

DYNAMIC & SPECIAL COMPANY

**DASCO**

**HEAT EXCHANGER FOR ENERGY SAVING**

There is a future in **DASCO**.

Future of your company shall be changed with **DASCO**.

# COMPANY PROFILE

**(2019)**

**Heat Solution**

for Your Good Partner

Thermal design and Detail design for **DASCO**

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*Beyond the Simple  
Customer's Satisfaction*

## GREETING MESSAGE



The management philosophy of DASCO is that the enterprises should permanently exist and develop, the purpose of management of the company is “profit maximization”, and the goal of the management of the company is to be a world-class company. DASCO has continuously made investments and endeavors to be the best in the heat exchange area since its establishment in 1995.

The company intends to make every endeavor as the leader in heat exchanger area based on its know-how that has been accumulated as a professional heat exchanger company including Air compressor inter cooler, H2 cooler, Shell & Tube heat exchanger, Pressure Vessels, and Electric heater as well as good-quality products and competitive prices.

Dasco co., Ltd.  
PRESIDENT **Lee, Geun young**

# 1. OUTLINE OF COMPANY

- 1) NAME : DASCO Co., Ltd
- 2) BOARD OF DIRECTOR  
PRESIDENT : Lee, Geun young
- 3) FOUNDED : OCT, 1995
- 4) CORRESPONDENT BANKS : KOOKMIN BANK, KOREA
- 5) NUMBER OF EMPLOYEES : 102 PERSONS
  - FINANTIAL & MANAGING STAFF : 8 / SALES ENGINEER : 8
  - DESIGN ENGINEER : 10 / Q.A ENGINEER : 7 / PRODUCTION : 69
- 6) CAPITAL : ₩ 363,270,000 (US\$ 330,000)
- 7) SALES AMOUNT OF YEAR 2018 : US\$ 18,000,000
- 8) ADDRESS

## Head office and factory

92, Gimhae-daero 916 beon-gil, Hallim-myeon, Gimhae-si, Gyeongsangnam-do, Korea  
 T. 82.55.346.4895 F. 82.55.346.4894 E-mail : dasco@dascohex.com



Date of establishment  
: May 2000  
 Land area  
: 5,315 m<sup>2</sup>  
 Factory Building area  
: 1,578 m<sup>2</sup>



Hi Air Korea BLDG 1F, 10, Sasang-ro 181 beon-gil, Sasang-gu, Busan, Korea  
 T. 82.51.715.9981 F. 82.70.8255.3300 E-mail : hs@heatsolution.co.kr

## Factory 2

19-52, Inje-ro 694 beon-gil, Saengrim-myeon, Gimhae-si, Gyeongsangnam-do, Korea



Land area  
: 4,950 m<sup>2</sup>  
 Factory Building area  
: 1,650 m<sup>2</sup>

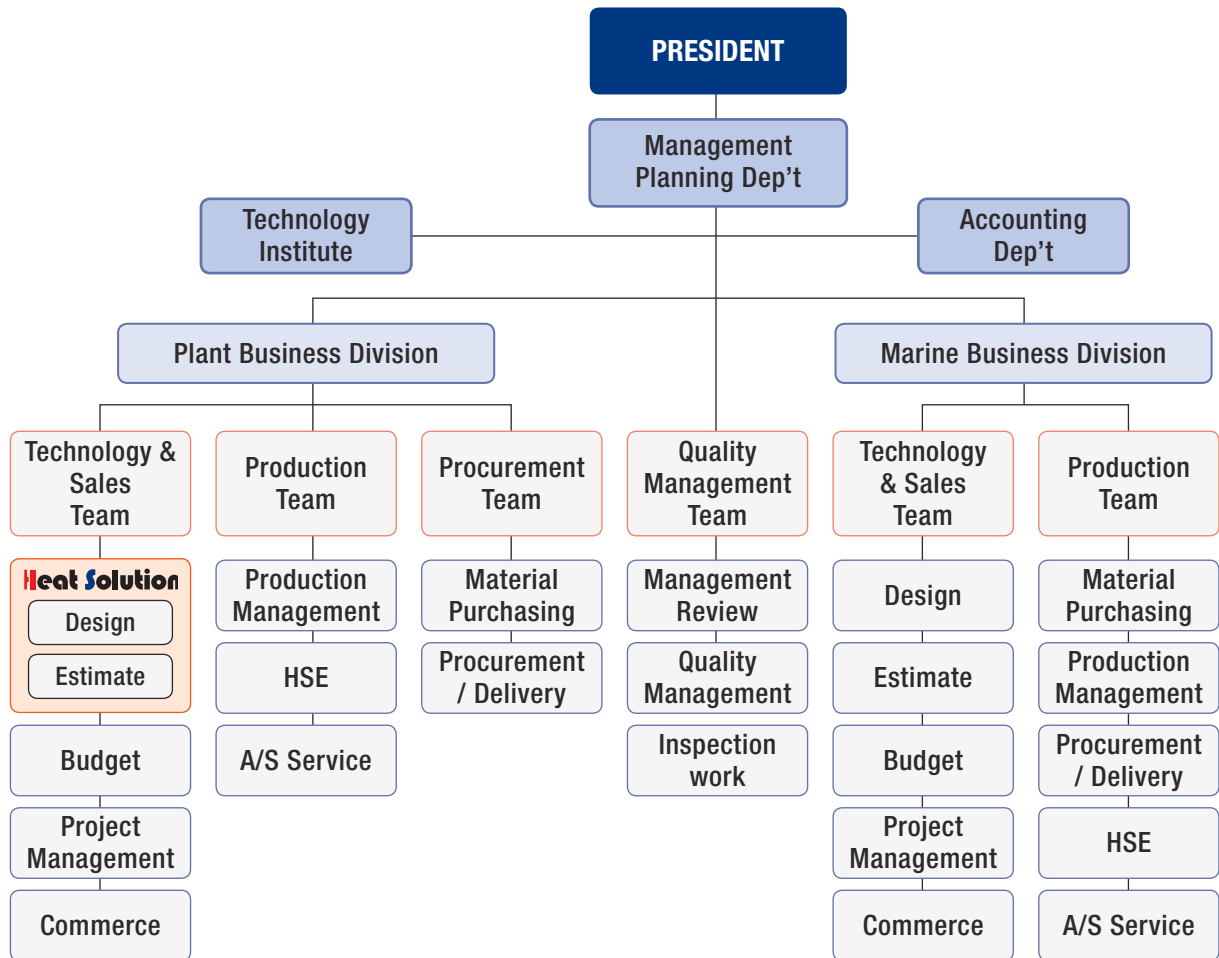
## Factory 3

53, Jeokmal-gil, Docheon-myeon,  
Changnyeong-gun, Gyeongnam, Korea

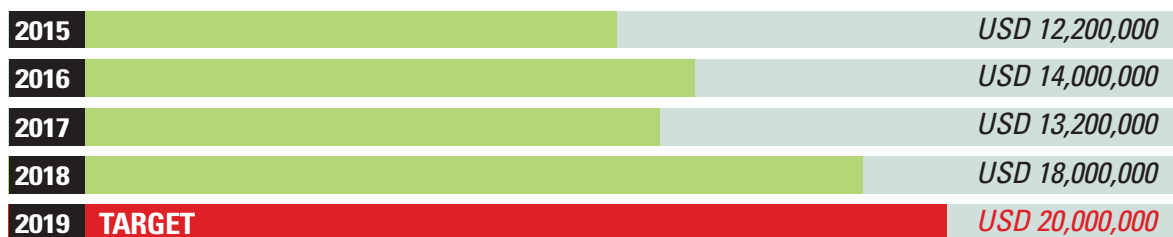


Date of establishment  
: Mar 2014  
 Land area  
: 19,800 m<sup>2</sup>  
 Factory Building area  
: 1,864 m<sup>2</sup>

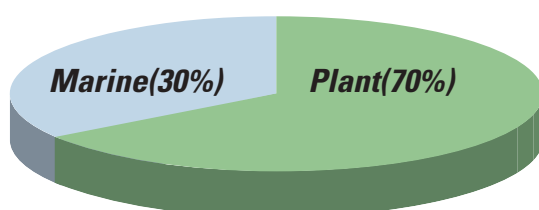
## 2. ORGANIZATION CHART



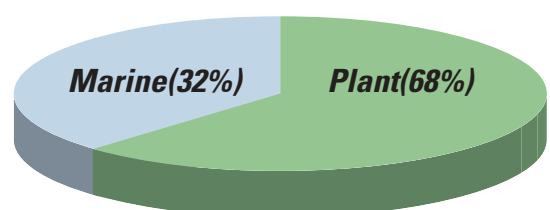
## 3. TURN-OVER (YEARLY SALES)



[ Contract Breakdown ]



[ Sales Breakdown ]



## 4. MAIN CUSTOMER

### 1) FOREIGN CUSTOMER

- ATLAS COPCO : [AMERICA], [GERMANY], [FRANCE], [KOREA]
- IHI ROTATING MACHINERY
- KOBE STEEL
- MITSUBISHI HITACHI POWER SYSTEMS
- MITSUBISHI HEAVY INDUSTRY
- FUJI ELECTRIC
- AIR LIQUIDE
- HITACHI
- MISUZU INDUSTRIAL CORP.
- PARKER TECHNO
- JAPAN STEEL WORKS
- EAGLEBURGMANN
- TOSHIBA
- ABEX
- ITO STEEL WORKS



### 2) DOMESTIC CUSTOMER

- HANWHA POWER SYSTEMS
- DOOSAN HEAVY INDUSTRIES
- HYUNDAI HEAVY INDUSTRIES
- DOOSAN ENGINE
- DSME / DSEC
- STX ENGINE
- STX OFFSHORE & SHIPBUILDING
- HI AIR KOREA / CONDITIONING
- DAESUNG INDUSTRIAL GASES
- KOLON INDUSTRIES
- POSCO
- KOREA 5 MAJOR ELECTRIC POWER CO. : [KOEN], [KEWP], [KOWEPO], [KOSPO], [KOMIPO]
- SEAH ENGINEERING
- DAEJU MACHINERY CO., LTD



## 5. PRODUCTION CAPACITY & HANDLING MATERIALS

### 1) PRODUCTION CAPACITY FOR 1 FACTORY

- MAX. WEIGHT : 20 TON
- MAX. SIZE (L x W x H) : 15 x 2.5 x 2.5 (m)

### 2) PRODUCTION CAPACITY FOR 3 FACTORY

- MAX. WEIGHT : 40 TON
- MAX. SIZE (L x W x H) : 20 x 4 x 4 (m)

### 3) MAJOR HANDLING MATERIALS

- CARBON STEEL
- STAINLESS STEEL
- COPPER & COPPER ALLOY (BRASS, BRONZE, CU-NI)
- ALLOY STEEL (Cr-Mo & CARBON-Mo)
- TITANIUM & TITANIUM CLAD

## 6. MAIN PRODUCTS

1) INTER/AFTER COOLER FOR COMPRESSOR

2) SHELL & TUBE TYPE HEAT EXCHANGER

3) H<sub>2</sub> / AIR COOLER FOR GENERATOR

4) OIL COOLER FOR API-614

5) GLAND STEAM CONDENSER FOR S/T & G/T

6) PRESSURE VESSEL

7) STEAM AIR HEATER FOR BOILER

8) SURFACE CONDENSER (CYLINDRICAL TYPE) WITH EJECTOR UNIT FOR S/T

9) EJECTOR FOR GLAND CONDENSER

10) AIR FAN COOLED HEAT EXCHANGER (BY API661) FOR COMPRESSOR

11) HEATER & VAPORIZER FOR LNG

12) CHARGE AIR COOLER FOR ENGINE

## 1) INTER/AFTER COOLER FOR COMPRESSOR (PLATE FIN TYPE HEAT EXCHANGER)

A Inter/After Cooler is installed in air compressor, It requires special design with a heat exchanger that cools compressed high temperature air to reduce its volume.

It consists of Fin Tube, Water Box, and Casing, etc.

- **Material Code** : ASME, ASTM, JIS
- **Applicable Code** : ASME(U-STMP with NB Cer't)  
TEMA R.C.B.  
KOREA KGS, KOSHA, KEMCO, KESCO and Etc.  
JAPAN KHK, 2nd Pressure Vessel code  
CE MARK (PED Cer't)  
World Wide Local law (DOSH, MOL, TRCU for Russia, CRN for Canada & etc.)
- **Material Combination** : Tube : Cu-Ni (9:1, 7:3), Cu, SUS 304, 316, Duplex.  
Fin : AL, CU  
Fin Coat : Sn Coat, Bly gold Coat, Phenolic Coat





## 2) SHELL & TUBE TYPE HEAT EXCHANGER

A Shell & Tube Heat Exchanger is heat exchanger that is the most general form and the most widely used. It is used for processor of power generation station, petroleum and chemical engineering factory and for facilities such as fuel Oil heater, Lubrication oil cooler. We provides heat calculation and structure design services for its manufacturing.

- **Applicable Code** : ASME(U-STMP with NB Cer't)  
 TEMA R.C.B.  
 KOREA KGS, KOSHA, KEMCO, KESCO and Etc.  
 JAPAN KHK, 2nd Pressure Vessel code  
 CE MARK (PED Cer't)  
 World Wide Local law (DOSH, MOL, TRCU for Russia, CRN for Canada & etc.)



O2 COOLER WITH O2 CLEANING ROOM



Fuel Gas cooler and After cooler for Compressor



GAS COOLER FOR LNG COMPRESSOR



NG PRE HEATER FOR LNGC

## 2) SHELL & TUBE TYPE HEAT EXCHANGER

### LUBE OIL COOLER FOR ROTATING MACHINERY



STACKING TYPE LUBE OIL COOLER



OIL FLUSHING EQUIPMENT

### GLAND STEAM CONDENSER FOR S/T



FAN BLOWER EXHAUST TYPE GLAND STEAM CONDENSER



EJECTOR EXHAUST TYPE CONDENSER & SILENCER

### EJECTOR FOR AIR EJECTOR UNIT



### 3) H2 / AIR COOLER FOR GENERATOR

Hydrogen Cooler is a heat exchanger that cools with tube side cooling water. A large-sized power generator uses hydrogen which specific heat is big as a cooling media.

The high temperature hydrogen by cooling power generator flows to fin side and it is used for cooling. It consist of plate fin, tube and water box. To prevent from vibration, it is manufactured using a professional vibration interpretation device.

- **Applicable Code** : ASME(U-STMP with NB Cer't)  
 TEMA R.C.B.  
 KOREA KGS, KOSHA, KEMCO, KESCO and Etc.  
 JAPAN KHK, 2nd Pressure Vessel code  
 CE MARK (PED Cer't)  
 World Wide Local law (DOSH, MOL, TRCU for Russia, CRN for Canada & etc.)
- **Material Combination** : Tube : Cu-Ni (9:1, 7:3), Cu, SUS 304, 316, Duplex.  
 Fin : AL, CU  
 Fin Coat : Sn Coat, Bly gold Coat, Phenolic Coat
- **Registered to GE, Doosan Heavy Industries**



## 4) OTHER HEAT EXCHANGER

- **Applicable Code** : ASME(U-STMP with NB Cer't)  
TEMA R.C.B.  
KOREA KGS, KOSHA, KEMCO, KESCO and Etc.  
JAPAN KHK, 2nd Pressure Vessel code  
CE MARK (PED Cer't)  
World Wide Local law (DOSH, MOL, TRCU for Russia, CRN for Canada & etc.)

### STEAM AIR HEATER (HOT WATER AIR HEATER) FOR BOILER



## 5) PRESSURE VESSEL (OIL / GAS FILTER, ETC)

A Pressure Vessel is for various processes in power generation plant, ship, petroleum and chemical engineering factory, etc. It is manufactured with structure and design satisfying various requirements of standards such as various ship associations, ASME, JIS, KGS,API, etc.

- **Applicable Code** : ASME(U-STMP with NB Cer't)  
TEMA R.C.B.  
KOREA KGS, KOSHA, KEMCO, KESCO and Etc.  
JAPAN KHK, 2nd Pressure Vessel code  
CE MARK (PED Cer't)  
World Wide Local law (DOSH, MOL, TRCU for Russia, CRN for Canada & etc.)



## 7. HISTORY OF DASCO

| No.       | SUBJECT  |
|-----------|--|
| Oct. 1995 | Established DASCO in 975, Jangnim-dong, Saha-gu, Busan, Korea  |
| May. 2000 | Changed the company into a corporation, DASCO Co., Ltd.  |
| Nov. 2003 | Certified of ISO 9001:2000(NQA)  |
| Nov. 2005 | Obtained the certification of anti-explosive electric heater (KIMM)                                  |
| Aug. 2006 | Obtained CE certification (in electric heater part (SGS))  |
| Aug. 2006 | Moved the office to a newly-constructed building in Byeongdong-ri, Halim-myeon, Gimhae-si, Gyeongnam |
| Feb. 2007 | Being registered as a business company in Samsung Techwin  |
| Oct. 2008 | Obtained Ship's Classification certification of ABS, BV, KR  |
| Dec. 2008 | Shop approved by DNV ship classification   |
| Feb. 2009 | Obtained INNO-BIZ certification  |
| Mar. 2009 | Being registered as a cooperative company of Doosan Heavy Industries                                 |
| Nov. 2009 | Obtained the certification of ASME, S and U Stamp  |
| Jun. 2010 | Registered as business partner of GE   |
| Jul. 2010 | Registered manufacture of specific equipment in Korea Gas Safety Corporation                         |
| Sep. 2010 | Newly constructed 2nd factory 255, Najeon-ri, Saengnim-myeon, Gimhae-si, Gyeongnam, Korea            |
| Apr. 2013 | Registered vender of DSEC (Marine area)  |
| Mar. 2014 | Expended new company at Gyeongnam, Changnyeong-gun (area 19,800 m <sup>2</sup> )                     |
| Nov. 2014 | Registered vendor of DSME  |
| Dec. 2014 | Registered vender of STX, SungDong, Doosan Engine (Marine area)                                      |
| Apr. 2015 | Invested capital to plant engineering professional company, <b>Heat Solution</b>                     |
| May. 2015 | Registered supplier of Air Liquide (Japan), Hyundai Heavy Industries                                 |
| Oct. 2015 | Registered Supplier of IHI, MHPS, Atlas Copco (America, France, Korea)                               |
| Dec. 2015 | Registered Supplier of Kobe Steel  |
| Feb. 2016 | Obtained the certification of 5 Major Korea Electric Power Co.                                       |
| Sep. 2016 | Registered Supplier of Fuji Electric, POSCO  |
| Oct. 2017 | Obtained the certification of TR-CU as approved factory  |

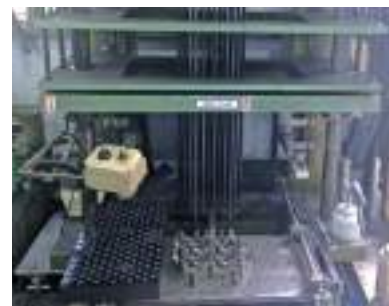
## 8. MAIN FACILITY

| No. | Equipment                                   | Specification   | Q'ty |
|-----|---|---|------|
| 1   | Overhead Crane                              | 2.8 Ton, 3 ton, 5 ton,<br>15 ton, 20 ton                    | 14   |
| 2   | TIG Welding Machine                         | 500A  | 18   |
| 3   | CO2 Welding Machine                         | 600A  | 13   |
| 4   | Plate Fin Press Machine                     | 60 Ton (1ea)<br>80 Ton (3ea)                                | 4    |
| 5   | Tube Expanding Machine                      | TR-502H<br>JTEC-12  | 6    |
| 6   | CNC Lathe Machine                           | 8" (1ea)<br>10" (1ea)                                       | 2    |
| 7   | Lathe Machine                               | D-480   | 2    |
| 8   | Turning Machine                             | TNL-802   | 1    |
| 9   | H2/C, Air/C, I/AC<br>Bundle Ass'y Table     | 1500 x 4800 x 1ea<br>1600 x 4500 x 1ea<br>1600 x 3500 x 6ea | 8    |
| 10  | Radial Machine                              | RE-1000   | 2    |
| 11  | Machining Center                            | MT-650 / 750 / 900  | 4    |
| 12  | Vibration Tester                            | Lion / VA-12  | 1    |
| 13  | Milling Machine                             | 2호기   | 3    |
| 14  | Hydro. Test Unit                            | 80 kg/cm <sup>2</sup> (2ea)<br>400 kg/cm <sup>2</sup> (1ea) | 3    |
| 15  | Plate Fin & Tube Single<br>/ Multi-Expander | 231 Hole, etc<br>(Multi 3ea, Single 7ea)                    | 10   |
| 16  | Oil Flushing Equipment                      | 3,000L  | 1    |
| 17  | Hydraulic Torque Wrench                     | 450 ~ 4510 N/M  | 1    |
| 18  | Electronic Expanding<br>Machine             | 10 m, etc   | 4    |

