

www.dascohex.com

DASCO

DYNAMIC & SPECIAL COMPANY

DASCO

Heat Exchanger for PLANT Division

There is a future in **DASCO**.

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

COMPANY PROFILE (2 0 1 5)

Heat Solution

for Your Good Partner

Thermal design and Detail design for **DASCO**

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OUTLINE OF COMPANY

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*Beyond the Simple
Customer's Satisfaction*

GREETING MESSAGE

DYNAMIC & SPECIAL COMPANY

DASCO

Heat Exchanger for PLANT Division

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, Electric heater and Heating & Cooling Coil as well as good-quality products and competitive prices

Dasco co., Ltd.
CEO Kim, Yong hwi

1. OUTLINE OF COMPANY

- 1) NAME : DASCO Co., Ltd
- 2) BOARD OF DIRECTOR
CHAIRMAN : YONG-HWI, KIM
ADMINISTRATION DIRECTOR : GEUN-YOUNG, LEE
- 3) FOUNDED : OCT, 1995
- 4) CORRESPONDENT BANKS : KOOKMIN BANK, KOREA
- 5) NUMBER OF EMPLOYEES : 86 PERSONS
 - FINANTIAL & MANAGING STAFF : 9
 - SALES ENGINEER : 4 (FOR MARINE)
 - DESIGN ENGINEER : 12 (INC. HEAT SOLUTION)
 - Q.A ENGINEER : 4 • PRODUCTION : 57
- 6) CAPITAL : ₩ 363,270,000 (US\$ 330,000)
- 7) SALES AMOUNT OF YEAR 2014 : US\$ 12,700,000
- 8) ADDRESS

Head office and factory

92, Gimhae-daero 916 beon-gil, Hallim-myeon, Gimhae-si, Gyeongsangnam-do, Korea

T. 82.55.346.4865 F. 82.55.346.4894

Date of establishment : May 2000 Land area : 5,315 m² Factory Building area : 1,578 m²



Heat Solution 610 High-end BLDG, 84, Gwangjang-ro, Sasang-gu, Busan, Korea
for Your Good Partner T. 82.51.715.9981 E-mail : heatsolution@chol.com

Factory 2

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

Land area : 4,950 m² Factory Building area : 1,650 m²



Factory 3

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

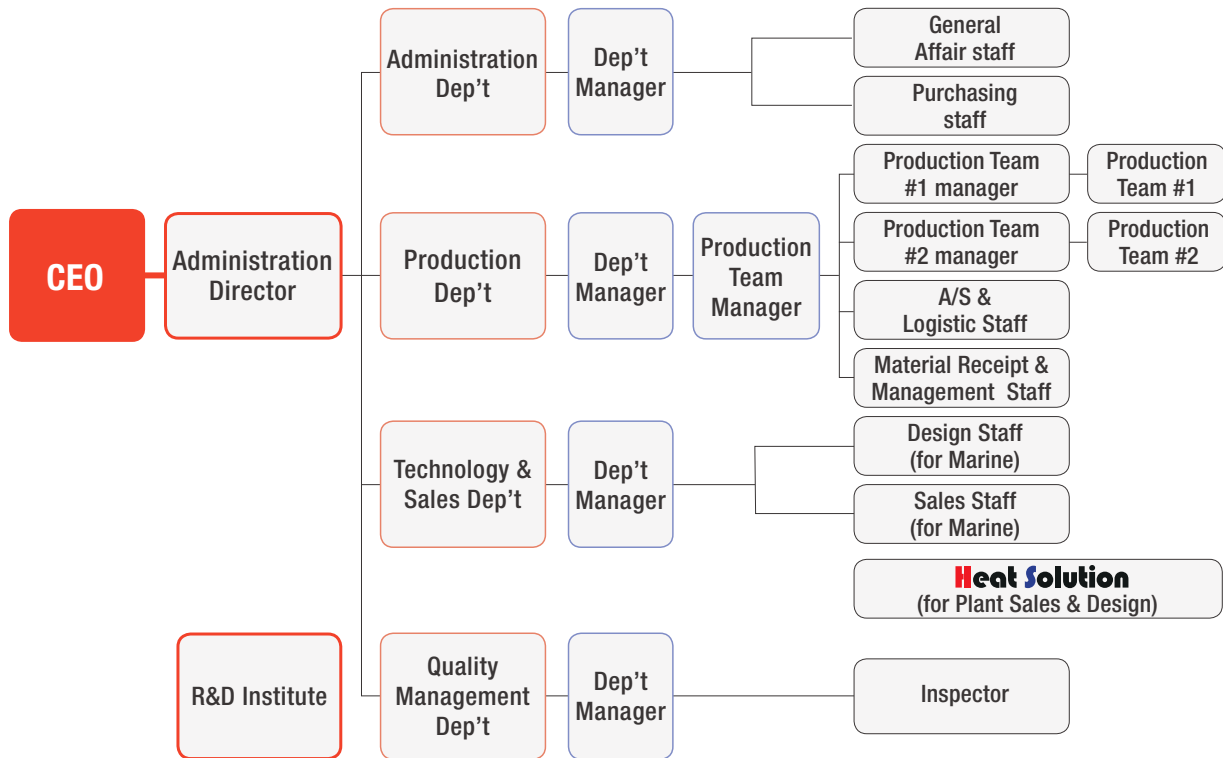
Date of establishment : Mar 2014

Land area : 19,800 m²

Factory Building area : 1,864 m²



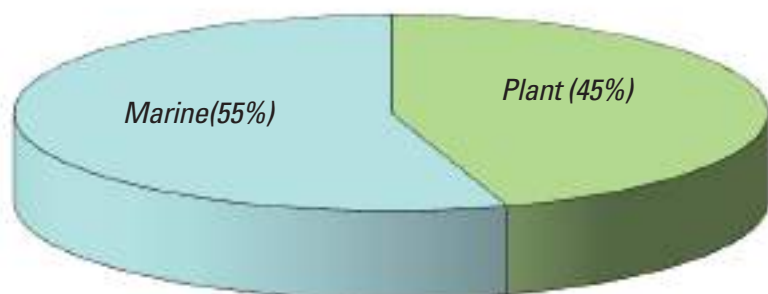
2. ORGANIZATION CHART



3. TURN-OVER (YEARLY SALES)



[Sales Breakdown]



4. MAIN CUSTOMER

1) FOREIGN CUSTOMER

- AIR LIQUIDE
- HITACHI
- KOBE STEEL
- IHI CORPORATION
- ATLAS COPCO
- MITSUBISHI INDUSTRIAL CORP.
- PARKER TECHNO



2) DOMESTIC CUSTOMER

- DOOSAN HEAVY INDUSTRIES
- DOOSAN ENGINE
- HYUNDAI HEAVY INDUSTRIES
- SAMSUNG TECHWIN
- DAEJU MACHINERY CO., LTD
- STX HEAVY INDUSTRIES
- DSEC
- HI AIR KOREA / CONDITIONING
- KOLON INDUSTRIES



5. MAIN PRODUCTS

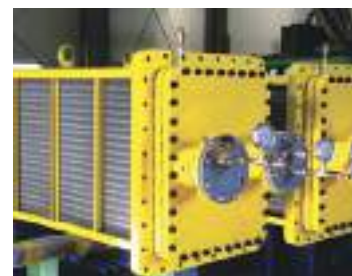
(Heat Exchanger for Plant Div.)

- 1) H₂ / AIR COOLER FOR GENERATOR**
- 2) INTER/AFTER COOLER FOR COMPRESSOR**
- 3) SHELL & TUBE TYPE HEAT EXCHANGER**
- 4) PRESSURE VESSEL (OIL / GAS FILTER, ETC)**
- 5) GLAND STEAM CONDENSER FOR STEAM TURBINE**
- 6) OIL COOLER FOR API 614**
- 7) FUEL GAS HEATER FOR GAS TURBINE**
- 8) TCA FILTER FOR GAS TURBINE**
- 9) GT AIR HEATER FOR GAS TURBINE**
- 10) STEAM AIR HEATER FOR BOILER**

1) 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 & 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**



2) 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 & 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



3) 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 & etc.)



4) 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 JAPAN KHK, 2nd Pressure Vessel code
CE MARK (PED Cer't)
World Wide Local law (DOSH, MOL, TRCU for Russia & etc.)



