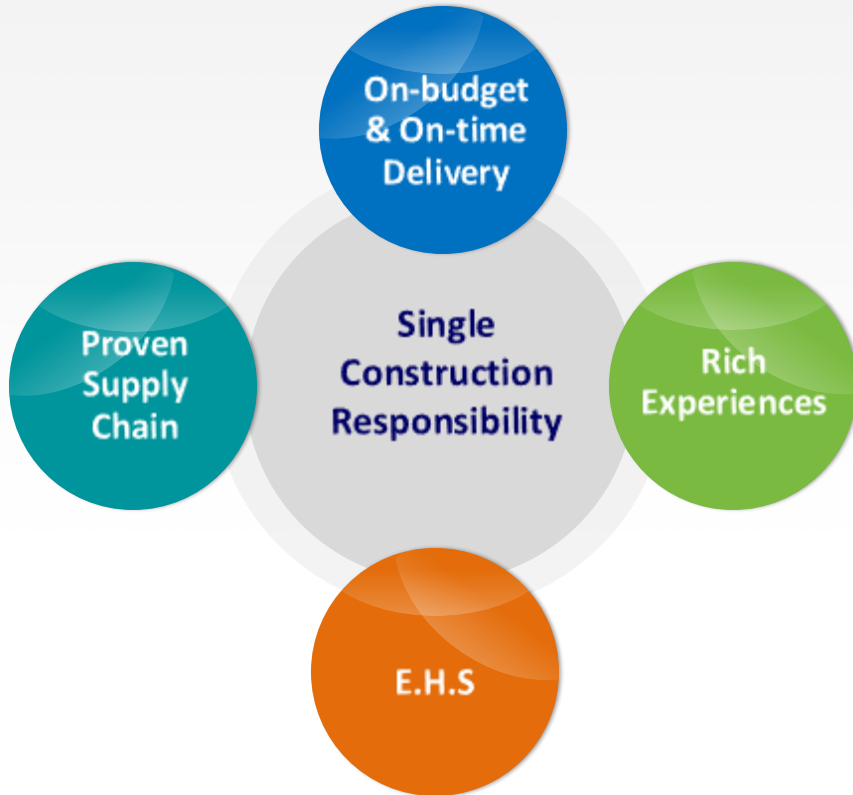
Samsung C&T have Completed 7 units and are currently carrying out 3 units

More than **300** experienced full time engineers in nuclear power project and HQ

Adequate resources to deliver **3** large nuclear power plants simultaneously



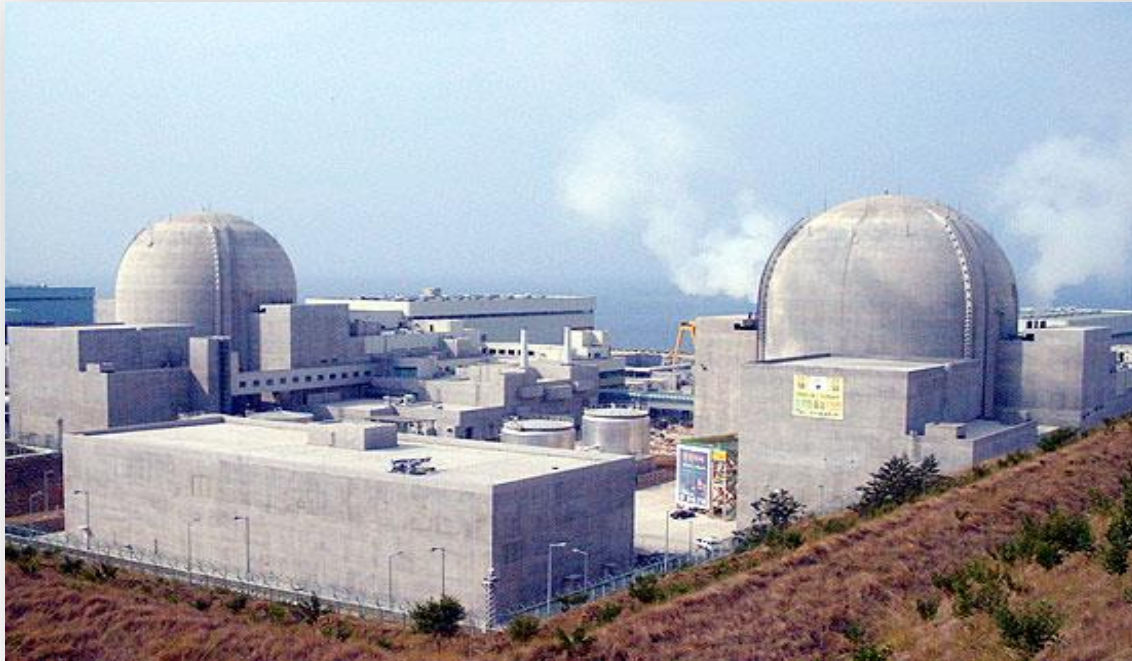
Our Competitiveness



Benefits for customer

- **Stable and shorter schedule management through :**
 - efficient interface control and flexibility with single site project management
 - experiences and experts
 - single communication channel to client
- **Cost saving through :**
 - enable to make simple organization of site for client
 - reliable execution and systemic risk management
- **Tailored support for localization with :**
 - proven global supply chain
 - enhanced utilization of local resources
- **Samsung E.H.S :**
 - systematic management activities
 - environment-friendly Process