**Plate Fin Press Machine**



**Plate Fin & Tube Multi Expander**



### Fin-Tube Bundle Ass'y Jig



### Fin-tube Bundle Expanding & Ass'y Table

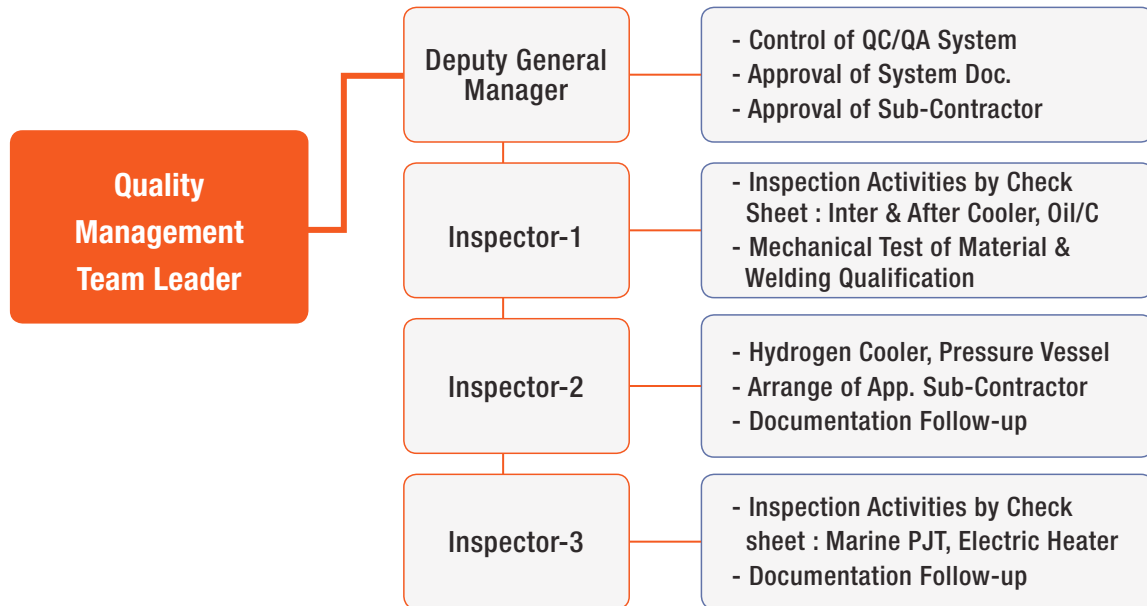


### Oil Flushing Equipment



## 9. QUALITY MANAGEMENT

### 1) ORGANIZATION OF QUALITY MANAGEMENT TEAM



### 2) QUALIFIED WELDER LIST BY ASME

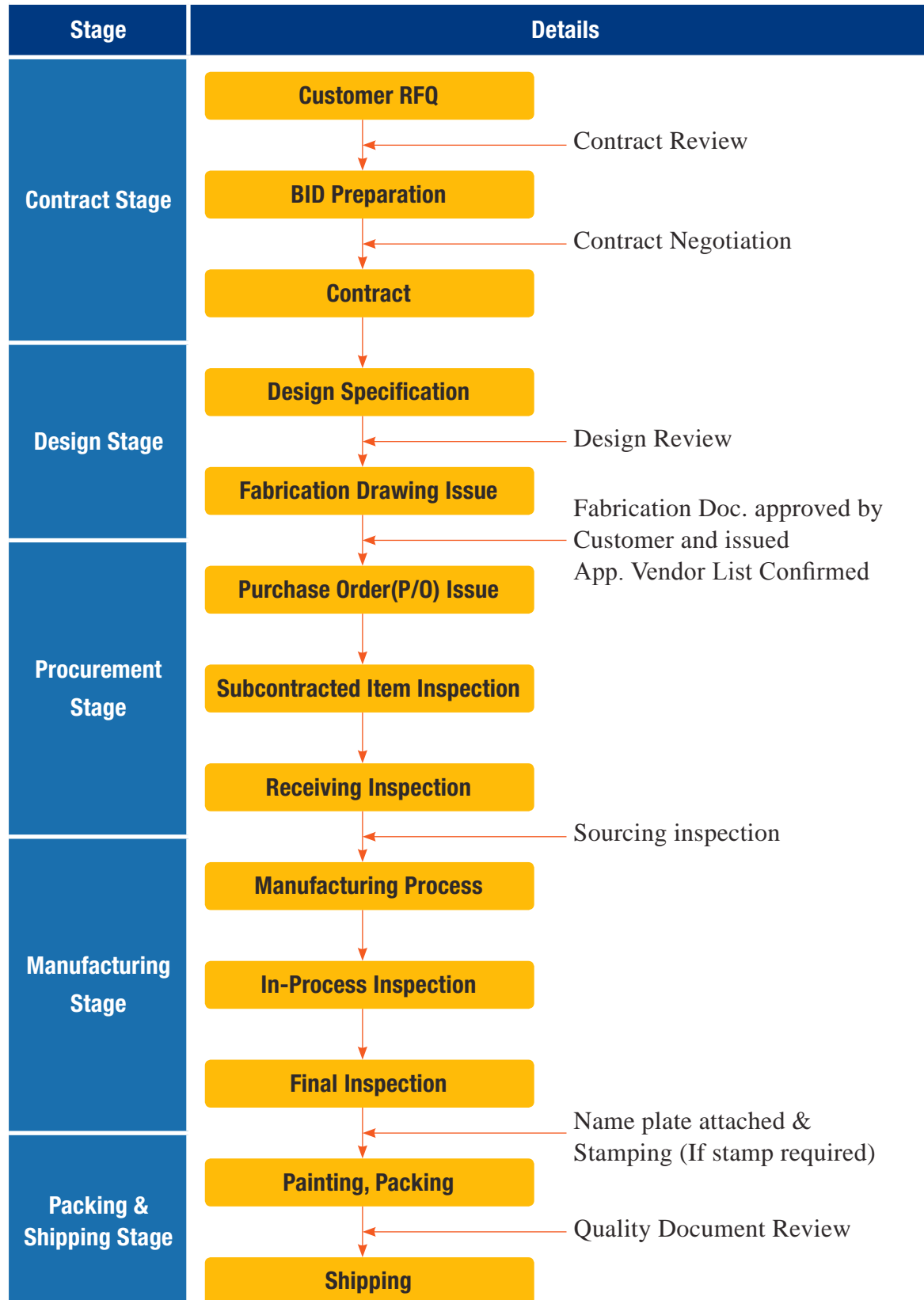
| Welder I.D No.      | Welder Name      | Welding Process |          |             |                   |
|---------------------|------------------|-----------------|----------|-------------|-------------------|
|                     |                  | GTAW            | FCAW     | SAW         | SMAW              |
| DW-01               | S.G Lee          | 0               | 0        |             |                   |
| DW-03               | J.S Woo          | 0               | 0        |             |                   |
| DW-05               | Y.T Lim          | 0               | 0        |             |                   |
| DW-06               | J.H Lee          | 0               | 0        |             |                   |
| DW-10               | S.Y Choi         | 0               | 0        |             |                   |
| DW-11               | S.M Ju           | 0               | 0        |             |                   |
| DW-12               | S.U Song         | 0               | 0        |             |                   |
| DW-13               | E.F Park         | 0               | 0        |             |                   |
| DW-14               | J.E Ryu          | 0               | 0        |             |                   |
| <b>Total Welder</b> | <b>9 Persons</b> | <b>9</b>        | <b>9</b> | <b>PLAN</b> | <b>OUT-SOURCE</b> |

### 3) CERTIFIED NDE PERSONNEL LIST

| No. | Name             | Method                 | Lv. | Cert. No.             |
|-----|------------------|------------------------|-----|-----------------------|
| 1   | Moon, Sung-Bae   | RT, UT, MT, PT, VT     | III | ASNT Level III 238741 |
| 2   | Park, Kwang-Yong | RT, UT, MT, PT, VT, LT | III | HY-III-0698           |
| 3   | Kim, Tae-Hwan    | RT, UT, MT, PT         | II  | KNDE-Q-L11-10010402   |
| 4   | Lee, Sang-Chan   | RT, UT, MT, PT, VT, LT | II  | HY-II-0898            |
| 5   | Lee, Chang-Seok  | RT, UT, MT, PT, VT, LT | II  | HY-II-0926            |



#### 4) QUALITY PLAN OF THE MANUFACTURING PROCESS



## 10. STATUS OF QUALITY CERTIFICATION

| Organization | Certificate Item | Expiry Date  | Number   |
|--------------|------------------|--------------|----------|
| SPEC         | ISO 9001         | 2021. 04. 24 | QMS-1404 |
| ASME         | U-STAMP          | 2021. 12. 10 | #39135   |
| ASME         | S-STAMP          | 2021. 12. 10 | #39134   |

### Korean Local Regulation

1. KESCO – Korea Electrical Safety Corporation
2. KGS – Korea Gas Safety Corporation
3. KEMCO – Korea Energy Management Corporation
4. KOSHA – Korea Occupational Safety & Health Agency
5. KIMM – Korea Institute of Machinery & Materials

### Other International Local Regulation

1. Japanese KHK, and 1st & 2nd Pressure Vessel Code
2. CE-Mark (PED) for European site
3. TR-CU (GOST-R, etc.) for Russian site
4. IBR Cert. for Indian site
5. Others (Singapore-MOL, Malaysian- DOSH, CRN for Canada, Algerian rule, etc)

| Class | Certificate Item                         |
|-------|--|
| A.B.S | Approval of Welding Procedure            |
| B.V   | Approval of Welding Procedure            |
| D.N.V | Approval of Manufacturer (Class 2)       |
| L.R   | Fusion Welded Pressure Vessels (Class 1) |
| G.L   | Approval for Welding                     |
| K.R   | Welder Performance Qualification         |

Certificate of Registration



## Quality Management System Certificate

Certificate No : QMS - 1404

Company Name : **DASCO CO., LTD.**  
 92, Gimhae-daero 916beon-gil, Hallim-myeon, Gimhae-si,  
 Gyeongsangnam-do, Korea

Scope of registration : **Design, development and production of heat exchanger**

Standard : **KS Q ISO 9001:2015 / ISO 9001:2015**

SPEC hereby certifies that the Quality Management System of the above organization has been assessed and found to meet the requirements of the standard and scope of registration detailed above.

Certificate From : 2018-04-25 Certificate Expiry : 2021-04-24  
 (Registration on 2008-07-15)  
 Reissue : Re-certificate  
 Issue date : 2018-04-25

Signed for and on behalf of SPEC

By authority of the Chief Executive

- The Accreditation Mark indicates accreditation by KAB in respect of those activities covered by the accreditation certificate number **KAB-QC-18**
- SPEC is accredited by Member(KAB) of the International Accreditation Forum Multilateral Recognition Arrangement for Quality Management Systems.





# CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

**COMPANY:**

DASCO Co., Ltd.  
92, Gimhae-daero 916 Beon-gil,  
Hallim-Myeon  
Gimhae-si, Gyeongsangnam-do 50850  
Republic of Korea

**SCOPE:**

**Manufacture and assembly of power boilers at the above location and field sites controlled by the above location**

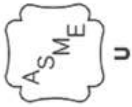
**AUTHORIZED:** November 27, 2018  
**EXPIRES:** December 10, 2021  
**CERTIFICATE NUMBER:** 39,134

*Richard R. Peterson*  
Board Chair, Conformity Assessment

*Joseph Horvath*  
Managing Director, Conformity Assessment



The American Society of Mechanical Engineers



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**COMPANY:**

DASCO Co., Ltd.  
92, Gimhae-daero 916 Beon-gil,  
Hallim-Myeon  
Gimhae-si, Gyeongsangnam-do 50850  
Republic of Korea

**SCOPE:**

**Manufacture of pressure vessels at the above location and field sites controlled by the above location (This authorization does not cover impregnated graphite)**

**AUTHORIZED:** November 27, 2018  
**EXPIRES:** December 10, 2021  
**CERTIFICATE NUMBER:** 39,135

*Richard R. Peterson*  
Board Chair, Conformity Assessment

*Joseph Horvath*  
Managing Director, Conformity Assessment



The American Society of Mechanical Engineers

발급번호 : CSR06723-086E-0232-9F70-4A075A526C2A

## 정비적격기업 인증서

등록번호: WTHHU20160200463  
 업체명: (주)다스코  
 대표자: 김용휘  
 사업자등록번호: 615-81-13738  
 유효기간: 2016-02-03 ~ 2019-02-03

상기업체는 정비적격기업 통합관리 기준에 따라 한국남동발전(주), 한국남부발전(주), 한국동서발전(주), 한국서부발전(주), 한국중부발전(주)의 정비적격기업으로 인증함.

| 관리종류 | 인증종류            | 인증범위 | 제어 | 평가 | 합격 |
|------|-----------------|------|----|----|----|
| 압력용기 | Pressure Vessel |      | V  |    |    |

2016.02.14



※ 인터넷으로 발급된 인증서이며 <http://withu.ewp.co.kr>에서 원본 확인이 가능합니다.

발급번호 : 66EE09C2-07A3-409A-8279-1E76019153A4

## 정비적격기업 인증서

등록번호: WTHHU20160200464  
 업체명: (주)다스코  
 대표자: 김용휘  
 사업자등록번호: 615-81-13738  
 유효기간: 2016-02-03 ~ 2019-02-03

상기업체는 정비적격기업 통합관리 기준에 따라 한국남동발전(주), 한국남부발전(주), 한국동서발전(주), 한국서부발전(주), 한국중부발전(주)의 정비적격기업으로 인증함.

| 관리종류        | 인증종류           | 인증범위 | 제어 | 평가 | 합격 |
|-------------|----------------|------|----|----|----|
| 열교환기<br>콘덴서 | Heat Exchanger |      | V  |    |    |

2016.02.14



※ 인터넷으로 발급된 인증서이며 <http://withu.ewp.co.kr>에서 원본 확인이 가능합니다.



**BUREAU VERITAS**  
MARINE DIVISION  
PREDICTION MARINE

International Bureau for Certification of Ships - Divulgué 189  
Bureau International de Classification à Nominer - Titulaire 1107

Approval Cert. No.: PSIN/WP/04/046/180

**APPROVAL OF WELDING PROCEDURE**

Issued within the scope of the Bureau Veritas Marine Spacing General Conditions :

Model : **DASCO CO., LTD.**  
#800, Byeongsong-d, Healm-myeon, Gimhae, Kyongsang, Korea

This is to certify that under mentioned welding procedure specifications with relevant qualification test records have been duly reviewed according to the rules of this society, and be considered that approval of the welding procedure can be granted under the conditions below :

**Manual Gas Tungsten Inert Gas Arc Welding (GTAW) with Shielding Gas (Argon) + Manual Flux Cored Arc Welding (FCAW) with Shielding Gas (CO2)**

- **WPS No.** : GT-FC-1-101 (Rev. 0)
- Supporting PQR No. : QGT-FC-1-101 (Rev. 0)
- Material grade : JS 63101 S3400 or Equivalent
- Thickness range : 8.0 mm to 32.0 mm
- Min. preheat temp. : 10 °C
- Max. interpass temp. : Max 200 °C
- Current type : DCSR(GTAW) + DCRS(FCAW)
- Joint type : Single V Groove (without backing)
- Position : N/A(Not)
- Welding technique : String & Weaving
- Classification of welding consumable : AWS A5.18 E70T8-G(GTAW) & AWS A5.26 E71T1-C(FCAW)
- Brand name : ST-305(GTAW) Ø 2.4 mm & SF-71(FCAW) Ø 1.2 mm (HINDA WELDING)

**Manual and Semi-automatic Gas Tungsten Inert Gas Arc Welding (GTAW) with Shielding Gas (Argon)**

- **WPS No.** : GF-1-1-101 (Rev. 0)
- Supporting PQR No. : QGT-1-1-101 (Rev. 0)
- Material grade : JS 53454 STPC370 or Equivalent
- Thickness range : 3.0 mm to 14.2 mm
- Pipe diameter : Ø2.6 mm to Unlimited
- Min. preheat temp. : 10 °C
- Max. interpass temp. : Max 200 °C
- Current type : DCSR
- Joint type : Single V Groove (without backing)
- Position : PA(Flat)
- Welding technique : String & Weaving
- Classification of welding consumable : AWS A5.18 E70T8-G
- Brand name : SF-505 Ø 2.4 mm (HINDA WELDING)



The latest published Rules of the Bureau Veritas Marine Spacing and the General Conditions Rules are applicable. In case of contradiction English text is to prevail over French text and Chinese text is to prevail over English text.

Every purchaser of this certificate is invited to provide support information as follows :  
 - Address of purchaser (if applicable)  
 - Name of purchaser (if applicable)  
 - Name of vessel (if applicable)  
 - Name of shipyard (if applicable)  
 - Name of classification society (if applicable)  
 - Name of classification society (if applicable)  
 - Name of classification society (if applicable)  
 - Name of classification society (if applicable)

The purchaser is invited to provide support information as follows :  
 - Name of purchaser (if applicable)  
 - Name of vessel (if applicable)  
 - Name of shipyard (if applicable)  
 - Name of classification society (if applicable)  
 - Name of classification society (if applicable)  
 - Name of classification society (if applicable)  
 - Name of classification society (if applicable)



**MISCELLANEOUS SURVEY REPORT**

**WELDING PROCEDURE APPROVAL**

Survey of : **WELDING PROCEDURE APPROVAL**

Model No. : **BT002040-A** Date : **26 July 2008** From : **Busan, Korea**

Vessel Name : **CRS Tm/EDCO**

Manufacturer : **Mg No.**

Product Name : **POULINA No.**

Location : **Korea (Jeju-do)**

Serial Number : **Weight** **Tire Pressure**

Material Test Report No. or Mill Sheets Verified : **Serial Use**

Drawing No. and Date Approved or for Multiple Drawing, Plan Approval Office : **ABE Marine**

ABS Survey Task No. : **310028** Date : **13 May 2008** ABS Survey Eng. Office : **M/A**

**THIS IS TO CERTIFY** that the undersigned Surveyor is this Bureau authorized for the above survey and reports as follows :

The following welding procedure approval tests were carried out in accordance with approved welding specification and the applicable Rules, examined, tested as required and completed satisfactorily.

WPS No. : **GT-FC-1-101** PQR No. : **QGT-FC-1-101**  
 Welding Process : **GTAW + FCAW**  
 Welding Position : **ND**  
 Type of Joint : **Single V Groove**  
 Thickness Range Qualified : **3 ~ 32mm**  
 Diameter of Pipe Qualified : **N/A**  
 Shielding Gas : **Ar or CO2**  
 Base Metal : **Plate, S34500S G3101, 16 mm**  
 Filler Metal : **AWS A5.18 E70T8-G, AWS A5.26 E71T1-C**  
 (Type), **BT-505, 2.4 mm, SF-71 (10mm)**

WPS No. : **GF-1-1-101** PQR No. : **QGT-1-1-101**  
 Welding Process : **GTAW**  
 Welding Position : **ND**  
 Type of Joint : **Single V Groove**  
 Thickness Range Qualified : **3 ~ 14.2 mm**  
 Diameter of Pipe Qualified : **Not tested - Unlimited**  
 Shielding Gas : **Ar**  
 Base Metal : **Plate, S34500S G3101, 16 mm**  
 Filler Metal : **AWS A5.18 E70T8-G**  
 (Type), **BT-505, 2.4 mm**

Welding Materials : **N/A**  
 Preheat Temp. : **Min 10°C**  
 Interpass Temp. : **Max 200°C**  
 Post Weld Heat Treatment : **N/A**

Surveyor : **Chang-Ho Kwon** (Signature) American Bureau of Shipping

Approved : **Chang-Ho Kwon** (Signature) American Bureau of Shipping

NOTE : The Report contains information with respect to the facts, figures, records or other matters of inspection and is issued only to the use of the Bureau. It is not intended to be used for other purposes. The Report is a representation of the facts as stated, without any warranty, representation, or liability on the part of the Bureau. The Bureau is not responsible for the accuracy or completeness of the information provided by the client. The Bureau is not responsible for the accuracy or completeness of the information provided by the client. The Bureau is not responsible for the accuracy or completeness of the information provided by the client. The Bureau is not responsible for the accuracy or completeness of the information provided by the client.



**KOREAN REGISTER OF SHIPPING**  
**List of Welder Performance Qualification Certificate**



| Company |                                 | DASICO CO., LTD.        |                  | Code / Standard      |                 | the Rules of Korean Register of Shipping |                               |            |                                |            |            |                  |
|---------|---------------------------------|-------------------------|------------------|----------------------|-----------------|--|-------------------------------|------------|--------------------------------|------------|------------|------------------|
| Address |                                 | 서울시 강남구 테헤란로 300        |                  |                      |                 |  |                               |            |                                |            |            |                  |
| No.     | Name of Welder                  |                         | Weld test detail |                      |                 | Range of approval                        |                               |            |                                | Appr. Date | Test Date  |                  |
|         | ID Number                       | Track no.(s)            | Position         | Type of Welder(T)    | Welding Process | Base Material                            | Plate Grade / Plate Thickness | Pipe Grade | Pipe Thickness / Pipe Out Dia. |            |            | Working Position |
| 1       | J-BSD0 WDO<br>781225-1898411    | Thic. 7.5<br>O.D. 108.2 | IG-P             | Manual /<br>WD,WO,TW | GTAW            | C/A                                      | Grade 2                       | Grade 2    | 3 ~ 10mm<br>100mm & over       | F          | 2008.10.13 | 2008.09.08       |
|         |                                 |                         |                  |                      |                 |  |                               |            |                                |            |            |                  |
| 2       | DONG WDO-KANG<br>780723-1898428 | Thic. 7.5<br>O.D. 108.2 | IG-P             | Manual /<br>WD,WO,TW | GTAW            | C/A                                      | Grade 2                       | Grade 2    | 3 ~ 10mm<br>100mm & over       | F          | 2008.10.13 | 2008.09.08       |
|         |                                 |                         |                  |                      |                 |  |                               |            |                                |            |            |                  |
| 3       | SUKK LGE<br>820485-1818817      | Thic. 7.5<br>O.D. 108.2 | IG-P             | Manual /<br>WD,WO,TW | GTAW            | C/A                                      | Grade 2                       | Grade 2    | 3 ~ 10mm<br>100mm & over       | F          | 2008.10.13 | 2008.09.08       |
|         |                                 |                         |                  |                      |                 |  |                               |            |                                |            |            |                  |
| 4       | J-BSD0 WDO<br>781225-1898411    | Thic. 7.5<br>O.D. 108.2 | IG               | Manual /<br>WD,WO,TW | FGAW, GTAW      | C/A                                      | Grade 2<br>3.2 ~ 52.0mm       |            |                                | F          | 2008.10.13 | 2008.09.08       |
|         |                                 |                         |                  |                      |                 |  |                               |            |                                |            |            |                  |
| 5       | DONG WDO-KANG<br>780723-1898428 | Thic. 7.5<br>O.D. 108.2 | IG               | Manual /<br>WD,WO,TW | FGAW, GTAW      | C/A                                      | Grade 2<br>3.2 ~ 52.0mm       |            |                                | F          | 2008.10.13 | 2008.09.08       |
|         |                                 |                         |                  |                      |                 |  |                               |            |                                |            |            |                  |
| 6       | SUKK LGE<br>820485-1818817      | Thic. 7.5<br>O.D. 108.2 | IG               | Manual /<br>WD,WO,TW | FGAW, GTAW      | C/A                                      | Grade 2<br>3.2 ~ 52.0mm       |            |                                | F          | 2008.10.13 | 2008.09.08       |
|         |                                 |                         |                  |                      |                 |  |                               |            |                                |            |            |                  |

(Remark) (1) WD: Welder, WO: Working Operator, TW: Tack Welder

(Remark) (2) C/A: Carbon & Low Alloy Steel, SS: Stainless Steel, A/A: Aluminium Alloy, C/A: Copper Alloy

This is to certify that the above welder is qualified in accordance with the requirements of the Rules of Korean Register of Shipping and applicable standards.  
Issued Office: CHANGWON

  
 Director KRS

- This certificate is to be retained by the company.  
The employer of qualified welders is responsible for keeping them and controlling their qualifications.
  - Where the welder has not engaged in a relevant welding work for a period of six months and avoids, the qualification entered is automatically withdrawn.
- If you wish to make any inquiry for list of welder certificate, please contact us as follows:  
CHANGWON / Tel. 053-252-3331-40 Fax: 053-252-3338

Form WW-010(2007.09)

1/1

**СЕРТИФИКАТ КОМПЕТЕНЦИИ**  
№ TC RU C-KR.MD10.B.01126  
Серия RU № 0447481

**ОРГАН ПО СЕРТИФИКАЦИИ** производит и удерживает контроль сертифицированных и испытанных ООО "АУТТЕРУШИТ", улица 50-летия Октября, дом 28, офис 309, город Уфа, Республика Башкортостан, Россия, 450005. Телефон: +7 (347) 246-47-17, адрес электронной почты: [info@autterushit.ru](mailto:info@autterushit.ru). Адресат взаимодействия: № RA.RU.10M8110 вступил 24.06.2015 Федерацией с/работ по аккредитации.

