

**Differences on Requirements for  
Manufacturing of Forgings**

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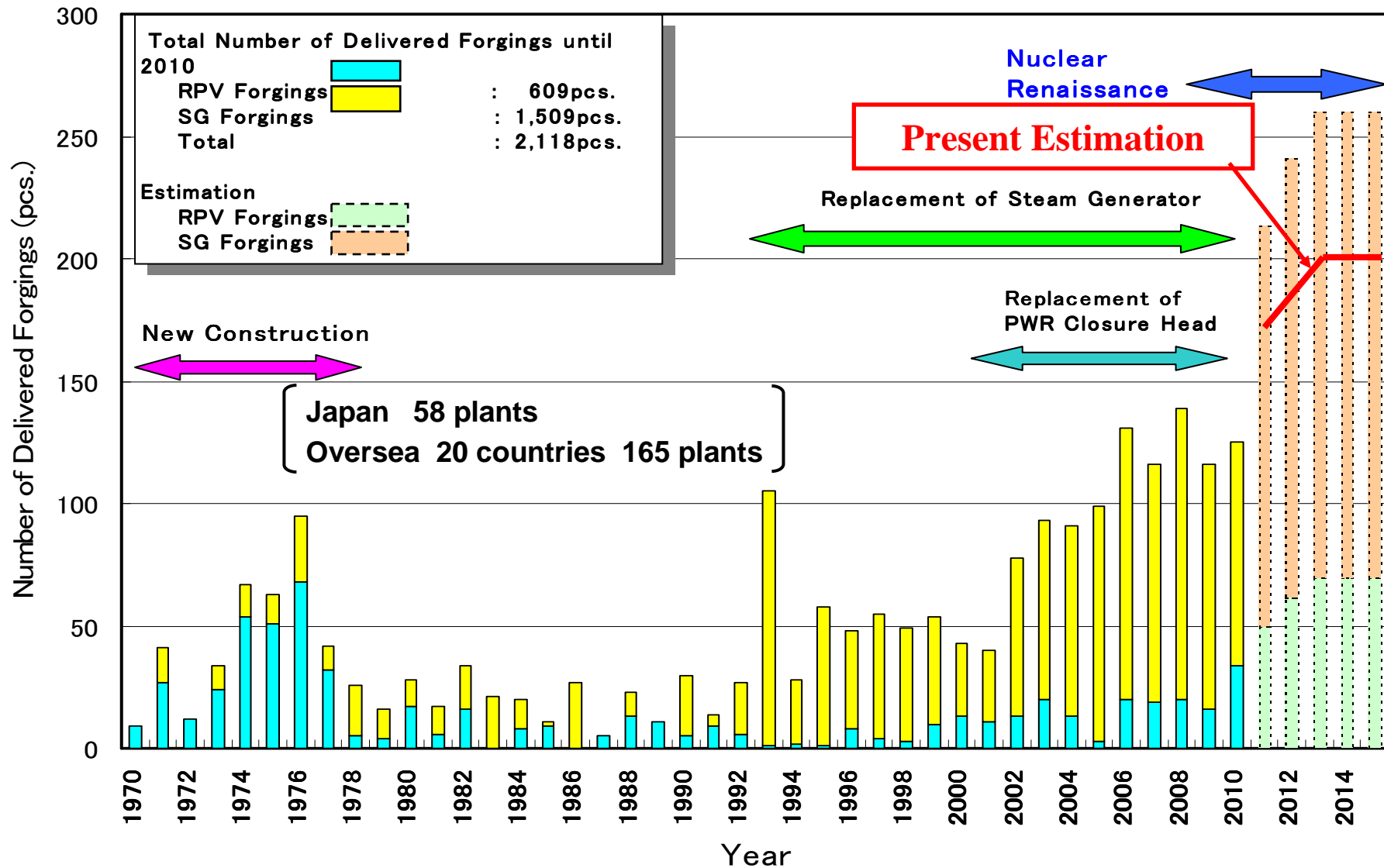
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# 1. Introduction of JSW Muroran Plant