Ulchin NPP #5&6



Summary

- Client KHNP
- Location Ulchin, Korea
- Capacity 1,000MW x 2 units
- Period Oct 1999 ~ May 2005

Highlights

- Samsung's first participation on nuclear power plant
- Reduced construction period (56M → 54.5M)

Shin-Wolsung NPP #1&2



Summary

- Client KHNP
- Location Kyungjoo, Korea
- Capacity 1,000MW x 2 units
- Period Oct 2007 ~ Jul 2015

Highlights

- Various state of art methodologies introduced
 - Adoption of CLP 3 layer installation
 - Reduction of defect ratio in RCL welding (6% → 0.7%)
- HSE performance award of 2011 by the government of Korea

UAE Barakah Nuclear Energy Plant #1~4



Summary

- Client KEPCO / ENEC
- Location Barakah, Abu Dhabi, UAE
- Capacity 1,400MW x 4 units
- Period Mar 2010 ~ Dec 2024
- Scope Building nuclear power plant & its infrastructure

Highlights

- The first overseas NPP project in Korea & the first commercial NPP in the middle east
- Collaboration of local workforce (over 80%)
- Unit 1~4 are under Operation
(#1: '21.04~ / #2: '22.03~ / #3: '23.02~ / #4: '24-09)

GyungJoo Radioactive Waste Repository Phase 1



Summary

- Client Korea Radioactive Waste Management Corporation (KRMC)
- Location Gyungjoo, Korea
- Capacity 100,000 Drums (ILW/LLW)
- Period June 2007 ~ June 2014

Highlights

- 6 Silos installation 80m under ground
- 1 silo = 25m x 50m / over 16,000 Drums
- Operation start from June 2014

On-going Sae-UI NPP #3&4



Summary

- Client KHNP
- Location Kori, Korea
- Capacity 1,400MW x 2 units (Unit 3 & 4)
- Period Jul 2016 ~ Feb 2026
- Scope Construction of NI, TI, and BOP
Civil work and Mechanical &
Electrical installation, and
pre-commissioning

Highlights

- Construction License / Excavation ('16.06)
- Major Work Quantity
 - Concrete : 807,000 m³
 - Rebar : 170,000 ton
 - Stru. Steel : 30,500 ton
 - Equipment : 2,900 ea
 - Piping : 375,000 m
 - Cable : 8,572,000 m
- 1st concrete of unit 3 ('17.04)
- 1st concrete of unit 4 ('18.09)
- Energization of unit 3 ('20.12)
- Cold Hydro Test of unit 3 ('23.06)
- Hot Functional Test of unit 3 ('24.06)
- **Fuel Load of unit 3 ('25.07), COD unit 3 ('26.02)**

On-going NuScale SMR Project in Romania

Project Summary

- Client RoPower
- Location Doicesti, Romania
- Capacity 462MW (6-Modules)
- Period 2027 ~ 2030
- EPC Contractor TBD
- Replacement of existing coal fired power plant



Highlights

- Romania's National Commission for Nuclear Activities Control (CNCAN) has approved the Licensing Basis Document for the NuScale VOYGR-6 small modular reactor power plant.
 - provides licensing plan to meeting critical milestones of the project siting, construction, commissioning and operation.
- Samsung is participating in the FEED Phase 2 of Romania NuScale SMR project with plan to participate in the EPC delivery (construction cost and schedule estimation) with FID planned for '26)



UAE Barakah Energy Plant Lessons Learned and Technology Improvement

Learned and Technology Improvement



UAE Barakah Nuclear Energy Plant Video

UAE Barakah Nuclear Energy Plant Project Summary

Summary

- **Project** Barakah Nuclear Energy Plant
- **Client** Emirate Nuclear Energy Corporation (ENEC)
- **Location** Barakah, Abu Dhabi, UAE
- **Capacity** 1,400MW x 4 units (5,600MW)
- **Period** Mar 2010 ~ September 2024
- **Scope** Building nuclear power plant & its infrastructure
(additional) Unit 3&4 PPS work
* Physical Protection System

History

- 2009 KEPCO, nominated as Prime Contractor
- 2010 Samsung, Award Construction Contract
- 2011 Site grading and excavation
- 2012 The first nuclear concrete of # Unit 1
- 2017 Completion of construction work of Unit #1
* Construction Readiness of Fuel Load (Oct 2017)
- 2021 Commercial Operation of Unit #1
- 2022 Commercial Operation of Unit #2
- 2023 Commercial Operation of Unit #3
- 2024 Commercial Operation of Unit #4

Project Progress



Unit 1

- Construction Readiness for Fuel Load was completed on Oct 2017.
- Unit 1 Commercial Operation was started in Apr 2021.