**ЗАЯВИТЕЛЬ** Общество с ограниченной ответственностью "ТЕХНОХИМ"  
ОГРН: 1090280010259. Место нахождения и фактический адрес: Улица Стратона Зюльфика, дом 51, корпус 2, город Уфа, Республика Башкортостан, Российская Федерация, 450022. Телефон: +7(967) 719 5835, адрес электронной почты: [technicalinfo-sta@techhim.ru](mailto:technicalinfo-sta@techhim.ru).

**ИСПОЛНИТЕЛЬ** DASICO CO., LTD. Место нахождения и фактический адрес: 92, Гиниль-даэро 916бэчэ-дэ, Халлин-гвон, Гиниль-э, Гвонгвонгвон-до, Республика Корея.

**ПРОДУКЦИЯ** Аппараты тепловых насосов, теплообменники, теплообменники промежуточные (INTER COOLER) и конденсаторы (AFTER COOLER), рабочие давления среднего давления от 0,06 до 9,0 МПа, рабочие давления среднего давления от 0,06 до 9,0 МПа, вместимость теплового теплоносителя от 0,015 м³ до 16 м³, вместимость теплового пространства от 0,015 м³ до 16 м³.  
Продукция изготавливается в соответствии с ASME VIII раздел 1, редакции 2015 года. Трубы и теплообменники сосудов под давлением". Сертификат выдан.

КОД ТЕБЭА TC №19 50 000 0


**СООТВЕТСТВУЕТ ТРЕБОВАНИЮ** ТР ТС 010/2011 "О безопасности машин и оборудования".

**СЕРТИФИКАТ ВЫДАН НА ОСНОВАНИИ** Протокола испытаний №101/2/17 от 16.10.2017 Испытательной лабораторией независимого частного общества с ограниченной ответственностью "Науша-Технологический центр электротехники, электротехники", адресной аккредитации № RA.RU.211701, дата в результате выдачи сертификата протокола № 075-TC-17 от 28.08.2017, паспорта на связь, работоспособности аппарата, оборудования №1706/28-08, решения за протоколом № УР-1706/28-1К-СТР, инструкций по эксплуатации и техническому обслуживанию, оборудования №УР-1706/28-1К-СТР. Серия сертифицирована 1.

**ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ** Стандарт, в результате применения которого обеспечивается безопасность оборудования специального назначения: ГОСТ Р 52093-2012 "Соединяющие аппараты стальные сварные. Общее техническое условие". Условие хранения, срок хранения без перемешивания и срок службы в соответствии с техническими характеристиками оборудования.

**СЕРТИФИКАЦИЯ** С 30.10.2017 ПО 29.10.2022

**ВИДОВИТЕЛЬ**

  
 E.П. Васьурин  
 Руководитель (уполномоченный лицом) органа по сертификации  
 (подпись) (подпись) (подпись)  
 (подпись) (подпись) (подпись)





# 11. TEST & MEASURING EQUIPMENT

| 검사설비 목록<br>I.M.T.E CONTROL LIST |                                |                    |
|---------------------------------|--------------------------------|--------------------|
| NO.<br>순서                       | EQUIP. NAME<br>계측기명            | SIZE / MODEL<br>규격 |
| 1                               | Dial Pressure Gauge            | 0 ~ 0.4 MPa(4')    |
| 2                               | Dial Pressure Gauge            | 0 ~ 1.0 MPa        |
| 3                               | Dial Pressure Gauge            | 0 ~ 1.0 MPa(4')    |
| 4                               | Dial Pressure Gauge            | 0 ~ 1.6 MPa(4')    |
| 5                               | Dial Pressure Gauge            | 0 ~ 1.6 MPa        |
| 6                               | Dial Pressure Gauge            | 0 ~ 2.5 MPa        |
| 7                               | Dial Pressure Gauge            | 0 ~ 2.5 MPa(4')    |
| 8                               | Dial Pressure Gauge            | 0 ~ 4.0 MPa        |
| 9                               | Dial Pressure Gauge            | 0 ~ 4.0 MPa(4')    |
| 10                              | Dial Pressure Gauge            | 0 ~ 6.0 MPa(4')    |
| 11                              | Dial Pressure Gauge            | 0 ~ 10 MPa         |
| 12                              | Dial Pressure Gauge            | 0 ~ 10 MPa(4')     |
| 13                              | Dial Pressure Gauge            | 0 ~ 16 MPa         |
| 14                              | Dial Pressure Gauge            | 0 ~ 16 MPa(4')     |
| 15                              | Dial Pressure Gauge            | 0 ~ 25 MPa         |
| 16                              | Dial Pressure Gauge            | 0 ~ 25 MPa(4')     |
| 17                              | Dial Pressure Gauge            | 0 ~ 60 MPa         |
| 18                              | Dial Pressure Gauge            | 0 ~ 60 MPa(4')     |
| 19                              | Cylinder/ Dial gauges          | 10 ~ 18.5 mm       |
| 20                              | Vernier Calipers               | 0 ~ 300 mm         |
| 21                              | Vernier Calipers               | 0 ~ 600 mm         |
| 22                              | Vernier Calipers               | 0 ~ 1500 mm        |
| 23                              | Digital Calipers               | 0 ~ 150 mm         |
| 24                              | Digital Calipers               | 0 ~ 300 mm         |
| 25                              | Inside Micrometer              | 5 ~ 30 mm          |
| 26                              | Outside Micrometer             | 0 ~ 25 mm          |
| 27                              | Outside Micrometer             | 25 ~ 50 mm         |
| 28                              | Outside Micrometer (tube type) | 0 ~ 25 mm          |

| 검사설비 목록<br>I.M.T.E CONTROL LIST |                                   |                    |
|---------------------------------|-----------------------------------|--------------------|
| NO.<br>순서                       | EQUIP. NAME<br>계측기명               | SIZE / MODEL<br>규격 |
| 29                              | Depth Gauge                       | 0 ~ 150 mm         |
| 30                              | Precision Squares                 | 1000X550           |
| 31                              | Squares                           | 600 X 500 mm       |
| 32                              | Coating Thickness Tester          | 0 ~ 1600µm         |
| 33                              | Welding Gauge                     | 0 ~ 20 mm          |
| 34                              | Digital temperature               | -                  |
| 35                              | TEST INDICATOR                    | 0 ~ 0.8 mm         |
| 36                              | Ultrasonic Thk Gauge              | 0.75 ~ 300mm       |
| 37                              | Standard tape rules               | 0 ~ 7.5 m          |
| 38                              | Vibration analyzer                | -                  |
| 39                              | DIGITAL CLAMP METER               | -                  |
| 40                              | PUNCTURE TESTER                   | 0.1 ~ 5kV          |
| 41                              | Bimetal Thermometer               | 0 ~ 100 °C         |
| 42                              | INFRARED THERMOMETER              | -18°C ~ 1350°C     |
| 43                              | INFRARED THERMOMETER              | -18°C ~ 1350°C     |
| 44                              | WATER METER                       | 15mm               |
| 45                              | Thread pitch gage                 | 52 Pts             |
| 46                              | Temperature indicating controller | -                  |
| 47                              | ELECTRIC BALANCE                  | 5 ton              |
| 48                              | DIGITAL MEGOHMMETER               | -                  |
| 49                              | DIGITAL MAGNET LEVEL              | 90' (250)          |
| 50                              | DIGITAL MAGNET LEVEL              | 90' (400)          |
| 51                              | HARDNESS TESTER                   | D type             |
| 52                              | STOPWATCH                         | -                  |
| 53                              | PLATE LEVEL                       | 200mm(0.02mm)      |
| 54                              | Ultrasonic Thk Gauge              | 2 ~ 225 mm         |
| 55                              | DIGITAL CLAMP METER               | AC/DC              |
| 56                              | Dead Weight Tester                | 0.2~25 MPa         |

## 용접설비목록

### Welding Machine List

| NO.<br>순서 | EQRP. NAME<br>계측기명 | SIZE / MODEL<br>규격 | SERIAL NO.<br>고유번호 | MFG.<br>제작회사                | TYPE |
|-----------|--------------------|--------------------|--------------------|-----------------------------|------|
| 1         | DC Ammeter         | M-50               | DSC-W2-A           | MEC                         | FCAW |
|           | DC Voltmeter       | M-50               | DSC-W2-V           | MEC                         |      |
| 2         | DC Ammeter         | RFII-500           | DSC-W17-A          | Panasonic                   | FCAW |
|           | DC Voltmeter       | RFII-500           | DSC-W17-V          | Panasonic                   |      |
| 3         | DC Ammeter         | DUTY-500D          | DSC-W16-A          | PRO-TECH                    | GTAW |
| 4         | DC Ammeter         | DUTY-500D          | DSC-W25-A          | PRO-TECH                    | GTAW |
| 5         | DC Ammeter         | DUTY-500D          | DSC-W28-A          | PRO-TECH                    | GTAW |
| 6         | DC Ammeter         | DUTY-500D          | DSC-W1-A           | PRO-TECH                    | GTAW |
| 7         | DC Ammeter         | M-68               | DSC-W18-A          | MEC                         | FCAW |
|           | DC Voltmeter       | M-68               | DSC-W18-V          | MEC                         |      |
| 8         | DC Ammeter         | M-68               | DSC-W19-A          | MEC                         | FCAW |
|           | DC Voltmeter       | M-68               | DSC-W19-V          | MEC                         |      |
| 9         | DC Ammeter         | DUTY-500D          | DSC-W20-A          | PRO-TECH                    | GTAW |
| 10        | DC Ammeter         | DUTY-500D          | DSC-W21-A          | PRO-TECH                    | GTAW |
| 11        | DC Ammeter         | TRM-60             | DSC-W13-A          | KUWANO                      | FCAW |
|           | DC Voltmeter       | TRM-60             | DSC-W13-V          | KUWANO                      |      |
| 12        | DC Ammeter         | M-68               | DSC-W30-A          | MEC                         | FCAW |
|           | DC Voltmeter       | M-68               | DSC-W30-V          | MEC                         |      |
| 13        | DC Ammeter         | DUTY-500D          | DSC-W31-A          | PRO-TECH                    | GTAW |
| 14        | DC Ammeter         | DUTY-500D          | DSC-W32-A          | PRO-TECH                    | GTAW |
| 15        | DC Ammeter         | M-68               | DSC-W33-A          | MEC                         | FCAW |
|           | DC Voltmeter       | M-68               | DSC-W33-V          | MEC                         |      |
|           |                    |                    |                    | <b>Welding Machine</b>      |      |
|           |                    |                    |                    | <b>TOTAL Q'TY : 15 SETS</b> |      |
|           |                    |                    |                    |                             |      |

## 12. EXPERIENCE LIST

Experience List (for Inter/ After Cooler for Compressor)

| JOB No  | END USER                      | CONTRACTOR               | PROJECT Name / ITEM Name                          | LOCATION   | ITEM | Q'TY     | DELIVERY |
|---------|-------------------------------|--------------------------|---|------------|------|----------|----------|
| 2006    | STANDARD MODEL FOR COMPRESSOR | HANWHA (SAMSUNG) TECHWIN | 26 PROJECT / INTER, AFTER COOLER (STANDARD TYPE)  | TOTAL      | 26   | 42 UNIT  | 2006     |
| 2007    | STANDARD MODEL FOR COMPRESSOR | HANWHA (SAMSUNG) TECHWIN | 138 PROJECT / INTER, AFTER COOLER (STANDARD TYPE) | TOTAL      | 138  | 247 UNIT | 2007     |
| 2008    | STANDARD MODEL FOR COMPRESSOR | HANWHA (SAMSUNG) TECHWIN | 193 PROJECT / INTER, AFTER COOLER (STANDARD TYPE) | TOTAL      | 193  | 285 UNIT | 2008     |
| 2009    | STANDARD MODEL FOR COMPRESSOR | HANWHA (SAMSUNG) TECHWIN | 59 PROJECT / INTER, AFTER COOLER (STANDARD TYPE)  | TOTAL      | 59   | 120 UNIT | 2009     |
| 2010    | STANDARD MODEL FOR COMPRESSOR | HANWHA (SAMSUNG) TECHWIN | 59 PROJECT / INTER, AFTER COOLER (STANDARD TYPE)  | TOTAL      | 100  | 160 UNIT | 2010     |
| 2011    | STANDARD MODEL FOR COMPRESSOR | HANWHA (SAMSUNG) TECHWIN | INTER, AFTER COOLER (STANDARD TYPE)               | ALL ITEMS  | ALL  | 200 UNIT | 2011     |
| 2011-1  | LINDE                         | HANWHA (SAMSUNG) TECHWIN | KARRATHA / INTER COOLER BUNDLE WITH SHELL         | AUSTRALIA  | 4    | 1 UNIT   | 2011     |
| 2011-2  | COSMODYNE                     | HANWHA (SAMSUNG) TECHWIN | COSMODYNE RAC / INTER COOLER BUNDLE WITH SHELL    | USA        | 2    | 1 UNIT   | 2011     |
| 2011-3  | SK INNOVATION                 | HANWHA (SAMSUNG) TECHWIN | SK INNOVATION / INTER COOLER BUNDLE WITH SHELL    | KOREA      | 3    | 1 UNIT   | 2011     |
| 2011-4  | KISLORODMASH-BNC              | HANWHA (SAMSUNG) TECHWIN | KISLORODMASH / INTER COOLER BUNDLE WITH SHELL     | RUSSIA     | 2    | 2 UNIT   | 2011     |
| 2011-5  | HITACHI PLANT TECHNOLOGIES    | RUN TECH                 | INTER COOLER                                      | JAPAN      | 1    | 2 UNIT   | 2011     |
| 2011-6  | HITACHI PLANT TECHNOLOGIES    | RUN TECH                 | INTER COOLER                                      | JAPAN      | 1    | 2 UNIT   | 2011     |
| 2011-7  | HITACHI PLANT TECHNOLOGIES    | RUN TECH                 | INTER COOLER                                      | JAPAN      | 5    | 10 UNIT  | 2011     |
| 2011-8  | LINDE KOREA                   | LINDE KOREA              | INTER COOLER                                      | KOREA      | 1    | 3 UNIT   | 2011     |
| 2012    | STANDARD MODEL FOR COMPRESSOR | HANWHA (SAMSUNG) TECHWIN | INTER, AFTER COOLER (STANDARD TYPE)               | ALL ITEMS  | ALL  | 150 UNIT | 2012     |
| 2012-1  | KISLORODMASH-BAC              | HANWHA (SAMSUNG) TECHWIN | KISLORODMASH / INTER COOLER BUNDLE WITH SHELL     | RUSSIA     | 3    | 6 UNIT   | 2012     |
| 2012-2  | WEST QURNA                    | HANWHA (SAMSUNG) TECHWIN | WEST QURNA / INTER COOLER BUNDLE WITH SHELL       | IRAQ       | 3    | 2 UNIT   | 2012     |
| 2012-3  | HYOSUNG CORPORATION           | HYOSUNG CORPORATION      | INTER COOLER                                      | KOREA      | 1    | 2 UNIT   | 2012     |
| 2012-4  | LINDE KOREA                   | LINDE KOREA              | 1ST & 2ND INTER COOLER                            | KOREA      | 1    | 3 UNIT   | 2012     |
| 2012-5  | HITACHI PLANT TECHNOLOGIES    | RUN TECH                 | INTER COOLER                                      | JAPAN      | 1    | 3 UNIT   | 2012     |
| 2012-6  | HONAM PETROCHEMICAL           | HONAM PETROCHEMICAL      | C-1301 INTER COOLER                               | KOREA      | 1    | 1 UNIT   | 2012     |
| 2012-7  | HITACHI PLANT TECHNOLOGIES    | RUN TECH                 | INTER COOLER                                      | JAPAN      | 1    | 3 UNIT   | 2012     |
| 2013    | STANDARD MODEL FOR COMPRESSOR | HANWHA (SAMSUNG) TECHWIN | INTER, AFTER COOLER (STANDARD TYPE)               | ALL ITEMS  | ALL  | 218 UNIT | 2013     |
| 2013-1  | HITACHI PLANT TECHNOLOGIES    | RUN TECH                 | EH20 / INTER, AFTER COOLER                        | JAPAN      | 1    | 2 UNIT   | 2013     |
| 2013-2  | HITACHI PLANT TECHNOLOGIES    | RUN TECH                 | HITURBO-10000 / INTER, AFTER COOLER               | JAPAN      | 1    | 3 UNIT   | 2013     |
| 2013-3  | HITACHI PLANT TECHNOLOGIES    | RUN TECH                 | EH31 / INTER, AFTER COOLER                        | JAPAN      | 1    | 2 UNIT   | 2013     |
| 2013-4  | SKEC                          | HANWHA (SAMSUNG) TECHWIN | SK NEXLENE / INTER COOLER BUNDLE WITH SHELL       | KOREA      | 3    | 3 UNIT   | 2013     |
| 2013-5  | BOC TATA STEEL                | HANWHA (SAMSUNG) TECHWIN | BOC TATA STEEL / AFTER COOLER BUNDLE WITH SHELL   | INDIA      | 1    | 1 UNIT   | 2013     |
| 2013-6  | KOREA EAST-WEST POWER         | HANWHA (SAMSUNG) TECHWIN | DANGJIN / INTER COOLER BUNDLE WITH SHELL (KESCO)  | KOREA      | 3    | 4 UNIT   | 2013     |
| 2013-7  | SAMSUNG TECHWIN               | HANWHA (SAMSUNG) TECHWIN | DMKD / INTER COOLER BUNDLE WITH SHELL             | UZBEKISTAN | 1    | 2 UNIT   | 2013     |
| 2013-8  | SAMSUNG TECHWIN               | HANWHA (SAMSUNG) TECHWIN | FORTUNE / INTER COOLER BUNDLE WITH SHELL          | RUSSIA     | 2    | 2 UNIT   | 2013     |
| 2013-9  | COSMODYNE                     | HANWHA (SAMSUNG) TECHWIN | COSMODYNE RNC / INTER COOLER BUNDLE WITH SHELL    | USA        | 3    | 2 UNIT   | 2013     |
| 2013-10 | CRYOGENMASH                   | HANWHA (SAMSUNG) TECHWIN | IJORA BAC / I.C BUNDLE WITH SHELL (ASME U-STAMP)  | RUSSIA     | 3    | 1 UNIT   | 2014     |
| 2013-11 | KEPCO                         | SUNGSAN                  | DANGJIN / TRANSFORMER OIL COOLER                  | KOREA      | 1    | 1 UNIT   | 2013     |

