



Sayı : 61167015-500-E. 15221
Konu : Sinop Nükleer Santral Projesi Yerli
Tedarik Çalışmaları

25/05/2016

TOBB TÜRKİYE ODALAR VE BORSALAR BİRLİĞİ

Bilindiği üzere 03.05.2013 tarihinde Japonya Hükümeti ile Türkiye Cumhuriyeti Hükümeti arasında Türkiye'de Nükleer Güç Santralleri (NGS) Kurulmasına İlişkin İşbirliği Anlaşması imzalanmıştır.

Söz konusu anlaşma hükümleri uyarınca; EÜAŞ'ın da %49 oranında hissedar olduğu Sinop Projesi kapsamında Proje ortaklarından olan ve santralin ana tasarımını yapan Mitsubishi Heavy Industries (MHI) tarafından bir fizibilite çalışması yapılmaktadır. Fizibilite çalışmasının ana amaçlarından biri; NGS'nin kurulumu sırasında gerekecek mal ve hizmetlerin ülkemizde üretilmesinin mümkün olup olmadığının belirlenmesidir.

Bu doğrultuda, NGS projelerinde yerli firmalarımızın mevcut durumunu tespit etmek ve bu projelere katılımını artırmak amacıyla Bakanlığımız tarafından 2013 yılında Firma Envanter Formu'nu oluşturularak internet üzerinden bilgi toplanmış ve 300'e yakın firma yerinde ziyaret edilmiştir. Firma ziyaretleri sonucu toplanan bilgiler nükleer santral kurucuları ile paylaşılmıştır. Bakanlığımız tarafından toplanan bilgiler MHI tarafından belli kriterlere göre değerlendirilmiş ve MHI ve Bakanlığımız personelinin katılımı ile firma değerlendirme ziyaretlerine başlanmıştır. Çalışmalar sonucunda bazı ürünlere ilişkin yeterli sayıda ve yetkin Türk firması henüz tespit edilemediği MHI tarafından Bakanlığımıza bildirilmiştir.

Ekteki dokümanlarda; ülkemizden temin edilmesi düşünülen ancak yeterli sayıda ve yetkin Türk firması tespit edilemeyen ürünlere ilişkin ana teknik veriler ve ürüne özel olarak hazırlanmış değerlendirme anketleri gönderilmektedir.

Bu bağlamda, söz konusu dokümanların hem ISO 9001 hem de ISO 14001 sahibi olan Türk firmalarına ülke çapında duyurulması; bahse konu kriterlere uyan ve istekli Türk firmalarının değerlendirme anketlerini 10 Haziran 2016 tarihine kadar doldurmasının sağlanması ve anket formlarının hhatipoglu@enerji.gov.tr adresine e-posta ile gönderilmesi hususunda bilgilerinizi ve gereğini rica ederim

e-İmza

İbrahim Halil DERE

Bakan a.

Nükleer Enerji Proje Uygulama Dairesi
Başkanı



Ek :

- 1- AC Power Source Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 2- Airlock Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 3- DC Power System Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 4- Electric Motor Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 5- Equipment Hatch Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 6- HVAC Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 7- I&C Instrument Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 8- Pressure&Differential Pressure Transmitters Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 9- Pump (including motors) Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 10- Stainless Liner Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi
- 11- TI&BOP Pump Ekipmanlarına İlişkin Teknik Bilgiler ve Değerlendirme Anketi

ETK Uzman Yardımcısı

: Hakan HATİPOĞLU

Evrakı Doğrulamak İçin : <http://belgedogrulama.enerji.gov.tr/BelgeDogrulama.aspx?V=BE845K73P>

Adres: Türk Ocağı Caddesi No:2 06100 Çankaya/ANKARA/TÜRKİYE

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Bilgi için: Hakan HATİPOĞLU

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hhatipoglu@enerji.gov.tr

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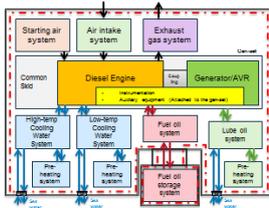


Supplier Questionnaire
Component: Onsite AC Power Source (Emergency power system)

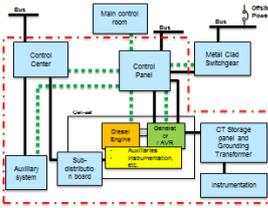
No.	Question	Response	Note	
Onsite AC Power Source				
1	Scope of supply (Diesel engine) *See Appendix-1	Is it possible to supply whole system including installation? Please let us know the scope of supply that is preferred in below case. <hr/> Case 1: Whole system of Onsite AC power source, including installation <hr/> Case 2: Whole system of Onsite AC power source, excluding installation <hr/> Case 3: Diesel engine and generator set, including instrumentation and auxiliary equipment and control system. (excluding piping and cabling) <hr/> Case 4: Diesel engine and generator set, including instrumentation, auxiliary equipment on the common skid. And control system for diesel engine, generator and auxiliaries on the common skid. (including piping and cabling on the common skid) <hr/> Case 5: Diesel engine only.	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "Yes", please check below case. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
2	Scope of supply (Gas turbine engine) *See Appendix-2	Is it possible to supply whole system including installation? Please let us know the scope of supply that is preferred in below case. <hr/> Case 1: Whole system of Onsite AC power source, including installation <hr/> Case 2: Whole system of Onsite AC power source, excluding installation <hr/> Case 3: Gas turbine engine and generator set, including instrumentation and auxiliary equipment and control system. (excluding piping and cabling) <hr/> Case 4: Gas turbine engine and generator set, including instrumentation, auxiliary equipment on the common skid. And control system for diesel engine, generator and auxiliaries on the common skid. (including piping and cabling on the common skid) <hr/> Case 5: Gas turbine engine only.	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "Yes", please check below case. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
3	Experience	Please provide your experience of manufacturing Diesel engine or Gas turbine engine with generator set to nuclear facilities or other power plant (e.g., fossil fuel power plants, nuclear power plants), if you have.	<input type="checkbox"/> Yes <input type="checkbox"/> No detail information of your experiences if you have.	
4	Schedule Control	Do you have procedures(manual) to manage or control of engineering and manufacturing schedule?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Code and Standard	Please let us know nuclear regulations (US R.G. 1.9 / IEEE 387 / KTA3702 etc.) that are applicable.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6	Seismic Qualification	Please let us know your experience of seismic study. Onsite AC power source shall be designed for and maintain their operability and stability during and after seismic events.	<input type="checkbox"/> Yes <input type="checkbox"/> No detail information of your experiences if you have.	
7	Generator Output (Diesel engine)	Please let us know generator output with diesel engine that is available in below power range, if you can supply. <hr/> 6,000 kW - 8,000 kW <hr/> 8,000 kW - 10,000 kW <hr/> 10,000 kW or more	Please check below case. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

8	Generator output (Gas turbine engine)	Please let us know generator output with gas turbine engine that is available in below power range, if you can supply.	Please check below case.	
		6,000 kW - 8,000 kW	<input type="checkbox"/>	
		8,000 kW - 10,000 kW	<input type="checkbox"/>	
		10,000 kW or more	<input type="checkbox"/>	
9	Test Facilities	Please let us know capacities of test facilities. Initial type test as safety-related will be carried out at shop.		
10	Starting Time	Please let us know the starting time of your Gen-set. Onsite AC power source is required quick start. (Onsite AC Power Source is required the starting time less than a few minutes from command to rated-voltage establishment)		

Mechanical



Electrical

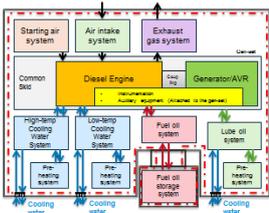


Case 1: Including installation.
Case 2: Excluding installation.