Unit 2

- Fuel Load was completed in Mar 2021.
- Unit 2 Commercial Operation was started in Mar 2022.

Unit 3

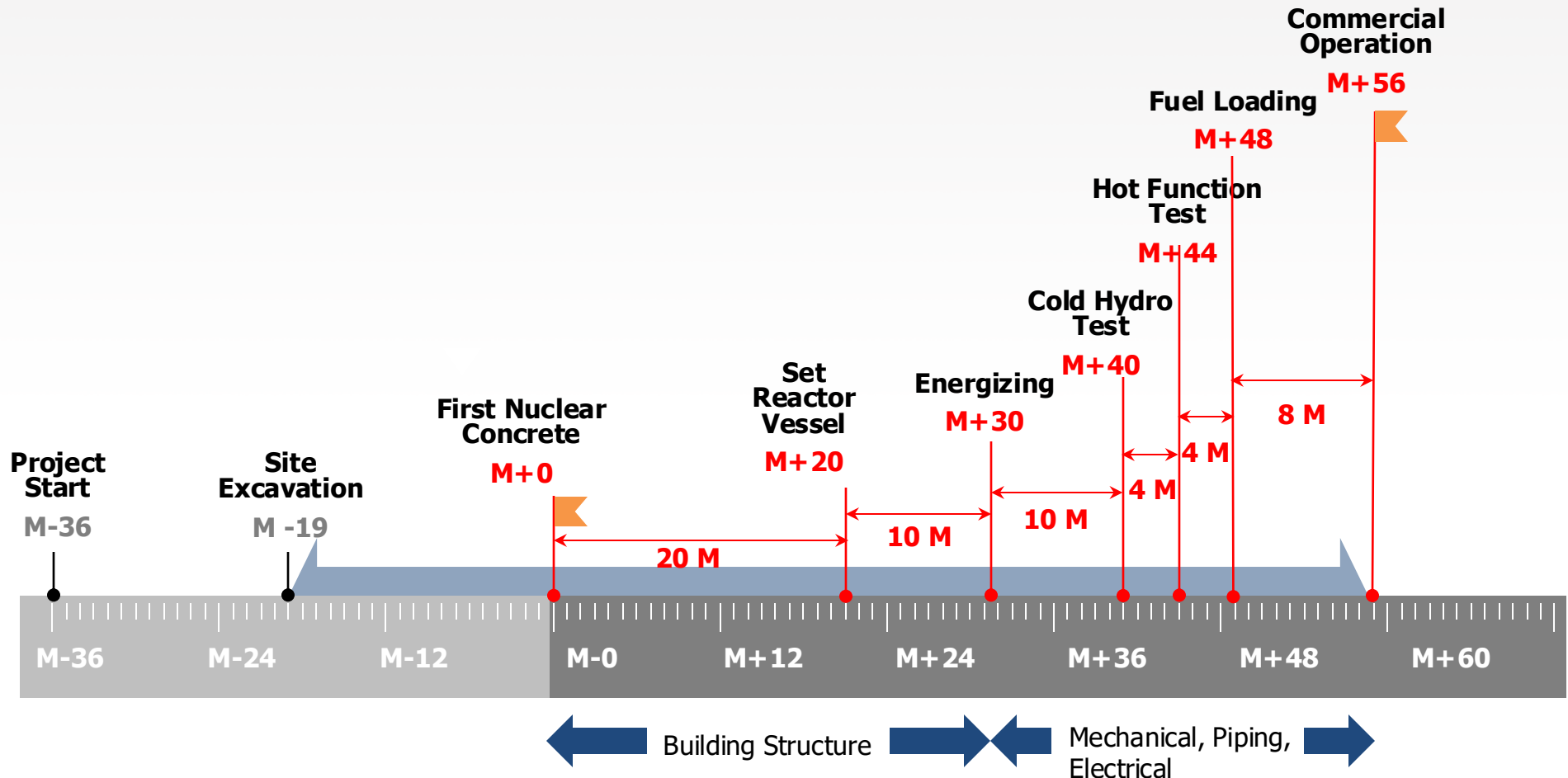
- Operation License was approved in June 2022
- Unit 3 Commercial Operation was started in Feb 2023.

Unit 4

- Operation License was approved in Mar 2024
- Unit 4 Commercial Operation was started in Sep 2024.

Project Milestone

From the first nuclear concrete to commercial operation, APR1400 reactor has 56 month standard construction period in Korea and UAE, however, construction ready for fuel load was delayed by one year.



Construction Packages

Construction activities of UAE nuclear power plant are divided into 25 packages based on the system characteristic and similarity of work.