### Experience List (for Inter/ After Cooler for Compressor)

| JOB No  | END USER                             | CONTRACTOR               | PROJECT Name / ITEM Name                        | LOCATION   | ITEM | Q'TY     | DELIVERY |
|---------|--------------------------------------|--------------------------|---|------------|------|----------|----------|
| 2014    | STANDARD MODEL FOR COMPRESSOR        | HANWHA (SAMSUNG) TECHWIN | INTER, AFTER COOLER (STANDARD TYPE)             | ALL ITEMS  | ALL  | 121 UNIT | 2014     |
| 2014-1  | HITACHI PLANT TECHNOLOGIES           | RUN TECH                 | HITURBO-16000 / INTER, AFTER COOLER             | JAPAN      | 1    | 3 UNIT   | 2014     |
| 2014-2  | SIAD LITHUANIA                       | HANWHA (SAMSUNG) TECHWIN | LITHUANIA / PRE COOLER WITH SHELL (PED-CE Mark) | RUSSIA     | 1    | 1 UNIT   | 2014     |
| 2014-3  | GS DONGHAE ELECTRIC POWER            | HANWHA (SAMSUNG) TECHWIN | BUKPYEONG / INTER COOLER BUNDLE WITH SHELL      | KOREA      | 1    | 3 UNIT   | 2014     |
| 2014-4  | KOREA WESTERN POWER                  | HANWHA (SAMSUNG) TECHWIN | TAEAN #9&#10 / INTER COOLER BUNDLE WITH SHELL   | KOREA      | 1    | 2 UNIT   | 2014     |
| 2014-5  | EGYPT ERC                            | HANWHA (SAMSUNG) TECHWIN | EGYPT ERC / INTER COOLER BUNDLE WITH SHELL      | EGYPT      | 1    | 2 UNIT   | 2014     |
| 2014-6  | KOLON INDUSTRIES                     | KOLON / GIMCHEON FACTORY | 7K TURBO COMP #6 & #7 / INTER COOLER            | KOREA      | 2    | 2 UNIT   | 2014     |
| 2014-7  | K K MULSAN                           | K K MULSAN               | Tx-M TURBO COMPRESSOR / AIR COOLER              | JAPAN      | 1    | 1 UNIT   | 2014     |
| 2014-8  | ABU DHABI MARINE OPERATING COMPANY   | HANWHA (SAMSUNG) TECHWIN | SARB IA / INTER COOLER                          | UAE        | 1    | 3 UNIT   | 2014     |
| 2015    | STANDARD MODEL FOR COMPRESSOR        | HANWHA POWER SYSTEM      | INTER, AFTER COOLER (STANDARD TYPE)             | ALL ITEMS  | ALL  | 204 UNIT | 2015     |
| 2015    | STANDARD MODEL FOR COMPRESSOR        | HYUNDAI HEAVY INDUSTRIES | INTER, AFTER COOLER (STANDARD TYPE)             | ALL ITEMS  | ALL  | 8 UNIT   | 2016     |
| 2015-1  | HITACHI PLANT TECHNOLOGIES           | RUN TECH                 | EH42 / INTER, AFTER COOLER                      | JAPAN      | 2    | 2 UNIT   | 2015     |
| 2015-2  | HITACHI PLANT TECHNOLOGIES           | RUN TECH                 | EH31 / INTER, AFTER COOLER                      | JAPAN      | 2    | 2 UNIT   | 2015     |
| 2015-3  | HITACHI PLANT TECHNOLOGIES           | RUN TECH                 | EH20 / INTER, AFTER COOLER                      | JAPAN      | 1    | 2 UNIT   | 2015     |
| 2015-4  | AIR LIQUIDE/ BAKU STEEL              | HANWHA POWER SYSTEM      | AZERBAIJAN / AFTER COOLER                       | AZERBAIJAN | 1    | 2 UNIT   | 2015     |
| 2015-5  | IRAN HORMOZGAN STEEL                 | HANWHA POWER SYSTEM      | IRAN HORMOZGAN MAC/ INTER, AFTER COOLER         | IRAN       | 4    | 1 UNIT   | 2015     |
| 2015-6  | IRAN HORMOZGAN STEEL                 | HANWHA POWER SYSTEM      | IRAN HORMOZGAN BAC/ INTER, AFTER COOLER         | IRAN       | 2    | 1 UNIT   | 2015     |
| 2015-7  | INOTERA                              | AIR LIQUIDE              | ALFE INOTERA / AFTER COOLER                     | TAIWAN     | 1    | 1 UNIT   | 2015     |
| 2015-8  | SK E&C                               | HANWHA POWER SYSTEM      | GUNSAN G3 / AFTER COOLER                        | KOREA      | 1    | 1 UNIT   | 2015     |
| 2015-9  | SIAD                                 | HANWHA POWER SYSTEM      | SIAD N2 / AFTER COOLER                          | ITALY      | 1    | 1 UNIT   | 2015     |
| 2015-10 | STAR REFINERY A.S.                   | HANWHA POWER SYSTEM      | AEGEAN REFINERY PROJECT (ARP) / INTER COOLER    | U.S.A      | 1    | 6 UNIT   | 2015     |
| 2015-11 | STATE COMPANY FOR OIL PROJECT (SCOP) | HANWHA POWER SYSTEM      | KARBALA REFINERY FEED / INTER, AFTER COOLER     | IRAQ       | 3    | 3 UNIT   | 2016     |
| 2015-12 | KUWAIT NATIONAL PETROLEUM COMPANY    | HANWHA POWER SYSTEM      | KNPC MMIA IA / INTER, AFTER COOLER              | KUWAIT     | 3    | 2 UNIT   | 2016     |
| 2015-13 | KOREA DISTRICT HEATING CORP.         | HANWHA POWER SYSTEM      | HWASUNG DONGTAN2 FGC / AFTER COOLER             | KOREA      | 1    | 3 UNIT   | 2016     |
| 2015-14 | JFE STEEL CORPORATION                | IHI                      | 3051-073(F95A3S-13300 KW) / AFTER COOLER        | JAPAN      | 3    | 1 UNIT   | 2016     |
| 2015-15 | POSCO E&C                            | HYUNDAI HEAVY INDUSTRIES | CHUNCHEON CHP / AFTER COOLER                    | KOREA      | 1    | 2 UNIT   | 2016     |
| 2015-16 | PRAXAIR                              | HANWHA POWER SYSTEM      | PRAXAIR - PRENTISS / INTER, AFTER COOLER        | CANADA     | 2    | 2 UNIT   | 2016     |
| 2015-17 | HANWHA POWER SYSTEM                  | HANWHA POWER SYSTEM      | SM4000 MEISAIR / AFTER COOLER                   | KOREA      | 1    | 1 UNIT   | 2016     |
| 2015-18 | DAELIM IND.                          | HANWHA POWER SYSTEM      | DAELIM PB2 REVAMPING / RECYCLE COOLER           | KOREA      | 2    | 1 UNIT   | 2016     |
| 2016    | STANDARD MODEL FOR COMPRESSOR        | HANWHA POWER SYSTEM      | INTER, AFTER COOLER (STANDARD TYPE)             | ALL ITEMS  | ALL  | 188 UNIT | 2016     |
| 2016    | STANDARD MODEL FOR COMPRESSOR        | HYUNDAI HEAVY INDUSTRIES | INTER, AFTER COOLER (STANDARD TYPE)             | ALL ITEMS  | ALL  | 22 UNIT  | 2016     |
| 2016    | STANDARD MODEL FOR COMPRESSOR        | SEAH ENGINEERING         | INTER, AFTER COOLER (STANDARD TYPE)             | ALL ITEMS  | ALL  | 43 UNIT  | 2016     |
| 2016-1  | SOXAL                                | AIR LIQUIDE              | SSMC CIP / AFTER COOLER                         | SINGAPORE  | 2    | 1 UNIT   | 2016     |
| 2016-2  | LINDE VOGAR                          | HANWHA POWER SYSTEM      | LINDE VOGAR / AFTER COOLER                      | ISLAND     | 1    | 1 UNIT   | 2016     |
| 2016-3  | KOLON INDUSTRIES                     | KOLON / GIMCHEON FACTORY | 7K TURBO COMPRESSOR #8 / INTER COOLER           | KOREA      | 2    | 1 UNIT   | 2016     |

### Experience List (for Inter/ After Cooler for Compressor)

| JOB No  | END USER           | CONTRACTOR            | PROJECT Name / ITEM Name                     | LOCATION     | ITEM | QTY     | DELIVERY |
|---------|--------------------|-----------------------|--|--------------|------|---------|----------|
| 2016-4  | TRISONIC           | HANWHA POWER SYSTEM   | TRISONIC / INTER, AFTER COOLER               | CANADA       | 3    | 3 UNIT  | 2016     |
| 2016-5  | SK E&C             | HANWHA POWER SYSTEM   | GUNSAN GES / AFTER COOLER                    | KOREA        | 1    | 1 UNIT  | 2016     |
| 2016-6  | SEAH ENGINEERING   |                       | ST450L2 / INTER, AFTER COOLER                | KOREA        | 2    | 1 UNIT  | 2016     |
| 2016-7  | LINDE ISKENDERUN   | HANWHA POWER SYSTEM   | ISKENDERUN / AFTER COOLER                    | TURKEY       | 1    | 1 UNIT  | 2016     |
| 2016-8  | POLARIS            | HANWHA POWER SYSTEM   | POLARIS / AFTER COOLER                       | ITALY        | 1    | 1 UNIT  | 2016     |
| 2016-9  | S-OIL              | HANWHA POWER SYSTEM   | S-OIL OXIDATION / INTER, AFTER COOLER        | KOREA        | 3    | 2 UNIT  | 2017     |
| 2016-10 | S-OIL              | HANWHA POWER SYSTEM   | S-OIL PACKAGE #1 / INTER, AFTER COOLER       | KOREA        | 3    | 3 UNIT  | 2017     |
| 2016-11 | S-OIL              | HANWHA POWER SYSTEM   | S-OIL PACKAGE #2 / INTER, AFTER COOLER       | KOREA        | 3    | 1 UNIT  | 2017     |
| 2016-12 | S-OIL              | HANWHA POWER SYSTEM   | S-OIL PACKAGE #3 / INTER, AFTER COOLER       | KOREA        | 3    | 3 UNIT  | 2017     |
| 2016-13 | D.S.M.E            | HANWHA POWER SYSTEM   | DSME H. 2462 / AFTER COOLER                  | KOREA        | 1    | 1 UNIT  | 2017     |
| 2016-14 | LINDE LIENHWA UIGC | HANWHA POWER SYSTEM   | LINDE LIENHWA / AFTER COOLER                 | TAIWAN       | 3    | 1 UNIT  | 2017     |
| 2017-1  | POSCO              | HANWHA POWER SYSTEM   | POSCO GWANGYANG / AFTER COOLER               | KOREA        | 1    | 1 UNIT  | 2017     |
| 2017-2  | HYDROSTOR          | HANWHA POWER SYSTEM   | HYDROSTOR / INTER COOLER                     | CANADA       | 1    | 1 UNIT  | 2017     |
| 2017-3  | SEVERSTAL          | HANWHA POWER SYSTEM   | RU SEVERSTAL / INTER, AFTER COOLER           | RUSSIA       | 3    | 9 UNIT  | 2017     |
| 2017-4  | M-TIS              |                       | MTIS1250 / INTER, AFTER COOLER               | KOREA        | 2    | 2 UNIT  | 2017     |
| 2017-5  | KIMM               | DJMCL                 | KIMM / Air Cooler                            | KOREA        | 1    | 1 SET   | 2017     |
| 2017-6  | GENEQ              |                       | WA-S650S / INTER COOLER                      | KOREA        | 1    | 1 UNIT  | 2017     |
| 2017-7  | SIAD               | HANWHA POWER SYSTEM   | LINDE SIAD / INTER, AFTER COOLER             | ALGERIA      | 1    | 1 UNIT  | 2017     |
| 2017-8  | GLENMONT           | HANWHA POWER SYSTEM   | GLENMONT / AFTER COOLER                      | U.S.A        | 1    | 1 UNIT  | 2017     |
| 2017-9  | CALSPAN            | HANWHA POWER SYSTEM   | US CALSPAN / AFTER COOLER                    | U.S.A        | 1    | 1 UNIT  | 2017     |
| 2017-10 | M-TIS              |                       | MTIS2250 / INTER, AFTER COOLER               | KOREA        | 2    | 2 UNIT  | 2017     |
| 2017-11 | ARAMCO             | HANWHA POWER SYSTEM   | EDRF / INTER, AFTER COOLER                   | SAUDI ARABIA | 3    | 9 UNIT  | 2018     |
| 2017-12 | VOORHEESVILLE      | HANWHA POWER SYSTEM   | KIPIC AL-ZOUR LNG/AZRP / OIL COOLER          | KUWAIT       | 3    | 6 UNIT  | 2018     |
| 2017-13 | SERBIA             | ATLAS COPCO - AMERICA | SERBIA (T.40001009) / INTER, AFTER COOLER    | SERBIA       | 1    | 4 UNIT  | 2018     |
| 2017-14 | KAZANORGSINTEZ     | HANWHA POWER SYSTEM   | RU KAZANORGSYNTHES #01 / INTER, AFTER COOLER | RUSSIA       | 4    | 4 UNIT  | 2018     |
| 2017-15 | SHI INTERNATIONAL  | HANWHA POWER SYSTEM   | SHI/MOZAMBIQUE ENI / INTER, AFTER COOLER     | MOZAMBIQUE   | 3    | 9 UNIT  | 2018     |
| 2017-16 | VOORHEESVILLE      | ATLAS COPCO - AMERICA | VOORHEESVILLE / INTER, AFTER COOLER          | U.S.A        | 3    | 6 UNIT  | 2018     |
| 2017-17 | SONY               | AIR LIQUIDE-J         | SONY KUMAMOTO NO.3 / AFTER COOLER            | JAPAN        | 1    | 1 UNIT  | 2018     |
| 2018-1  | FARABI             | HANWHA POWER SYSTEM   | FARABI / INTER, AFTER COOLER                 | IRAN         | 3    | 6 UNIT  | 2018     |
| 2018-2  | SAUDI ARAMCO       | HANWHA POWER SYSTEM   | SIAD ARAMCO / AFTER COOLER                   | SAUDI ARABIA | 1    | 2 UNIT  | 2018     |
| 2018-3  | M-TIS              |                       | MTIS1250 / INTER, AFTER COOLER               | KOREA        | 2    | 2 UNIT  | 2018     |
| 2018-4  | LINDE GIHEUNG      | HANWHA POWER SYSTEM   | LINDE GIHEUNG / INTER, AFTER COOLER          | KOREA        | 4    | 16 UNIT | 2018     |
| 2018-5  | BRASKEM            | HANWHA POWER SYSTEM   | BRASKEM / INTER, AFTER COOLER                | BRAZIL       | 1    | 1 UNIT  | 2018     |
| 2018-6  | LINDE LIENHWA      | HANWHA POWER SYSTEM   | LINDE LIENHWA / INTER, AFTER COOLER          | TAIWAN       | 3    | 6 UNIT  | 2018     |
| 2018-7  | TNSC               | IFRM                  | 3051133 TNS / INTER, AFTER COOLER            | IRAN         | 3    | 9 UNIT  | 2018     |

### Experience List (for Inter/ After Cooler for Compressor)

| JOB No  | END USER                        | CONTRACTOR            | PROJECT Name / ITEM Name                        | LOCATION   | ITEM | QTY     | DELIVERY |
|---------|---------------------------------|-----------------------|---|------------|------|---------|----------|
| 2018-8  | SHIN ETSU                       | KOBE STEEL, LTD.      | SSP-3 PLAQUEMINE CA PLANT / INTER, AFTER COOLER | USA        | 3    | 9 UNIT  | 2018     |
| 2018-9  | TAKHIATASH POWER PLANT          | HANWHA POWER SYSTEM   | TAKHIATASH / INTER COOLER                       | TAKHIATASH | 1    | 3 UNIT  | 2018     |
| 2018-10 | AMK                             | ATLAS COPCO - AMERICA | ALE AMK O2 / INTER, AFTER COOLER                | GERMANY    | 4    | 8 UNIT  | 2018     |
| 2018-11 | THAILAND PETROCHEMICAL PLANT    | KOBE STEEL, LTD.      | SECL PTTGC(VG593) / INTER, AFTER COOLER         | THAILAND   | 3    | 3 UNIT  | 2018     |
| 2018-12 | THAILAND PETROCHEMICAL PLANT    | KOBE STEEL, LTD.      | SECL PTTGC(VG593) / INTER, AFTER COOLER         | THAILAND   | 3    | 3 UNIT  | 2018     |
| 2018-13 | AMUR GAS PROCESSING PLANT       | HANWHA POWER SYSTEM   | TECHNIMONT AGPP SINERGIA / INTER COOLER         | RUSSIA     | 4    | 6 UNIT  | 2018     |
| 2018-14 | AMUR GAS PROCESSING PLANT       | HANWHA POWER SYSTEM   | TECHNIMONT AGPP SIAD / INTER COOLER             | RUSSIA     | 2    | 6 UNIT  | 2018     |
| 2018-15 | AIR LIQUIDE                     | KOBE STEEL, LTD.      | 17-00714 YEOSU 4 / INTER, AFTER COOLER          | JAPAN      | 6    | 6 UNIT  | 2018     |
| 2018-16 | CRYOGENMASH                     | HANWHA POWER SYSTEM   | S_RU CRYOGENMASH ZHELEZNOGORSK / AFTER COOLER   | RUSSIA     | 1    | 1 UNIT  | 2018     |
| 2018-17 | PETRONA                         | HANWHA POWER SYSTEM   | HEC MELAKA EUROS / INTER, AFTER COOLER          | MALAYSIA   | 2    | 3 UNIT  | 2018     |
| 2018-18 | LINDE SEOSAN                    | HANWHA POWER SYSTEM   | PA LINDE SEOSAN / AFTER COOLER                  | KOREA      | 1    | 2 UNIT  | 2018     |
| 2018-19 | MARAN GAS MARITIME              | ATLAS COPCO - AMERICA | DSME 2477 (T.1147,49) / INTER, AFTER COOLER     | GREECE     | 2    | 3 UNIT  | 2018     |
| 2018-20 | MARAN GAS MARITIME              | ATLAS COPCO - AMERICA | DSME 2477 (T.1147,49) / INTER, AFTER COOLER     | GREECE     | 2    | 3 UNIT  | 2019     |
| 2018-21 | TATNEFT                         | HANWHA POWER SYSTEM   | TATNEFT NIZHEKAMSK / AFTER COOLER               | RUSSIA     | 1    | 2 UNIT  | 2018     |
| 2018-22 | BIDBOLAND GAS PLANT             | HANWHA POWER SYSTEM   | BIDBOLAND / AFTER COOLER                        | IRAN       | 1    | 3 UNIT  | 2018     |
| 2018-23 | PRAXAIR                         | HANWHA POWER SYSTEM   | PRAXAIR/PYEONGTAEK / INTER, AFTER COOLER        | KOREA      | 4    | 4 UNIT  | 2019     |
| 2018-24 | PRAXAIR                         | HANWHA POWER SYSTEM   | PRAXAIR/PYEONGTAEK / INTER, AFTER COOLER        | KOREA      | 3    | 3 UNIT  | 2019     |
| 2018-25 | VOORHEESVILLE                   | ATLAS COPCO - AMERICA | T.1158/MEXICO / INTER COOLER                    | MEXICO     | 2    | 2 UNIT  | 2019     |
| 2018-26 | -                               | IRM                   | 3051-0138/KOREA / INTER, AFTER COOLER           | KOREA      | 4    | 4 UNIT  | 2019     |
| 2018-27 | -                               | IRM                   | 30510141/JAPAN / INTER, AFTER COOLER            | JAPAN      | 3    | 3 UNIT  | 2019     |
| 2018-28 | -                               | IRM                   | TLO / INTER, AFTER COOLER                       | JAPAN      | 2    | 2 UNIT  | 2019     |
| 2018-29 | YEOSU PLANT                     | HANWHA POWER SYSTEM   | ALK YEOSU Y4 NG BOOSTER / INTER, AFTER COOLER   | KOREA      | 2    | 2 UNIT  | 2019     |
| 2018-30 | SINSEOCHEON THERMAL POWER PLANT | HHI-TMC               | SINSEOCHEON / INTER, AFTER COOLER               | KOREA      | 3    | 12 UNIT | 2019     |
| 2018-31 | THAILAND PETROCHEMICAL PLANT    | HANWHA POWER SYSTEM   | THAILAND / AFTER COOLER                         | THAILAND   | 1    | 1 UNIT  | 2019     |
| 2018-32 | LINDE SEOSAN                    | HANWHA POWER SYSTEM   | PA LINDE SEOSAN / AFTER COOLER                  | KOREA      | 1    | 1 UNIT  | 2018     |
| 2018-33 | TNSC                            | IRM                   | 3051142/TNS / INTER, AFTER COOLER               | IRAN       | 5    | 5 UNIT  | 2019     |
| 2018-34 | TNSC                            | IRM                   | 3051-144/TNSC / INTER, AFTER COOLER             | IRAN       | 4    | 4 UNIT  | 2019     |
| 2018-35 | -                               | IRM                   | 3051-143/KOREA / INTER, AFTER COOLER            | KOREA      | 4    | 4 UNIT  | 2019     |
| 2018-36 | -                               | IRM                   | 3051145_KOREA / INTER, AFTER COOLER             | KOREA      | 4    | 8 UNIT  | 2019     |
| 2018-37 | PRAXAIR                         | HANWHA POWER SYSTEM   | PRAXAIR/YONGIN(EN3000) / INTER, AFTER COOLER    | KOREA      | 3    | 3 UNIT  | 2019     |
| 2018-38 | LINDE SEOSAN                    | HANWHA POWER SYSTEM   | PA LINDE SEOSAN / AFTER COOLER                  | KOREA      | 1    | 3 UNIT  | 2019     |
| 2018-39 | PRAXAIR                         | HANWHA POWER SYSTEM   | PRAXAIR/YONGIN / INTER, AFTER COOLER            | KOREA      | 4    | 4 UNIT  | 2019     |
| 2018-40 | NEFTECHEMSERVICE                | HANWHA POWER SYSTEM   | YAIISKY / AFTER COOLER                          | RUSSIA     | 1    | 1 UNIT  | 2019     |