6. 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 ²)
Dec. 2014	Registered vender of STX, SungDong, Doosan Engine (Marine area)
Apr. 2015	Invested capital to plant engineering professional company, Heat Solution

7. MAIN FACIALITY

No.	Equipment	Specification	Q'ty
1	Crane	2.5 Ton, 5 ton, 15 ton	7
2	TIG Welding Machine	500A	10
3	CO2 Welding Machine	600A	12
4	Plate Fin Press Machine	80 Ton	3
5	CNC Pipe Buring Machine	Ø100	2
6	CNC Lathe Machine	SKT-200	1
7	Lathe Machine	D-480	3
8	Turning Machine	TNL-80V-2	1
9	Radial Machine	RE-1000	2
10	Machining Center	MT-650	1
11	Machining Center	MT-750	1
12	Machining Center	MT-900	1
13	Vibration Tester	Lion / VA-12	1
14	Milling Machine	2호기	3
15	Hydro. Test Unit	80 kg/cm ²	2
16	Plate Fin & Tube Multi-Expander	231 Hole, etc	3

Plate Fin Press Machine



Air/C, H2/C Bundle Ass'y



Plate Fin & Tube Multi Expander



8. PRODUCTION CAPACITY & HANDLING MATERIALS

1) PRODUCTION CAPACITY FOR GIM-HAE FACTORY

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

2) PRODUCTION CAPACITY FOR CHANG-NYEONG FACTORY

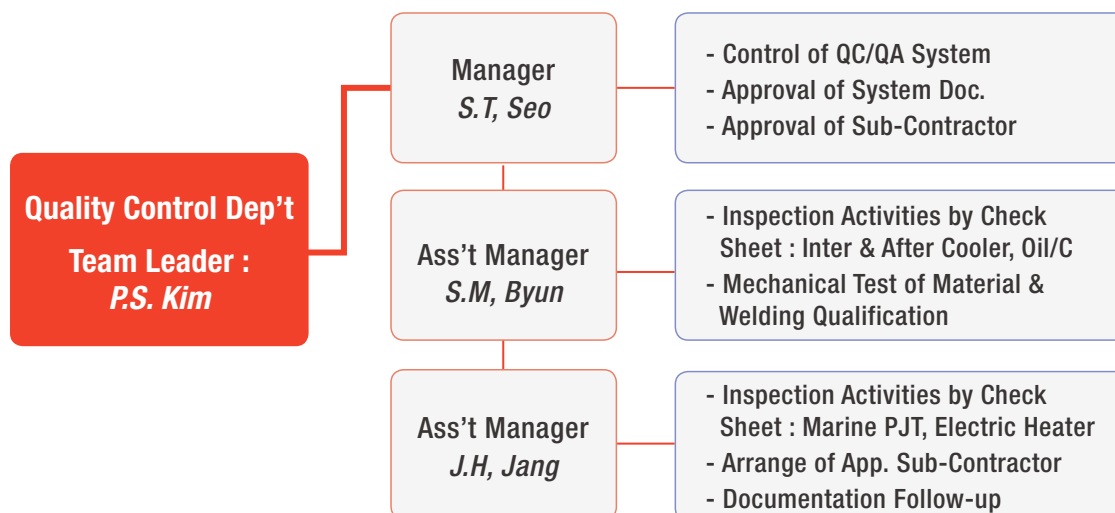
- MAX. WEIGHT : 30TON
- MAX. SIZE (L x W x H) : 20 x 4 x 4 (m)

3) MAJOR HANDLING MATERIALS

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

9. QUALITY MANAGEMENT

1) ORGANIZATION OF QC DEP'T



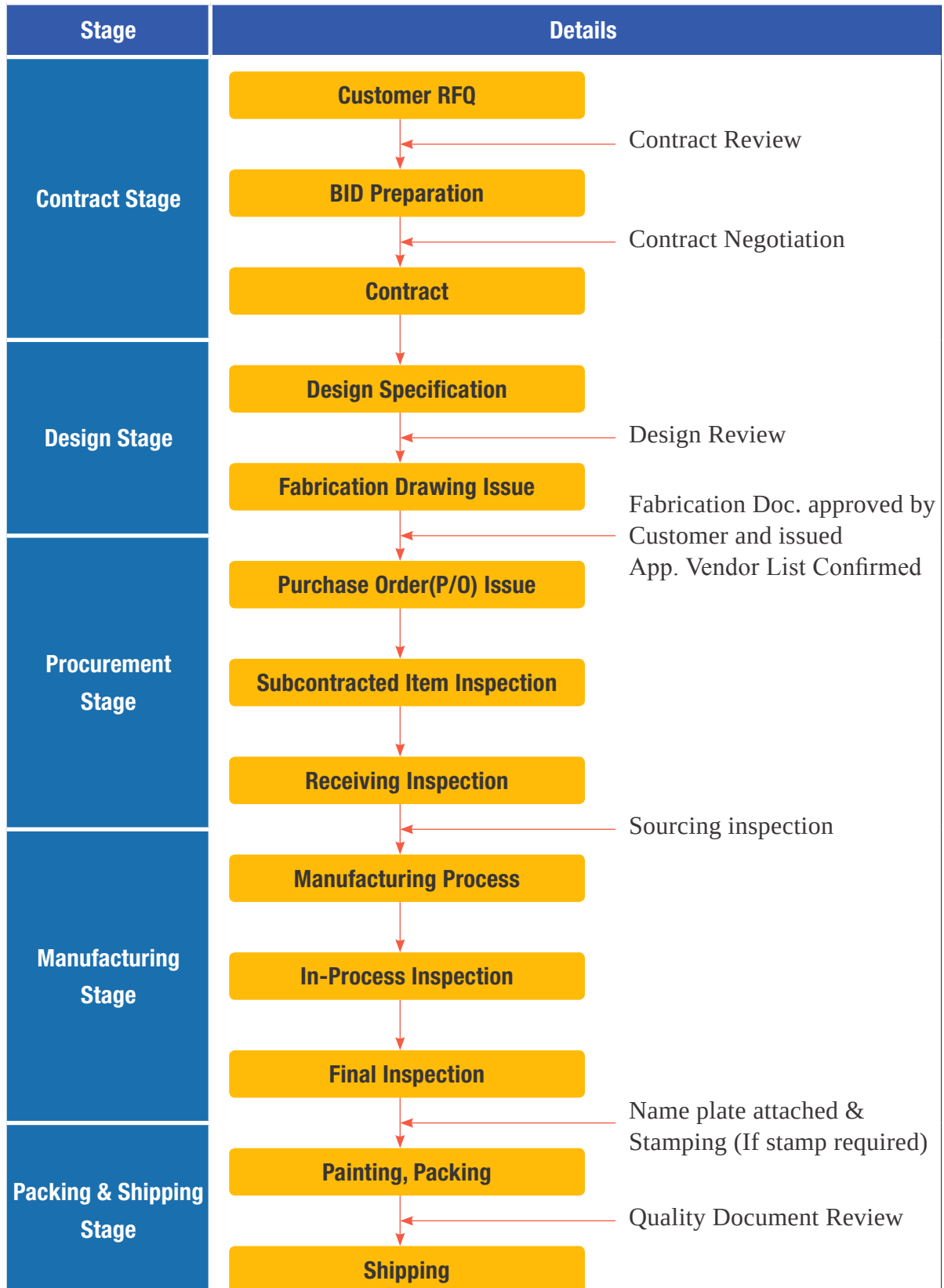
2) QUALIFIED WELDER LIST BY ASME

Welder I.D No.	Welder Name	Welding Process			
		GTAW	GTAW	SAW	SMAW
DW-01	Lee, Su-Gil	0	0		
DW-03	Woo, Ji-Su	0	0		
DW-05	Lim, Yuk-Taek	0	0		
DW-06	Lee, Jung-Ho	0	0		
DW-010	Choi, Sung-Young	0	0		
Total Welder	5 Persons	5	5	PLAN(2016)	OUT-SOURCE

3) CERTIFIED NDE PERSONNEL LIST

No.	Name	Method	Lv.	Exp. Date	Cert. No.
1	Hwang, Jung-Lae	RT, UT, MT, PT	III	Oct. 25, 2017	ASNT Level III 171001
2	Park, Jung-Kyeong	RT, UT, MT, PT	II	Aug. 29, 2018	EN - 82410
3	Moon, Sung-Bae	RT, UT, MT, PT	II	Nov. 4, 2018	EN- 81759
4	Seok, Won Jae	RT, UT, MT, PT	II	Feb. 27, 2017	EN - 66074
5	Ji, Je-Hoon	RT, UT, MT, PT	II	Dec. 26, 2017	120502121

4) QUALITY PLAN OF THE MANUFACTURING PROCESS



10. STATUS OF QUALITY CERTIFICATION

Organization	Certificate Item	Expiry Date	Number
ABS Q.E	ISO 9001	2015.08.30	QMS-1404
ASME	U-STAMP	2015.12.10	#39135
ASME	S-STAMP	2015.12.10	#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, Algerian rule, etc)

Class	Certificate Item	Expiry Date
A.B.S	Approval of Welding Procedure	2015.08.30
B.V	Approval of Welding Procedure	
D.N.V	Approval of Manufacturer (Class 2)	2016.12.31
L.R	Fusion Welded Pressure Vessels (Class 2.2)	2012.07.24
G.L	Approval for Welding	
K.R	Welder Performance Qualification	



CERTIFICATE OF REGISTRATION

Certificate No : QMS - 1404

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

Scope of registration : The design, development and production of heat exchanger

Standard : KS Q ISO 9001:2009 / ISO 9001:2008

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 : 2014-07-15 **Certificate Expiry** : 2017-07-14
(Registration on 2008-07-15)