Civil (4 Packages)

- CP-C1 : Excavation, backfill & misc. facilities
- CP-C2 : Concrete production
- CP-C3 : Yard & underground work
- CP-C4 : Cooling water system structures



Piping (2 Packages)

- CP-P1 : Piping
- CP-P2 : Insulation



Commissioning (1 Packages)

- CP-S1 : Startup Support

Architecture (3 Packages)

- CP-A1 : Major Building & related structures
- CP-A2 : Architectural finish, equipment & material
- CP-A3 : Field finish coating / painting work



Infrastructure (4 Packages)

- CP-I1 : Temporary Facility
- CP-I2 : Permanent Facility
- CP-V1 : Village 1
- CP-V2 : Village 2



Mechanical (6 Packages)

- CP-M1 : Mechanical equipment & CLP installation
- CP-M2 : Condenser installation & erection
- CP-M3 : Turbine-generator installation & erection
- CP-M4 : Heating, ventilation & air condition sys. Installation
- CP-M5 : Nuclear steam supply sys. Equipment installation
- CP-M6 : Field erection tank



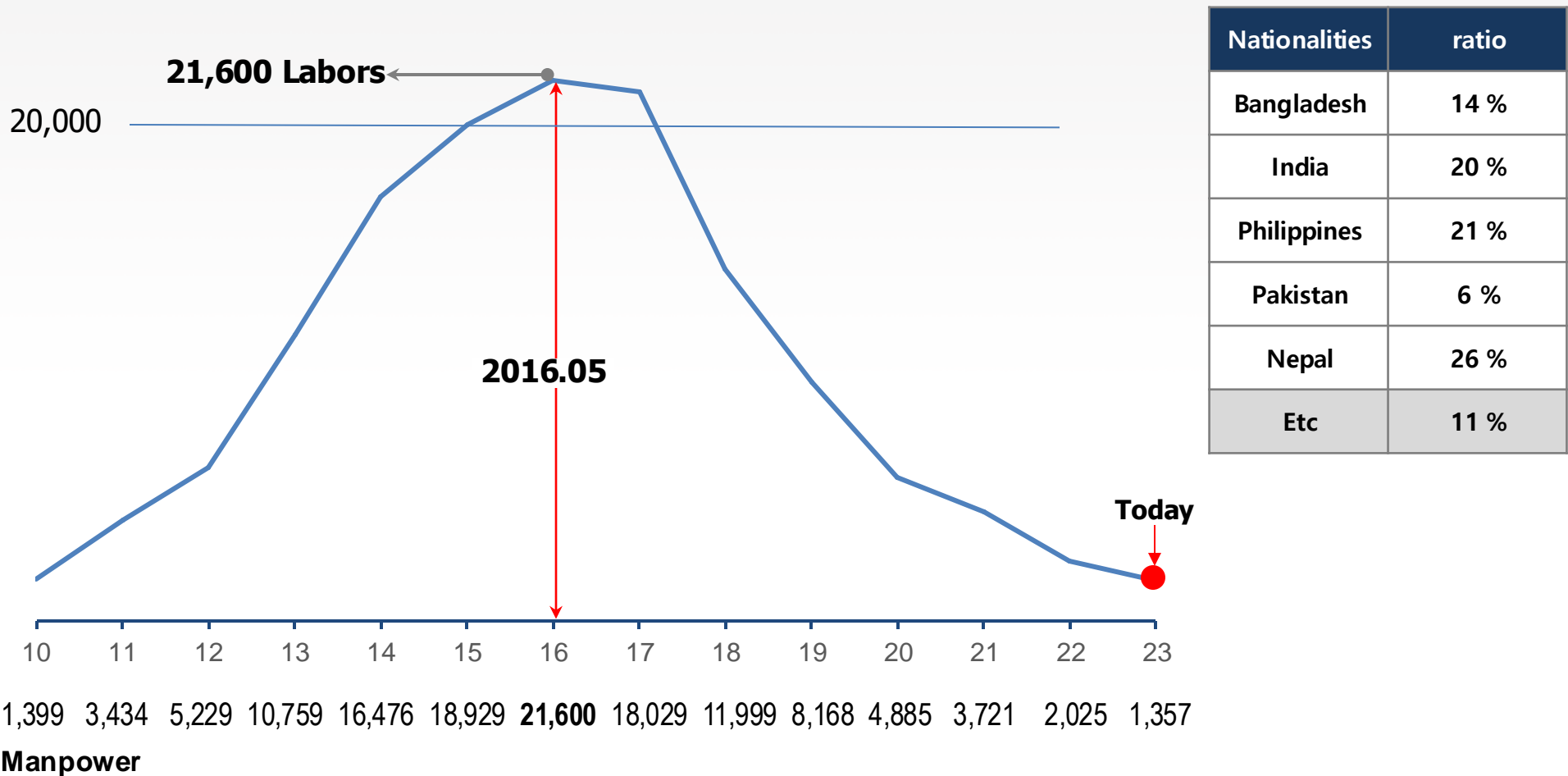
Electrical (5 Packages)

- CP-E1 : Electrical equipment installation
- CP-E2 : Cabling & termination
- CP-E3 : Switchyard installation
- CP-E4 : Instrument & control equipment installation
- CP-E5 : Security & communication installation



Manpower Mobilization

Man power mobilization reached the peak in May 2016 with diver workers from different third country nations.