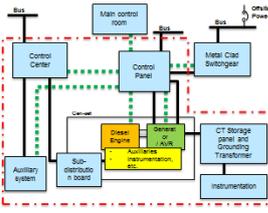
Note:
- Piping and cabling are included.



Mechanical



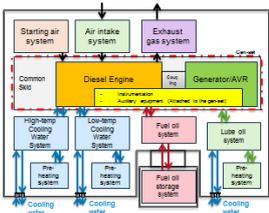
Electrical



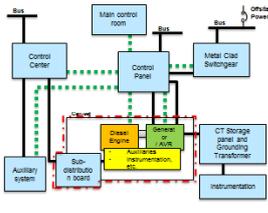
Note:
- Piping and cabling outside of common skid are excluded.
- Piping and cabling on common skid are included.



Mechanical



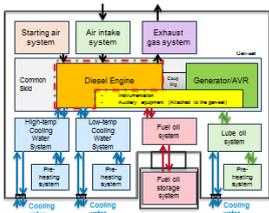
Electrical



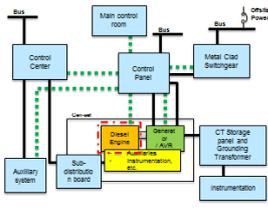
Note:
- Piping and cabling on common skid are included.



Mechanical



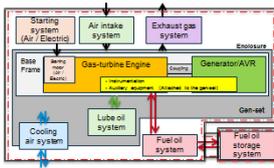
Electrical



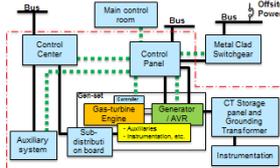
Note:
- Governor and governor controller are included.



Mechanical

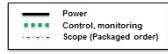


Electrical

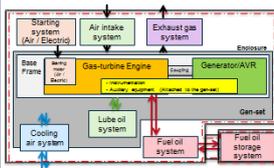


Case 1: Including installation.
Case 2: Excluding installation.

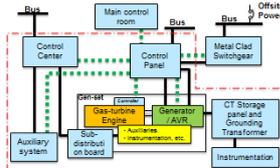
Note:
- Piping and cabling are included.



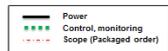
Mechanical



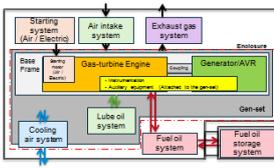
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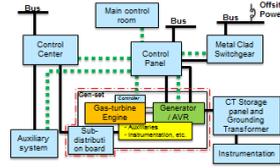
Note:
- Piping and cabling outside of enclosure are excluded.
- Piping and cabling inside of enclosure are included.



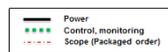
Mechanical



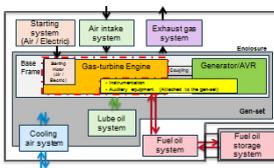
Electrical



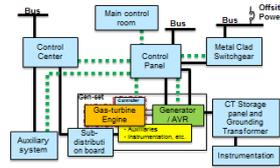
Note:
- Piping and cabling inside of enclosure are included.



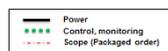
Mechanical



Electrical



Note:
- Reduction gear, starting motor, governor and governor controller are included.



QUESTIONNAIRES

Please fill in the blank by typing or select among the choices in the column.
 Bold line cells will be filled later, so you need not fill them.

1. Basic Information				
Vendor Name				Vendor Code
Address of Company (Country)			State Code	
Name of Contact				
TEL No. (INT. +)			E-mail address	
FAX No. (INT. +)			Number of Employee	
A	Capital Amount	Currency	Amount	
		Currency Code		
Sales Amount in the last fiscal year				
Parent Companies and Ownership(%)				
Foreign Capital <input type="checkbox"/> UNDER 30% <input type="checkbox"/> UNDER 50% <input type="checkbox"/> UNDER 70% <input type="checkbox"/> OVER 70%				
Agent Name (if any)				Agent Code
Relationship with Agent 1. Sole 2. Other ()				
B	Date of Establishment			
C	Main Product			Product Code
D	Number of Permanent Employees <input type="checkbox"/> UNDER10 <input type="checkbox"/> UNDER50 <input type="checkbox"/> UNDER100 <input type="checkbox"/> OVER101 (approximate number :)			
E	English Capability -Please check the below.			
F	-Speaking and writing/reading documents & drawings <input type="checkbox"/> very smooth <input type="checkbox"/> normal <input type="checkbox"/> difficult			
G	-Availability of QA documents in English <input type="checkbox"/> Yes <input type="checkbox"/> No			
Design Capability - If Yes, please fill in the Number of Engineers below.				
-Engineers		<input type="checkbox"/> UNDER10 <input type="checkbox"/> UNDER50 <input type="checkbox"/> UNDER100 <input type="checkbox"/> OVER101		
-Designer / Technical Staff		<input type="checkbox"/> UNDER10 <input type="checkbox"/> UNDER50 <input type="checkbox"/> UNDER100 <input type="checkbox"/> OVER101		
-Drawer / Drafter / CAD Operators		<input type="checkbox"/> UNDER10 <input type="checkbox"/> UNDER50 <input type="checkbox"/> UNDER100 <input type="checkbox"/> OVER101		
Main Clients (Name)				
H	Dun & Bradstreet rating (if any)			
I	Rating of other rating company (if any)			
Financial Status		Currency ()		
		Latest	one year before	two years before
-Sales				
-Gross Profit / (Loss)				
-Operating Profit / (Loss)				
-Net Profit / (Loss)				
QA Certificate				
J	-ISO <input type="checkbox"/> ISO 9000 <input type="checkbox"/> ISO 140000			
K	-Other Certificate(please fill in the box, if any)			
2. General Experience of Project Work				
Experience in Plant Type		Number of Order (within past XX years)		
		10years	5years	1year
L	-Power (Thermal)	<input type="checkbox"/> Yes <input type="checkbox"/> No		
M	-Power (Nuclear)	<input type="checkbox"/> Yes <input type="checkbox"/> No		
N	-Petrochemical Plant	<input type="checkbox"/> Yes <input type="checkbox"/> No		
-Others		Specific Category ()		
Experience in Work Category		Number of Order (within past XX years)		
		10years	5years	1year
-Engineering		<input type="checkbox"/> Yes <input type="checkbox"/> No		
-Manufacturing		<input type="checkbox"/> Yes <input type="checkbox"/> No		
-Procurement		<input type="checkbox"/> Yes <input type="checkbox"/> No		
-Construction		<input type="checkbox"/> Yes <input type="checkbox"/> No		
-Maintenance		<input type="checkbox"/> Yes <input type="checkbox"/> No		
-Trading Only (as agent)		<input type="checkbox"/> Yes <input type="checkbox"/> No		
-Others		Specific Category ()		
Experience with Japanese Company (Company/Project/Work Category/Completion Year)		Company Name () Detailed Information ()		
3. Submittal Documents: Please enclose the following documents when you reply to this questionnaire.				
O	1) Company brochure book (English)			
P	2) Product Catalog (English)			
Q	3) Experience record (English)			
4. Technical Information:				
1) Location of Main Factory *				
2) Number of Factory Worker				
R	3) Number of Qualified worker and inspector (Please also indicate specific qualification name ex. welding: 10 workers/ASME BPVC Sec.IX etc.)			
4) Number of QC Engineer				
5) Dimension of the Factory (Number of Building, m2, m3, etc.)				
S	6) Facilities of Factory (roller, press machine, welding machine, equipment for NDE, etc.)			
T	7) Information of Facilities of Shop Test			
U	8) Manufacturing Capacity (maximum thickness, maximum size, maximum weight of a block, overhead crane capacity etc.)			
V	9) Manufacturing Capability (ton per month, pc per month etc.).			
10) Design and Manufacturing period for main product				
*If you have two or more factory, please provide us with the above information of each location.				