Reissue : Re-certificate

Issue date : 2014-06-16

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



The American Society of Mechanical Engineers



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.
#800, Byeongdong-Ri
Hallim-Myeon
Gimhae-Si, Gyeongnam 621-873
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 14, 2012
EXPIRES: December 10, 2015
CERTIFICATE NUMBER: 39,135

Vice President, Conformity Assessment

Director, Conformity Assessment





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.
#800, Byeongdong-Ri
Hallim-Myeon
Gimhae-Si, Gyeongnam 621-873
Republic of Korea**

SCOPE:

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

AUTHORIZED: November 14, 2012

EXPIRES: December 10, 2015

CERTIFICATE NUMBER: 39,134

Vice President, Conformity Assessment

Director, Conformity Assessment





SGS

Date issued: July 31, 2006

CERTIFICATE No.: STS-06-0155 S C LV

CERTIFICATE OF LVD COMPLIANCE

Product submitted: FIN HEATER
Model L-series
Rated Input: 230 V~, 50/60 Hz, 100-4500 W, Class II

Applicant (Manufacturer): DASCO Co., Ltd.
#800 Byeongdong-ni, Hallim-myeon, Gimheui-si, Gyeongsangnam-do, Korea

Testing Laboratory: SGS Testing Korea Co., Ltd. Electrical Safety Laboratory

Test Report Number(s): STS-06-0155 S R LV

Specification Requested: EN 60335-1:2002

Conclusion

Based on a review of the test report, this apparatus meets the requirements of the above standards and hence fulfills the requirements of Directive 73/23/EEC as amended by Directive 93/68/EEC.

This certificate is only valid for the equipment submitted and configuration described, in conjunction with the test data detailed above. It does not permit the use of the SGS PRODUCT CERTIFICATION MARK.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

Windsor Kim
Manager



Arthur Kwon
General Manager

Copyright of this certificate is owned by SGS Testing Korea and may not be reproduced other than in full and with the prior approval of the General Manager of SGS Testing Korea.

SGS Testing Korea CO., LTD. 19-35, Sanbo-dong, Gampu-gu, Kyonggi-do, Korea 435-041
T +82 (0)1-426-5700 F +82 (0)31-427-2570 Web site : www.sgstesting.co.kr

Member of SGS Group (Société Générale de Surveillance)

F690501

This document is issued, on the Client's behalf, by the Company under the General Conditions of Service printed elsewhere. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction clauses defined therein.

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SGSPAPER
03694834



Certificate



Appendix Rev. 01 to Certificate
WF 1010147 HH dated 2010-03-29

Messrs. **Dasco Co., Ltd.**
#800, Byeongdong-ri, Hallim-myeon
Gimhae-si, Gyeongsangnam-do
Korea, Republic of

has been approved for the procedures as specified in the supplements for the following range of application:

Welding of Pressure Vessels

Range of Production/
Components:
(Entry only in case of special
approvals)

Heat Exchangers

Regulations also
considered:

Supervisor: **Mr. Yeong-geun Kim**
Certificate No.: ---
issued by: ---

issued:

Deputy Supervisor: **Mr. Byeong-ho Choi**
Certificate No.: ---
issued by: ---

issued:

Part of the approval is our letter of approval ref. no. 009722-13/GS1 of 2013-02-05.

Hamburg, 2013-02-05

Approval is valid until: 2015-12-31

Germanischer Lloyd

Marcus von Busch

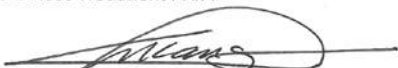
Norbert Worm

Continuing the period of validity of the extension of approval and the duty to notify GL of any circumstances change under which approval was granted, the statements given in the Rules for Auditing are to be observed. Additional requirements, if any, in the covering letter are to be observed. The respective introduction of Germanischer Lloyd's Classification Rules is applicable. The introduction of the General Terms and Conditions of Germanischer Lloyd is applicable (see Chap. I - Ship Technology, Part I - Classification and Services, Germanischer Lloyd SE, Registered Office Hamburg, HRB 15942).



MISCELLANEOUS SURVEY REPORT

Page 1 of 2

SURVEY OF:				
WELDING PROCEDURE APPROVAL				
Report No.: BK1000340-A	Date: 24 July 2008	Port: Busan, Korea		
Vessel's Name: -	Class No./MD/CID: -			
Manufacturer: DASCO Co., Ltd.	Mfg.No.: -			
Purchaser/Builder/S.Y.: -	PO No./Hull No.: -			
Location: Kimhae, Korea	Rating (WP/HP/KW): -			
Serial Number: -	Weight: -	Test Pressure: -		
Material Test Report No. or Mill Sheets Verified: -	Service Use: -			
Drawing No. and Date Approved or for Multiple Drawing, Plan Approval Office: ABS Busan Task No. : 340826 13 May 2008/ABS Busan Eng'g Office		ABS Markings N/A		
THIS IS TO CERTIFY that the undersigned Surveyor to this Bureau attended for the above survey and reports as follows: The following welding procedure approval tests were carried out in accordance with approved welding specifications and the applicable Rules, examined, tested as required and considered satisfactory. <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> WPS No. : GT-1.1-101 PQR No. : QGT-1.1-101 Welding Process: GTAW Welding Position: 1G Type of Joint: Single Vee Groove Thickness Range Qualified: 3 ~ 14.2 mmT Diameter of Pipe Qualified: 165.2mmφ - Unlimited Shielding Gas: Ar Base Metal: Pipe, SPPS38(KS D3562), 150A Filler Metal: AWS A5.18, ER70S-G (Hyundai, ST-50G), 2.4mmφ Backing Materials : N/A Preheat Temp. : Min. 10°C Interpass Temp. : Max. 250°C Post Weld Heat Treatment : N/A </td> <td style="vertical-align: top; width: 50%;"> WPS No. : GT-FC-1.1-101 PQR No. : QGT-FC-1.1-101 Welding Process: GTAW + FCAW Welding Position: 1G Type of Joint: Single Vee Groove Thickness Range Qualified: 3 ~ 32mmT Diameter of Pipe Qualified: N/A Shielding Gas: Ar or CO2 Base Metal: Plate, SS400(JIS G3101), 16 mmT Filler Metal: AWS A5.18, ER70S-G, AWS A5.20, E71T1-1C (Hyundai, ST-50G, 2.4 mmφ, SF-71, 1.2mmφ) Backing Materials : N/A Preheat Temp. : 10°C Interpass Temp. : Max. 250°C Post Weld Heat Treatment : N/A </td> </tr> </table>  Chang-Hae Kang, Surveyor, American Bureau of Shipping _____ Surveyor, American Bureau of Shipping			WPS No. : GT-1.1-101 PQR No. : QGT-1.1-101 Welding Process: GTAW Welding Position: 1G Type of Joint: Single Vee Groove Thickness Range Qualified: 3 ~ 14.2 mmT Diameter of Pipe Qualified: 165.2mmφ - Unlimited Shielding Gas: Ar Base Metal: Pipe, SPPS38(KS D3562), 150A Filler Metal: AWS A5.18, ER70S-G (Hyundai, ST-50G), 2.4mmφ Backing Materials : N/A Preheat Temp. : Min. 10°C Interpass Temp. : Max. 250°C Post Weld Heat Treatment : N/A	WPS No. : GT-FC-1.1-101 PQR No. : QGT-FC-1.1-101 Welding Process: GTAW + FCAW Welding Position: 1G Type of Joint: Single Vee Groove Thickness Range Qualified: 3 ~ 32mmT Diameter of Pipe Qualified: N/A Shielding Gas: Ar or CO2 Base Metal: Plate, SS400(JIS G3101), 16 mmT Filler Metal: AWS A5.18, ER70S-G, AWS A5.20, E71T1-1C (Hyundai, ST-50G, 2.4 mmφ, SF-71, 1.2mmφ) Backing Materials : N/A Preheat Temp. : 10°C Interpass Temp. : Max. 250°C Post Weld Heat Treatment : N/A
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(If additional space is required, use other side of this form)

NOTE: This Report evidences compliance with one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. This Report is a representation only that the vessel, structure, item of material, equipment, machinery or any other item covered by this Report has met one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping as of the date of issue. Parties are advised to review the Rules for the scope and conditions of classification and to review the survey records for a fuller description of any restrictions or limitations on the vessel's service or surveys. The validity, applicability and interpretation of this Report is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this Report or in any notation made in contemplation of this Report shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied.