Project Challenges and Lessons Learned

Long Distance Transportation

Transportation Risk (11,700km, 45days)



Extreme Surroundings

Harsh Environment

- Sand Storms(Mar-Apr.), Intense Heat (Jun.-Sep.)



On-time Construction

Proactive Progress Control

- Operation of internal EDS (Early Delivery Schedule) to Advanced Completion
- Expedite Site work in Winter Season & Night Time

On-time Mobilization

- Sufficient & Qualified Manpower Mobilization
- Equipment Delivery Control : Advanced Transportation



Project Challenges and Lessons Learned

Training program is critical for increasing productivity and understanding of nuclear safety culture for new nuclear power client.

First NPP Deployment Country

- Needs for Nuclear Infrastructure
- Third Country Nationals Labor



Nuclear Training Program

- Training Program
 - Nuclear Theory, Quality Control, etc.
- Site Training for Technicians and Unskilled TCN labors
 - Mechanical, Electrical, Civil/Architectural Construction, etc.



Project Challenges and Lessons Learned

Safety achievement with 80 Million work hours without Lost-Time injury

Site-Specific HSE Requirements

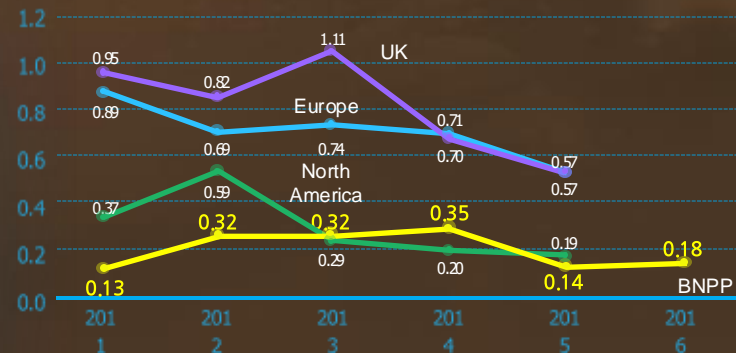
- Owner & Regulator have intensive HSE Requirements
- Conduct sophisticated HSE Inspection



Outstanding HSE System & Performance

- High-Quality HSE System
 - Sufficient HSE Manpower, HSE Procedures, HSE Training Program, etc.
- World Class HSE Records

LTIFR (Lost Time Injury Frequency Ratio)



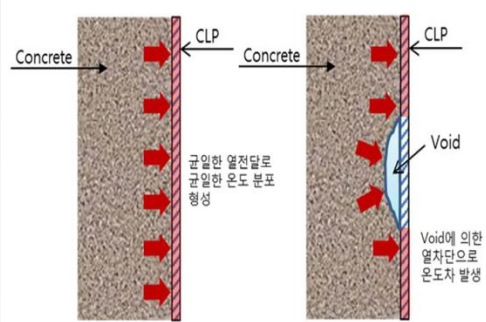
→ LTI is an injury sustained by an employee that will ultimately lead to the loss of productive work time in the form of worker delays or absenteeism

→ $LTIFR = (LTI/man-hour) * 1,000,000$

Technology Improvement

Detection of Void in the Containment Wall

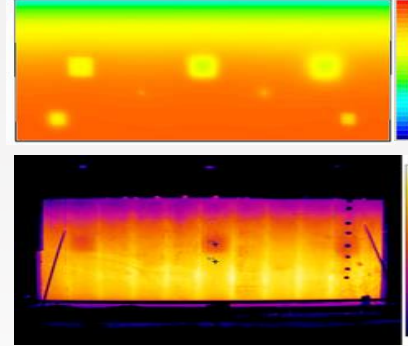
- Void Detection Method in Concrete Member Covered with Steel Plate Using Thermal Image