## 2. Manufacturing Experience of Forgings for RPV & SG



# 2.1 Manufacturing Experience of Forgings for EPR



**Nozzle Shell Flange**



**Primary Head**

Component	No.	Product	#1	#2	#3	#4	#5	#6	#7	#8
			Olkiluoto -3	Flamanville -3	Taishan -1	Taishan -2	USA	TBD	Penly -3	UK
RPV	1	Closure Head	●	-	-	-	-	*	-	-
	2	Head Flange	●	●	●	-	-	*	*	*
	3	Nozzle Shell Flange	●	●	●	●	●	●	○	*
	4	Upper Core Shell	●	●	●	-	-	*	*	*
	5	Lower Core Shell	●	●	●	-	-	*	*	*
	6	Transition Ring	●	●	●	-	-	○	*	*
	7	Bottom Head	●	-	-	-	-	*	-	-
SG	8	Elliptical Head	●	●	●	-	○	-	*	*
	9	Upper Shell	●	-	-	-	-	-	-	-
	10	Nozzle Shell	●	-	-	-	-	-	-	-
	11	Conical Shell	●	●	●	●	●	*	○	*
	12	High Shell	●	-	-	-	-	-	-	-
	13	Intermediate Shell	●	-	-	-	-	-	-	-
	14	Lower Shell	●	-	-	-	-	-	-	-
	15	Tube Sheet	●	●	●	-	●	*	*	*
	16	Primary Head	●	●	●	●	●	*	*	*

TBD: To Be Determined

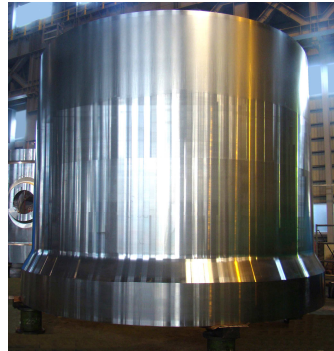
● : Forging      ○ : Under manufacturing      \* : Before manufacturing



# 2.2 Manufacturing Experience of Forgings for AP1000



Closure Head/RPV



Upper Shell/RPV



Channel Head/SG



Upper Head/SG

Component	No.	Project Product	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11
			China	Vogtle -3	TBD	TBD	TBD	Xianning -2	Tao Hua Jiang	San Men	Tao Hua Jiang	Pengze -1	Haiyang
RPV	1	Closure Head	●	●	●	●	*	○	*	*	-	-	-
	2	Upper Shell	●	●	●	●	*	○	*	*	-	-	-
	3	Lower Shell	●	●	●	●	*	○	*	*	-	-	-
	4	Transition Ring	●	●	●	●	*	○	-	-	-	-	-
	5	Lower Head	●	●	●	●	*	○	-	-	-	-	-
SG	6	Upper Head	●	●	●	○	*	○	○	*	*	-	-
	7	Upper Shell E	-	●	●	○	*	*	-	-	-	-	-
	8	Upper Shell D	-	●	●	○	*	*	-	-	-	-	-
	9	Transition Cone	●	●	●	●	*	○	○	*	-	-	-
	10	Lower Shell C	-	●	●	●	*	○	-	-	-	-	-
	11	Lower Shell B	-	●	●	●	*	○	-	-	-	-	-
	12	Lower Shell A	-	●	●	●	*	○	-	-	-	-	-
	13	Tube Sheet	●	●	●	●	○	●	○	*	-	*	*
	14	Channel Head	● (Separate type)	●	●	○	*	○	○	*	○	-	*

● : Forging      ○ : Under manufacturing      \* : Before manufacturing

TBD: To Be Determined



### 3. Main Applicable Codes for Forgings (1/2)

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**Applicable code is difference for each reactor design and location of site.**

**Basic Code**

**Location of Site**

**AP1000 : ASME**

**ABWR : JSME, ASME + Country's Rules**

**EPR : RCCM**

### 3. Main Applicable Codes for Forgings (2/2)

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(Example of Country' s rule)

AP1000 projects in China

- 1) Special mechanical properties are required for forgings, additionally.
- 2) Many production weld test materials are required.

Projects in France

- 1) Application of ESPN (Order of December 12, 2005 related to Nuclear Pressure Equipments) is required.