**Supplier Questionnaire
Component: Airlock**

No.	Question	Response	Note
Equipment Hatch			
	<p>General Introduction</p> <p>The purpose of Airlock (AL) is to ensure entrance and exit of persons to containment vessel (CV) of nuclear plant. Two pieces of doors are prepared for inside and outside of CV in AL. The number of AL per unit is two and the size of it is approx. 3m (diameter) x 7m (length). AL is identified with a part of CV, so it is classified ASME class MC Components. AL is provided for purpose of passage of personnel into or out to CV and prevention of leakage of harmful substances such as radioactive ingredient emitted from CV. AL shall be consisted of cylindrical shell having the bulkhead and gasket sealed door at each end. The doors are mechanically interlocked to preclude both doors being open simultaneously and they are required sequential operation. (see Attachment. Outline for AL)</p>		This part provide information about AL, is not question.
1	Scope of supply	<p>In this Project, regarding AL, MHI requires engineering and manufacturing to Supplier. Is it possible for you to handle it?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No If your answer is "No", please let us know your capable scope.</p>	
2	Experience	<p>Do you have any experiences of projects for AL or similar product manufacturing and/or erection?</p> <p>Also, please let us know the detail, if you have some experiences of this topic. For example: detail design, material procurement, material fabrication at shop, material handling at site, welding and inspection at site, etc.</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No detail information of your experiences if you have.</p>	
3	QA standard	<p>Can you control the quality assurance according to IAEA GS-R-3?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
4	Schedule Control	<p>Do you have procedures(manual) to manage or control of engineering and manufacturing schedule?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
5	Code and Standard	<p>Design of AL shall meet the requirements of ASME Sec.III or equivalent code and standard. Can you satisfy this requirements?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
6		<p>AL shall be analyzed in accordance with ASME Sec.III or other adequate code and standard in the environment condition [high pressure (approx. 0.5MPa) and temperature (approx. 150 °C)] specified by ATMEA. Do you have the experience that you analyzed accordance to plant conditions? (include seismic and Air Plane Clash analysis)</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
7	Certification	<p>We do not require ASME N stamp, but AL is required equivalent codes and standards for engineering and manufacturing. What kind of codes and standards can you apply for engineering and manufacturing? If you don't have applicable codes and standards, can you perform manufacture as the NPT certificates personnel (a Fabricator), and construction in accordance with ASME?</p>	
8	Manufacturing	<p>Fabrication of AL (such as welding) shall meet the requirements of ASME Sec III or equivalent code and standard. Can you satisfy this requirements?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
9		<p>AL shall be provided the mechanical interlock between doors to prevent opening both doors at the same time. Do you have a experience and an ability to fabricate the mechanical interlock system ?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
10		<p>The doors and penetrations of AL are required the leak tightness at the high pressure(approx. 0.5MPa), high temperature(approx. 150 °C) and high radiation. Can you manufacture and provide the temperature and radiation proof gasket ?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	

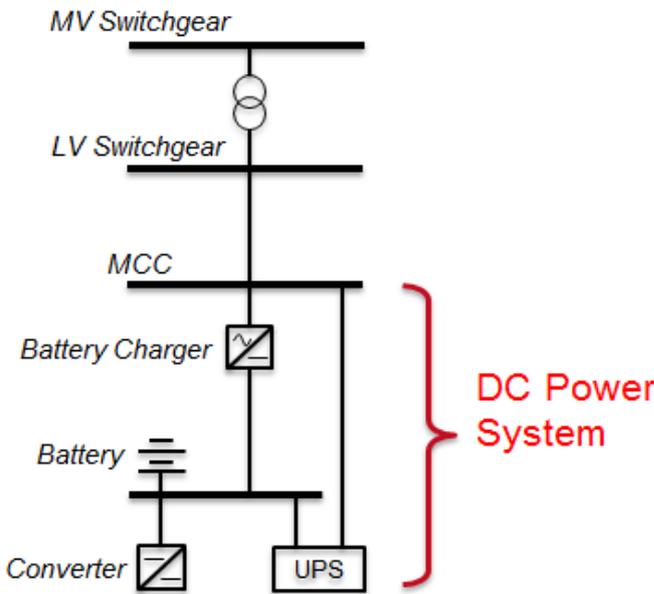
Attachment. Outline for Airlock

Explanation of Function	Airlock (AL) is provided for purpose of passage of personnel into or out to Containment Vessel (CV) and prevention of leakage of harmful substances such as radioactive ingredient emitted from CV.
Conceptual Figure	<p>The diagram illustrates a cross-section of an airlock system. It features a central cylindrical shell with two doors, one on each side. Each door is flanked by a bulkhead. Inside the shell, there is a Containment Vessel (CV) labeled 'CV Inside'. Outside the shell, there is another Containment Vessel labeled 'CV Outside'. A vertical double-headed arrow indicates the height of the airlock chamber is 'Approx. 3m'. A horizontal double-headed arrow at the bottom indicates the width of the airlock chamber is 'Approx. 7m'. A text box on the right side of the diagram states: 'The doors are mechanically interlocked to preclude both doors being open simultaneously and they are required sequential operation.'</p>

Supplier Questionnaire
Component : DC Power System (Battery, Battery Charger, UPS Unit, AC/DC and DC/DC Converters)

