



Doosan Heavy Industries & Construction

Nuclear Business and Regulatory Body Expectations



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Material

- Supply forgings which are basic materials for nuclear Power Plant

Fabrication

- Fabricate Various Reactor types: PWR, PHWR, and Replacement Components
- NSSS(Nuclear Steam Supply System), BOP(Balance of Plant), T/G(Turbine/Generator)
 - Reactor Vessel, Steam Generator, RV Internal
- Now, performing localization of I&C major system and RCP for APR1400 Project
 - MMIS(Man Machine Interface System)
 - RCP(Reactor Coolant Pump)

Erection

- Participate in Construction on Domestic Site

Experience _ Domestic

Over 30 years of experience, 25 projects including under construction projects
Completed

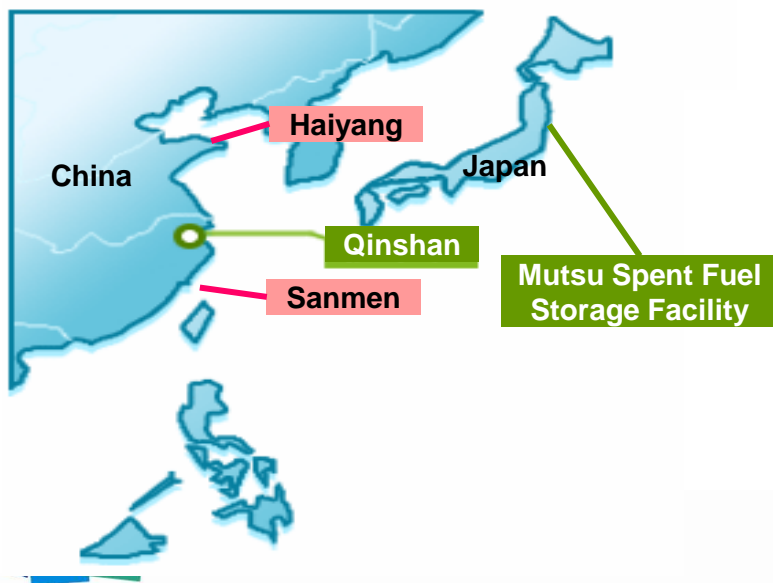
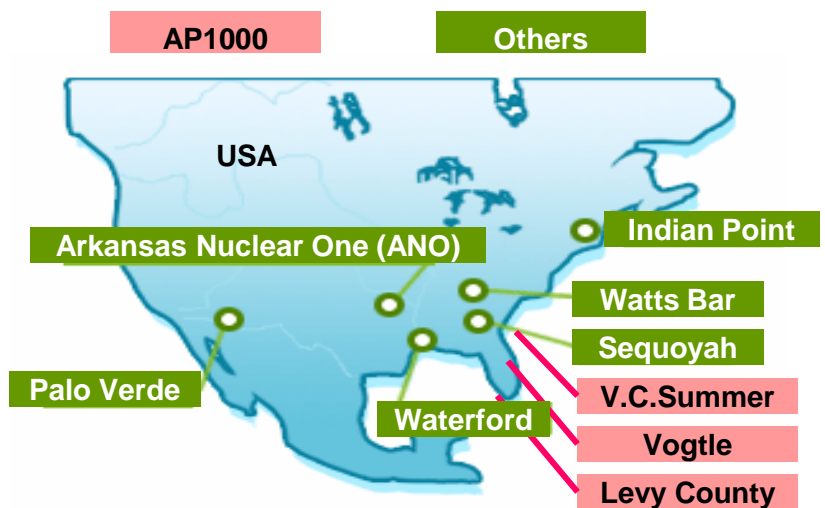
Year	Project	Type	Remark
1980~2010	Yonggwang #1,2	PWR	900 Mwe
	Ulchin #1,2	PWR	900 Mwe
	Yonggwang #3,4	PWR	1000 Mwe
	Wolsong #2,3,4	PHWR	1000 Mwe
	Ulchin #3,4	PWR	1000 Mwe
	Yonggwang #5,6	PWR	1000 Mwe
	Ulchin #5,6	PWR	1000 Mwe
	KEDO #1,2	PWR	1000 Mwe
	Shin-Kori #1,2	PWR	1000 Mwe
	Shin-Wolsong #1,2	PWR	1000 Mwe