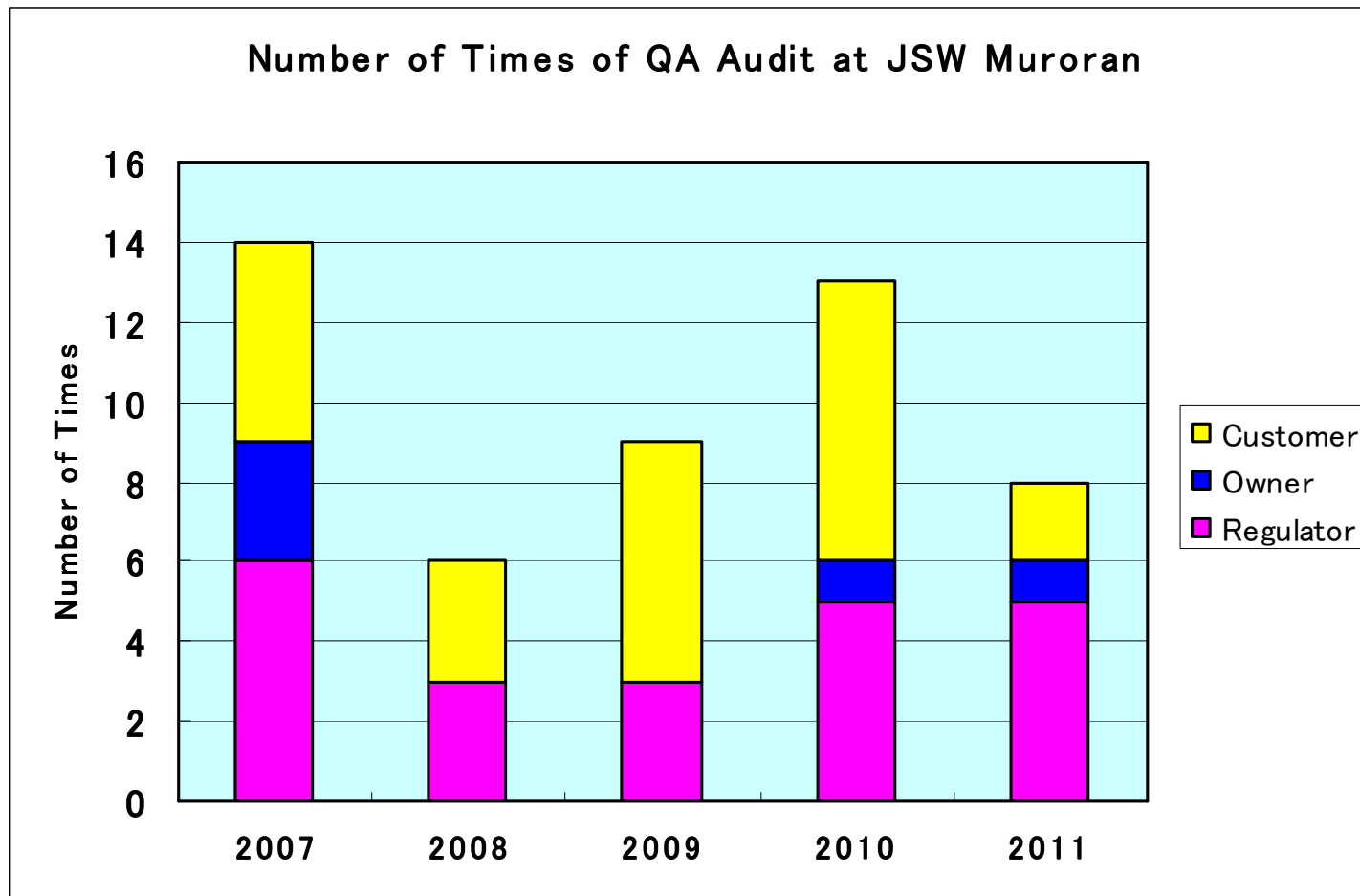
Projects in UK

- 1) Application of ISO17025 (Qualification of Test Laboratory) is required.