No.	Question	Response	Note
DC Power System			
1	Scope of supply	In this Project, regarding DC Power System, MHI requires engineering (e.g. addition of necessary protection to the Supplier's overall single line diagram, protection relay setting and coordination) and manufacturing (procurement) work to Supplier. Is it possible for you to handle it?	<input type="checkbox"/> Yes <input type="checkbox"/> No If above answer is "No", please let us know your capable scope for DC Power System.
2	Experience	Do you have any experiences of engineering and manufacturing for DC Power System ? Let us know your experience of supplying your products to nuclear facilities for the safety and/or non-safety application or other power plant (e.g., fossil fuel power plants, nuclear power plants), if you have.	<input type="checkbox"/> Yes <input type="checkbox"/> No detail information of your experiences if you have.
3	Schedule Control	Do you have procedures(manual) to manage or control of engineering and manufacturing schedule?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4	QA standard	Can you control the quality assurance according to IAEA GS-R-3?	<input type="checkbox"/> Yes <input type="checkbox"/> No
5	BoQ	Please confirm if your products meet the following specification: Is it possible for you to provide them? <u>Battery</u> Type: Vented lead acid Rated DC voltage: 220V Number of cells per string: 106 Capacity: 1000Ah - 5000Ah Qty: approx. 10 <u>Battery Charger</u> Supply voltage: AC400V Rated frequency: 50Hz Rated DC voltage: 220V Rated DC current: 250A - 500A Qty: approx. 10 <u>UPS Unit</u> Normal Input: AC400V, 3 phases Emergency Input: DC220V Bypass Input: AC400V, 3 phases Rated frequency: 50Hz Output rating: 170kVA - 510kVA Output voltage: AC400V, 3 phases Qty: approx. 10 <u>AC/DC and DC/DC Converters</u> Rated AC supply voltage: AC400V Rated frequency: 50Hz Rated DC supply voltage: 220V Rated DC output voltage: 26V Capacity: 10kVA - 70kVA Qty: approx. 20	<input type="checkbox"/> Yes <input type="checkbox"/> No If above answer is "No", please let us know your capable components.
6	Code and Standard	DC components which used for class 1E (safety) application shall meet the requirements of qualification based on IEC standard (e.g. IEC60780:Safety System Qualification, IEC 60980: Sismic Qualification) or equivalent code and standard as well as product standards. Can you satisfy this requirements? What codes and standards are applied to your product (DC components)?	<input type="checkbox"/> Yes <input type="checkbox"/> No If above answer is "Yes", please let us know your capable codes and standards.
7	Certification mark	MHI assume CE Mark is applied to electrical equipment. Can you supply the products (DC components) which CE Mark is applied?	<input type="checkbox"/> Yes <input type="checkbox"/> No If above answer is "Yes", please let us know your products (DC components) which CE Mark is applied.
8	Engineering/Design	Is it possible to perform the protection and coordination study on the DC power system and set the protection relays, based on protection and coordination principles provided by a purchaser?	<input type="checkbox"/> Yes <input type="checkbox"/> No
9	Seismic analysis	Is it possible to perform seismic design and analysis in your company? If you perform seismic analysis and/or testing, what is the maximum G (acceleration) that your product can keep function?	<input type="checkbox"/> Yes <input type="checkbox"/> No If above answer is "Yes", please let us know maximum G of your products.

Attachment. Outline for DC Power System

Explanation of Function	DC power system supply DC power to plant equipment. A part of DC power converted AC power by UPS unit. DC power system consists of Battery, Battery Charger, UPS Unit, AC/DC and DC/DC Converters. These components have safety and non-safety function for Nuclear Plant.
Conceptual Figure	 <p>The diagram illustrates the DC power system architecture. It starts with MV Switchgear at the top, which feeds into LV Switchgear. The LV Switchgear is connected to an MCC (Motor Control Center). From the MCC, power is distributed to three main components: a Battery Charger, a Battery, and a Converter. The Battery Charger is connected to the MCC bus. The Battery is connected to the Converter bus. The Converter is connected to the UPS. A red bracket on the right side of the diagram groups the Battery Charger, Battery, Converter, and UPS components under the label "DC Power System".</p>

Supplier Questionnaire Component : Motor

No.	Question	Response	Note
1	Scope of supply In this Project, MHPS will require engineering and manufacturing work to Supplier. Is it possible for you to handle it?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Engineering and Manufacturing capability, Experience Please let us know whether you can supply the motors which meet attached general specifications. If yes, please inform us of your experiences for them in power generation and/or other industries.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

General Specification for TI&BOP Motor

JEXK-0124-2190
MELCO NPP

No.	Specification	
1	10kVAC Motor	<p>Type of motor: Totally enclosed, squirrel cage induction motor with <u>horizontal and vertical</u> shaft</p> <p>Rated voltage: 10,000 VAC</p> <p>Rated frequency: 50 Hz</p> <p>Rated capacity: 2,100 kW (more than)</p> <p>Starting current: 5.5 X I_e (less than)</p> <p>Motor starting interval: -Motor can start at least one more time (at hot condition) -Motor can start two times continuously within an hour (at cold condition)</p> <p>Insulation level: Class F, B rise</p> <p>Degree of protection: IP55 or better</p> <p>Cooling type: <u>Water and air</u> to air heat exchanger</p>
2	400VAC Motor	<p>Type of motor: Totally enclosed, squirrel cage induction motor with <u>horizontal and vertical</u> shaft</p> <p>Rated voltage: 400 VAC</p> <p>Rated frequency: 50 Hz</p> <p>Rated capacity: 150kW (max.)</p> <p>Starting current: 8 X I_e (less than)</p> <p>Degree of protection: IP55 or better (meet the requirement of environmental conditions)</p> <p>Cooling type: Frame cooled Fin type</p>
3	220VDC Motor	<p>Type of motor: Drip proof</p> <p>Rated voltage: 220 VDC</p> <p>Rated frequency: 50 Hz</p> <p>Rated capacity: 55 kW (max.)</p> <p>Starting current: 200% X I_e</p> <p>Degree of protection: IP22</p> <p>Installation type: Vertical and horizon</p>
4	Applicable Codes&Standards	<p>Applicable codes and standards show the below, but not limited to.</p> <p>93/68/EEC: CE Marking</p> <p>2006/42/EC: Machinery Directive</p> <p>2006/95/EC: Low Voltage Directive</p> <p>IEC 60034: Rotating electric machines</p>