Under Construction

Year	Project	Type	Remark
2010~	Shin-Kori #3,4	PWR	1400 Mwe (APR1400 : Advanced Power Reactor)
	Shin-Ulchin #1,2	PWR	1400 Mwe (APR1400 : Advanced Power Reactor)

Experience _ Overseas

12 projects are completed, 11 projects are on-going



Year (supply)	Customer	Project	Scope	Remark
2001	China	Qinshan Phase III #1,2	NSSS	Completed
2002	USA	Sequoyah #1	RSG	Completed
2005	USA	Watts Bar #1	RSG	Completed
2006	USA	ANO #2	RPZR	Completed
2009	USA	ANO #2 / Waterford #3	RRVCH&CEDM	Completed
2018	USA	Indian Point #2,3	RRVCH&CEDM	On-going
2009	China	Qinshan Phase II Unit 3	RV	Completed
2010	USA	Sequoyah Unit 2	RSG	Completed
2006	USA	Palo Verde Unit 1,2,3	RRVCH&CEDM	Completed
2011	China	Sanmen #1	SG,RV	On-going
2011	China	Haiyang #1	SG,RV,RVI	On-going
2020	Japan	TEPCO Cask	Cask	On-going
2014	USA	Vogtle #3,4	SG,RV	On-going
2015	USA	V.C. Summer #2,3	SG,RV	On-going
2018	UAE	*BNPP #1,2	NSSS	On-going

*BNPP(Braka Nuclear Power Plant) is same as Shin-Kori #3.4

KINS

- ✓ Domestic Plant
- ✓ NSSS, T/G, and BOP
- ✓ Including overseas vendor supplying domestic plant
- ✓ 3 times per year (Normally)
- ✓ To verify vendor's QA Program implementation
 - Contract Requirement
 - Atomic Energy Regulation Section IV(equivalent to 10 CFR 50 App.B)
 - KEPIC QAP(equivalent to NQA-1)
 - KEPIC MN(equivalent to ASME III)
 - Vendor's QA Manual

KEPIC started on 1995 and is similar to the ASME Codes

NRC

- ✓ Components to U.S.A Plant
- ✓ RV, SG, RRVH, RSG, CEDM, RPZR
- ✓ Has inspected twice at the Doosan shop
 - 1st : Vendor inspection with KINS(2008)
 - 2nd : NRC(2009)
- ✓ Will perform joint inspection with KINS on Oct. 2011
- ✓ To verify implementation of vendor's QA Program
 - Contract Requirement
 - 10 CFR 50 App.B
 - 10 CFR 21
 - NQA-1, ASME III
 - Vendor's QA Manual