### Experience List (for Hydrogen Cooler & Air Cooler of Electric Generator)

| JOB No | END USER                    | CONTRACTOR                     | PROJECT Name / ITEM Name                   | Tube Material | Tube-sheet Material | DELIVERY     | Unit | Quantity | DELIVERY |
|--------|-----------------------------|--------------------------------|--|---------------|---------------------|--------------|------|----------|----------|
| 2002   | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 324 H2 COOLER                | B111-C70600   | A516-70             | U.S.A        | 3    | 12 SETS  | 2002     |
| 2003-1 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 324 H2 COOLER                | B111-C70600   | A516-70             | U.S.A        | 9    | 36 SETS  | 2003     |
| 2003-2 | KOREA SOUTHERN POWER        | DOOSAN HEAVY INDUSTRIES / KPHE | YONGDONG / H2 COOLER                       | B111-C70600   | A516-70             | KOREA        | 1    | 1 SET    | 2003     |
| 2004-1 | KOREA HYDRO & NUCLEAR POWER | DOOSAN HEAVY INDUSTRIES / KPHE | YANGYANG / H2 COOLER                       | B111-C70600   | A516-70             | KOREA        | 1    | 27 SETS  | 2004     |
| 2004-2 | KOREA HYDRO & NUCLEAR POWER | DOOSAN HEAVY INDUSTRIES / KPHE | YANGYANG / H2 COOLER                       | B111-C70600   | A516-70             | KOREA        | 1    | 24 SETS  | 2005     |
| 2007-1 | KOREA HYDRO & NUCLEAR POWER | DOOSAN HEAVY INDUSTRIES / KPHE | YEONGGWANG / H2 COOLER                     | B111-C70600   | A516-70             | KOREA        | 1    | 8 SETS   | 2007     |
| 2007-2 | KOREA EAST-WEST POWER       | DOOSAN HEAVY INDUSTRIES / KPHE | ULSAN / H2 COOLER                          | B111-C70600   | A516-70             | KOREA        | 1    | 12 SETS  | 2007     |
| 2008-1 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 7FH2 COOLER                  | B111-C70600   | A516-70             | U.S.A        | 13   | 52 SETS  | 2008     |
| 2008-2 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 324 H2 COOLER                | B111-C70600   | A516-70             | U.S.A        | 7    | 28 SETS  | 2008     |
| 2009-1 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 7FH2 COOLER                  | B111-C70600   | A516-70             | U.S.A        | 4    | 16 SETS  | 2009     |
| 2009-2 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 324 H2 COOLER                | B111-C70600   | A516-70             | U.S.A        | 4    | 16 SETS  | 2009     |
| 2009-3 | KOREA SOUTHERN POWER        | DOOSAN HEAVY INDUSTRIES        | YEONGWOL (300 MW) / STG H2 COOLER          | B111-C70600   | A516-70             | KOREA        | 1    | 4 SETS   | 2009     |
| 2009-4 | KOREA SOUTHERN POWER        | DOOSAN HEAVY INDUSTRIES        | YEONGWOL (300 MW) / GTG H2 COOLER          | B111-C70600   | A516-70             | KOREA        | 1    | 12 SETS  | 2009     |
| 2010-1 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 7FH2 COOLER                  | B111-C70600   | A516-70             | U.S.A        | 8    | 32 SETS  | 2010     |
| 2010-2 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 324 H2 COOLER                | B111-C70600   | A516-70             | U.S.A        | 2    | 8 SETS   | 2010     |
| 2010-3 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 7FH2 COOLER                  | B111-C70600   | A516-70             | U.S.A        | 3    | 12 SETS  | 2010     |
| 2010-4 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES / KPHE | GE SOURCING / 324 COOLER                   | B111-C70600   | A516-70             | U.S.A        | 1    | 4 SETS   | 2010     |
| 2010-5 | KOREA WESTERN POWER         | DOOSAN HEAVY INDUSTRIES        | PYEONGTAEK #3, #4 (582 MW) / H2 COOLER     | B111-C70600   | A516-70             | KOREA        | 2    | 8 SETS   | 2010     |
| 2010-6 | KOREA SOUTH-EAST POWER      | DOOSAN HEAVY INDUSTRIES        | SAMCHONPO #1, #2, #4 (324 MW) / H2 COOLER  | B111-C70600   | A516-70             | KOREA        | 3    | 12 SETS  | 2010     |
| 2010-7 | GMR ENERGY                  | DOOSAN HEAVY INDUSTRIES        | RAIPUR #1, #2 (1370 MW) / H2 COOLER        | B111-C70600   | A516-70             | INDIA        | 2    | 8 SETS   | 2011     |
| 2011-1 | GENERAL ELECTRIC COMPANY    | DOOSAN HEAVY INDUSTRIES        | GE SOURCING / 324 H2 COOLER (ASME U-STAMP) | B111-C70600   | A516-70             | U.S.A        | 8    | 32 SETS  | 2011     |
| 2011-2 | KOREA WESTERN POWER         | DOOSAN HEAVY INDUSTRIES        | PYEONGTAEK #1 (582 MW) / H2 COOLER         | B111-C70600   | A516-70             | KOREA        | 1    | 4 SETS   | 2011     |
| 2011-3 | KOREA MIDLAND POWER         | SUNGSAN                        | BORYUNG CAPP (500 MW) / AIR COOLER         | B111-C70600   | B171-C46400         | KOREA        | 1    | 4 SETS   | 2011     |
| 2011-4 | KOREA HYDRO & NUCLEAR POWER | SUNGSAN                        | CHEONG-PYEONG (400 MW) / AIR COOLER        | B111-C70600   | B171-C46400         | KOREA        | 1    | 1 SET    | 2011     |
| 2012-1 | KOREA HYDRO & NUCLEAR POWER | SUNGSAN                        | CHEONG-PYEONG (400 MW) / AIR COOLER        | B111-C70600   | B171-C46400         | KOREA        | 1    | 7 SETS   | 2012     |
| 2012-2 | AES-VCM                     | DOOSAN HEAVY INDUSTRIES        | MONG DOUNG-2 (1120 MW) / H2 COOLER         | B111-C70600   | A516-70             | VIETNAM      | 2    | 8 SETS   | 2012     |
| 2012-3 | MARAFIQ                     | DOOSAN HEAVY INDUSTRIES        | YANBU-2 / H2 COOLER (ASME U-STAMP)         | B111-C70600   | A516-70             | SAUDI ARABIA | 3    | 12 SETS  | 2012     |
| 2012-4 | POCHEON POWER               | DOOSAN HEAVY INDUSTRIES        | POCHEON (1560 MW) / H2 COOLER              | B111-C70600   | A516-70             | KOREA        | 2    | 8 SETS   | 2012     |
| 2012-5 | H.H.I.C                     | DOOSAN HEAVY INDUSTRIES        | YANGJU (550 MW) / H2 COOLER                | B111-C70600   | A516-70             | KOREA        | 3    | 12 SETS  | 2012     |



### Experience List (for Hydrogen Cooler & Air Cooler of Electric Generator)

| JOB No | END USER                            | CONTRACTOR                       | PROJECT Name / ITEM Name                      | Tube Material | Tube Sheet Material | DELIVERY | Unit | Quantity | DELIVERY    |
|--------|-------------------------------------|----------------------------------|---|---------------|---------------------|----------|------|----------|-------------|
| 2012-6 | KOREA MIDLAND POWER                 | DOOSAN HEAVY INDUSTRIES          | SEJONG (530 MW) / H2 COOLER                   | B111-C70600   | A516-70             | KOREA    | 3    | 12 SETS  | 2012        |
| 2012-7 | KOREA HYDRO & NUCLEAR POWER         | SUNGSAN                          | INCHEON (375 MW) / AIR COOLER                 | B111-C70600   | B171-C46400         | KOREA    | 1    | 4 SETS   | 2012        |
| 2012-8 | KOREA MIDLAND POWER                 | TURBOCARE                        | BORYEONG #4 (500 MW) / H2 COOLER              | B111-C70600   | A516-70             | KOREA    | 1    | 4 SETS   | 2013        |
| 2013-1 | EVN                                 | DOOSAN HEAVY INDUSTRIES          | MONG DOUNG-1 (1120 MW) / H2 COOLER            | B111-C70600   | A516-70             | VIETNAM  | 2    | 8 SETS   | 2013        |
| 2013-2 | HANAM ENERGY SERVICE                | DOOSAN HEAVY INDUSTRIES          | HANAM CHP (469 MW) / H2 COOLER                | B111-C70600   | A516-70             | KOREA    | 1    | 4 SETS   | 2013        |
| 2013-3 | GENERAL ELECTRIC COMPANY            | DOOSAN HEAVY INDUSTRIES          | 7FH2B / H2 COOLER (ASME U-STAMP)              | B111-C70600   | A516-70             | U.S.A    | 1    | 4 SETS   | 2013        |
| 2013-4 | KOREA SOUTH-EAST POWER              | DOOSAN HEAVY INDUSTRIES          | SAMCHONPO #3 (324 MW) / H2 COOLER             | B111-C70600   | A516-70             | KOREA    | 1    | 4 SETS   | 2013        |
| 2013-5 | GENERAL ELECTRIC COMPANY            | DOOSAN HEAVY INDUSTRIES          | GE SOURCING / 324 H2 COOLER (ASME U-STAMP)    | B111-C70600   | A516-70             | U.S.A    | 2    | 8 SETS   | 2013        |
| 2013-6 | HANAM ENERGY SERVICE                | DOOSAN HEAVY INDUSTRIES          | HANAM CHP (460 MW) / AIR COOLER               | B111-C70600   | A516-70             | KOREA    | 1    | 2 SETS   | 2013        |
| 2014-1 | KOREA MIDLAND POWER                 | KEPCO                            | BORYEONG #3 (500 MW) / H2 COOLER              | B111-C70600   | A516-70             | KOREA    | 1    | 4 SETS   | 2014        |
| 2014-2 | KOREA MIDLAND POWER                 | DOOSAN HEAVY INDUSTRIES          | SEOUL GTG #1 & #2 (400 MW) / H2 COOLER        | B111-C70600   | A516-70             | KOREA    | 2    | 8 SETS   | 2016        |
| 2014-3 | O.C.I                               | DOOSAN HEAVY INDUSTRIES          | SAEMANGEUM STG #1 & #2 (303 MW) / AIR COOLER  | B111-C70600   | A516-70             | KOREA    | 2    | 4 SETS   | 2014        |
| 2014-4 | KOREA MIDLAND POWER                 | DOOSAN HEAVY INDUSTRIES          | SEOUL STG #1 & #2 (400 MW) / AIR COOLER       | B111-C70600   | A516-70             | KOREA    | 2    | 4 SETS   | 2015        |
| 2014-5 | GENERAL ELECTRIC COMPANY            | DOOSAN HEAVY INDUSTRIES          | 7FH2B / H2 COOLER (ASME U-STAMP)              | B111-C70600   | A516-70             | U.S.A    | 8    | 32 SETS  | 2014 & 2015 |
| 2014-6 | GENERAL ELECTRIC COMPANY            | DOOSAN HEAVY INDUSTRIES          | 7FH2B / H2 COOLER (MEXICAN REGULATION)        | B111-C70600   | A516-70             | U.S.A    | 1    | 4 SETS   | 2014        |
| 2014-7 | KOREA WESTERN POWER                 | DONGHWA ENTEC                    | TAEAN #1 & #2 (500 MW) / H2 COOLER            | B111-C70600   | A516-70             | KOREA    | 1    | 4 SETS   | 2014 & 2015 |
| 2014-8 | AES-VCM                             | DOOSAN HEAVY INDUSTRIES          | MONG DOUNG-2 (1120 MW) / H2 COOLER            | B111-C70600   | A516-70             | VIETNAM  | 1    | 4 SETS   | 2014        |
| 2015-1 | GENERAL ELECTRIC COMPANY            | DOOSAN HEAVY INDUSTRIES          | 7FH2B / H2 COOLER (ASME U-STAMP)              | B111-C70600   | B171-C46400         | U.S.A    | 2    | 8 SETS   | 2015        |
| 2015-2 | GENERAL ELECTRIC COMPANY            | DOOSAN HEAVY INDUSTRIES          | 7FH2B / H2 COOLER (ASME U-STAMP)              | B111-C70600   | A516-70             | U.S.A    | 4    | 16 SETS  | 2015        |
| 2015-3 | KOREA DISTRICT HEATING CORP.        | DOOSAN HEAVY INDUSTRIES          | HWASUNG DONGTAN2 #1 & #2 (800MW) / AIR COOLER | B111-C70600   | A516-70             | KOREA    | 2    | 4 SETS   | 2015        |
| 2015-4 | KOREA DISTRICT HEATING CORP.        | DOOSAN HEAVY INDUSTRIES          | HWASUNG DONGTAN2 #1 & #2 (800 MW) / H2 COOLER | B111-C70600   | A516-70             | KOREA    | 2    | 8 SETS   | 2016        |
| 2015-5 | SAFI ENERGY COMPANY                 | MITSUBISHI HITACHI POWER SYSTEMS | SAFI INDEPENDENT POWER (1320 MW) / H2 COOLER  | B111-C70600   | A516-70             | MOROCCO  | 2    | 8 SETS   | 2016        |
| 2016-1 | EMPLAME                             | DOOSAN HEAVY INDUSTRIES          | EMPALME #1,2 (770 MW) / H2 COOLER             | A213-TP304    | A240-304            | MEXICO   | 2    | 8 SETS   | 2016        |
| 2016-2 | PVN (PETRO VIETNAM)                 | DOOSAN HEAVY INDUSTRIES          | SONGHAU1 (1200 MW) / H2 COOLER                | B111-C70600   | A516-70             | VIETNAM  | 2    | 8 SETS   | 2017        |
| 2016-3 | GANGREUNG ECO POWER                 | DOOSAN HEAVY INDUSTRIES          | GANGREUNG #1,2 (1000 MW) / H2 COOLER          | B111-C70600   | A516-70             | KOREA    | 2    | 8 SETS   | 2018        |
| 2016-4 | SK E&C                              | DOOSAN HEAVY INDUSTRIES          | GOSUNG 1,2 (1000 MW) / H2 COOLER              | B111-C70600   | A516-70             | KOREA    | 2    | 8 SETS   | 2018        |
| 2016-5 | KOREA MIDLAND POWER                 | DOOSAN HEAVY INDUSTRIES          | SHIN SEOCHUN (1000 MW) / H2 COOLER            | B111-C70600   | B171-C46400         | KOREA    | 1    | 4 SETS   | 2018        |
| 2016-6 | PUBLIC POWER CORPORATION S.A        | MITSUBISHI HITACHI POWER SYSTEMS | XGPT-5 IN GREECE (660 MW) / H2 COOLER         | B111-C70600   | B171-C46400         | GREECE   | 1    | 2 SETS   | 2017        |
| 2016-7 | AIR WATER & ENERGIA POWER YAMAGUCHI | FUJII ELECTRIC                   | HOFU BIOMASS POWER STATION / AIR COOLER       | B111-C70600   | B171-C46400         | JAPAN    | 1    | 3 SETS   | 2017        |

### Experience List (for Hydrogen Cooler & Air Cooler of Electric Generator)

| JOB No  | END USER                            | CONTRACTOR                       | PROJECT Name / ITEM Name                           | Tube Material | Tube Material | Tube Material | DELIVERY     | Unit | Quantity | DELIVERY    |
|---------|-------------------------------------|----------------------------------|--|---------------|---------------|---------------|--------------|------|----------|-------------|
| 2016-8  | KOBE STEEL, LTD.                    | FUJI ELECTRIC                    | MOKA POWER PLANT #1 / H2 COOLER                    | B111-C70600   | B111-C70600   | B171-C46400   | JAPAN        | 1    | 2 SETS   | 2017        |
| 2016-9  | SAN BUENAVENTURA POWER LTD.         | MITSUBISHI HITACHI POWER SYSTEMS | XSBF (500 MW) SUPERCRITICAL PULVERIZED / H2 COOLER | B111-C70600   | B111-C70600   | B171-C46400   | PHILIPPINE   | 1    | 4 SETS   | 2017        |
| 2016-10 | KOREA SOUTH-EAST POWER              | DOOSAN HEAVY INDUSTRIES          | SAMCHONPO #5.8 (324 MW) / H2 COOLER                | B111-C70600   | B111-C70600   | A516-70       | KOREA        | 2    | 8 SETS   | 2017 & 2018 |
| 2016-11 | KOREA SOUTHERN POWER                | DOOSAN HEAVY INDUSTRIES          | HADONG #1-6 (300 MW) / H2 COOLER                   | B111-C70600   | B111-C70600   | A516-70       | KOREA        | 5    | 20 SETS  | 2017 & 2018 |
| 2017-1  | KOBE STEEL, LTD.                    | FUJI ELECTRIC                    | MOKA POWER PLANT #2 / H2 COOLER                    | B111-C70600   | B111-C70600   | B171-C46400   | JAPAN        | 1    | 2 SETS   | 2017        |
| 2017-2  | KOBE STEEL, LTD.                    | FUJI ELECTRIC                    | MOKA POWER PLANT #1.2 / AIR COOLER                 | B111-C70600   | B111-C70600   | B171-C46400   | JAPAN        | 2    | 6 SETS   | 2017 & 2018 |
| 2017-4  | PUBLIC POWER CORPORATION S.A        | MITSUBISHI HITACHI POWER SYSTEMS | XGPT-5, EXTRA / H2 COOLER                          | B111-C70600   | B111-C70600   | B171-C46400   | GREECE       | 1    | 1 SET    | 2017        |
| 2017-5  | BUZEN NEW ENERGY                    | FUJI ELECTRIC                    | EREX BUZEN / AIR COOLER                            | B111-C70600   | B111-C70600   | B171-C46400   | JAPAN        | 1    | 3 SETS   | 2017        |
| 2017-6  | PT SUPREME ENERGY                   | FUJI ELECTRIC                    | MUARALOBOH GEOTHERMAL / AIR COOLER                 | A213-TP316L   | A213-TP316L   | A240-316L     | INDONESIA    | 1    | 3 SETS   | 2018        |
| 2017-7  | MUORAN BIOMASS POWER GEN.           | FUJI ELECTRIC                    | MUORAN BIOMASS / AIR COOLER                        | B111-C70600   | B111-C70600   | B171-C46400   | JAPAN        | 1    | 3 SETS   | 2018        |
| 2017-8  | FADHILI                             | DOOSAN HEAVY INDUSTRIES          | FADHILI / H2 COOLER                                | B111-C70600   | B111-C70600   | A516-70       | SAUDI ARABIA | 2    | 4 SETS   | 2017        |
| 2017-9  | MURARA TAWAR                        | DOOSAN HEAVY INDUSTRIES          | MURARA TAWAR / AIR COOLER                          | B111-C70600   | B111-C70600   | A516-70       | INDONESIA    | 3    | 2 SETS   | 2018        |
| 2017-10 | ASSIUT                              | DOOSAN HEAVY INDUSTRIES          | ASSIUT / H2 COOLER                                 | B111-C70600   | B111-C70600   | A516-70       | EGYPT        | 1    | 4 SETS   | 2018        |
| 2017-11 | CAIRO WEST                          | DOOSAN HEAVY INDUSTRIES          | CAIRO WEST / H2 COOLER                             | B111-C70600   | B111-C70600   | A516-70       | EGYPT        | 1    | 4 SETS   | 2018        |
| 2017-12 | ZERAN                               | DOOSAN HEAVY INDUSTRIES          | ZERAN / AIR COOLER                                 | A213-TP304    | A213-TP304    | A240-304      | POLAND       | 1    | 2 SETS   | 2018        |
| 2018-1  | KOREA SOUTHERN POWER                | YEONGWOL POWER PLANT             | YEONGWOL COMBINED CYCLE POWER / H2 COOLER          | B111-C70600   | B111-C70600   | A516-70       | KOREA        | 1    | 1 SET    | 2018        |
| 2018-2  | THE KWALE OKPAI POWER PLANT         | DOOSAN HEAVY INDUSTRIES          | OKPAI-2 / AIR COOLER                               | B111-C70600   | B111-C70600   | A516-70       | NIGERIA      | 1    | 2 SETS   | 2018        |
| 2018-3  | MARCUS HOOK ENERGY CENTER           | TOSHIBA                          | MARCUS HOOK / H2 COOLER                            | B111-C70600   | B111-C70600   | A516-70       | U.S.A        | 1    | 4 SETS   | 2018        |
| 2018-4  | GEOHEMAL POWER PLANT                | FUJI ELECTRIC                    | NORTH AMERICA / AIR COOLER                         | SUS316L TB-S  | SUS316L TB-S  | SUS316L       | U.S.A        | 1    | 4 SETS   | 2018        |
| 2018-5  | RANTAU DEDAP GEOTHERMAL POWER PLANT | FUJI ELECTRIC                    | RANTAU U1, U2 / AIR COOLER                         | SUS316L TB-S  | SUS316L TB-S  | SUS316L       | MALAYSIA     | 1    | 6 SETS   | 2019        |
| 2018-6  | GEOHEMAL POWER STATION              | FUJI ELECTRIC                    | F-PROJECT / H2 COOLER                              | B111-C70600   | B111-C70600   | B171-C46400   | KENYA        | 1    | 4 SETS   | 2019        |
| 2018-7  | OLKARIA I GEOTHERMAL POWER STATION  | DAISHO-FUJI                      | OLKARIA U6 / AIR COOLER                            | SUS316L TB-S  | SUS316L TB-S  | SUS316L       | KENYA        | 1    | 4 SETS   | 2019        |
| 2018-8  | SHARJAH LAYYAH POWER STATION        | MITSUBISHI HITACHI POWER SYSTEMS | XULS-GTG-1, 2/STG / H2 COOLER                      | B111-C70600   | B111-C70600   | B171-C46400   | U.A.E        | 1    | 6 SETS   | 2019        |
| 2018-9  | JSW STEEL DOLVI WORKS               | DOOSAN HEAVY INDUSTRIES          | JSW DOLVI / AIR COOLER                             | B111-C70600   | B111-C70600   | SA516-70N     | INDIA        | 1    | 2 SETS   | 2019        |
| 2018-10 | MONTGOMERY POWER PLANT              | TOSHIBA                          | MONTGOMERY / H2 COOLER                             | B111-C70600   | B111-C70600   | SA516-70N     | U.S.A        | 1    | 4 SETS   | 2019        |