**Supplier Questionnaire
Component: Equipment Hatch**

No.	Question	Response	Note
Equipment Hatch			
	<p>General Introduction</p> <p>The purpose of Equipment Hatch (EH) is to carry in and carry out large equipment to the containment vessel (CV) of nuclear plant. The number of EH per unit is one (1) and the diameter of it is approx. 10m. EH is identified with a part of CV, so it is classified ASME class MC Components. EH is provided for purpose of transference into or out to CV and prevention of leakage of harmful substances such as radioactive ingredient emitted from the CV. EH shall be consisted of cylindrical shell and spherical cover having double gasket flange that bolts to a matching on flange of a shell. A set of lifting device shall be provided to lift to the cover. (see Attachment. Outline for EH)</p>		This part provide information about EH, is not question.
1	Scope of supply	<p>In this Project, regarding EH, MHI requires engineering and manufacturing to Supplier. Is it possible for you to handle it?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No If your answer is "No", please let us know your capable scope.</p>	
2	Experience	<p>Do you have any experiences of projects for EH or similar product manufacturing and/or erection?</p> <p>Also, please let us know the detail, if you have some experiences of this topic. For example: detail design, material procurement, material fabrication at shop, material handling at site, welding and inspection at site, etc.</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No detail information of your experiences if you have.</p>	
3	QA standard	<p>Can you control the quality assurance according to IAEA GS-R-3?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
4	Schedule Control	<p>Do you have procedures (manual) to manage or control of engineering and manufacturing schedule?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
5	Code and Standard	<p>Design of EH shall meet the requirements of ASME Sec.III or equivalent code and standard. Can you satisfy this requirements?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
6		<p>EH shall be analyzed in accordance with ASME Sec.III or equivalent code and standard in the environment condition [high pressure (approx. 0.5MPa) and temperature (approx. 150 °C)] specified by ATMEA. Do you have the experience that you analyzed accordance to plant conditions? (include seismic and Air Plane Clash analysis)</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
7	Certification	<p>We do not require ASME N stamp, but EH is required equivalent codes and standards for engineering and manufacturing. What kind of codes and standards can you apply for engineering and manufacturing? If you don't have applicable codes and standards, can you perform manufacture as the NPT certificates personnel (a Fabricator), and construction in accordance with ASME?</p>	
8	Manufacturing	<p>Fabrication of EH (such as welding) shall meet the requirements of ASME Sec III or equivalent code and standard. Can you satisfy this requirements?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
9		<p>The shell of EH is so large to transfer equipment into and out of the CV. The diameter of it is approximately 10m. Do you have a experience and an ability to fabricate the such a large size (approx. 10m) Hatch?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	
10		<p>The flange of EH is required the leak tightness at the high pressure(approx. 0.5MPa), high temperature(approx. 150 °C) and high radiation. Can you manufacture the flange of EH with high dimensional accuracy and provide the temperature and radiation proof gasket ?</p> <p><input type="checkbox"/>Yes <input type="checkbox"/>No</p>	

Attachment. Outline for Equipment Hatch

Explanation of Function	Equipment Hatch (EH) is provided for purpose of transference into or out to Containment Vessel (CV) and prevention of leakage of harmful substances such as radioactive ingredient emitted from the CV.
Conceptual Figure	<p>CV Inside</p> <p>CV Outside</p> <p>CV</p> <p>Cylindrical Shell</p> <p>Spherical Cover</p> <p>Flange</p> <p>Approx. 10m</p> <p>Spherical cover shall be lifted vertically and a set of lifting device shell be provided together.</p>

**Supplier Questionnaire
Component: HVAC**

No.	Question	Response	Note	
HVAC				
1	Scope of supply	<p>In this Project, regarding HVAC equipment, MHI requires EPC package contract (Engineering, Procurement, Construction, Commissioning) to Supplier. Is it possible for you to handle it? (see Attachment. Outline for HVAC, if you need)</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "No", please let us know your capable scope.	
2	Experience (not only in the nuclear power plant, but also in the general industrial plant.)	<p>Please let us know the following items regarding your track records of EPC package contract in the field of general industrial plant.</p> <p>1)Project Name 2)Site Location 3)Client Name 4)Supplied Products 5)Applicable Code & Standard 6)Project Duration (upper: award/ lower: completion)</p>		
3	BoQ	<p>In this Project, MHI requires EPCC package contract for HVAC equipment to Supplier. Detailed HVAC equipment and quantity are as following. Is it possible for you to provide them?</p> <p>[HVAC equipment and quantity] 1) Fan (including fan-motor) (app.150 units / 1 plant) 2) Air Handling Unit (including cooling coil, heater, HEPA filter, Rough filter etc.) (app.100 units / 1 plant) 3) Air Filter Unit (including HEPA filter, Charcoal filter etc.) (app.30 units / 1 plant) 4) Chiller including control panel (app.5 units / 1 plant) 5) Electric Heater (app.200 units / 1 plant) 6) Damper (including fire damper) (app.3500 units / 1 plant) 7) Cooling Tower (app.5 units / 1 plant) 8) Humidifier (app.20 units / 1 plant) 9) Silencer (app.10 units / 1 plant) 10) Containment Isolation Damper (app.10 units / 1 plant) 11) Duct (installation drawing, manufacturing drawing) (app.50,000 m² / 1 plant) 12) Instrument & Control for HVAC Components 13) Electrical Components for HVAC Components 14) Support for the above equipment</p> <p>* Some of HVAC equipment are required as nuclear safety related component.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "No", please let us know your capable bounds for each items as mentioned in left cell.	
4	QA standard	Can you control the quality assurance according to IAEA GS-R-3?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Schedule Control	Do you have procedures(manual) to manage or control of engineering and manufacturing schedule?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6	Code and Standard	<p>Some HVAC equipment in nuclear safety related HVAC systems are required to comply with Code & Standard of nuclear related HVAC equipment (e.g. ASME AG-1). Is it possible for you to provide these equipment complying with these nuclear related HVAC Code & Standard?</p> <p>If you can provide them, please let us know the specific applicable Code & Standard. Also, please let us know the detail, if you have some experiences of this topic.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No If above answer is "Yes", write the specific applicable Code & Standard below.	
7	Equipment Qualification	<p>To qualify the operability and required function during design life time, Some nuclear safety related HVAC equipment are required "Equipment Qualification" for seismic, environmental and aging requirements by prototype test or analysis. "Equipment Qualification" shall be implemented based on applicable Code & Standard for nuclear application (e.g. IEEE-323). Is it possible for you to implement the above "Equipment Qualification" ?</p> <p>If you can implement "Equipment Qualification, please let us know the specific applicable Code & Standard. Also, please let us know the detail, if you have some experiences of this topic.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "Yes", please write the detail.	