NNSA

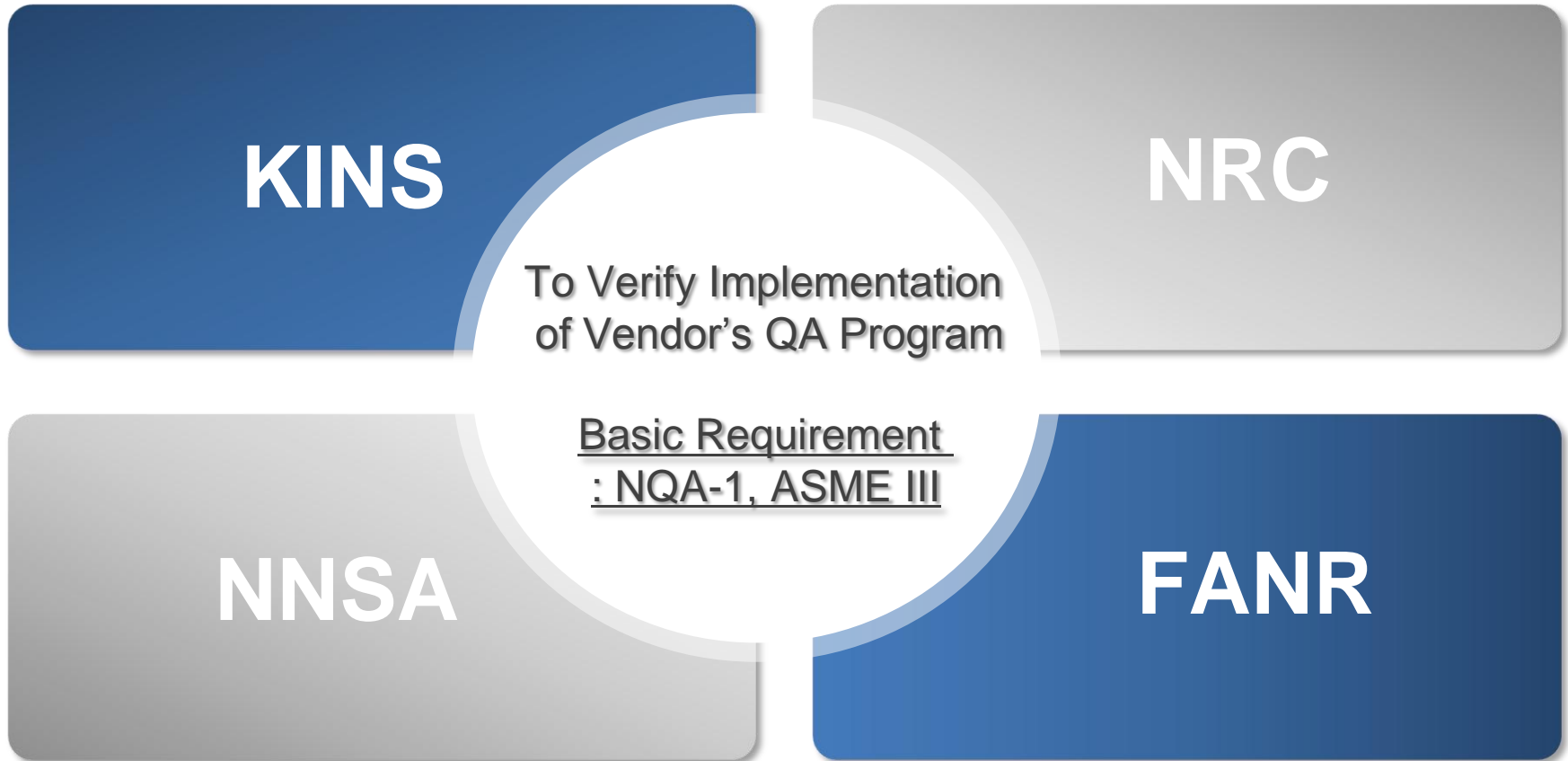
- ✓ China Project(Samen, Haiyang)
- ✓ RV, SG, and RVI
- ✓ Has once inspected the Doosan shop on Aug. 2011
- ✓ To verify implementation of vendor's QA Program
 - Contract Requirement
 - 10 CFR 50 App.B
 - NQA-1, ASME III
 - Vendor's QA Manual

FANR

- ✓ UAE Project (Braka Nuclear Power Plant)
- ✓ NSSS (on-going component)
- ✓ Participated in the vendor inspection by KINS(2010) as an Observer
- ✓ Inspection at the Doosan shop on 26.Sep.2011.
- ✓ To verify implementation of vendor's QA Program
 - Contract Requirement
 - 10 CFR 50 App.B
 - NQA-1, ASME III
 - Vendor's QA Manual

Summary

Each Regulatory Body's inspection criteria is very similar



■ Vendor inspection by regulatory body is being enhanced

- QA program implementation
- Suspect, counterfeit & fraudulent part

■ Joint vendor audit is being performed(NUPIC, NIAC)

- Share the results vendor audit

Expectation

Request is vendor inspection by regulatory bodies may be performed as joint venture or, if not, share the inspection results with other regulatory bodies