Principle of Void Detection



Mockup Test



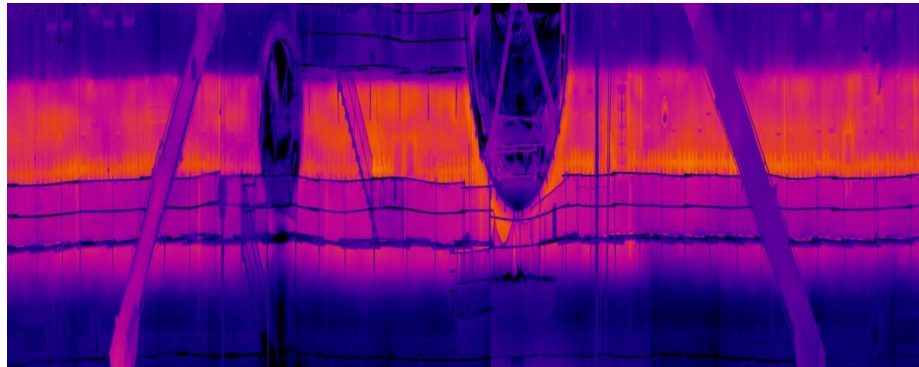
difference by temperature



< Certificate of Patent >



Photographing during placing concrete



Thermal Image after placing concrete in Saeul 3&4

Project Executed

- Applied and Executed in 1 NPP construction project
- Saeul 3&4

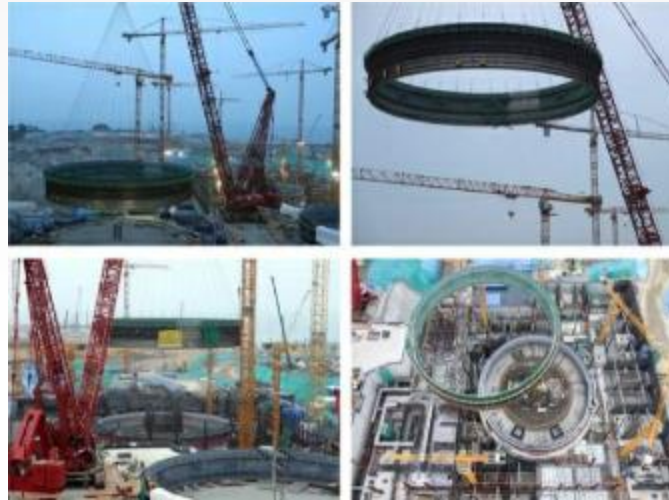
Technology Improvement

CLP Ground-Assembly and Lifting

- The CLP (Containment Liner Plate) is consisted of 19-layers of ring-shaped carbon steel liner plate. Each layer is weight about 50,484kg in average and height about 10'-0".
- To shorten the construction duration and enhance the constructability, 3 layers are assembled on ground level and lifted / installed at once using Heavy Lift Crane(2,300 ton).



[CLP Ground-Assembly]



[CLP Lifting / Installation]



[3 Layer Ground-Assembly and Installation]

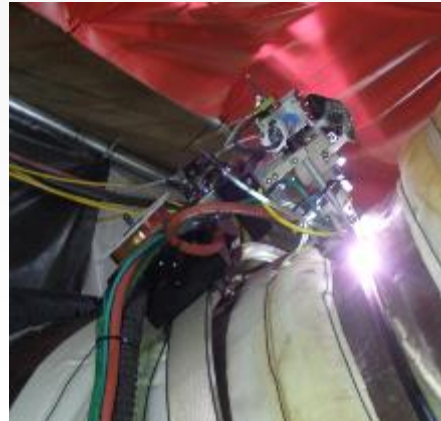
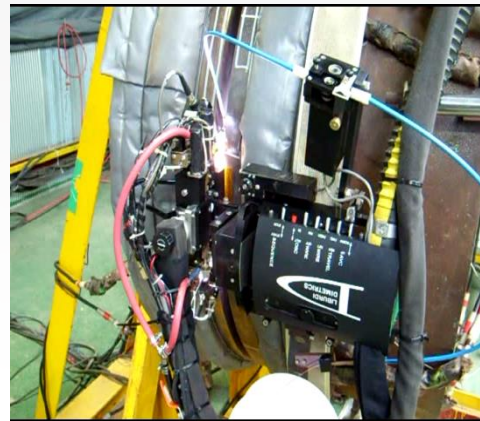
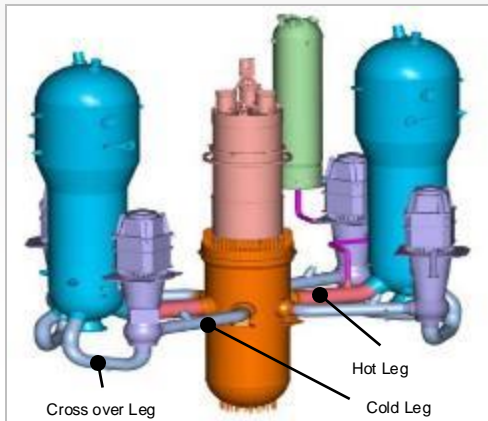
Project Executed

- Applied and Executed in 3 NPP construction projects
 - Shin-Wolseong NPP #2, UAE BNPP #1~4, Saeul NPP 3&4

Technology Improvement

Machine Welding of Reactor Coolant Loop Piping

- Technology that welds reactor coolant loop piping with automatic welding machine to minimize the amount of deposition (narrow gap), leading to less work load and improved welding quality
- The Past (Shielded Metal Arc Welding, SMAW) → The Present (Automatic Gas Tungsten Arc Welding, GTAW)



[RCL Automated Welding]