8	Seismic Design	<p>Some HVAC equipment are required seismic adequacy. Is it possible for you to provide these equipment met seismic adequacy? (Question 1)</p> <p>Furthermore, qualification/evaluation of seismic adequacy by prototype test or analysis (e.g. natural frequency analysis, stress analysis, seismic analysis for active components (like Fan and Chiller) .etc.) is required. Is it possible for you to implement this qualification/evaluation?(Question 2)</p> <p>Also, please let us know the detail, if you have some experiences of this topic.</p>	<p>(Your answer to Question 1) <input type="checkbox"/>Yes <input type="checkbox"/>No</p> <p>(Your answer to Question 2) <input type="checkbox"/>Yes <input type="checkbox"/>No</p> <p>Write your experiences if you have.</p>	
9	Leakage Design	<p>Internal and external leakage rate of Damper and external leakage rate of Duct, Air Filter Unit and Air Handling Unit shall meet the criteria in Code & Standard of nuclear related HVAC equipment. Is it possible for you to provide these equipment?</p> <p>Also, please let us know the detail, if you have some experiences of this topic.</p>	<p><input type="checkbox"/>Yes <input type="checkbox"/>No</p> <p>Write your experiences if you have.</p>	
10	Charcoal Filter Design	<p>Is it possible for you to provide charcoal filter complying with ASME AG-1 or equivalent code and standard? If you can provide, please let us know which type of charcoal filter you can provide, Type II (ASME AG-1 Section FD) or Type III (ASME AG-1 Section FE)?</p> <p>Also, please let us know the detail, if you have some experiences of this topic.</p>	<p><input type="checkbox"/>Yes <input type="checkbox"/>No</p> <p>If your answer is "Yes", please write the detail.</p>	
11	Chiller Design	<p>Safety related chiller is planning to use sea water as cooling water in condenser. Is it possible for you to provide this safety related chiller met the above requirement?</p> <p>Also, please let us know the detail, if you have some experiences of this topic.</p>	<p><input type="checkbox"/>Yes <input type="checkbox"/>No</p> <p>Write your experiences if you have.</p>	
12	Penetration Closing	<p>In the nuclear power plant, some area require leakage tests. Also penetration sealing for duct on each wall and floor in order to meet requirements of the above leakage test(ex. welding sealing plate, installing rubber boot etc.). Can you implement the leakage tests, including the sealing work?(Question 1)</p> <p>In addition, some penetrations in the wall or on the floor are required radiation shield equivalent to the performance of concrete wall. Please let us know your experiences or ability to this radiation shield also. (Question 2)</p>	<p>(Question 1)<input type="checkbox"/>Yes <input type="checkbox"/>No</p> <p>(Question 2) Write the detail, if you have.</p>	
13	Commissioning	<p>In this Project, negative pressure control value is set by each building and controlled each value. Therefore, regarding commissioning work, negative pressure adjustment test will be implemented in order to achieve and verify this negative pressure control system. Is it possible for you to implement the above test?</p> <p>Also, please let us know the detail, if you have some experiences of this topic.</p>	<p><input type="checkbox"/>Yes <input type="checkbox"/>No</p> <p>Write your experiences if you have.</p>	

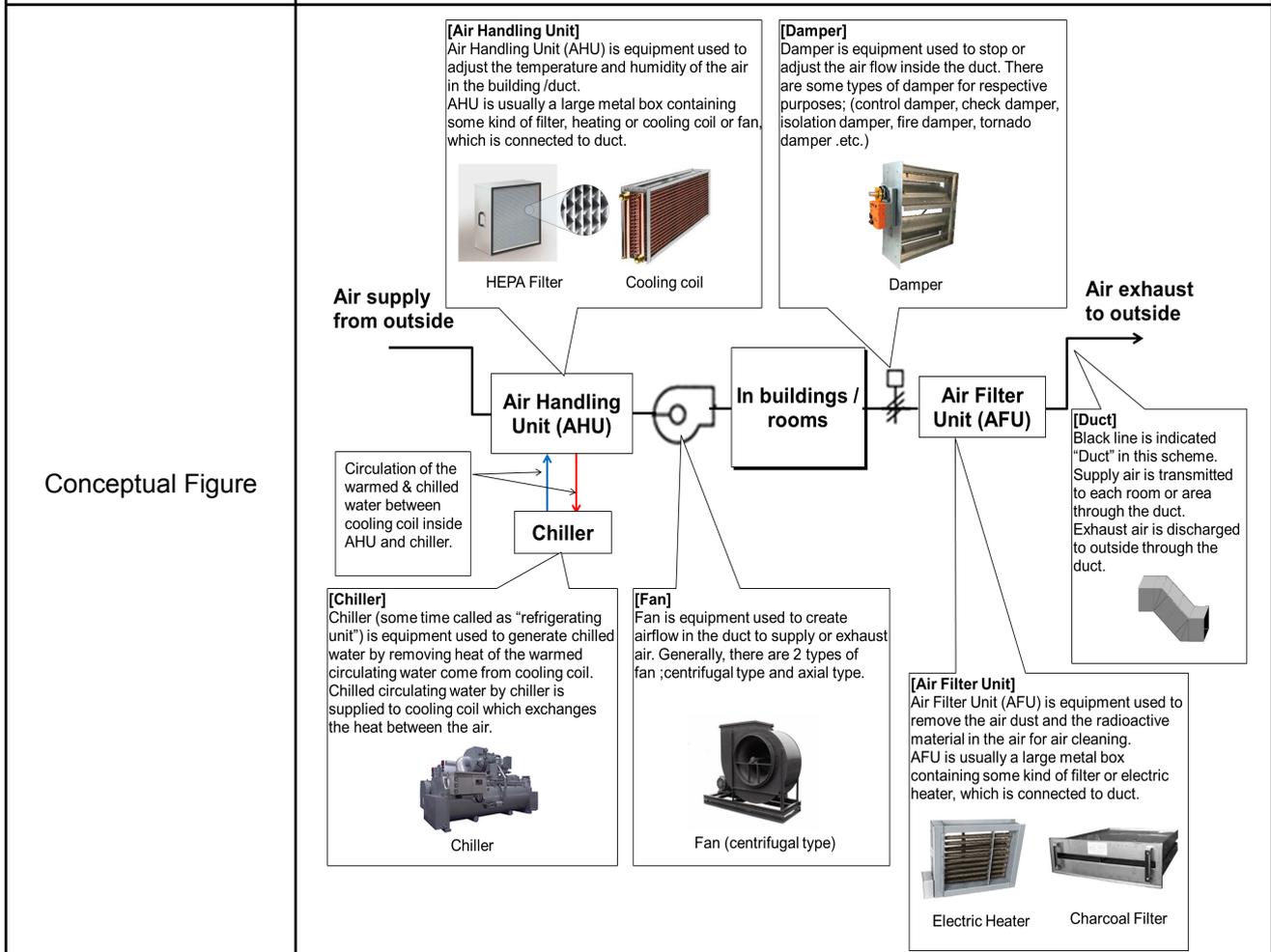
Attachment. Outline for HVAC

Purposes of Heating, Ventilation, and Air Conditioning (HVAC) system in Nuclear Power Plant (NPP) are as follows;

- **Radiation control**
⇒ To remove the radioactive material and dust in the air for air cleaning.
- **Protection of safety-related equipment**
⇒ To keep applicable air condition for safety-related equipment and electric cabinet to achieve their required function.
- **Comfortability of operator**
⇒ To keep applicable air condition for operators in NPP to work comfortably.

Above purposes are achieved by HVAC equipment (Chiller, Fan, Damper, Fire damper, Electric heater, Humidifier, Air Handling Unit, Air Filter Unit, Cooling Tower, Containment isolation damper, Silencer, Duct, Electrical equipment and Instruments relevant to HVAC).