AB 113

Revision 9



**BUREAU
VERITAS**
MARINE DIVISION
DIRECTION MARINE

International Register for Classification of Ships – Established 1828
Régistre International de Classification de Navires – Fondé en 1828

Approval Cert. No. **PSN/WP/08/046/R0**

APPROVAL OF WELDING PROCEDURE

Issued within the scope of the Bureau Veritas Marine Branch General Conditions

Messrs : **DASCO CO., LTD.**
#800, Byeongdong-ri, Hallim-myeon, Gimhae, Kyeongsang, 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 procedures 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-1.1-101 (Rev. 0)**
- Supporting PQR No. : QGT-FC-1.1-101 (Rev. 0)
- Material grade : JIS G3101 SS400 or Equivalent
- Thickness range : 8.0 mm to 32.0 mm
- Min. preheat temp. : 10 °C
- Max. interpass temp. : Max. 250 °C
- Current type : DCSP(GTAW) + DCRP(FCAW)
- Joint type : Single V Groove (without backing)
- Position : PA(Flat)
- Welding technique : String & Weaving
- Classification of welding consumable: AWS A5.18 ER70S-G(GTAW) & AWS A5.20 E71T-1C(FCAW)
- Brand name: ST-50G(GTAW) Ø 2.4 mm & SF-71(FCAW) Ø 1.2 mm (HYUNDAI WELDING)

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

- **WPS No.** : **GT-1.1-101 (Rev. 0)**
- Supporting PQR No. : QGT-1.1-101 (Rev. 0)
- Material grade : JIS G3454 STPG370 or Equivalent
- Thickness range : 3.0 mm to 14.2 mm
- Pipe diameter : 82.6 mm to Unlimited
- Min. preheat temp. : 10 °C
- Max. interpass temp. : Max. 250 °C
- Current type : DCSP
- Joint type : Single V Groove (without backing)
- Position : PA(Flat)
- Welding technique : String & Weaving
- Classification of welding consumable: AWS A5.18 ER70S-G
- Brand name: ST-50G Ø 2.4 mm (HYUNDAI WELDING)



The latest published Rules of the Bureau Veritas Marine Division and the General Conditions therein are applicable.
La dernière édition des Règlements de la Direction Marine du Bureau Veritas ainsi que les Conditions Générales qui y figurent sont applicables.

Tout personnel qui n'est pas partie au contrat aux termes duquel ce document est délivré ne peut en engager la responsabilité au Bureau Veritas ou les intervenants ou commissions qui procèdent à leur délivrance ainsi que pour les erreurs de jugement, fautes ou négligences commises par le personnel de la Société ou par ses agents dans l'établissement de ce document et dans l'insertion des interventions qu'il comporte.

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BV Mod. Ad ME 465 c



DET NORSKE VERITAS

APPROVAL OF MANUFACTURER CERTIFICATE

CERTIFICATE NO. T-1553

This is to certify that the Manufacturer
DASCO Co., Ltd. (Kimhae factory)
Gyeongsangnam-do, Republic of Korea

is approved for the
Manufacture of Welded Pressure Vessels, Class II

The approval is granted on condition that
Det Norske Veritas' Rules for Classification of Ships

are complied with in all respect

Havik, 2012-12-12
for Det Norske Veritas AS

Giorgio Sala
Acting Head of Section



DNV local office:
Changwon

This Certificate is valid until
2016-12-31

Elen Katrine Kjerfveien
Surveyor

This Certificate is subject to terms and conditions inserted. Any significant change in production facilities and methods may render this Certificate invalid. If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

DET NORSKE VERITAS AS, Veritasveien 1, NO-1322 Havik, Norway. Tel.: +47 67 57 99 99, Fax: +47 67 57 99 11, Org No. NO 943 748 931 MVA www.dnv.com
Form No.: AM 140 1a Issue: October 2009 Page 1 of 2



Certificate No : MD00/3638/0002/PC

DASCO. CO.,LTD
#800 Beyongdong-ri
Hallim-myeon, Gimhae-si
Gyeongnam,
Korea

has been approved as a manufacturer in accordance with the requirements of Lloyd's Register for :-

Fusion Welded Pressure Vessels Class 2.2

This approval is subject to compliance with the Lloyd's Register Rules for the Classification of Ships. The full details of the processes, products and grades to which this approval applies are given in the Appendix of this certificate.

Lloyd's Register is to be notified of any change that may affect the validity of this Certificate.

This Certificate is issued to the above manufacturer and is valid until the date given below.

Valid Until : 23 July 2015
Date of Issue : 01 August 2012

Jaspal Nirankari
Principal Specialist to Lloyd's Register EMEA
A member of the Lloyd's Register Group

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Lloyd's Register Limited is an incorporated private company and its company number registered in England and Wales is 00000000. Registered office: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

**Lloyd's
Register**



KOREAN REGISTER OF SHIPPING

List of Welder Performance Qualification Certificate



Company		DASCO CO., LTD.		Code : Standard		the Rules of Korean Register of Shipping	
Address		광안남도 임해시 현영면 영곡리 800					
No.	Name of Welder		Weld test detail		Range of approval		Appr. Date
		Thickness(mm)		Position	Type of Welder(1)	Welding Process	Base Material(2)
		Plate	Pipe				
1	JH-SOO WOO	Thic.: 7.1		1G-P	Manual / WD, WO, TW	GTAW	Grade 2
	761225-1809411	O.D.: 155.2					Grade 2
2	DONG-WOO KANG	Thic.: 7.1		1G-P	Manual / WD, WO, TW	GTAW	Grade 2
	780723-1808825	O.D.: 155.2					Grade 2
3	SU-KIL LEE	Thic.: 7.1		1G-P	Manual / WD, WO, TW	GTAW	Grade 2
	820403-1918917	O.D.: 155.2					Grade 2
4	JH-SOO WOO	Thic.: 16.0	O.D.: 16.0	1G	Manual / WD, WO, TW	FCAW, GTAW	Grade 2
	761225-1809411						Grade 2
5	DONG-WOO KANG	Thic.: 16.0	O.D.: 16.0	1G	Manual / WD, WO, TW	FCAW, GTAW	Grade 2
	780723-1808825						Grade 2
6	SU-KIL LEE	Thic.: 16.0	O.D.: 16.0	1G	Manual / WD, WO, TW	FCAW, GTAW	Grade 2
	820403-1918917						Grade 2
(Remark) (1) WD: Welder, WO: Welding Operator, TW: Tack Welder							
(Remark) (2) CLA: Carbon & Low Alloy Steel, SS: Stainless Steel, AA: Aluminum Alloy, CA: Copper Alloy							

This is to certify that the above welder is qualified in accordance with the requirements of the Rules of Korea Register of Shipping and applicable standards.

Issued Office : CHANGWON

1. This certificate is to be retained by the company.

The employer of qualified welders is responsible for training them and controlling their qualification.

2. Where the welder has not engaged in a relevant welding work for a period of six months

and above, the qualification obtained is automatically withdrawn

- If you wish to make any inquiry for list of welder certification, please contact us as follows.

CHANGWON : Tel. 055/262-3331~2 Fax 055/262-3330


 Surveyor
 Kim Jae-joo

11. TEST & MEASURING QUIPMENT

검 사 설 비 목 록 I.M.T.E CONTROL LIST								Doc. No. : DSCP-711-01(0) Date : 2015. 05. 28 Rev. No. 0 Page No. : 1 of 6 Section : A (Pressure gauge)	
NO.	POS.	CONT. NO	EQURP. NAME	SIZE / MODEL	SERIAL NO.	MFG.	DATE OF CALIBRATION	DUE CYCLE	Page
순서	위치	관리번호	계 측 기 명	규 격	고유번호	제작회사	교 정 일 자	교정주기	
1	창고	DSCPR-A-01	Dial Pressure Gauge	0 ~ 0.6 Mpa	P11053002 외 6EA	WIKA	2015.05.28	12 Months	-
2	창고	DSCPR-A-02	Dial Pressure Gauge	0 ~ 1.0 Mpa	P12082401 외 15EA	WIKA	2015.05.28	12 Months	-
3	창고	DSCPR-A-03	Dial Pressure Gauge	0 ~ 1.6 Mpa(4")	P12082403 외 4EA	WIKA	2015.05.28	12 Months	-
4	창고	DSCPR-A-04	Dial Pressure Gauge	0 ~ 2.5 Mpa	P12082402 외 35EA	WIKA	2015.05.28	12 Months	-
5	창고	DSCPR-A-06	Dial Pressure Gauge	0 ~ 4 Mpa	P12121701 외 30EA	WIKI	2015.05.28	12 Months	-
5	창고	DSCPR-A-06	Dial Pressure Gauge	0 ~ 6 Mpa	P12121702 외 10EA	WIKI	2015.05.28	12 Months	-
6	창고	DSCPR-A-07	Dial Pressure Gauge	0 ~ 10 Mpa	P12121702 외 5EA	WIKI	2015.05.28	12 Months	-