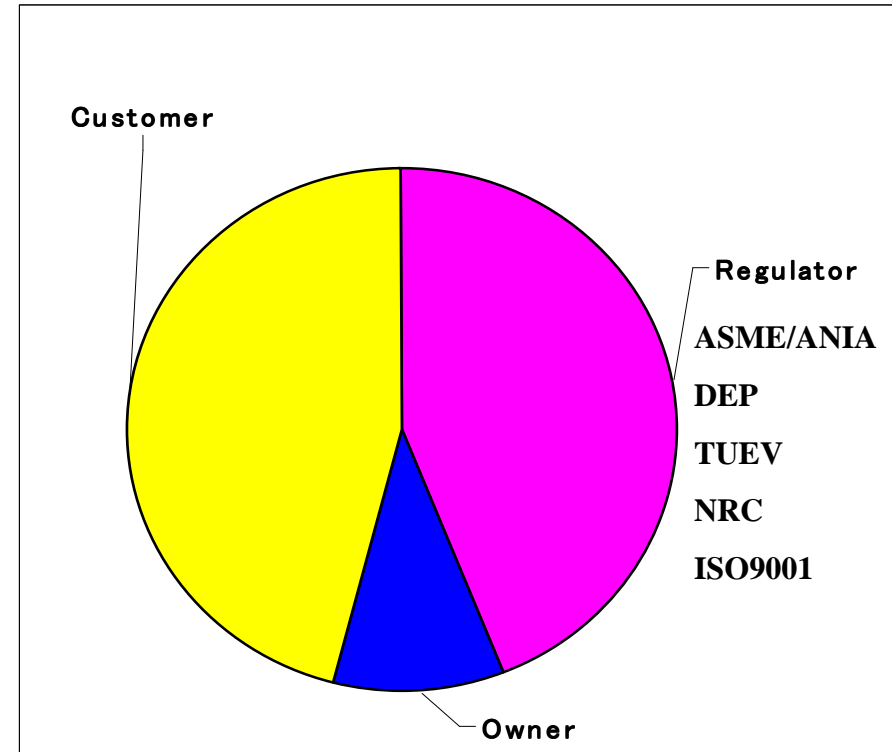
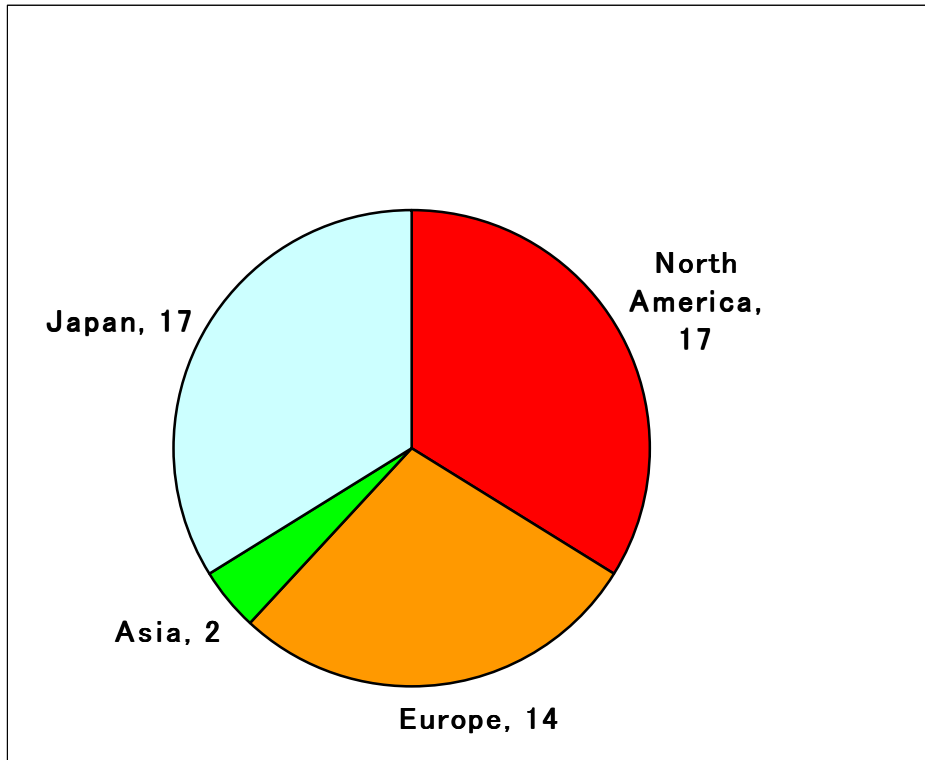
## 4. Vender Inspection (1/2)

**JSW has many experience to receive vender inspection (quality assurance audit/survey).**



## 4. Vender Inspection (2/2)

Number of times of QA audits at JSW Murooran for 2007 to 2011



## 5. Expectation to MDEP's Activities

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**JSW (as material manufacturer) expects to MDEP's activities,**

- To harmonize requirements of Code and Standard for material manufacturing.**
- To simplify the process of manufacturer qualification.**

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***Thank you  
for your attention!***

**The Japan Steel Works, Ltd.**

**JSW**