Example of flow diagram is as follows;



Supplier Questionnaire
Component : I&C Instrument

No.	Question	Response	Note	
1	Scope of supply	In this Project, MHPS will require engineering and manufacturing work to Supplier. Is it possible for you to handle it?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Engineering and Manufacturing capability, Experience	Please let us know whether you can supply the I&C instruments which meet attached general specifications. If yes, please inform us of your experiences for them in power generation and/or other industries.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

General Specification for TI&BOP I&C Instrument

Transmitter	
Performance	
Output	4-20mA DC (DC24V external power supply)
Load Limitation	greater than 500 Ω
Reference Accuracy	less than $\pm 0.5\%$
Response Time	less than 0.3sec for Turbine Control less than 1sec for others
CE Marking	requested
Qty	approx. 500
The accuracy less than 0.5% is satisfied under the following environmental conditions.	
Operating Temperature	10-40°C (ambient temp. shift: per20°C)
Humidity	0-100% relative humidity
Radiation	not required

Thermo-Couple & RTD	
Performance	
Type	Type E and Type T Thermo-Couple, Pt100 3 wire and 4 wire RTD
Tolerance Class	ASTM Special or equivalent accuracy for Thermo-Couple, Class A or equivalent accuracy for RTD
CE Marking	requested
Qty	approx. 500
Thermo-Couple Junction	Ungrounded type and Grounded type
Number of Elements	Single and Double
The accuracy described above is satisfied under the following environmental conditions.	
Operating Temperature	10-40°C (ambient temp. shift: per20°C)
Humidity	0-100% relative humidity
Radiation	not required

Switch	
Performance	
Feature	Bourdon tube type, Bellows type and Diaphragm type with Micro Switch
Accuracy	less than $\pm 1\%$
CE Marking	requested
Qty	approx. 100
Electrical Rating	DC125V 0.5A and DC48V 10mA
Contact Configuration	SPDT \times 1
The accuracy described above is satisfied under the following environmental conditions.	
Ambient Temperature	-20 to 60°C
Humidity	0-100% relative humidity
Radiation	not required

Local Gauge	
Performance	
Feature	Bourdon tube type, Bellows type and Diaphragm type
Accuracy	less than $\pm 1.6\%$
Qty	approx. 300
The accuracy described above is satisfied under the following environmental conditions.	
Ambient Temperature	-20 to 60°C
Humidity	0-100% relative humidity
Radiation	not required

Supplier Questionnaire
Component: Pressure/Differential Pressure Transmitters

No.	MHI Question / Requirement		Response	Note
Pressure/Differential Pressure Transmitters				
1	Scope of supply	Can you supply a remote diaphragm seal type transmitter that meets following features? 1) The maximum length of a capillary tube should be at least 15 meters. 20 meters are preferable. 2) The ambient temperature effect of the remote diaphragm seal type transmitter should be less than $\pm 0.5\%$ per 20°C temperature shift. 3) The fill fluid of the remote diaphragm seal is distilled water or silicone oil as requested.	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "Yes", please let us know your specification of transmitter.	
2	Experience	Please provide your experience of the manufacturing pressure/differential pressure transmitters in a power plant (e.g., fossil fuel power plants, nuclear power plants) or an equivalent facility?	<input type="checkbox"/> Yes <input type="checkbox"/> No detail information of your experiences if you have.	
3	Schedule Control	Do you have procedures(manual) to manage or control of engineering and manufacturing schedule?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4	Performance	Can the transmitter operate in the following performance? [General Performance Features] Output: 4-20mA DC (DC 24V external power supply) Load Limitations: Greater than 500Ω Reference Accuracy: less than $\pm 0.5\%$ Response Time: less than 1 sec Environmental Conditions: See the next question. Qty: approx. 1,000 CE marking requested Please provide the performance specifications of your products.	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "Yes", please let us know your specification of transmitter.	
5	Accuracy	Can you supply transmitters with less than $\pm 0.5\%$ accuracy under following environmental conditions?: Environment: Operating Temperature: 10-40°C (ambient temp. shift: per 20°C) Humidity: 0-100% relative humidity Radiation: 100Gy Please provide the environmental performance specifications of your products.	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "Yes", please let us know your specification of transmitter.	
6	Drift	Please provide drift information of your products for 24 months and justification. (MHI prefer drift performance less than $\pm 0.5\%$)		
7	Design life	Is a design life of transmitters more than 10 years? Please provide a qualification test report or any other engineering documents to demonstrate the design life.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8	Hydrostatic Test	Are all of your transmitters hydrostatically tested before shipping? The test pressure should be at least 150% of maximum static pressure or maximum working pressure.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Supplier Questionnaire
Component : Pump (including motors)

No.	Question		Response	Note
Pump (including motors)				
<Questions for all pumps>				
1	Scope of supply	In this Project, regarding pump including motors, MHI requires engineering and manufacturing work to Supplier. Is it possible for you to handle it?	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "No", please let us know your capable scope.	
2	Experience	Please let us know the pump types and performance ranges among the above types and ranges which you can supply.		
3	BoQ	In this Project, MHI requires the BoQ of Pumps as shown in the table. Required Pump Types and Performance Ranges. Is it possible for you to provide them?	<input type="checkbox"/> Yes <input type="checkbox"/> No If your answer is "No", please let us know your capable bounds for each items as mentioned in left cell.	
4	QA standard	Can you control the quality assurance according to IAEA GS-R-3?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Schedule Control	Do you have procedures(manual) to manage or control of engineering and manufacturing schedule?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6	Analysis Program	Can you use FEM programs such as ANSYS or Nastran?(Question 1) Can you use CFD programs such as Fluent or CFX?(Question 2)	(Your answer to Question 1) <input type="checkbox"/> Yes <input type="checkbox"/> No (Your answer to Question 2) <input type="checkbox"/> Yes <input type="checkbox"/> No	
7	Seismic Design	Do you have experience of seismic analysis of supporting structures, which confirms that the pump stays at the installed location during and after earthquakes?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8	Handing of stainless steel	Can you separate the stainless steel manufacturing area form carbon steel manufacturing area? Moreover, do you use different tools for above-mentioned two areas?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
9	Test Facility	Do you have test facilities where product performance tests can be conducted for the pump types and ranges responded to the question No. 4?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10	Vibration	Do you have experience to implement countermeasures against abnormal pump vibrations?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<Questions only for safety related pumps>				
11	QA standard	Can you control the quality assurance according to IAEA GS-R-3?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
12	Code and Standard	Do you have experience of stress analysis of pressure boundaries and supporting structures according to the equivalent requirements specified in ASME Boiler & Pressure Vessel Code, Section III?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
13	Seismic Design	Do you have experience of seismic analysis of a pump rotor, which confirms that the pump can continue its operation during and after earthquakes?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
14	Solid mixed flow	For the pump type and performance ranges "A" and "B" below, do you have experience of manufacturing pumps which flow liquid including solid particles?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