WRITTEN BY : 장 지 호
 QM Dept

APPROVED BY : 김 필 성
 QM Dept Manager

검 사 설 비 목 록

I.M.T.E CONTROL LIST

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NO. 순서	POS. 위치	CONT. NO 관리번호	EQURP. NAME 계 측 기 명	SIZE / MODEL 규 격	SERIAL NO. 고유번호	MFG. 제작회사	DATE OF CALIBRATION 교 정 일 자	DUE CYCLE 교정주기	Page
1	B동	DSCE-B-24	Cylinder/bore gauges	10 ~ 18.5 mm	882779	MITUTOYO	2014.09.25	12 Months	B-1~3
2	B동	DSCE-B-2	Cylinder/bore gauges	10 ~ 18.5 mm	866128	MITUTOYO	2015.05.28	12 Months	B-4~6
						Cylinder Gauge TOTAL Q'TY : 2 EA			
3	office	DSCE-B-3	Vernier Calipers	0 ~ 300 mm	10150220	MITUTOYO	2015.05.28	12 Months	B-7~8
4	B동	DSCE-B-4	Vernier Calipers	0 ~ 300 mm	9049456	MITUTOYO	2015.05.28	12 Months	B-9~10
5	B동	DSCE-B-5	Vernier Calipers	0 ~ 300 mm	60523466	MITUTOYO	2015.05.28	12 Months	B-11~12
6	B동	DSCE-B-6	Vernier Calipers	0 ~ 600 mm	L09060901	YOON JEON	2015.05.28	12 Months	B-13~14
						Vernier Calipers TOTAL Q'TY : 4 EA			
7	B동	DSCE-B-7	Digital Calipers	0 ~ 150 mm	10061248	MITUTOYO	2015.05.28	12 Months	B-15~16
						Digital Calipers TOTAL Q'TY : 1 EA			
8	B동	DSCE-B-8	Outside Micrometer	0 ~ 25 mm	L070402501	MITUTOYO	2015.05.28	12 Months	B-17~18
9	B동	DSCE-B-9	Outside Micrometer	25 ~ 50 mm	0935195	MITUTOYO	2015.05.28	12 Months	B-19~20
10	B동	DSCE-B-10	Outside Micrometer	25 ~ 50 mm	L08041401	MITUTOYO	2015.05.28	12 Months	B-21~22
						Outside Micrometer TOTAL Q'TY : 3 EA			
11	B동	DSCE-B-11	Outside Micrometer (Tube Type)	0 ~ 25 mm	76190506	MITUTOYO	2015.05.28	12 Months	B-23~24
						Outside Micrometer (Tube Type) TOTAL Q'TY : 1 EA			

검 사 설 비 목 록

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12	B동	DSCE-B-24	Depth Gauge	0 ~ 150 mm	91101384	MITUTOYO	2015.05.28	12 Months	B-25~26
						Depth Gauge TOTAL Q'TY : 1 EA			
13	B동	DSCE-B-13	Squares	1000X550	L11072501	RSK	2015.05.28	12 Months	B-27~28
						Squares TOTAL Q'TY : 1 EA			
14	B동	DSCE-B-14	Height Gauge	0 ~ 600 mm	051287	MITUTOYO	2015.05.28	12 Months	B-29~30
						Height Gauge TOTAL Q'TY : 1 EA			
15	OFFICE	DSCE-B-15	Coatong Thickness Tester	0 ~ 1500 μ m	GA0604	ELCOMETER	2015.05.28	12 Months	B-31~32
						Coating Thickness Tester TOTAL Q'TY : 1 EA			
16	OFFICE	DSCE-B-16	Welding Gauge	0 ~ 40 mm	#1	Shin Wa	2015.05.28	12 Months	B-33~34
						Welding Gauge TOTAL Q'TY : 1 EA			
17	용접봉 창고	DSCE-B-17	Digital temperature	-	TH000234	-	2015.05.28	12 Months	B-35~36
18	자재 창고	DSCE-B-18	Digital temperature	-	TH000233	DAEKWANG	2015.05.28	12 Months	B-37~38
						Digital temperature TOTAL Q'TY : 2 EA			

검 사 설 비 목 록

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NO. 순서	POS. 위치	CONT. NO 관리번호	EQUIP. NAME 계 측 기 명	SIZE / MODEL 규 격	SERIAL NO. 고유번호	MFG. 제작회사	DATE OF CALIBRATION 교 정 일 자	DUE CYCLE 교정주기	Page
19	B동	DSCE-B-19	TEST INDICATOR	0 ~ 40 mm	GZK939	MITUTOYO	2015.05.28	12 Months	B-39~40
						TEST INDICATOR TOTAL Q'TY : 1 EA			
20	OFFICE	DSCE-B-20	Ultrasonic Th'k Gauge	0.75 ~ 300mm	L09102701	Mitech	2015.05.28	12 Months	B-41~42
						Thickness Gauge, Ultra TOTAL Q'TY : 1 EA			
21	B동	DSCE-B-21	Standard tape rules	0 ~ 7.5 m	L12060401	Komelon	2015.05.28	24 Months	B-43~44
						Standard tape rules TOTAL Q'TY : 1 EA			
22	B동	DSCE-B-22	Vibro meter	-	00700223	RION	2015.05.28	12 Months	B-45~46
						Vibrometer TOTAL Q'TY : 1 EA			
23	office	DSCE-B-27	INFRARED THERMOMETER	-18°C ~ 1350°C	00705485	SMART SENSOR	2015.05.28	12 Months	B-47~48
						INFRARED THERMOMETER TOTAL Q'TY : 1 EA			
24	B동	DSCE-B-24	Squares	600 X 500 mm	A12060701	-	2015.05.28	12 Months	B-49~50
						Squares TOTAL Q'TY : 1 EA			

검 사 설 비 목 록

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Date : 2015. 05. 28

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NO.	POS.	CONT. NO	EQURP. NAME	SIZE / MODEL	SERIAL NO.	MFG.	DATE OF CALIBRATION	DUE CYCLE	Page
순서	위치	관리번호	계 측 기 명	규 격	고유번호	제작회사	교 정 일 자	교정주기	
25	OFFICE	DSCE-B-25	DIGITAL CLAMP METER		0213698	KYORITSU	2015.05.28	12 Months	B-51~52
						DIGITAL CLAMP METER			
						TOTAL Q'TY : 1 EA			
26	office	DSCE-B-26	AC/DC Clamp Meter		0267383	KYORITSU	2015.05.28	12 Months	B-53~55
						AC/DC Clamp Meter			
						TOTAL Q'TY : 1 EA			
27	B동	DSCE-B-23	PUNCTURE TESTER	0.1 ~ 5kV	EJ913304	GW INSTEK	2015.05.28	12 Months	B-56~58
						PUNCTURE TESTER			
						TOTAL Q'TY : 1 EA			
28	B동	DSCE-B-28	Bimetal Thermometer	0 ~ 100 °C	825442	DAEWON	2015.05.28	12 Months	B-59~60
						Bimetal Thermometer			
						TOTAL Q'TY : 1 EA			
29	office	DSCE-B-29	depth gauge	0 ~ 10 mm	NNE782	MITUTOYO	2015.05.28	12 Months	B-61~62
						Depth gauge			
						TOTAL Q'TY : 1 EA			
30	OFFICE	DSCE-B-30	Inside Micrometer	5 ~ 30 mm	816584	MITUTOYO	2015.05.28	12 Months	
						Inside Micrometer			
						TOTAL Q'TY : 1 EA			

용접설비 목록

I.M.T.E CONTROL LIST

Doc. No. : DSCP-711-01(0)

Date : 2015. 05. 28

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Section : C (Welding Machine)