### Experience List (for Shell & Tube Heat Exchanger)

| JOB No | END USER                         | CONTRACTOR                  | PROJECT Name / ITEM Name                  | Tube / T.S Material     | Design pressure (Shell / Tube) | Tube Joint                  | LOCATION  | ITEM | QTY    | DELIVERY |
|--------|----------------------------------|-----------------------------|---|-------------------------|--------------------------------|-----------------------------|-----------|------|--------|----------|
| 2010-1 | KOREA HYDRO & NUCLEAR POWER      | DOOSAN                      | YECHON / LO COOLER                        | Copper / C.S            | 4.0 / 18.2 (bar.g)             | Expand W/2 groove           | KOREA     | 1    | 2 UNIT | 2010     |
| 2010-2 | KOREA HYDRO & NUCLEAR POWER      | DOOSAN                      | YECHON / LO COOLER                        | Copper / C.S            | 4.0 / 18.2 (bar.g)             | Expand W/2 groove           | KOREA     | 1    | 2 UNIT | 2010     |
| 2010-3 | KOLON INDUSTRIES                 | KOLON INDUSTRIES            | DEW HEATER                                | SUS304 / SUS304         | 5.0 / 7.5 (bar.g)              | Sealing Welding W/2 groove  | KOREA     | 1    | 1 UNIT | 2010     |
| 2010-4 | KOLON INDUSTRIES                 | KOLON INDUSTRIES            | EG CONDENSER                              | SUS304 / SUS304         | 5.0 / 6.0 (bar.g)              | Sealing Welding W/2 groove  | KOREA     | 1    | 1 UNIT | 2011     |
| 2010-5 | KOLON INDUSTRIES                 | KOLON INDUSTRIES            | EG COOLER                                 | SUS304 / SUS304         | 6.0 / 5.0 (bar.g)              | Sealing Welding W/2 groove  | KOREA     | 1    | 1 UNIT | 2011     |
| 2011-1 | NIPPON STEEL CORPORATION         | NIPPON STEEL CORPORATION    | OIL COOLER                                | C.S / C.S               | 5 / 5 (bar.g)                  | Expand W/2 groove           | JAPAN     | 1    | 1 UNIT | 2011     |
| 2011-2 | KOLON INDUSTRIES                 | KOLON INDUSTRIES            | TOTAL CONDENSER                           | SUS304 / SUS304         | 0.7 / 5.0 (bar.g)              | Strength Welding W/2 groove | KOREA     | 1    | 1 UNIT | 2011     |
| 2011-3 | KOLON INDUSTRIES                 | KOLON INDUSTRIES            | HTM HEATER                                | SUS304 / SUS304         | 10.0 / 7.0 (bar.g)             | Sealing Welding W/2 groove  | KOREA     | 1    | 2 UNIT | 2011     |
| 2012-1 | ABEX                             | ABEX                        | OIL COOLER                                | Cu-Ni 9:1 / C.S         | 7.5 / 10 (bar.g)               | Expand W/2 groove           | JAPAN     | 1    | 1 UNIT | 2012     |
| 2012-2 | SKEC                             | SKEC                        | OIL COOLER                                | Copper / C.S            | 10.0 / 10.0 (bar.g)            | Expand W/2 groove           | KOREA     | 1    | 2 UNIT | 2012     |
| 2012-3 | FUJITA IRON                      | FUJITA IRON                 | OIL COOLER                                | Copper / Naval Brass    | 4 / 8 (bar.g)                  | Expand W/2 groove           | JAPAN     | 2    | 1 UNIT | 2012     |
| 2012-4 | KOREA EAST-WEST POWER            | SAMSUNG TECHWIN             | ULSAN FGC / DUAL OIL COOLER               | Admiralty / C.S         | 10.0 / 11.0 (bar.g)            | Expand W/2 groove           | KOREA     | 1    | 3 UNIT | 2013     |
| 2012-5 | KOREA WESTERN POWER              | SAMSUNG TECHWIN             | PYEONGTAEK FGC / DUAL OIL COOLER          | Admiralty / C.S         | 10.0 / 10.0 (bar.g)            | Expand W/2 groove           | KOREA     | 1    | 2 UNIT | 2013     |
| 2013-1 | SKEC                             | SAMSUNG TECHWIN             | SK NEXLENE / OIL COOLER                   | Cu-Ni 9:1 / C.S         | 10.0 / 10.0 (bar.g)            | Expand W/2 groove           | KOREA     | 1    | 3 UNIT | 2013     |
| 2013-2 | SK ENERGY                        | SK ENERGY                   | NO.2 FCC REVAMP / OIL COOLER              | Copper / C.S            | 9 / 7 (bar.g)                  | Expand W/2 groove           | KOREA     | 1    | 2 UNIT | 2013     |
| 2013-3 | BOC TATA STEEL                   | SAMSUNG TECHWIN             | BOC TATA STEEL PJT / OIL COOLER           | Cu-Ni 9:1 / C.S         | 10.0 / 6.0 (bar.g)             | Expand W/2 groove           | INDIA     | 1    | 1 UNIT | 2013     |
| 2013-4 | KOLON INDUSTRIES                 | KOLON INDUSTRIES            | HTM COOLER                                | SUS304 / SUS304         | 10.0 / 10.0 (bar.g)            | Sealing Welding W/2 groove  | KOREA     | 1    | 1 UNIT | 2013     |
| 2013-5 | KOREA EAST-WEST POWER            | SAMSUNG TECHWIN             | ULSAN FGC / GAS RECYCLE COOLER            | SUS304 / C.S            | 15.0 / 36.0 (bar.g)            | Sealing Welding W/2 groove  | KOREA     | 1    | 3 UNIT | 2014     |
| 2013-6 | MEDA                             | SAMSUNG TECHWIN             | IREP / DUAL OIL COOLER                    | Admiralty / C.S         | 10.0 / 7.5 (bar.g)             | Expand W/2 groove           | INDIA     | 1    | 4 UNIT | 2014     |
| 2013-7 | YPFB                             | SAMSUNG TECHWIN             | BOLIVIA YPFB / DUAL OIL COOLER (AEW TYPE) | SUS304 / SUS304         | 10.2 / 8.2 (bar.g)             | Expand W/2 groove           | BOLIVIA   | 1    | 1 UNIT | 2014     |
| 2014-1 | ABU DHABI MARINE OPERATING CO.   | SAMSUNG TECHWIN             | SARBIA / OIL COOLER (NEW TYPE)            | SUS316 / SUS316         | 11 / 10 (bar.g)                | Expand W/2 groove           | UAE       | 1    | 3 UNIT | 2014     |
| 2014-2 | SKEC                             | SAMSUNG TECHWIN             | SK ULSAN CLX / OIL COOLER                 | Cu-Ni 9:1 / C.S         | 10 / 10 (bar.g)                | Expand W/2 groove           | KOREA     | 1    | 1 UNIT | 2014     |
| 2015-1 | DAEJU MACHINERY                  | DAEJU MACHINERY             | CAMERON / OIL COOLER                      | Copper / C.S            | 10 / 10 (bar.g)                | Expand W/2 groove           | KOREA     | 1    | 1 UNIT | 2015     |
| 2015-2 | DAEJU MACHINERY                  | DAEJU MACHINERY             | KOREA / AIR PRE-HEATER                    | Copper / C.S            | 10 / 10 (bar.g)                | Expand W/2 groove           | KOREA     | 1    | 1 UNIT | 2015     |
| 2015-3 | STATE COMPANY FOR OIL PJT (SCOP) | SAMSUNG TECHWIN             | KARBALA REFINERY FEED / OIL COOLER        | Admiralty / Naval Brass | 8 / 7 (bar.g)                  | Expand W/2 groove           | IRAQ      | 1    | 3 UNIT | 2016     |
| 2015-4 | KUWAIT NATIONAL PETROLEUM CO.    | SAMSUNG TECHWIN             | KNPC MMA IA / DUAL OIL COOLER             | Al-Brass / Cu-Ni 9:1    | 10 / 10 (bar.g)                | Expand W/2 groove           | KUWAIT    | 1    | 4 UNIT | 2016     |
| 2015-5 | KOREA DISTRICT HEATING CORP.     | SAMSUNG TECHWIN             | HWASUNG DONGTANZ FGC / GAS COOLER         | C.S / C.S               | 10 / 53 (bar.g)                | Sealing Welding W/2 groove  | KOREA     | 1    | 2 UNIT | 2016     |
| 2015-6 | KOREA DISTRICT HEATING CORP.     | SAMSUNG TECHWIN             | HWASUNG DONGTANZ FGC / OIL COOLER         | Copper / C.S            | 10 / 14 (bar.g)                | Expand W/2 groove           | KOREA     | 1    | 2 UNIT | 2016     |
| 2015-7 | POSCO E&C                        | HYUNDAI HEAVY INDUSTRIES    | CHUNCHEON CHP / RECYCLE COOLER            | C.S / C.S               | 10 / 39 (bar.g)                | Expand W/2 groove           | KOREA     | 2    | 4 UNIT | 2016     |
| 2015-8 | POSCO E&C                        | HYUNDAI HEAVY INDUSTRIES    | CHUNCHEON CHP / OIL COOLER                | Admiralty / C.S         | 10 / 10 (bar.g)                | Expand W/2 groove           | KOREA     | 2    | 4 UNIT | 2016     |
| 2016-1 | DAEWOO E&C                       | ATLAS COPCO - AMERICA       | YOUNGAM COPP / RECYCLE GAS COOLER         | SUS304 / SUS304         | 9 / 59 bar.g                   | Strength welding            | KOREA     | 2    | 2 UNIT | 2016     |
| 2016-2 | MITSUBISHI HEAVY INDUSTRIES      | MITSUBISHI HEAVY INDUSTRIES | FUEL GAS SUPPLY SYSTEM / HOT WATER HEATER | SUS304L / SUS304L       | 5 / 1 bar.g                    | Expand W/2 groove           | JAPAN     | 1    | 1 UNIT | 2016     |
| 2016-3 | NESTLE                           | ATLAS COPCO - KOREA         | PULMONE NATURAL MINERAL WATER / AFTER-C   | SUS304 / SUS304         | 5 / 10 bar.g                   | Expand W/2 groove           | KOREA     | 1    | 1 UNIT | 2016     |
| 2016-4 | KOLON INDUSTRIES                 | KOLON INDUSTRIES            | GIMCHUN / DIB STORAGE TANK HEAT EXCHANGER | SUS304 / SUS304         | 1 / 10 bar.g                   | Expand W/2 groove           | KOREA     | 1    | 1 UNIT | 2016     |
| 2016-5 | FORMOSA PLASTICS CORP.           | KOBE STEEL, LTD.            | 15-00375-UFORMOSA / OIL COOLER            | Admiralty / Naval Brass | 7 / 7 bar.g                    | Expand W/2 groove           | TAIWAN    | 1    | 1 UNIT | 2016     |
| 2016-6 | ICDI(SINGAPORE)PTE.              | TSURUMI PUMP                | CCD SINGAPORE / SEAL WATER COOLER         | Cu-Ni 9:1 / C.S         | 4 / 8 bar.g                    | Expand W/2 groove           | SINGAPORE | 2    | 1 UNIT | 2016     |
| 2016-7 | POSCO                            | POSCO                       | PCI 3.4 HIGH PRESSURE / AFTER COOLER      | Admiralty / SUS304      | 7.5 / 21 bar.g                 | Expand W/2 groove           | KOREA     | 3    | 1 UNIT | 2016     |
| 2016-8 | TOHO CHEMICAL E&C                | HWANWOONG                   | GK-7.8 / SURFACE CONDENSER                | SUS304 / SUS304         | 3 / 5 bar.g                    | Expand W/2 groove           | JAPAN     | 3    | 1 UNIT | 2016     |
| 2016-9 | PT PERTAMINA / JGC CONSORTIUM    | KOBE STEEL, LTD.            | JGC PERTAMINA / TOW COOLER                | Titanium / Titanium     | 5 / 7 bar.g                    | Expand W/2 groove           | INDONESIA | 1    | 1 UNIT | 2016     |

### Experience List (for Shell & Tube Heat Exchanger)

| JOB No  | END USER                          | CONTRACTOR                  | PROJECT Name / ITEM Name                      | Tube / T.S Material     | Design pressure (Shell / Tube) | Tube Joint                      | LOCATION     | ITEM | QTY    | DELIVERY    |
|---------|-----------------------------------|-----------------------------|---|-------------------------|--------------------------------|---------------------------------|--------------|------|--------|-------------|
| 2016-10 | DSME/MOL                          | KOBE STEEL, LTD.            | BOG BOOSTING COMP. / 1ST DIS COOLER           | C-S / C.S               | 10 / 68 (bar.g)                | Strength Welding                | JAPAN        | 1    | 1 UNIT | 2017        |
| 2016-11 | DSME/MOL                          | KOBE STEEL, LTD.            | BOG BOOSTING COMP. / 2ND DIS COOLER           | C.S / C.S               | 10 / 71.8 (bar.g)              | Strength Welding                | JAPAN        | 1    | 1 UNIT | 2017        |
| 2016-12 | DSME/MOL                          | KOBE STEEL, LTD.            | BOG BOOSTING COMP. / 3RD DIS COOLER           | C.S / C.S               | 10 / 167 (bar.g)               | Strength Welding                | JAPAN        | 1    | 1 UNIT | 2017        |
| 2016-12 | S-OIL                             | HANWHA TECHWIN              | S-OIL OXIDATION / OIL COOLER (AEW TYPE)       | SUS304 / SUS304         | 10 / 8 (bar.g)                 | Expand W/ 2 groove              | KOREA        | 1    | 2 UNIT | 2017        |
| 2016-12 | S-OIL                             | HANWHA TECHWIN              | S-OIL PACKAGE #1 / OIL COOLER (AEW TYPE)      | SUS304 / SUS304         | 10 / 8 (bar.g)                 | Expand W/ 2 groove              | KOREA        | 1    | 3 UNIT | 2017        |
| 2016-12 | S-OIL                             | HANWHA TECHWIN              | S-OIL PACKAGE #2 / OIL COOLER (AEW TYPE)      | SUS304 / SUS304         | 10 / 8 (bar.g)                 | Expand W/ 2 groove              | KOREA        | 1    | 1 UNIT | 2017        |
| 2016-12 | S-OIL                             | HANWHA TECHWIN              | S-OIL PACKAGE #3 / OIL COOLER (AEW TYPE)      | SUS304 / SUS304         | 10 / 8 (bar.g)                 | Expand W/ 2 groove              | KOREA        | 1    | 3 UNIT | 2017        |
| 2016-13 | MHPS                              | HANWHA TECHWIN              | XIB-2 INDONESIA / OIL COOLER                  | Al-Brass / C.S          | 10 / 7 (bar.g)                 | Expand W/ 2 groove              | INDONESIA    | 1    | 1 UNIT | 2017        |
| 2016-14 | China Energy Engineering Group    | ATLAS COPCO - AMERICA       | GPEC - Ghorasal 4 Bangladesh / INTER COOLER   | Cu-Ni 9:1 / C.S         | 10 / 37.5 (bar.g)              | Expand W/ 2 groove              | BANGLADESH   | 1    | 3 UNIT | 2017        |
| 2016-15 | China Energy Engineering Group    | ATLAS COPCO - AMERICA       | GPEC - Ghorasal 4 Bangladesh / RECYCLE COOLER | Cu-Ni 9:1 / C.S         | 10 / 43.8 (bar.g)              | Expand W/ 2 groove              | BANGLADESH   | 1    | 3 UNIT | 2017        |
| 2017-1  | DAESUNG INDUSTRIAL GASES CO.      | DASUNG INDUSTRIAL GASES CO. | HSC SUNGHEON NO.3 / AIR HEATER EXCHANGER      | SUS304 / SUS304         | 10 / 10 (bar.g)                | Expand W/ 2 groove              | KOREA        | 1    | 1 UNIT | 2017        |
| 2017-2  | FORMOSA PETROCHEMICAL CORP.       | KOBE STEEL, LTD.            | METHANE RICH GAS / TOW COOLER                 | SUS304 / SUS304         | 8 / 10 (bar.g)                 | Expand W/ 2 groove              | TAIWAN       | 1    | 2 UNIT | 2017        |
| 2017-3  | FORMOSA PETROCHEMICAL CORP.       | KOBE STEEL, LTD.            | METHANE RICH GAS / LO COOLER (DUPLEX)         | SUS304 / SUS304         | 10 / 10 (bar.g)                | Expand W/ 2 groove              | TAIWAN       | 1    | 3 UNIT | 2017        |
| 2017-4  | KOREA HYDRO & NUCLEAR POWER       | DOOSAN HEAVY INDUSTRIES     | SHINGORI #5.6 / GLAND STEAM CONDENSER         | SUS304 / C.S            | 0.69 / 42.7 (bar.g)            | Expand W/ 2 groove              | KOREA        | 1    | 2 UNIT | 2018 & 2019 |
| 2017-5  | DSME                              | HANWHA TECHWIN              | DSME H.2462 / OIL COOLER                      | Cu / C.S                | 10 / 6 (bar.g)                 | Expand W/ 2 groove              | KOREA        | 1    | 2 UNIT | 2017        |
| 2017-6  | NAVOI                             | KOBE STEEL, LTD.            | MHPSUZBEKENERGY NAVOI / Oil Cooler            | Copper / C.S            | 5 / 10 (bar.g)                 | Expand W/ 2 groove              | UZBEKISTAN   | 1    | 3 UNIT | 2017        |
| 2017-7  | ALE                               | KOBE STEEL, LTD.            | AL France / Oil Cooler                        | Copper / Naval Brass    | 8 / 10 (bar.g)                 | Expand W/ 2 groove              | FRANCE       | 1    | 1 UNIT | 2017        |
| 2017-8  | HYUNDAI HEAVY INDUSTRIES          | KOBE STEEL, LTD.            | HHIPARDUS / 1st Dis Cooler                    | C.S / C.S               | 5 / 20 (bar.g)                 | Expand W/Strength weld          | KOREA        | 1    | 1 UNIT | 2017        |
| 2017-9  | HYUNDAI HEAVY INDUSTRIES          | KOBE STEEL, LTD.            | HHIPARDUS / 2nd Dis Cooler                    | C.S / C.S               | 5 / 50 (bar.g)                 | Expand W/Strength weld          | KOREA        | 1    | 1 UNIT | 2017        |
| 2017-10 | HYUNDAI HEAVY INDUSTRIES          | KOBE STEEL, LTD.            | HHIPARDUS / 3rd Dis Cooler                    | C.S / C.S               | 5 / 105 (bar.g)                | Expand W/Strength weld          | KOREA        | 1    | 1 UNIT | 2017        |
| 2017-11 | KOLON INDUSTRIES                  | KOLON INDUSTRIES            | SP#4 / VENT CONDENSER                         | SUS304 / SUS304         | 1 / 7 (bar.g)                  | Expand W/2 groove Strength weld | KOREA        | 1    | 1 UNIT | 2017        |
| 2017-12 | KUWAIT NATIONAL PETROLEUM COMPANY | KOBE STEEL, LTD.            | HECKNPK / Oil Cooler                          | DUPLEX / DUPLEX         | 10 / 14 (bar.g)                | Expand W/2 groove Sealing Weld  | KUWAIT       | 4    | 4 UNIT | 2017        |
| 2017-13 | MAIDURU KIRAKU KOGYO              | ING CORP.                   | TONICHI KIKAI / EJECTOR CONDENSER             | C-S / C.S               | 1.35 / 5 (bar.g)               | Expand W/2 groove               | JAPAN        | 1    | 1 UNIT | 2018        |
| 2017-14 | ARAMCO                            | HANWHA TECHWIN              | EDRF / OIL COOLER                             | SUS316L / Copper        | 10 / 7.7 (bar.g)               | Expand W/ 2 groove              | SAUDI ARABIA | 1    | 3 UNIT | 2018        |
| 2017-15 | KUWAIT NATIONAL PETROLEUM COMPANY | HANWHA TECHWIN              | KIPIC AL-ZOUR LNG/AZRP / OIL COOLER           | Cu-Ni 7:3 / Cu-Ni 7:3   | 12 / 12 (bar.g)                | Expand W/ 2 groove              | KUWAIT       | 1    | 2 UNIT | 2018        |
| 2017-16 | SERBIA                            | ATLAS COPCO - AMERICA       | SERBIA (T.40001009) / LUBE OIL COOLER         | Cu-Ni 9:1 / C.S         | 10.3 / 10.3 (bar.g)            | Expand W/ 2 groove              | SERBIA       | 1    | 1 UNIT | 2018        |
| 2017-17 | KAZANORGSMITEZ                    | HANWHA TECHWIN              | RU KaznOrgSynthex #01 / OIL COOLER            | Copper / C.S            | 9 / 9 (bar.g)                  | Expand W/ 2 groove              | RUSSIA       | 1    | 1 UNIT | 2018        |
| 2017-18 | SAMSUNG HEAVY INDUSTRIES          | HANWHA TECHWIN              | SHIMozambique ENI / OIL COOLER                | Admiralty / Naval Brass | 10 / 6.5 (bar.g)               | Expand W/ 2 groove              | MOZAMBIQUE   | 1    | 3 UNIT | 2018        |
| 2017-19 | SHINPYEONGTAEK POWER Co.,Ltd.     | HANWHA TECHWIN              | SHINPYEONGTAEK / RECYCLE GAS COOLER           | C.S / C.S               | 10 / 50 (bar.g)                | Expand W/2 groove/seal weld     | KOREA        | 1    | 3 UNIT | 2018        |
| 2017-20 | LOTTE CHEMICAL                    | HYOSUNG / JAEWOO            | LCC H-NC3 / GLAND STEAM CONDENSER             | Al Brass / C.S          | 10 / 8 (bar.g)                 | Expand W/ 2 groove              | KOREA        | 1    | 1 UNIT | 2018        |
| 2017-21 | KOREA MIDLAND POWER Co.,Ltd.      | DOOSAN HEAVY INDUSTRIES     | BORYEONG#3 / OIL COOLER BUNDLE                | C.S / C.S               | 9 / 10 (bar.g)                 | Expand W/ 2 groove              | KOREA        | 2    | 2 UNIT | 2018        |
| 2017-22 | OLTIN YO'L GTL                    | KOBE STEEL, LTD.            | HEC/OLTIN YO'L GTL / OIL COOLER               | DUPLEX / DUPLEX         | 10 / 7 (bar.g)                 | Expand W/ 2 groove              | UZBEKISTAN   | 3    | 6 UNIT | 2018        |
| 2017-23 | OLTIN YO'L GTL                    | KOBE STEEL, LTD.            | HEC/OLTIN YO'L GTL / CW COOLER                | DUPLEX / DUPLEX         | 5 / 7 (bar.g)                  | Expand W/ 2 groove              | UZBEKISTAN   | 3    | 5 UNIT | 2018        |
| 2017-24 | SAMSUNG HEAVY INDUSTRIES          | HANWHA POWER SYSTEM         | SH-Mozambique ENI / Warm-up Heater            | SUS316L / SUS316L       | 18 / 10 (bar.g)                | Expand / Strength weld          | MOZAMBIQUE   | 1    | 1 UNIT | 2018        |
| 2017-25 | SAMSUNG HEAVY INDUSTRIES          | ATLAS COPCO - AMERICA       | SH-KOAS 2233, 2234 / Pre-Heater               | SUS316L / SUS316L       | 10 / 10 (bar.g)                | Expand / Strength weld          | KOREA        | 1    | 4 UNIT | 2018        |
| 2017-26 | FARABI                            | HANWHA POWER SYSTEM         | IRAN/FARABI / OIL COOLER                      | Cu-Ni 9:1 / C.S         | 9 / 11 (bar.g)                 | Expand W/ 2 groove              | IRAN         | 1    | 2 UNIT | 2018        |
| 2018-1  | CTCI                              | HANWHA POWER SYSTEM         | CTC/TRACK4A / OIL COOLER                      | Copper / C.S            | 10 / 7 (bar.g)                 | Heavy Expand                    | CHINA        | 1    | 3 UNIT | 2018        |
| 2018-2  | CTCI                              | HANWHA POWER SYSTEM         | CTC/TRACK4A / RECYCLE COOLER                  | C.S / C.S               | 10 / 6 (bar.g)                 | Expand / Strength weld          | CHINA        | 1    | 3 UNIT | 2018        |
| 2018-3  | KOREA HYDRO & NUCLEAR POWER       | DOOSAN HEAVY INDUSTRIES     | SHINGORI FWPT / LUBE OIL COOLER               | Al-Brass / Naval Brass  | 17.2 / 11.7 (bar.g)            | Expand W/ 2 groove              | KOREA        | 1    | 6 UNIT | 2018        |
| 2018-3  | INDIA OIL CORPORATION             | HANWHA POWER SYSTEM         | INDIA/EIL IOCL / OIL COOLER                   | Copper / Naval Brass    | 10 / 7.8 (bar.g)               | Expand W/ 2 groove              | INDIA        | 1    | 2 UNIT | 2018        |