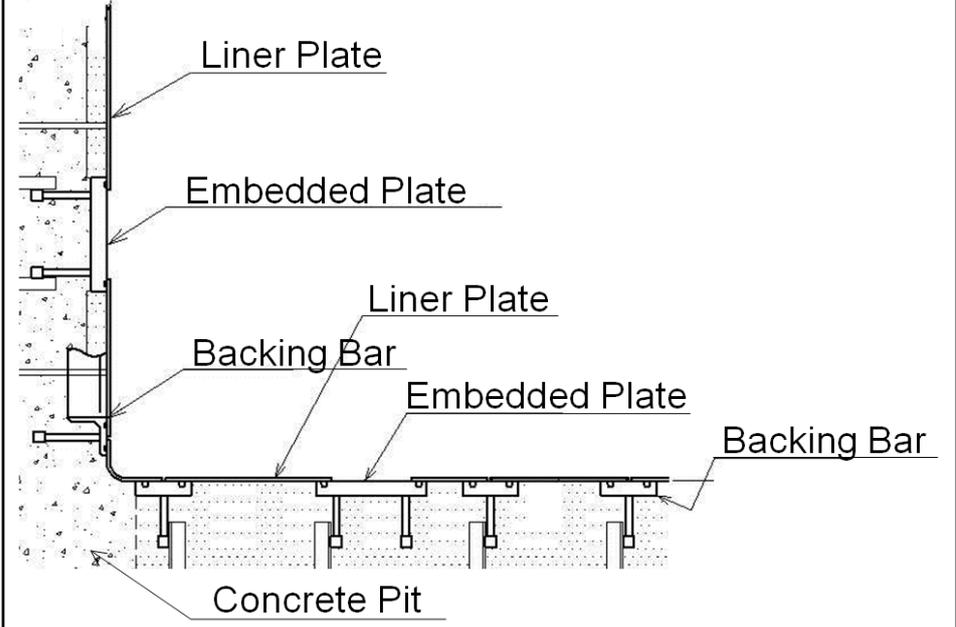
Table. Required Pump Types and Performance Ranges

No.	Pump Type	Design Temperature (°C)	Flow Rate (m³/h)	Delivery Head (m)	Quantity (Unit)
<Safety Related Pumps>					
A	Horizontal Multi Stage Centrifugal Pumps	approx. 50	approx. 100	approx. 1200	6
B		approx. 200	approx. 800	approx. 150	3
C	Horizontal Single Stage Centrifugal Pumps	approx. 50	approx. 150 ~ 200	approx. 50	4
D		approx. 100	approx. 1000 ~ 3000	approx. 100	8
E	Vertical Centrifugal Pumps	approx. 50	approx. 3000 ~ 6000	approx. 70 ~ 80	4
<Non Safety Related Pumps>					
F	Horizontal Single Stage Centrifugal Pumps	approx. 50 ~ 100	approx. 10 ~ 100	approx. 10 ~ 100	10
G		approx. 50	approx. 1000 ~ 1500	approx. 50	6
H		approx. 50	approx. 6000	approx. 100	1
I	Horizontal Centrifugal Canned Motor Pumps	approx. 100	approx. 20 ~ 100	approx. 60 ~ 80	5
J	Vertical Submersible Centrifugal Pumps	approx. 50	approx. 5	approx. 20	1
K		approx. 100	approx. 10 ~ 20	approx. 20 ~ 80	15

**Supplier Questionnaire
Component: Pool Liner**

No.	MHI Question / Requirement	Response	Note
Pool Liner (Stainless Liner and Gate)			
1	Scope of supply In this Project, regarding stainless Pool Liner, MHI requires EPC package contract (Engineering, Procurement, Construction) to Supplier. Can you supply EPC scope for stainless Pool Liner?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Experience Do you have any experiences of projects for Stainless liner or similar product with EPC package contract?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3	Schedule Control Contractor must plan the detail construction method and schedule. There could be many interference between Stainless liner construction and Civil work. (i.e. rebar setting, form work setting, concreting) Contractor must coordinate with Civil work company to plan the best method for Stainless liner construction. Are you capable of coordination with Civil work company by yourself?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4	Do you have procedures(manual) to manage or control of engineering and manufacturing schedule?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Water tight Door and Radiation Shielding Gate The contractor must design, manufacture and install the watertight door and radiation shielding gate to be installed in the pits as accessories of the stainless liner and must take responsibility for the functions. Do you perform these work?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6	Leak Detection Structure Contractor must design Leak detection system for all the weld seams. The purpose of Leak detection system is to detect any leakage of pool/pit water as soon as possible. Contractor must define the appropriateness of the design of Leak detection system. Are you capable of designing the Leak detection system mentioned above?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7	Gate The purpose of Pool/Pit gate is to separate adjacent Pools/Pits. Contractor must ensure the perfect water tightness of Pool/Pit gate. Contractor must evaluate and take responsibility for the hydraulic resistance, seismic resistance including sloshing resistance and water tightness. The maximum Pool/Pit gate size is approx. 7 m W x 13 m H. Are you capable of satisfying the perfect water tightness and evaluating the strength of Pool/Pit gates?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8	Welding Contractor must execute the weld of thin and large stainless plate. The minimum thickness of stainless plates is 3 mm. The maximum size of stainless plate could be about 3 m x 9 m depending on Contractor design. Approximate liner area is over 3,000m ² . Contractor must have the skill to control weld deformation as less as possible and handle such thin stainless plates without bend. Are you capable of satisfying all conditions mentioned above?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
9	Handling of Stainless Steel From the view point of SCC prevention, Contractor must consider with the maximum attention to the handling of stainless steel including, but not limited to, the arrangement of specific tool for stainless steel fabrication and the specific fabrication/storage area for stainless steel to prevent carbon steel materials/elements contamination. Thus a well-established procedure and abundant experiences is mandatory to the handle and fabrication of stainless steel. Are you capable of satisfying such conditions mentioned above?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10	Heavy Handling The maximum weight of pre-assembled part could be more than 20 ton depending on Contractor design. Contractor must lift such heavy load to install right position. Also Contractor must design and fabricate the specific lifting beams. Are you capable of handling of such parts?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
11	NDE Contractor must conduct the vacuum box leakage test for all the weld seams as one of NDA. Basic idea of the vacuum box leakage test is as bellow. Test pressure: -40kPa or less, Retention time: 10 sec. or more, Test temperature: 5 to 50 °C, Are you capable of conducting vacuum box leakage test mentioned above and evaluating the result?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Attachment. Outline for Stainless Liner

Explanation of Function	Stainless Liner is to complement the pool water storage and facilitate the decontamination of the pool.
Conceptual Figure	<p>A Stainless Liner is composed of liner plate, backing bar (with leak detection ditch and stud dowel) and embedded plate.</p> 

Supplier Questionnaire
Component : Pump

No.	Question	Response	Note	
1	Scope of supply	In this Project, MHPS will require engineering and manufacturing work to Supplier. Is it possible for you to handle it?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Engineering and Manufacturing capability, Experience	Please let us know whether you can supply the pumps which meet attached general specifications. If yes, please inform us of your experiences for them in power generation and/or other industries.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

General specification for TI&BOP Pump

1.Types and Performance Ranges

No.	Pump type	Water quality	Design temperature(°C)	Flow Rate (m3/h)	Delivery Head (m)
A	Vertical	Fresh water	< 100	~2000	~300
B		Sea water	< 100	~800	~80
C	Horizontal	Fresh water	< 100	~2000	~50
D			< 100	~600	~200
E			≥ 100	~600	~50
F		Sea water	< 100	~2000	~30

2.Expected general Codes and standards to be applied

In general,the design,equipment,manufacturing and testing methods of the Pump will conform to the following codes and standards.

- ISO
- CE Marking
- ANSI/ASME or EN
- IEC
- API