NO.	POS.	CONT. NO	EQURP. NAME	SIZE / MODEL	SERIAL NO.	MFG.	DATE OF CALIBRATION	DUE CYCLE	TYPE	Page
순서	위치	관리번호	계 측 기 명	규 격	고유번호	제작회사	교 정 일 자	교정주기		
1	B동	DSCW-C-1	DC Ammeter	MRM-A7d	DSC-W1-A	MEC	2015.05.28	12 Months	FCAW	C-1~2
			DC Voltmeter	MRM-A7d	DSC-W1-V	MEC	2015.05.28	12 Months		C-3~4
2	A동	DSCW-C-2	DC Ammeter	M-50	DSC-W2-A	MEC	2015.05.28	12 Months	FCAW	C-5~6
			DC Voltmeter	M-50	DSC-W2-V	MEC	2015.05.28	12 Months		C-7~8
3	A동	DSCW-C-3	DC Ammeter	M-60	DSC-W3-A	MEC	2015.05.28	12 Months	GTAW	C-9~10
4	A동	DSCW-C-4	DC Ammeter	MRM-A8d	DSC-W4-A	MST	2015.05.28	12 Months	FCAW	C-11~12
			DC Voltmeter	M-88	DSC-W4-V	MYUNGJIN	2015.05.28	12 Months		C-13~14
5	A동	DSCW-C-5	DC Ammeter	RFII-500	DSC-W17-V	Panasonic	2015.05.28	12 Months	FCAW	C-15~16
			DC Voltmeter	RFII-500	DSC-W17-A	Panasonic	2015.05.28	12 Months		C-17~18
6	A동	DSCW-C-6	DC Ammeter	SK-70	DSC-W8-A	SKW	2015.05.28	12 Months	FCAW	C-19~20
			DC Voltmeter	SK-70	DSC-W8-V	SKW	2015.05.28	12 Months		C-21~22
7	A동	DSCW-C-7	DC Ammeter	US-70	DSC-W10-A	TECHWIN	2015.05.28	12 Months	FCAW	C-23~24
			DC Voltmeter	US-70	DSC-W10-V	TECHWIN	2015.05.28	12 Months		C-25~26
8	A동	DSCW-C-8	DC Ammeter	DUTY-500D	DSC-W16-A	PRO-TECH	2015.05.28	12 Months	GTAW	C-27~28
9	A동	DSCW-C-9	DC Ammeter	DUTY-500D	DSC-W25-A	PRO-TECH	2015.05.28	12 Months	GTAW	C-29~30
10	A동	DSCW-C-10	DC Ammeter	NONE	DSC-W14-A	MILLER	2015.05.28	12 Months	FCAW	C-31~32
			DC Voltmeter	NONE	DSC-W14-V	MILLER	2015.05.28	12 Months		C-33~34
11	A동	DSCW-C-11	DC Ammeter	M-88	DSC-W15-A	MYUNGJIN	2015.05.28	12 Months	FCAW	C-35~36
			DC Voltmeter	M-88	DSC-W15-V	MYUNGJIN	2015.05.28	12 Months		C-37~38
12	A동	DSCW-C-12	DC Voltmeter	M-60	DSC-W5-V	DOUNGSUNG	N/A	N/A	GTAW	-
13	A동	DSCW-C-13	DC Voltmeter	US-60	DSC-W9-V	CENTURY	N/A	N/A	GTAW	-
14	A동	DSCW-C-14	PLASMA	FLASH-1200	DSC-W12-A	POROTEH	N/A	N/A	N/A	-
15	A동	DSCW-C-15	DC Ammeter	TRM-60	DSC-W13-A	KUWANO	2015.05.28	12 Months	FCAW	C-39~40
16	A동		DC Voltmeter	TRM-60	DSC-W13-V	KUWANO	2015.05.28	12 Months		C41~42
17	A동	DSCW-C-16	DC Voltmeter	M-60	DSC-W6-A	MEC	2015.05.28	12 Months	GTAW	C43~44
						Welding Machine TOTAL Q'TY : 17 SET				

EXPERIENCE LIST

Experience List (for Hydrogen Cooler & Air Cooler)

JOB No.	END USER	Contractor	PROJECT Name / ITEM Name	LOCATION	ITEM	Quantity	DELIVERY
2002	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 324 H2 COOLER	U.S.A	1	3 UNIT	2002
2003-1	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 324 H2 COOLER	U.S.A	1	9 UNIT	2003
2003-2	KOREA SOUTHERN POWER	DOOSAN HEAVY INDUSTRIES / KPHE	YONGDONG / H2 COOLER	KOREA	1	1 UNIT	2003
2004-1	KOREA HYDRO & NUCLEAR POWER	DOOSAN HEAVY INDUSTRIES / KPHE	YANGYANG / H2 COOLER	KOREA	1	27 UNIT	2004
2004-2	KOREA HYDRO & NUCLEAR POWER	DOOSAN HEAVY INDUSTRIES / KPHE	YANGYANG / H2 COOLER	KOREA	1	6 UNIT	2005
2007-1	KOREA HYDRO & NUCLEAR POWER	DOOSAN HEAVY INDUSTRIES / KPHE	YEONGGWANG / H2 COOLER	KOREA	1	2 UNIT	2007
2007-2	KOREA EAST-WEST POWER	DOOSAN HEAVY INDUSTRIES / KPHE	ULSAN / H2 COOLER	KOREA	1	3 UNIT	2007
2008-1	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 7FH2 COOLER	U.S.A	1	13 UNIT	2008
2008-2	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 324 H2 COOLER	U.S.A	1	7 UNIT	2008
2009-1	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 7FH2 COOLER	U.S.A	1	4 UNIT	2009
2009-2	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 324 H2 COOLER	U.S.A	1	4 UNIT	2009
2009-3	KOREA SOUTHERN POWER	DOOSAN HEAVY INDUSTRIES	YEONGWOL / STG H2 COOLER	KOREA	1	1 UNIT	2009
2009-4	KOREA SOUTHERN POWER	DOOSAN HEAVY INDUSTRIES	YEONGWOL / GTG H2 COOLER	KOREA	1	3 UNIT	2009
2010-1	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 7FH2 COOLER	U.S.A	1	8 UNIT	2010
2010-2	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 324 H2 COOLER	U.S.A	1	2 UNIT	2010
2010-3	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 7FH2 COOLER	U.S.A	1	3 UNIT	2010
2010-4	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES / KPHE	GE SOURCING / 324 COOLER	U.S.A	1	1 UNIT	2010
2010-5	KOREA WESTERN POWER	DOOSAN HEAVY INDUSTRIES	PYEONGTAEK #3, #4 / H2 COOLER	KOREA	1	2 UNIT	2010
2010-6	KOREA SOUTH-EAST POWER	DOOSAN HEAVY INDUSTRIES	SAMCHONPO #1, #2, #4 / H2 COOLER (ASME U-STAMP)	KOREA	1	3 UNIT	2010
2010-7	GMR ENERGY	DOOSAN HEAVY INDUSTRIES	RAIPUR #1, #2 / H2 COOLER (ASME U-STAMP)	INDIA	1	2 UNIT	2011
2011-1	GENERAL ELECTRIC COMPANY	DOOSAN HEAVY INDUSTRIES	GE SOURCING / 324 H2 COOLER (ASME U-STAMP)	U.S.A	1	8 UNIT	2011
2011-2	KOREA WESTERN POWER	DOOSAN HEAVY INDUSTRIES	PYEONGTAEK #1 / H2 COOLER	KOREA	1	1 UNIT	2011
2011-3	KOREA MIDLAND POWER	SUNGSAN	BORYUNG CAPP / AIR COOLER	KOREA	1	4 UNIT	2011
2011-4	KOREA HYDRO & NUCLEAR POWER	SUNGSAN	CHEONG-PYEONG / AIR COOLER	KOREA	1	1 UNIT	2011
2012-1	KOREA HYDRO & NUCLEAR POWER	SUNGSAN	CHEONG-PYEONG / AIR COOLER	KOREA	1	7 UNIT	2012
2012-2	AES-VCM	DOOSAN HEAVY INDUSTRIES	MONG DOUNG-2 / H2 COOLER (ASME U-STAMP)	VIETNAM	1	2 UNIT	2012
2012-3	MARAFIQ	DOOSAN HEAVY INDUSTRIES	YANBU-2 / H2 COOLER (ASME U-STAMP)	SAUDI ARABIA	1	3 UNIT	2012
2012-4	POCHEON POWER	DOOSAN HEAVY INDUSTRIES	POCHEON / H2 COOLER (ASME U-STAMP)	KOREA	1	2 UNIT	2012
2012-5	H.I.H.C	DOOSAN HEAVY INDUSTRIES	YANGJU / H2 COOLER (ASME U-STAMP)	KOREA	1	3 UNIT	2012
2012-6	KOREA MIDLAND POWER	DOOSAN HEAVY INDUSTRIES	SEJONG / H2 COOLER (ASME U-STAMP)	KOREA	1	3 UNIT	2012
2012-7	KOREA HYDRO & NUCLEAR POWER	SUNGSAN	INCHEON / AIR COOLER	KOREA	1	4 UNIT	2012
2012-8	KOREA MIDLAND POWER	TURBOCARE	BORYEONG #4 / H2 COOLER	KOREA	1	1 UNIT	2013

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Experience List (for Inter/After Cooler for Compressor)