**Experience List (for Shell & Tube Heat Exchanger)**

| JOB No  | END USER                     | CONTRACTOR              | PROJECT Name / ITEM Name                             | Tube / T.S Material               | Design pressure (Shell / Tube) | Tube Joint             | LOCATION   | ITEM | Q'TY   | DELIVERY |
|---------|------------------------------|-------------------------|--|-----------------------------------|--------------------------------|------------------------|------------|------|--------|----------|
| 2018-4  | SK E&C                       | DOOSAN HEAVY INDUSTRIES | GOSEONG THERMAL POWER PLANT / OIL COOLER             | Cu-Ni 9:1 / Naval Brass           | 18 / 10 (bar.g)                | Expand W/ 2 groove     | KOREA      | 1    | 4 UNIT | 2018     |
| 2018-5  | MORUPULE POWER STATION       | DOOSAN HEAVY INDUSTRIES | MORUPULE A / LUBE OIL COOLER                         | Cu-Ni 9:1 / C.S                   | 17.2 / 11.7 (bar.g)            | Expand W/ 2 groove     | BOTSWANA   | 1    | 2 UNIT | 2018     |
| 2018-6  | KOREA MIDLAND POWER          | DOOSAN HEAVY INDUSTRIES | SHINSECHON THERMAL POWER PLANT / STATOR WATER COOLER | Cu-Ni 9:1 / Naval Brass           | 10 / 9 (bar.g)                 | Expand W/ 2 groove     | KOREA      | 1    | 2 UNIT | 2018     |
| 2018-7  | SK E&C                       | DOOSAN HEAVY INDUSTRIES | GOSEONG THERMAL POWER PLANT / STATOR WATER COOLER    | Cu-Ni 9:1 / Naval Brass           | 9 / 10 (bar.g)                 | Expand W/ 2 groove     | KOREA      | 1    | 4 UNIT | 2018     |
| 2018-8  | DAEJU MACHINERY              | DAEJU MACHINERY         | R&D / LUBE OIL COOLER                                | Copper / Naval Brass              | 9 / 10 (bar.g)                 | Expand W/ 2 groove     | KOREA      | 1    | 1 UNIT | 2018     |
| 2018-9  | SHIN ETSU                    | KOBE STEEL, LTD.        | SSP-3 PLAQUEMINE CA PLANT / LUBE OIL COOLER          | Copper / C.S                      | 9 / 10 (bar.g)                 | Expand W/ 2 groove     | JAPAN      | 1    | 4 UNIT | 2018     |
| 2018-10 | TAKHIATASH POWER PLANT       | HANWHA POWER SYSTEM     | TAKHIATASH / RECYCLE COOLER                          | C.S / C.S                         | 9 / 41 (bar.g)                 | Expand W/ 2 groove     | UZBEKISTAN | 1    | 3 UNIT | 2018     |
| 2018-11 | TAKHIATASH POWER PLANT       | HANWHA POWER SYSTEM     | TAKHIATASH / OIL COOLER                              | Copper / Naval Brass              | 10 / 9 (bar.g)                 | Expand W/ 2 groove     | UZBEKISTAN | 1    | 4 UNIT | 2018     |
| 2018-12 | AMK                          | ATLAS COPCO - AMERICA   | ALE AMK O2 / OIL COOLER                              | Cu-Ni 9:1 / C.S                   | 10.3 / 10.3 (bar.g)            | Expand W/ 2 groove     | GERMANY    | 1    | 2 UNIT | 2018     |
| 2018-13 | THAILAND PETROCHEMICAL PLANT | KOBE STEEL, LTD.        | SECL PTTG(VG593) / OIL COOLER                        | Stainless Steel / Stainless Steel | 7.8 / 7.8 (bar.g)              | Expand W/ 2 groove     | THAILAND   | 2    | 3 UNIT | 2018     |
| 2018-14 | AMUR GAS PROCESSING PLANT    | HANWHA POWER SYSTEM     | TECNIMONT AGPP SINERGIA / OIL COOLER                 | Stainless Steel / Stainless Steel | 7.7 / 10 (bar.g)               | Expand W/ 2 groove     | RUSSIA     | 1    | 2 UNIT | 2018     |
| 2018-15 | AMUR GAS PROCESSING PLANT    | HANWHA POWER SYSTEM     | TECNIMONT AGPP SIAD / OIL COOLER                     | Stainless Steel / Stainless Steel | 10 / 10 (bar.g)                | Expand W/ 2 groove     | RUSSIA     | 1    | 3 UNIT | 2018     |
| 2018-16 | AIR LIQUIDE                  | KOBE STEEL, LTD.        | AIR LIQUIDE YEOSU / LUBE OIL COOLER                  | Cu-Ni 9:1 / Naval Brass           | 9.5 / 10.3 (bar.g)             | Expand W/ 2 groove     | JAPAN      | 1    | 1 UNIT | 2018     |
| 2018-17 | PETRONA                      | HANWHA POWER SYSTEM     | HEC MELAKA EURO5 / OIL COOLER                        | Stainless Steel / Stainless Steel | 12.2 / 11.7 (bar.g)            | Expand W/ 2 groove     | MALAYSIA   | 1    | 1 UNIT | 2018     |
| 2018-18 | JUPC                         | HANWHA POWER SYSTEM     | SECL JUPC EG-III / LUBE OIL COOLER                   | Stainless Steel / Stainless Steel | 10.3 / 10.3 (bar.g)            | Expand W/ 2 groove     | THAILAND   | 1    | 1 UNIT | 2018     |
| 2018-19 | PRAXAIR                      | HANWHA POWER SYSTEM     | PRAXAIR/PYEONGTAEK / LUBE OIL COOLER                 | Cu-Ni 9:1 / C.S                   | 10 / 10 (bar.g)                | Expand W/ 2 groove     | KOREA      | 1    | 1 UNIT | 2018     |
| 2018-20 | PRAXAIR                      | HANWHA POWER SYSTEM     | PRAXAIR/PYEONGTAEK / LUBE OIL COOLER                 | Cu-Ni 9:1 / C.S                   | 10 / 10 (bar.g)                | Expand W/ 2 groove     | KOREA      | 1    | 1 UNIT | 2018     |
| 2018-21 | KOREA HYDRO & NUCLEAR POWER  | DOOSAN HEAVY INDUSTRIES | SHINGORI 5 / STATOR WINDING WATER COOLER             | Cu-Ni 9:1 / Ni-AL-BRONZE          | 13.7 / 10.2 (bar.g)            | Expand W/ 2 groove     | KOREA      | 1    | 2 UNIT | 2018     |
| 2018-22 | KOREA HYDRO & NUCLEAR POWER  | DOOSAN HEAVY INDUSTRIES | SHINGORI 6 / STATOR WINDING WATER COOLER             | Cu-Ni 9:1 / Ni-AL-BRONZE          | 13.7 / 10.2 (bar.g)            | Expand W/ 2 groove     | KOREA      | 1    | 2 UNIT | 2018     |
| 2018-23 | LOTTE CHEMICAL               | AIR LIQUIDE-FRANCH      | LOTTE BP / CO EXPANDER COOLER                        | DUPLEX / DUPLEX                   | 36.7 / 28.3 (bar.g)            | Expand W/Strength weld | FRANCH     | 1    | 1 UNIT | 2019     |
| 2018-24 | YEOSU PLANT                  | AIR LIQUIDE-FRANCH      | YEOSU 4 / CO EXPANDER COOLER                         | DUPLEX / DUPLEX                   | 34 / 26.2 (bar.g)              | Expand W/Strength weld | KOREA      | 1    | 1 UNIT | 2019     |
| 2018-25 | YEOSU PLANT                  | HANWHA POWER SYSTEM     | ALK YEOSU Y4 NG BOOSTER / OIL COOLER                 | Cu-Ni 9:1 / Naval Brass           | 10.3 / 10.3 (bar.g)            | Expand W/ 2 groove     | KOREA      | 1    | 1 UNIT | 2019     |
| 2018-26 | KOREA HYDRO & NUCLEAR POWER  | DOOSAN HEAVY INDUSTRIES | SHINGORI 5 / LUBE OIL COOLER                         | Cu-Ni 9:1 / Ni-AL-BRONZE          | 8.8 / 12.2 (bar.g)             | Expand W/ 2 groove     | KOREA      | 1    | 2 UNIT | 2019     |
| 2018-27 | KOREA HYDRO & NUCLEAR POWER  | DOOSAN HEAVY INDUSTRIES | SHINGORI 6 / LUBE OIL COOLER                         | Cu-Ni 9:1 / Ni-AL-BRONZE          | 8.8 / 12.2 (bar.g)             | Expand W/ 2 groove     | KOREA      | 1    | 2 UNIT | 2019     |
| 2018-28 | PRAXAIR                      | HANWHA POWER SYSTEM     | PRAXAIR/YONGIN(EN3000) / OIL COOLER                  | Cu-Ni 9:1 / C.S                   | 10 / 10 (bar.g)                | Expand W/ 2 groove     | KOREA      | 1    | 1 UNIT | 2019     |
| 2018-29 | GCGV ASSET HOLDING, LLC      | KOBE STEEL, LTD.        | N224 CMI / OIL COOLER                                | DUPLEX / DUPLEX                   | 7.2 / 10.3 (bar.g)             | Expand W/ 2 groove     | U.S.A      | 1    | 2 UNIT | 2019     |
| 2018-30 | PRAXAIR                      | HANWHA POWER SYSTEM     | PRAXAIR/YONGIN / OIL COOLER                          | Cu-Ni 9:1 / C.S                   | 10 / 10 (bar.g)                | Expand W/ 2 groove     | KOREA      | 1    | 1 UNIT | 2019     |
| 2018-31 | CSPC                         | MISUZU                  | CSPC SHIPOPOD / LUBE OIL COOLER                      | Stainless Steel / Stainless Steel | 12 / 9.5 (bar.g)               | Expand W/ 2 groove     | CHINA      | 1    | 2 UNIT | 2019     |

### Experience List (for Lube Oil Cooler)

| JOB No  | END USER                             | CONTRACTOR               | PROJECT Name / ITEM Name                 | Tube / T.S Material     | Design pressure (Shell / Tube) | LOCATION     | ITEM | QTY    | DELIVERY |
|---------|--------------------------------------|--------------------------|--|-------------------------|--------------------------------|--------------|------|--------|----------|
| 2010-1  | KEPCO                                | DOOSAN                   | YECHON / L.O COOLER                      | Copper / C.S            | 4 / 18 (bar.g)                 | KOREA        | 1    | 2 UNIT | 2010     |
| 2011-1  | NIPPON STEEL CORPORATION             | NIPPON STEEL CORPORATION | OIL COOLER                               | C.S / C.S               | 5 / 5 (bar.g)                  | JAPAN        | 1    | 1 UNIT | 2011     |
| 2012-1  | ABEX                                 | ABEX                     | OIL COOLER                               | Cu-Ni 9:1 / C.S         | 7.5 / 10 (bar.g)               | JAPAN        | 1    | 1 UNIT | 2012     |
| 2012-2  | SKEC                                 | SKEC                     | OIL COOLER                               | Copper / C.S            | 9 / 7 (bar.g)                  | KOREA        | 1    | 2 UNIT | 2012     |
| 2012-3  | FUJITA IRON                          | FUJITA IRON              | OIL COOLER                               | Copper / Naval Brass    | 4 / 8 (bar.g)                  | JAPAN        | 2    | 1 UNIT | 2012     |
| 2012-4  | KOREA EAST-WEST POWER                | HANWHA TECHWIN           | ULSAN FGC / OIL COOLER (DUPLX)           | Admiralty / C.S         | 10 / 11 (bar.g)                | KOREA        | 1    | 3 UNIT | 2013     |
| 2012-5  | KOREA WESTERN POWER                  | HANWHA TECHWIN           | PYEONGTAEK FGC / OIL COOLER (DUPLX)      | Admiralty / C.S         | 10 / 10 (bar.g)                | KOREA        | 1    | 2 UNIT | 2013     |
| 2013-1  | SKEC                                 | HANWHA TECHWIN           | SK NEXLENE / OIL COOLER                  | Cu-Ni 9:1 / C.S         | 10 / 10 (bar.g)                | KOREA        | 1    | 3 UNIT | 2013     |
| 2013-2  | SK ENERGY                            | SK ENERGY                | NO.2 FCC REVAIMP / OIL COOLER            | Copper / C.S            | 9 / 7 (bar.g)                  | KOREA        | 1    | 2 UNIT | 2013     |
| 2013-3  | BOC TATA STEEL                       | HANWHA TECHWIN           | BOC TATA STEEL PJT / OIL COOLER          | Cu-Ni 9:1 / C.S         | 10 / 6 (bar.g)                 | INDIA        | 1    | 1 UNIT | 2013     |
| 2013-4  | MEDA                                 | HANWHA TECHWIN           | INDIA IREP / OIL COOLER (DUPLX)          | Admiralty / C.S         | 10 / 7.6 (bar.g)               | INDIA        | 1    | 4 UNIT | 2014     |
| 2013-5  | YPFB                                 | HANWHA TECHWIN           | BOLIVIA YPFB / OIL COOLER                | SUS304 / SUS304         | 10 / 8 (bar.g)                 | BOLIVIA      | 1    | 1 UNIT | 2014     |
| 2014-1  | ABU DHABI MARINE OPERATING COMPANY   | HANWHA TECHWIN           | SARB IA / OIL COOLER                     | SUS316 / SUS316         | 11 / 10 (bar.g)                | UAE          | 1    | 3 UNIT | 2014     |
| 2014-2  | SKEC                                 | HANWHA TECHWIN           | SK ULSAN CLX / OIL COOLER                | Cu-Ni 9:1 / C.S         | 10 / 10 (bar.g)                | KOREA        | 1    | 1 UNIT | 2014     |
| 2015-1  | DAEJU MACHINERY                      | DAEJU MACHINERY          | CAMERON / OIL COOLER                     | Copper / C.S            | 10 / 10 (bar.g)                | KOREA        | 1    | 1 UNIT | 2015     |
| 2015-2  | STATE COMPANY FOR OIL PROJECT (SCOP) | HANWHA TECHWIN           | KARBALA REFINERY FEED / OIL COOLER       | Admiralty / Naval Brass | 8 / 7 (bar.g)                  | IRAQ         | 1    | 3 UNIT | 2016     |
| 2015-3  | KUWAIT NATIONAL PETROLEUM COMPANY    | HANWHA TECHWIN           | KNPC MMA IA / DUAL OIL COOLER (DUPLX)    | Al-Brass / Cu-Ni 9:1    | 10 / 10 (bar.g)                | KUWAIT       | 1    | 4 UNIT | 2016     |
| 2015-4  | KOREA NATIONAL HEATING CORP.         | HANWHA TECHWIN           | HWASUNG DONGTAN2 FGC / OIL COOLER        | Copper / C.S            | 10 / 10 (bar.g)                | KOREA        | 1    | 3 UNIT | 2016     |
| 2015-5  | POSCO E&C                            | HYUNDAI HEAVY INDUSTRIES | CHUNCHEON CHP / OIL COOLER               | Admiralty / C.S         | 14 / 10 (bar.g)                | KOREA        | 1    | 4 UNIT | 2016     |
| 2016-1  | FORMOSA PLASTICS CORP.               | KOBE STEEL               | 15-00375-UJFORMOSA / OIL COOLER (DUPLX)  | Admiralty / Naval Brass | 7 / 7 (bar.g)                  | U.S.A        | 1    | 1 UNIT | 2016     |
| 2016-2  | S-OIL                                | HANWHA TECHWIN           | S-OIL OXIDATION / OIL COOLER (DUPLX)     | SUS304 / SUS304         | 10 / 8 (bar.g)                 | KOREA        | 1    | 2 UNIT | 2017     |
| 2016-3  | S-OIL                                | HANWHA TECHWIN           | S-OIL PACKAGE #1 / OIL COOLER            | SUS304 / SUS304         | 10 / 8 (bar.g)                 | KOREA        | 1    | 3 UNIT | 2017     |
| 2016-4  | S-OIL                                | HANWHA TECHWIN           | S-OIL PACKAGE #2 / OIL COOLER            | SUS304 / SUS304         | 10 / 8 (bar.g)                 | KOREA        | 1    | 1 UNIT | 2017     |
| 2016-5  | S-OIL                                | HANWHA TECHWIN           | S-OIL PACKAGE #3 / OIL COOLER            | SUS304 / SUS304         | 10 / 8 (bar.g)                 | KOREA        | 1    | 3 UNIT | 2017     |
| 2016-6  | MHPS                                 | MHPS                     | XIB-2 INDONESIA / OIL COOLER             | Al-Brass / C.S          | 10 / 7 (bar.g)                 | INDONESIA    | 1    | 1 UNIT | 2017     |
| 2017-1  | FORMOSA PETROCHEMICAL CORP.          | KOBE STEEL, LTD.         | METHANE RICH GAS / OIL COOLER (DUPLX)    | SUS304 / SUS304         | 10 / 10 bar.g                  | TAIWAN       | 1    | 3 UNIT | 2017     |
| 2017-2  | DSME                                 | HANWHA TECHWIN           | DSME H.2462 / OIL COOLER                 | Cu / C.S                | 10 / 6 (bar.g)                 | KOREA        | 1    | 2 UNIT | 2017     |
| 2017-3  | NAVOI                                | KOBE STEEL, LTD.         | MHPS/UZBEKENERGY NAVOI / OIL COOLER      | Copper / C.S            | 5 / 10 (bar.g)                 | UZBEKISTAN   | 1    | 3 UNIT | 2017     |
| 2017-4  | ALE                                  | KOBE STEEL, LTD.         | AL France / OIL COOLER                   | Copper / Naval Brass    | 8 / 10 (bar.g)                 | FRANCE       | 1    | 1 UNIT | 2017     |
| 2017-5  | KUWAIT NATIONAL PETROLEUM COMPANY    | KOBE STEEL, LTD.         | HEC/KNPC / OIL COOLER                    | DUPLEX / DUPLEX         | 10 / 14 (bar.g)                | KUWAIT       | 4    | 4 UNIT | 2017     |
| 2017-6  | ARAMCO                               | HANWHA TECHWIN           | EDRF / OIL COOLER                        | SUS316L / Copper        | 10 / 7.7 (bar.g)               | SAUDI ARABIA | 1    | 3 UNIT | 2018     |
| 2017-7  | KUWAIT NATIONAL PETROLEUM COMPANY    | HANWHA TECHWIN           | KNPC/AZRP / OIL COOLER                   | Cu-Ni 7:3 / Cu-Ni 7:3   | 12 / 12 (bar.g)                | KUWAIT       | 1    | 2 UNIT | 2018     |
| 2017-8  | SERBIA                               | ATLAS COPCO - AMERICA    | SERVIA (T.40001009) / LUBE OIL COOLER    | Cu-Ni 9:1 / C.S         | 10.3 / 10.3 (bar.g)            | SERBIA       | 1    | 1 UNIT | 2018     |
| 2017-9  | KAZANORGSIINTEZ                      | HANWHA TECHWIN           | RU KazOrgSynthez #01 / OIL COOLER        | Copper / C.S            | 10 / 6.5 (bar.g)               | RUSSIA       | 1    | 1 UNIT | 2018     |
| 2017-10 | SHI INTERNATIONAL                    | HANWHA TECHWIN           | SHIMozambique ENI / OIL COOLER           | Admiralty / Naval Brass | 9 / 9 (bar.g)                  | MOZAMBIQUE   | 1    | 3 UNIT | 2018     |
| 2017-11 | KOREA MIDLAND POWER Co.,Ltd.         | DOOSAN HEAVY INDUSTRIES  | BORYEONG#3 / OIL COOLER BUNDLE           | C.S / C.S               | 9 / 10 (bar.g)                 | KOREA        | 2    | 2 UNIT | 2018     |
| 2017-12 | OL.TIN YO'L GTL                      | KOBE STEEL, LTD.         | HEC/OL.TIN YO'L GTL / OIL COOLER (DUPLX) | DUPLEX / DUPLEX         | 10 / 7 (bar.g)                 | UZBEKISTAN   | 3    | 6 UNIT | 2018     |
| 2018-1  | INDIA OIL CORPORATION                | HANWHA TECHWIN           | INDIA/EIL IOCL / OIL COOLER              | Copper / Naval Brass    | 10 / 7.8 (bar.g)               | INDIA        | 1    | 2 UNIT | 2018     |