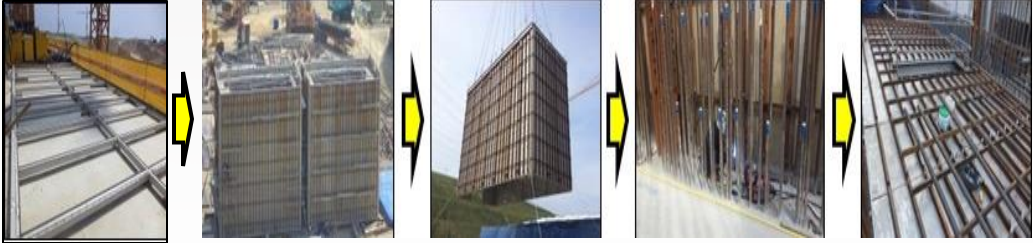

Project

- Project execution : Shin-Wolseong #2, UAE BNPP #1~4, Saeul NPP #3/4
- Construction period reduction : V-narrow Gap(BNPP) → U-narrow Gap(SKN#5,6), Welding amount reduction(39%)
- Quality improvement : Welding defect reduction [SWN#1(4.32%) → SWN#2(0.17%) → BNPP#1(1.21%) → BNPP#2(0.61%) → BNPP#3(0.15%) → BNPP#4(0.47%)]

Technology

Modularization of AFWST SSLP

- Improving the construction method of auxiliary water supply tanks (AFWSTs) in auxiliary buildings to minimize interference with subsequent processes and shorten construction period to improve construction feasibility and establish optimized process plans. Enhance productivity by securing continuity of work
- Comparison of Work Process & Duration

Conventional Method	Enhancement
	
<ol style="list-style-type: none"> ① Install Leak chase on EL.100' slab ② Assemble Wall Liner Plate Module outside in parallel ③ Lifting and Install Wall Liner Plate Module ④ Welding Leak Chase and Wall Liner Plate Module ⑤ Install Top Liner Plate 	<ol style="list-style-type: none"> ① Assemble Leak chase + Top Liner + Wall Liner Plate ② Lifting and Install Assembled Liner Plate Module ③ Welding Assembled Module
Leak Chase (Structure team) + Wall Liner Plate(Mechanical team) + Top Liner Plate(Mechanical team) → at least 4 months	Leak Chase + Wall Liner Plate + Top Liner Plate integrated module → 1 month

Project Executed

- Applied and Executed in 6 NPP construction project
 - UAE BNPP #1~4, Saeul NPP 3&4



Our Global SMR Strategy

Global SMR Strategy



NSSS OEM

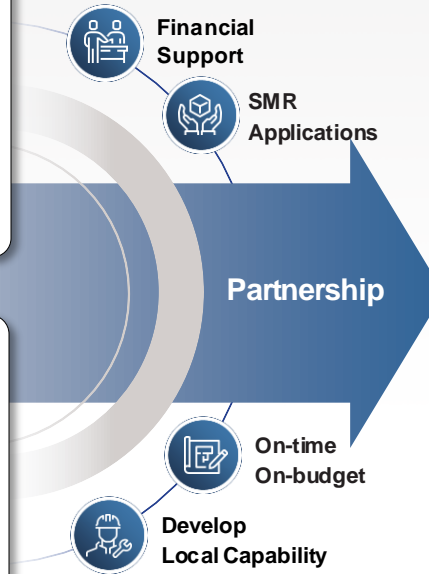
- Design | Proven Reactor Design
- Deployment | Must account for learnings from lead Unit
- NSSS Equipment | Proven supply chain and manufacturing capability
- Financial Stability | Financial capability and strong balance sheet

ONE TEAM

SAMSUNG

- Engineering | Abundant TI/BOP ENG Experience
- Procurement | Global Supply Chain Partnerships
- Construction | Successful Nuclear construction capability
- Financial Stability | Financial capability and strong balance sheet

- NSSS OEM – Experienced NSSS design provider
 - Proven Reactor technology
 - Nuclear analysis and licensing
 - Leader in nuclear Industry



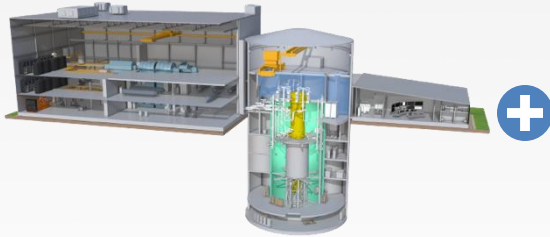
**Fleet Deployment
&
Increased Delivery Certainty**

- Samsung C&T – Global EPC provider
 - Engineering expertise for TI and BOP
 - Proven Global Procurement service capabilities
 - Leader in nuclear Construction

Global SMR Strategy

Future Collaboration Opportunities

- Leveraging experience in high-tech utility construction, propose SMR Technology + Datacenter / Hydrogen / ETC.



<NSSL Technology>



< Hyperscale Datacenter >

Nuclear Quality Management System

- Systematic Quality Management for Nuclear Power Project
- '24.4Q ISO 19443 / '25.1Q ASME N



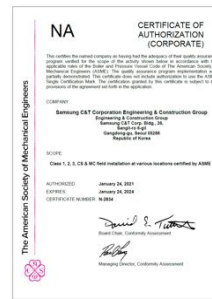
<ISO 9001>



<ISO 29001>



<KEPIC>



<ASME NA/NPT>

Leverage Samsung C&T's Approved Vendor

- +5,500 vendors in world wide based on the overall evaluation of Financial Status, Quality, Delivery Schedule, Capability.