JOB No.	END USER	Contractor	PROJECT Name / ITEM Name	LOCATION	ITEM	Quantity	DELIVERY
2006	TOTAL	SAMSUNG TECHWIN	26 PROJECT / INTER COOLER	TOTAL	26	42 UNIT	2006
2007	TOTAL	SAMSUNG TECHWIN	138 PROJECT / INTER COOLER	TOTAL	138	247 UNIT	2007
2008	TOTAL	SAMSUNG TECHWIN	193 PROJECT / INTER COOLER	TOTAL	193	285 UNIT	2008
2009	TOTAL	SAMSUNG TECHWIN	59 PROJECT / INTER COOLER	TOTAL	59	120 UNIT	2009
2010	TOTAL	SAMSUNG TECHWIN	59 PROJECT / INTER COOLER	TOTAL	100	160 UNIT	2010
2011	ALL ITEMS	SAMSUNG TECHWIN	INTER COOLER	ALL ITEMS	ALL	200 UNIT	2011
2011-1	LINDE	SAMSUNG TECHWIN	KARRATHA / INTER COOLER BUNDLE WITH SHELL	AUSTRALIA	4	1 UNIT	2011
2011-2	COSMODYNE	SAMSUNG TECHWIN	COSMODYNE RAC / INTER COOLER BUNDLE WITH SHELL	USA	2	1 UNIT	2011
2011-3	SK INNOVATION	SAMSUNG TECHWIN	SK INNOVATION / INTER COOLER BUNDLE WITH SHELL	KOREA	3	1 UNIT	2011
2011-4	KISLORODMASH-BNC	SAMSUNG TECHWIN	KISLORODMASH / INTER COOLER BUNDLE WITH SHELL	RUSSIA	2	2 UNIT	2011
2011-5	HITACHI	HITACHI	INTER COOLER	JAPAN	1	2 UNIT	2011
2011-6	HITACHI	HITACHI	INTER COOLER	JAPAN	1	2 UNIT	2011
2011-7	HITACHI	HITACHI	INTER COOLER	JAPAN	5	10 UNIT	2011
2011-8	LINDE KOREA	LINDE KOREA	INTER COOLER	KOREA	1	3 UNIT	2011
2012	ALL ITEMS	SAMSUNG TECHWIN	INTER COOLER	ALL ITEMS	ALL	150 UNIT	2012
2012-1	KISLORODMASH-BAC	SAMSUNG TECHWIN	KISLORODMASH / INTER COOLER BUNDLE WITH SHELL	RUSSIA	3	6 UNIT	2012
2012-2	SECL	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	1'ST & 2'ND INTER COOLER	KOREA	1	3 UNIT	2012
2012-5	HITACHI	HITACHI	INTER COOLER	JAPAN	1	3 UNIT	2012
2012-6	HONAM PETROCHEM ICAL	HONAM PETROCHEM ICAL	C-1301 INTER COOLER	KOREA	1	1 UNIT	2012
2012-7	HITACHI	HITACHI	INTER COOLER	JAPAN	1	3 UNIT	2012
2013-1	SKEC	SAMSUNG TECHWIN	SK NEXLENE / INTER COOLER BUNDLE WITH SHELL	KOREA	3	3 UNIT	2013
2013-2	BOC TATA STEEL	SAMSUNG TECHWIN	BOC TATA STEEL / AFTER COOLER BUNDLE WITH SHELL	INDIA	1	1 UNIT	2013
2013-3	KEPCO	SAMSUNG TECHWIN	DANGJIN / INTER COOLER BUNDLE WITH SHELL (KESCO)	KOREA	3	4 UNIT	2013
2013-4	SAMSUNG TECHWIN	SAMSUNG TECHWIN	DMKD / INTER COOLER BUNDLE WITH SHELL	UZBEKISTAN	1	2 UNIT	2013
2013-5	SAMSUNG TECHWIN	SAMSUNG TECHWIN	FORTUNE / INTER COOLER BUNDLE WITH SHELL	RUSSIA	2	2 UNIT	2013
2013-6	COSMODYNE	SAMSUNG TECHWIN	COSMODYNE RNC / INTER COOLER BUNDLE WITH SHELL	USA	3	2 UNIT	2013
2013-7	CRYOGENMASH	SAMSUNG TECHWIN	IJORA BAC / I/C BUNDLE WITH SHELL (ASME U-STAMP)	RUSSIA	3	1 UNIT	2014
2013-8	KEPCO	SUNGSAK	DANGJIN / TRANSFORMER OIL COOLER	KOREA	1	1 UNIT	2013
2014-1	SIAD LITHUANIA	SAMSUNG TECHWIN	LITHUANIA / PRE COOLER WITH SHELL (PED-CE Mark)	RUSSIA	1	1 UNIT	2014

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Experience List (for Shell & Tube Heat Exchanger)

JOB No.	END USER	Contractor	PROJECT Name / ITEM Name / Class	LOCATION	ITEM	Quantity	DELIVERY
2010-1	KEPCO	DOOSAN	YECHON / L.O COOLER	KOREA	1	2 UNIT	2010
2010-2	KEPCO	DOOSAN	YECHON / L.O COOLER	KOREA	1	2 UNIT	2010
2010-3	KOLON	KOLON	DEW HEATER	KOREA	1	1 UNIT	2010
2010-4	KOLON	KOLON	EG CONDENSER	KOREA	1	1 UNIT	2011
2010-5	KOLON	KOLON	EG COOLER	KOREA	1	1 UNIT	2011
2011-1	NIPPON STEEL CORPORATION	NIPPON STEEL CORPORATION	OIL COOLER	JAPAN	1	1 UNIT	2011
2011-2	KOLON	KOLON	TOTAL CONDENSER	KOREA	1	1 UNIT	2011
2011-3	KOLON	KOLON	HTM HEATER	KOREA	1	2 UNIT	2011
2012-1	ABEX	ABEX	OIL COOLER (ASME U-STAMP)	JAPAN	1	1 UNIT	2012
2012-2	SKEC	SKEC	OIL COOLER (ASME U-STAMP)	KOREA	1	2 UNIT	2012
2012-3	FUJITA IRON	FUJITA IRON	OIL COOLER	JAPAN	2	1 UNIT	2012
2012-4	SAMSUNG TECHWIN	SAMSUNG TECHWIN	ULSAN FGC / DUAL OIL COOLER	KOREA	1	3 UNIT	2013
2012-5	SAMSUNG TECHWIN	SAMSUNG TECHWIN	PYEONGTAEK FGC / DUAL OIL COOLER	KOREA	1	2 UNIT	2013
2013-1	SKEC	SAMSUNG TECHWIN	SK NEXLENE / OIL COOLER	KOREA	1	3 UNIT	2013
2013-2	SK ENERGY	SK ENERGY	NO.2 FCC REVAMP / OIL COOLER (ASME U-STAMP)	KOREA	1	2 UNIT	2013
2013-3	BOC TATA STEEL	SAMSUNG TECHWIN	BOC TATA STEEL PJT / OIL COOLER	INDIA	1	1 UNIT	2013
2013-4	KOLON	KOLON	HTM COOLER	KOREA	1	1 UNIT	2013
2013-5	SAMSUNG TECHWIN	SAMSUNG TECHWIN	ULSAN FGC / GAS RECYCLE COOLER	KOREA	1	3 UNIT	2014
2013-6	SAMSUNG TECHWIN	SAMSUNG TECHWIN	IREP / DUAL OIL COOLER	INDIA	1	4 UNIT	2014
2013-7	SAMSUNG TECHWIN	SAMSUNG TECHWIN	YPFB / DUAL OIL COOLER (ASME U-STAMP)	BOLIVIA	1	1 UNIT	2014
2014-1	HDEC	SAMSUNG TECHWIN	SARB IA / OIL COOLER (ASME U-STAMP)	SAUDI ARABIA	1	3 UNIT	2014
2014-2	SKEC	SAMSUNG TECHWIN	SK ULSAN CLX / OIL COOLER	KOREA	1	1 UNIT	2014
2015-1	DAEJU MACHINERY	DAEJU MACHINERY	CAMERON / OIL COOLER	KOREA	1	1 UNIT	2015
2015-2	DAEJU MACHINERY	DAEJU MACHINERY	KOREA / AIR PRE-HEATER	KOREA	1	1 UNIT	2015