### Experience List (for Lube Oil Cooler)

| JOB No  | END USER                     | CONTRACTOR              | PROJECT Name / ITEM Name                    | Tube / T.S Material               | Design pressure (Shell / Tube) | LOCATION   | ITEM | Q'TY   | DELIVERY |
|---------|------------------------------|-------------------------|---|-----------------------------------|--------------------------------|------------|------|--------|----------|
| 2018-2  | SK E&C                       | DOOSAN HEAVY INDUSTRIES | GOSEONG TPP / BFPT OIL COOLER (DUPLX)       | Cu-Ni 9:1 / Naval Brass           | 18 / 10 (bar.g)                | KOREA      | 1    | 4 UNIT | 2018     |
| 2018-3  | MORUPULE POWER STATION       | DOOSAN HEAVY INDUSTRIES | MORUPULE A / LUBE OIL COOLER                | Cu-Ni 9:1 / C.S                   | 17.2 / 11.7 (bar.g)            | BOTSWANA   | 1    | 2 UNIT | 2018     |
| 2018-4  | DAEJU MACHINERY              | DAEJU MACHINERY         | R&D / LUBE OIL COOLER                       | Copper / Naval Brass              | 9 / 10 (bar.g)                 | KOREA      | 1    | 1 UNIT | 2018     |
| 2018-5  | SHIN ETSU                    | KOBE STEEL, LTD.        | SSP-3 PLAQUEMINE CA PLANT / LUBE OIL COOLER | Ni-AL-Bronze / Naval Brass        | 9 / 10 (bar.g)                 | JAPAN      | 1    | 4 UNIT | 2018     |
| 2018-6  | TAKHIATASH POWER PLANT       | HANWHA TECHWIN          | TAKHIATASH / OIL COOLER                     | Copper / Naval Brass              | 10 / 9 (bar.g)                 | UZBEKISTAN | 1    | 4 UNIT | 2018     |
| 2018-7  | AMK                          | ATLAS COPCO - AMERICA   | ALE AMK O2 / OIL COOLER                     | Cu-Ni 9:1 / C.S                   | 10.3 / 10.3 (bar.g)            | GERMANY    | 1    | 2 UNIT | 2018     |
| 2018-8  | THAILAND PETROCHEMICAL PLANT | KOBE STEEL, LTD.        | SECL_PTTGC(VG593) / OIL COOLER              | Stainless Steel / Stainless Steel | 7.8 / 7.8 (bar.g)              | THAILAND   | 2    | 3 UNIT | 2018     |
| 2018-9  | AMUR GAS PROCESSING PLANT    | HANWHA POWER SYSTEM     | TECHMONT AGPP SINERGIA / OIL COOLER         | Stainless Steel / Stainless Steel | 7.7 / 10 (bar.g)               | RUSSIA     | 1    | 2 UNIT | 2018     |
| 2018-10 | AMUR GAS PROCESSING PLANT    | HANWHA POWER SYSTEM     | TECHMONT AGPP SIAD / OIL COOLER             | Stainless Steel / Stainless Steel | 10 / 10 (bar.g)                | RUSSIA     | 1    | 3 UNIT | 2018     |
| 2018-11 | AIR LIQUIDE                  | KOBE STEEL, LTD.        | AIR LIQUIDE YEOSU / LUBE OIL COOLER         | Cu-Ni 9:1 / Naval Brass           | 9.5 / 10.3 (bar.g)             | JAPAN      | 1    | 1 UNIT | 2018     |
| 2018-12 | PETRONA                      | HANWHA POWER SYSTEM     | HEC MELAKA EURO5 / OIL COOLER               | Stainless Steel / Stainless Steel | 12.2 / 11.7 (bar.g)            | MALAYSIA   | 1    | 1 UNIT | 2018     |
| 2018-13 | JUPC                         | HANWHA POWER SYSTEM     | SECL JUPC EG-III / LUBE OIL COOLER          | Stainless Steel / Stainless Steel | 10.3 / 10.3 (bar.g)            | THAILAND   | 1    | 1 UNIT | 2018     |
| 2018-14 | PRAXAIR                      | HANWHA POWER SYSTEM     | PRAXAIR/PYEONGTAEK / LUBE OIL COOLER        | Cu-Ni 9:1 / C.S                   | 10 / 10 (bar.g)                | KOREA      | 1    | 1 UNIT | 2018     |
| 2018-15 | PRAXAIR                      | HANWHA POWER SYSTEM     | PRAXAIR/PYEONGTAEK / LUBE OIL COOLER        | Cu-Ni 9:1 / C.S                   | 10 / 10 (bar.g)                | KOREA      | 1    | 1 UNIT | 2018     |
| 2018-16 | YEOSU PLANT                  | HANWHA POWER SYSTEM     | ALK YEOSU Y4 NG BOOSTER / OIL COOLER        | Cu-Ni 9:1 / Naval Brass           | 10.3 / 10.3 (bar.g)            | KOREA      | 1    | 1 UNIT | 2019     |
| 2018-17 | KOREA HYDRO & NUCLEAR POWER  | DOOSAN HEAVY INDUSTRIES | SHINGORI 5 / LUBE OIL COOLER                | Cu-Ni 9:1 / NI-AL-BRONZE          | 8.8 / 12.2 (bar.g)             | KOREA      | 1    | 2 UNIT | 2019     |
| 2018-18 | KOREA HYDRO & NUCLEAR POWER  | DOOSAN HEAVY INDUSTRIES | SHINGORI 6 / LUBE OIL COOLER                | Cu-Ni 9:1 / NI-AL-BRONZE          | 8.8 / 12.2 (bar.g)             | KOREA      | 1    | 2 UNIT | 2019     |
| 2018-19 | PRAXAIR                      | HANWHA POWER SYSTEM     | PRAXAIR/YONGIN(N3000) / OIL COOLER          | Cu-Ni 9:1 / C.S                   | 10 / 10 (bar.g)                | KOREA      | 1    | 4 UNIT | 2019     |
| 2018-20 | GCGV ASSET HOLDING, LLC      | KOBE STEEL, LTD.        | N224 CMI / OIL COOLER                       | DUPLEX / DUPLEX                   | 7.2 / 10.3 (bar.g)             | U.S.A      | 1    | 1 UNIT | 2019     |
| 2018-21 | PRAXAIR                      | HANWHA POWER SYSTEM     | PRAXAIR/YONGIN / OIL COOLER                 | Cu-Ni 9:1 / C.S                   | 10 / 10 (bar.g)                | KOREA      | 1    | 1 UNIT | 2019     |
| 2018-22 | CSPC                         | MISUZU                  | CSPC SMP/POD / LUBE OIL COOLER              | Stainless Steel / Stainless Steel | 12 / 9.5 (bar.g)               | CHINA      | 1    | 2 UNIT | 2019     |

**Experience List (for Gland Steam Condenser)**

| JOB No | END USER                    | CONTRACTOR              | PROJECT Name / ITEM Name   | Tube / T.S Material | Design pressure (Shell / Tube) | Tube Joint         | LOCATION | ITEM | Q'TY   | DELIVERY |
|--------|-----------------------------|-------------------------|--|---------------------|--------------------------------|--------------------|----------|------|--------|----------|
| 2017-1 | KOREA HYDRO & NUCLEAR POWER | DOOSAN HEAVY INDUSTRIES | SHINGORI #5 / GLAND STEAM CONDENSER (FAN BLOWER EXHAUST TYPE)        | SUS304 / C.S        | 0.69 / 42.7 bar.g              | Expand W/ 2 groove | KOREA    | 1    | 1 UNIT | 2019     |
| 2017-2 | KOREA HYDRO & NUCLEAR POWER | DOOSAN HEAVY INDUSTRIES | SHINGORI #6 / GLAND STEAM CONDENSER (FAN BLOWER EXHAUST TYPE)        | SUS304 / C.S        | 0.69 / 42.7 bar.g              | Expand W/ 2 groove | KOREA    | 1    | 1 UNIT | 2019     |
| 2017-3 | LOTTE CHEMICAL              | HYOSUNG / JAEWOO        | LCC HMC3 / GLAND STEAM CONDENSER (EJECTOR EXHAUST TYPE)              | AL-BRASS / C.S      | 10 / 8 bar.g                   | Expand W/ 2 groove | KOREA    | 1    | 1 UNIT | 2019     |
| 2017-4 | KOREA MIDLAND POWER         | DOOSAN HEAVY INDUSTRIES | BORYEONG #3 / GLAND STEAM CONDENSER (FAN BLOWER EXHAUST TYPE)        | SUS304 / C.S        | 0.35 / 17 bar.g                | Expand W/ 2 groove | KOREA    | 1    | 1 UNIT | 2018     |
| 2017-5 | KOREA MIDLAND POWER         | DOOSAN HEAVY INDUSTRIES | SHIN SEOCHUN / GLAND STEAM CONDENSER (FAN BLOWER EXHAUST TYPE)       | SUS304 / C.S        | 0.35 / 17 bar.g                | Expand W/ 2 groove | KOREA    | 1    | 1 UNIT | 2018     |
| 2017-6 | SK E&C                      | DOOSAN HEAVY INDUSTRIES | GOSUNG / GLAND STEAM CONDENSER (FAN BLOWER EXHAUST TYPE)             | SUS304 / C.S        | 0.35 / 17 bar.g                | Expand W/ 2 groove | KOREA    | 1    | 1 UNIT | 2018     |
| 2018-1 | CAIRO WEST POWER PLANT      | DOOSAN HEAVY INDUSTRIES | CAIRO WEST / GLAND STEAM CONDENSER (FAN BLOWER EXHAUST TYPE)         | SUS304 / C.S        | 0.35 / 45 bar.g                | Expand W/ 2 groove | EGYPT    | 1    | 1 UNIT | 2018     |
| 2018-2 | ASSUIT POWER PLANT          | DOOSAN HEAVY INDUSTRIES | ASSUIT POWER PLANT / GLAND STEAM CONDENSER (FAN BLOWER EXHAUST TYPE) | SUS304 / C.S        | 0.35 / 46 bar.g                | Expand W/ 2 groove | EGYPT    | 1    | 1 UNIT | 2018     |
|        |                             |                         |  |                     |                                |                    |          |      |        |          |
|        |                             |                         |  |                     |                                |                    |          |      |        |          |
|        |                             |                         |  |                     |                                |                    |          |      |        |          |
|        |                             |                         |  |                     |                                |                    |          |      |        |          |
|        |                             |                         |  |                     |                                |                    |          |      |        |          |
|        |                             |                         |  |                     |                                |                    |          |      |        |          |
|        |                             |                         |  |                     |                                |                    |          |      |        |          |
|        |                             |                         |  |                     |                                |                    |          |      |        |          |

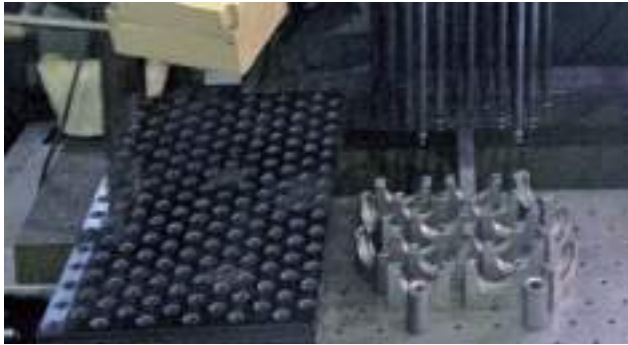


## Experience List (for Steam Air Heater)

| JOB No | END USER                   | CONTRACTOR                 | PROJECT Name / ITEM Name                               | LOCATION | ITEM | Q'TY     | DELIVERY |
|--------|----------------------------|----------------------------|--|----------|------|----------|----------|
| 2011-3 | KOLON INDUSTRIES           | KOLON INDUSTRIES           | KYUNSAN FACTORY / STEAM AIR HEATER                     | KOREA    | 1    | 5 UNIT   | 2011     |
| 2011-5 | KOLON INDUSTRIES           | KOLON INDUSTRIES           | FBK-3 TD P1 / STEAM AIR HEATER                         | KOREA    | 1    | 1 UNIT   | 2011     |
| 2011-6 | JAPAN STEEL WORKS          | JAPAN STEEL WORKS          | MA108341, 110228 / STEAM AIR HEATER                    | JAPAN    | 2    | 120 UNIT | 2011     |
|        |                            |                            |  |          |      |          |          |
| 2012-1 | KOLON INDUSTRIES           | KOLON INDUSTRIES           | FBK-1 / STEAM AIR HEATER                               | KOREA    | 1    | 1 UNIT   | 2012     |
| 2012-2 | JAPAN STEEL WORKS          | JAPAN STEEL WORKS          | MA108341, 110228 / STEAM AIR HEATER                    | JAPAN    | 2    | 28 UNIT  | 2012     |
| 2012-3 | HITACHI PLANT TECHNOLOGIES | HITACHI PLANT TECHNOLOGIES | KP YEP-IV / STEAM AIR HEATER                           | KOREA    | 1    | 1 UNIT   | 2013     |
|        |                            |                            |  |          |      |          |          |
| 2013-1 | KOLON INDUSTRIES           | KOLON INDUSTRIES           | KYUNSAN FACTORY / STEAM AIR HEATER                     | KOREA    | 1    | 5 UNIT   | 2013     |
| 2013-2 | KOLON INDUSTRIES           | KOLON INDUSTRIES           | FB-1,2,3 TD / STEAM AIR HEATER                         | KOREA    | 3    | 1 UNIT   | 2013     |
| 2013-3 | JAPAN STEEL WORKS          | JAPAN STEEL WORKS          | MA138111/113, 28344/46, 120347 / STEAM AIR HEATER      | JAPAN    | 5    | 160 UNIT | 2013, 14 |
| 2013-4 | HITACHI PLANT TECHNOLOGIES | HITACHI PLANT TECHNOLOGIES | KP YEP-V / STEAM AIR HEATER                            | KOREA    | 1    | 1 UNIT   | 2014     |
|        |                            |                            |  |          |      |          |          |
| 2014-1 | JAPAN STEEL WORKS          | JAPAN STEEL WORKS          | MA148195/96, 138282, 138279, 138280 / STEAM AIR HEATER | JAPAN    | 5    | 147 UNIT | 2014, 15 |
|        |                            |                            |  |          |      |          |          |
| 2015-1 | JAPAN STEEL WORKS          | JAPAN STEEL WORKS          | MA148210/11, PA9613260010 / STEAM AIR HEATER           | JAPAN    | 5    | 76 UNIT  | 2015     |
|        |                            |                            |  |          |      |          |          |
| 2016-1 | KOREA SOUTH-EAST POWER     | DOOSAN HEAVY INDUSTRIES    | YEONG DONG THERMAL PP / HOT WATER AIR HEATER           | KOREA    | 1    | 1 UNIT   | 2016     |
|        |                            |                            |  |          |      |          |          |
| 2017-1 | KOLON INDUSTRIES           | KOLON INDUSTRIES           | FBK-3,4 / STEAM AIR HEATER                             | KOREA    | 1    | 2 UNIT   | 2017     |
| 2017-2 | KOLON INDUSTRIES           | KOLON INDUSTRIES           | FBK-1,2 / STEAM AIR HEATER                             | KOREA    | 1    | 2 UNIT   | 2017     |
| 2017-3 | KOLON INDUSTRIES           | KOLON INDUSTRIES           | ST-2 POLYMERIZATION ANTI STICKER / AIR COOLER          | KOREA    | 1    | 1 SET    | 2017     |
| 2017-4 | KOLON INDUSTRIES           | KOLON INDUSTRIES           | FBK-1 / STEAM AIR HEATER                               | KOREA    | 1    | 2 UNIT   | 2017     |

### Experience List (for Pressure Vessel)

| JOB No  | END USER                             | CONTRACTOR                    | PROJECT Name / ITEM Name                            | Material        | Design pressure | LOCATION   | ITEM | QTY     | DELIVERY |
|---------|--------------------------------------|-------------------------------|---|-----------------|-----------------|------------|------|---------|----------|
| 2010-2  | KOLON INDUSTRIES                     | KOLON INDUSTRIES              | PRESSURE VESSEL & DEW HEATER                        | SUS304          | 10 bar.g        | KOREA      | 1    | 4 UNIT  | 2010     |
| 2010-4  | KOLON INDUSTRIES                     | KOLON INDUSTRIES              | PRESSURE VESSEL                                     | SUS304          | 10 bar.g        | KOREA      | 1    | 1 UNIT  | 2010     |
| 2010-7  | EBARA                                | MISUZU                        | DRAIN POT (ASME U-STAMP)                            | SUS304          | 30 bar.g        | JAPAN      | 1    | 2 UNIT  | 2011     |
| 2015-1  | NINGBO FORTUNE P.D.H                 | MISUZU Industrial Corporation | NINGBO FORTUNE P.D.H / BOOSTER CHAMBER & GAS FILTER | SUS304          | 37 bar.g        | CHINA      | 6    | 6 UNIT  | 2015     |
| 2015-2  | PARKER TECHNO                        | PARKER TECHNO                 | FX349 / CONTROL OIL FILTER                          | SUS304          | 10 bar.g        | JAPAN      | 1    | 1 UNIT  | 2015     |
| 2015-3  | KUWAIT NATIONAL PETROLEUM COMPANY    | MISUZU Industrial Corporation | KNPC CLEAN FUEL / DRAIN POT                         | SUS316L         | 114 bar.g       | KUWAIT     | 1    | 3 UNIT  | 2015     |
| 2015-4  | PETROLEU MEXICANOS                   | MISUZU Industrial Corporation | SALAMANCA ULSD / DRAIN POT                          | SUS316          | 110 bar.g       | MEXICO     | 1    | 1 UNIT  | 2015     |
| 2015-5  | PARKER TECHNO                        | PARKER TECHNO                 | KOREA / OIL FILTER                                  | Carbon Steel    | 10 bar.g        | KOREA      | 1    | 1 UNIT  | 2015     |
| 2015-6  | KUWAIT NATIONAL PETROLEUM COMPANY    | MISUZU Industrial Corporation | KNPC CLEAN FUEL / N2 GAS FILTER                     | SUS316L         | 10 bar.g        | KUWAIT     | 1    | 6 UNIT  | 2015     |
| 2015-7  | PETROLEU MEXICANOS                   | MISUZU Industrial Corporation | SALAMANCA ULSD / N2 GAS FILTER                      | SUS316          | 13 bar.g        | MEXICO     | 1    | 2 UNIT  | 2015     |
| 2015-8  | HYUNDAI CHEMICAL CO., LTD            | MISUZU Industrial Corporation | HDC MX LLIPJT / DRAIN POT                           | SUS316          | 30 bar.g        | KUWAIT     | 1    | 8 UNIT  | 2015     |
| 2015-9  | KUWAIT NATIONAL PETROLEUM COMPANY    | MISUZU Industrial Corporation | KNPC CLEAN FUEL / N2 GAS FILTER                     | SUS316L         | 44 bar.g        | KUWAIT     | 1    | 2 UNIT  | 2015     |
| 2015-10 | KUWAIT NATIONAL PETROLEUM COMPANY    | MISUZU Industrial Corporation | KNPC CLEAN FUEL / DRAIN POT, BOOSTER POT            | SUS316L         | 44 bar.g        | KUWAIT     | 2    | 2 UNIT  | 2016     |
| 2016-1  | FORMOSA PLASTICS CORP.               | KOBE STEEL, LTD.              | FORMOSA / LO OVERHEAD TANK                          | SUS304          | 7 bar.g         | TAIWAN     | 1    | 1 UNIT  | 2016     |
| 2016-2  | CCD(SINGAPORE) PTE.                  | TSURUMI PUMP                  | CCD SINGAPORE / SEPARATOR TANK                      | SUS316L         | 8 bar.g         | SINGAPORE  | 2    | 1 UNIT  | 2016     |
| 2016-3  | KOLON INDUSTRIES                     | KOLON INDUSTRIES              | BX POLY #14 / MIST CATCHER                          | SUS304          | 10 bar.g        | KOREA      | 1    | 1 UNIT  | 2016     |
| 2016-4  | PARKER TECHNO                        | PARKER TECHNO                 | KOREA / DUPLEX OIL FILTER                           | Carbon Steel    | 10 bar.g        | KOREA      | 1    | 1 UNIT  | 2016     |
| 2016-5  | YANVAN COG                           | MISUZU Industrial Corporation | YANVAN COG / GAS FILTER & DRAIN POT (ASME STAMP)    | SUS304          | 20 bar.g        | CHINA      | 6    | 7 UNIT  | 2016     |
| 2016-6  | KUWAIT NATIONAL PETROLEUM COMPANY    | MISUZU Industrial Corporation | SINOPEC KNPC / DRAIN POT & BOOSTER POT (ASME STAMP) | SUS316L         | 10.3 bar.g      | KUWAIT     | 2    | 2 UNIT  | 2016     |
| 2016-7  | D.S.M.E                              | KOBE STEEL, LTD.              | BOG BOOSTING COMP. / PRESSURE VESSEL                | Carbon Steel    | 167 bar.g       | KOREA      | 8    | 1 UNIT  | 2017     |
| 2017-1  | HYUNDAI HEAVY INDUSTRIES             | KOBE STEEL, LTD.              | HHIPARDUS / PRESSURE VESSEL                         | Carbon Steel    | 105 bar.g       | KOREA      | 6    | 6 UNIT  | 2017     |
| 2017-2  | OL TIN YO'L GTL                      | KOBE STEEL, LTD.              | UZBEKISTAN GAS TO LIQUID / PRESSURE VESSEL          | C.S / SUS316    | 10 bar.g        | UZBEKISTAN | 11   | 24 UNIT | 2017     |
| 2017-3  | POSCO                                | MISUZU Industrial Corporation | COG BOOSTER FOR POSCO POHANG STEEL WORKS / OIL TANK | Carbon Steel    | 5.8 bar.g       | KOREA      | 1    | 1 UNIT  | 2018     |
| 2017-4  | OL TIN YO'L GTL                      | KOBE STEEL, LTD.              | UZBEKISTAN GAS TO LIQUID / DRAIN POT                | Carbon Steel    | 2 bar.g         | UZBEKISTAN | 6    | 12 UNIT | 2018     |
| 2018-1  | ORIENTAL ENERGY NEW MATERIAL CO.,LTD | MISUZU Industrial Corporation | U-3980-2 / GAS FILTER                               | Stainless Steel | 34 bar.g        | CHINA      | 6    | 12 UNIT | 2018     |
| 2018-2  | ORIENTAL ENERGY NEW MATERIAL CO.,LTD | MISUZU Industrial Corporation | U-3980-2 / DRAIN POT                                | Stainless Steel | 34 bar.g        | CHINA      | 3    | 3 UNIT  | 2018     |
| 2018-3  | KOGAS                                | ATLAS COPCO - AMERICA         | KOGAS / DAMPER & BLOCK                              | Stainless Steel | 14 bar.g        | KOREA      | 1    | 4 UNIT  | 2018     |
| 2018-4  | THAILAND PETROCHEMICAL PLANT         | KOBE STEEL, LTD.              | SECL PTTGC(VG593) / OIL HEAD TANK                   | Stainless Steel | 7.8 bar.g       | THAILAND   | 2    | 3 UNIT  | 2019     |
| 2018-5  | GCG ASSET HOLDING, LLC               | KOBE STEEL, LTD.              | N224 CMI / RUNDOWN TANK                             | Stainless Steel | 7.2 bar.g       | U.S.A      | 2    | 3 UNIT  | 2019     |





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