Localization

- Based on local suppliers and subcontractors for each country
- Mobilize labors and utilize equipment from local subcontractors
- Operate training center for labors to improve productivity and quality



<Education Centre>



<Welder Training Center>

Global SMR Strategy

Local Content (Qualification)

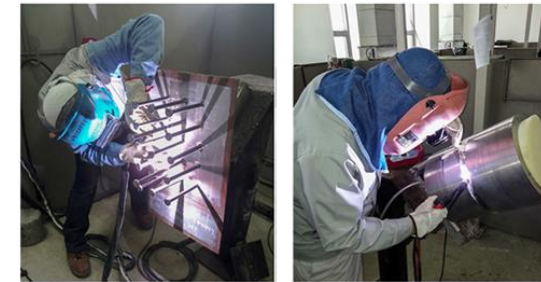
Quality Control Procedure

- Quality Inspectors & Workers(ex. welder) must be qualified in accordance with the qualification procedure
- Safety Class work should be classified by qualified inspectors and workers

Training Guideline including Subcontractor staffs and labors

Welding School

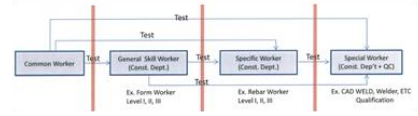
- Welder Training & Test



BARAKAH NUCLEAR POWER PLANT QUALITY CONTROL PROCEDURE	
Qualification of Inspection and Test Personnel	
Document No. : 9-979-D-013-001	
Revision No. : 7	
Internal No. : QCP-001	
Prepared by	Changkyu Park / 17 Feb. 2013
Reviewed/ Approved by	Joongho Cha / 13 Feb. 2013

Quality Class	Prepared by	Reviewed by	Approved by	Remarks
Q, T, R	Construction Inspector	INSV, QC Department	KEPCO, QC Department	Approval by ANI (KAPCO) or KAPCO
S	Construction Supervisor	INSV, Construction Supervisor	KEPCO, Construction Supervisor	Including the CP12 activities

BARAKAH NUCLEAR POWER PLANT GENERAL CONTROL PROCEDURE	
Indoctrination and Training	
Document No. : 9-970-D-430-001	
Revision No. : 11	
Internal No. : GCP-001	
Prepared by	BRENNRUTH CHANDHAN / 17 DEC 2013
Reviewed / Approved by	SANGMYUNG LEE / 19 DEC 2013



Name	Hours	Frequency	Responsible Department	Supporting Department	Remarks
Site regulations				Admin	
Material control				FE	
Introduction to BNPP system and construction overview	2	Once when transferred to Site (부임시 1회)	FE	Schedule	
Codes, CPs, and Procedures				FE	
Quality-QA Program, etc.				QA	

Name	Hours	Frequency	Responsible Department	Supporting Department	Remarks
Quality-QA program, etc.	1	Yearly	ED	QA	
Major construction techniques - CPs, WPP/QCs, etc.	2	Yearly	ED	ED	
Lessons learned	2			ED	1 HR, per 6 months

Name	Hours	Frequency	Responsible Department	Supporting Department	Remarks
Rebar works	2	per 6 months (6개월에)	Arch/Civil	Arch/Civil	
Structural Steel	2	per 6 months (6개월에)	Arch/Civil	Arch/Civil	
Concrete work	2	1시간	Arch/Civil	Arch/Civil	
Pipefitter	2		Piping	Piping	

Name	Hours	Frequency	Responsible Department	Supporting Department	Remarks
Mechanical Rebar Splices - CADWELD/BMS	2		Arch/Civil	Arch/Civil	
Protective Coating	2		Arch/Civil	Arch/Civil	
Welding	2	1HR per 6months (6개월에)	FE/ALL	FE	
PWHT	2	1시간	FE/Mech	FE	
Cable Termination	2		Electrical	Electrical	
Chemical Cleaning	2		Mech	Mech	
NDE for Vacuum Box Test Worker	2		Mech.	Mech./QC	

BARAKAH NUCLEAR POWER PLANT WORK PLAN PROCEDURE	
Welder Qualification	
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Prepared by	Deok Sung / 18 Aug 2014
Reviewed/ Approved by	Sung Kee Lee / 18 Aug 2014

Work Flow	Relevant Para.	Responsible Organization	Relevant Form	Remark
Welder Training/Education	4.3	WE		
Pre-qual	4.3	WE		
Notification of State	7.3.2	WE	WPP-004-W-01	
Welding of Test Coupon	7.3	Welder		
Visual Inspection	7.5.6	BOC, KEPCO/QS, ANI		
Based test or not	7.5	NDE Contractor, BOC, KEPCO/QS, ANI		
Preparation of Work Approval of WPP	8.2	WE, BOC, KEPCO/QS, ANI	WPP-004-W-03, WPP-004-W-04, WPP-004-W-05	
Issue of ID card	8.3	BOC		

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THANK YOU