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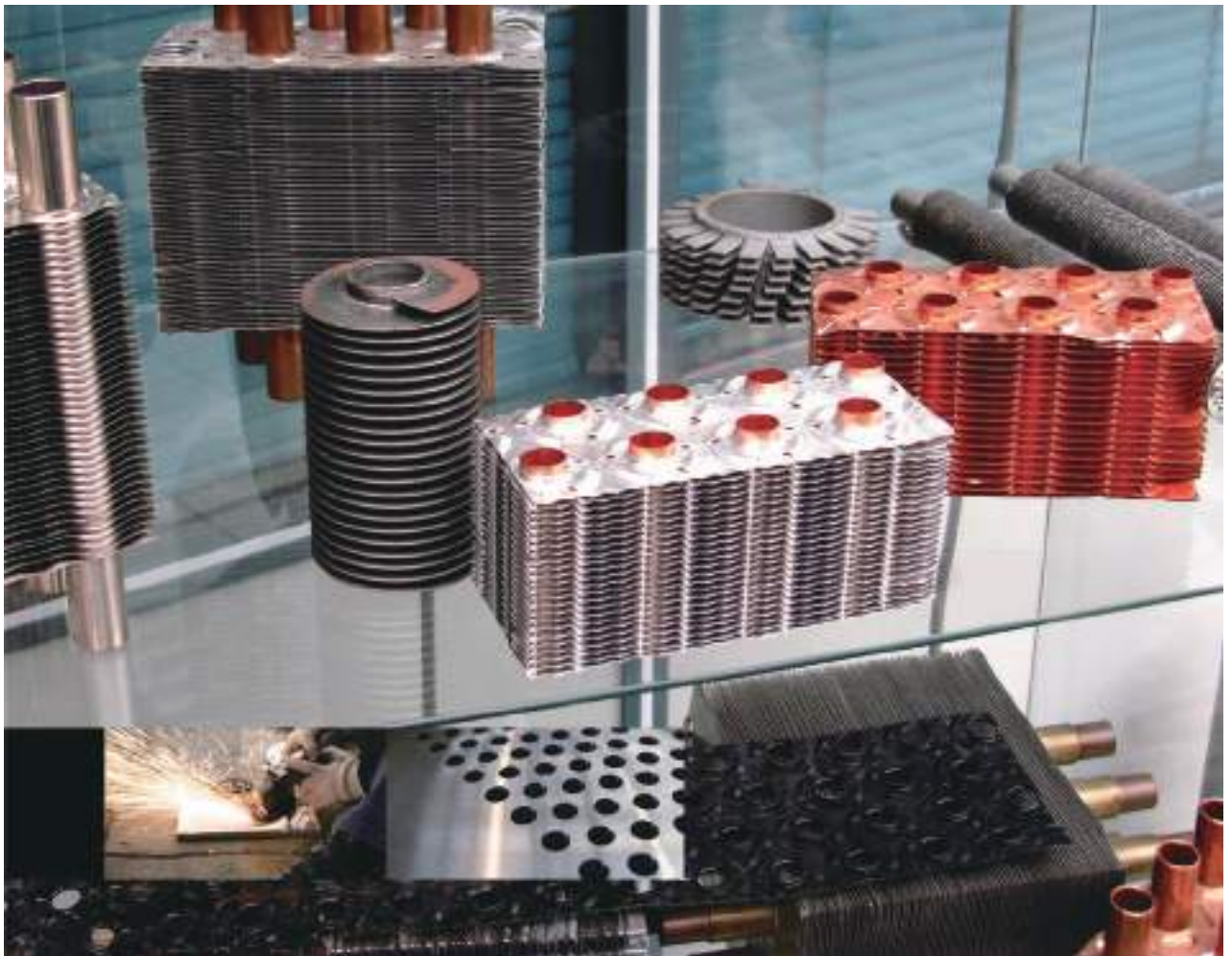
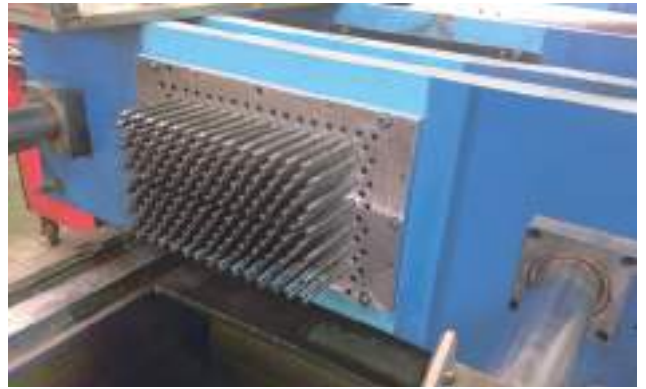
Experience List (for Pressure Vessel)

JOB No.	END USER	Contractor	PROJECT Name / ITEM Name / Class	LOCATION	ITEM	Quantity	DELIVERY
2010-2	KOLON	KOLON	PRESSURE VESSEL & DEW HEATER	KOREA	1	4 UNIT	2010
2010-4	KOLON	KOLON	PRESSURE VESSEL	KOREA	1	1 UNIT	2010
2010-7	EBARA	MISUZU	DRAIN POT (ASME U-STAMP)	JAPAN	1	2 UNIT	2011
2015-1	MISUZU Industrial Corporation	MISUZU Industrial Corporation	NINGBO FORTUNE PDH / BOOSTER CHAMBER & GAS FILTER	CHINA	6	6 UNIT	2015
2015-2	PARKER TECHNO	PARKER TECHNO	FX349 / CONTROL OIL FILTER	JAPAN	1	1 UNIT	2015
2015-3	MISUZU Industrial Corporation	MISUZU Industrial Corporation	U-3913-5 KNPC CLEAN FUEL / DRAIN POT	KUWAIT	1	3 UNIT	2015
2015-4	PETROLEO MEXICANOS	MISUZU Industrial Corporation	U-3919 SALAMANCA ULSD / DRAIN POT	MEXICO	1	1 UNIT	2015
2015-5	PARKER TECHNO	PARKER TECHNO	KOREA / OIL FILTER	KOREA	1	1 UNIT	2015
2015-6	MISUZU Industrial Corporation	MISUZU Industrial Corporation	U-3913-5 KNPC CLEAN FUEL / N2 GAS FILTER	KUWAIT	1	6 UNIT	2015
2015-7	PETROLEO MEXICANOS	MISUZU Industrial Corporation	U-3919 SALAMANCA ULSD / N2 GAS FILTER	MEXICO	1	2 UNIT	2015
2015-8	HYUNDAI CHEMICAL CO., LTD	MISUZU Industrial Corporation	U-3905-8 HDC MX LLI PJT / DRAIN POT	KUWAIT	1	8 UNIT	2015

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Experience List for Power Plant in Korea

No.	END USER	CONTRACTOR	PROJECT	ITEM	UNIT	DELIVERY	REMARK
1	KOREA SOUTHERN POWER	DOOSAN HEAVY INDUSTRIES	YEONGWOL / STG	H2 COOLER	1 UNIT	2009	
2	KOREA SOUTHERN POWER	DOOSAN HEAVY INDUSTRIES	YEONGWOL / GTG	H2 COOLER	3 UNIT	2009	
3	KOREA WESTERN POWER	DOOSAN HEAVY INDUSTRIES	PYEONGTAEK #3, #4	H2 COOLER	2 UNIT	2010	
4	KOREA SOUTH-EAST POWER	DOOSAN HEAVY INDUSTRIES	SAMCHEONPO #1, #2, #4	H2 COOLER	3 UNIT	2010	
5	KOREA HYDRO & NUCLEAR POWER	DOOSAN HEAVY INDUSTRIES	YECHEON	L.O COOLER	4 UNITS	2010	
6	KOREA WESTERN POWER	DOOSAN HEAVY INDUSTRIES	PYEONGTAEK #1	H2 COOLER	1 UNIT	2011	
7	KOREA MIDLAND POWER	SUNGSAN	BORYEONG #4	AIR COOLER	4 UNITS	2011	
8	KOREA HYDRO & NUCLEAR POWER	SUNGSAN	CHEONGPYEONG	AIR COOLER	1 UNIT	2011	
9	KOREA HYDRO & NUCLEAR POWER	SUNGSAN	CHEONGPYEONG	AIR COOLER	7 UNITS	2012	
10	KOREA HYDRO & NUCLEAR POWER	SUNGSAN	INCHOEN	AIR COOLER	4 UNITS	2012	
11	POCHEON POWER	DOOSAN HEAVY INDUSTRIES	POCHEON	H2 COOLER	2 UNITS	2012	
12	H.H.I.C	DOOSAN HEAVY INDUSTRIES	YANGJU	H2 COOLER	3 UNITS	2012	
13	KOREA MIDLAND POWER	DOOSAN HEAVY INDUSTRIES	SEJONG	H2 COOLER	3 UNITS	2012	
14	KOREA EAST-WEST POWER	SAMSUNG TECHWIN	ULSAN FGC	DUAL OIL COOLER	3 UNITS	2013	
15	KOREA WESTERN POWER	SAMSUNG TECHWIN	PYEONGTAEK FGC	DUAL OIL COOLER	2 UNITS	2013	
16	HANAM ENERGY SERVICE	DOOSAN HEAVY INDUSTRIES	HANAM CHP	H2 COOLER & AIR COOLER	1 UNIT	2013	
17	KOREA SOUTH-EAST POWER	DOOSAN HEAVY INDUSTRIES	SAMCHEONPO #3	H2 COOLER	1 UNIT	2013	
18	KOREA EAST-WEST POWER	SAMSUNG TECHWIN	ULSAN FGC	GAS RECYCLE COOLER	3 UNITS	2013	
19	KOREA MIDLAND POWER	KOREA MIDLAND POWER	BORYEONG #3	H2 COOLER	1 UNIT	2014	
20	KOREA MIDLAND POWER	TURBO CARE POLAND SA	BORYEONG #4	H2 COOLER	1 UNIT	2014	
21	O.C.I	DOOSAN HEAVY INDUSTRIES	SAEMANGEUM STG #1 & #2	AIR COOLER	2 UNITS	2014	
22	KOREA WESTERN POWER	DONGHWA ENTEC	TAEAN #1 & #2	H2 COOLER	2 UNITS	2015	
23	KOREA MIDLAND POWER	DOOSAN HEAVY INDUSTRIES	SEOUL GTG #1 & #2	AIR COOLER	2 UNITS	2015	
24	KOREA MIDLAND POWER	DOOSAN HEAVY INDUSTRIES	SEOUL GTG #1 & #2	H2 COOLER	2 UNITS	2016	
25	KOREA DISTRICT HEATING CORP.	DOOSAN HEAVY INDUSTRIES	HWASUNG DONGTAN2 #1 & #2	AIR COOLER	2 UNITS	2015	
26	KOREA DISTRICT HEATING CORP.	DOOSAN HEAVY INDUSTRIES	HWASUNG DONGTAN2 #1 & #2	H2 COOLER	2 UNITS	2016	





DYNAMIC & SPECIAL COMPANY

DASCO

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