

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

(2016)

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

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 2015 : US\$ 12,200,000
- 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 : dascoem@hanmail.net

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

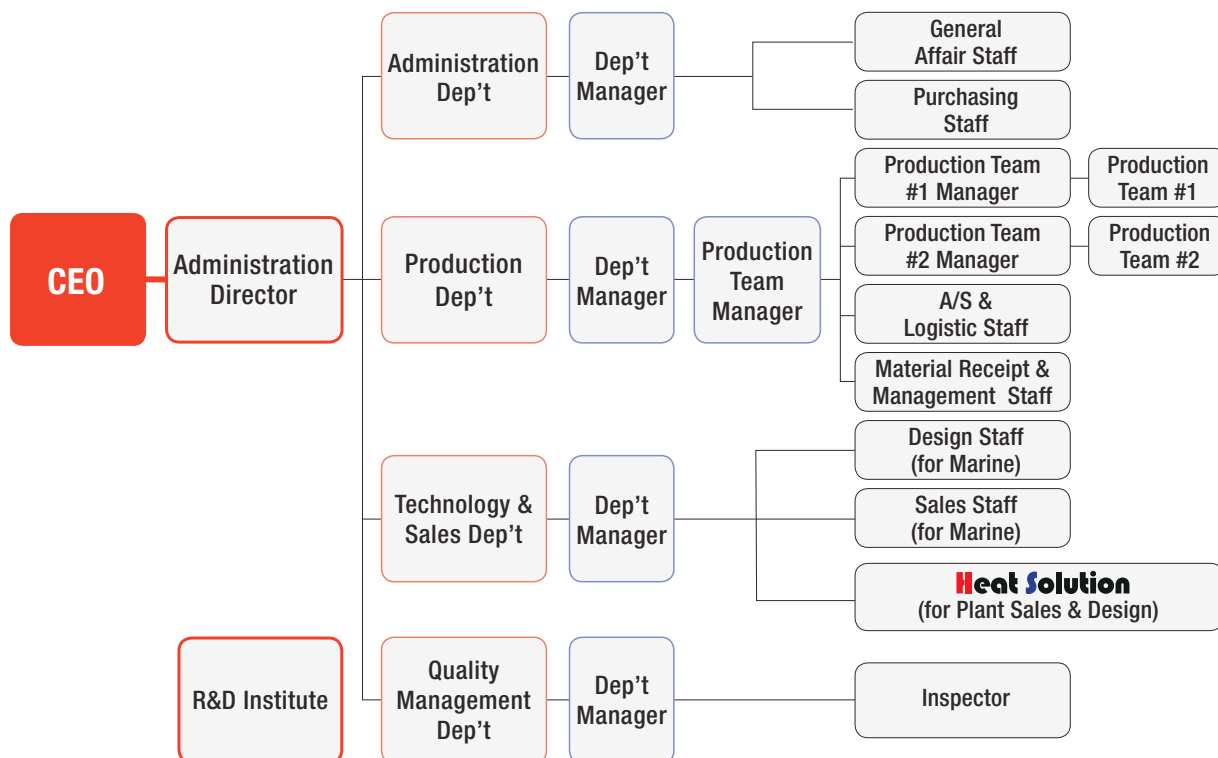
Date of establishment : Mar 2014

Land area : 19,800 m²

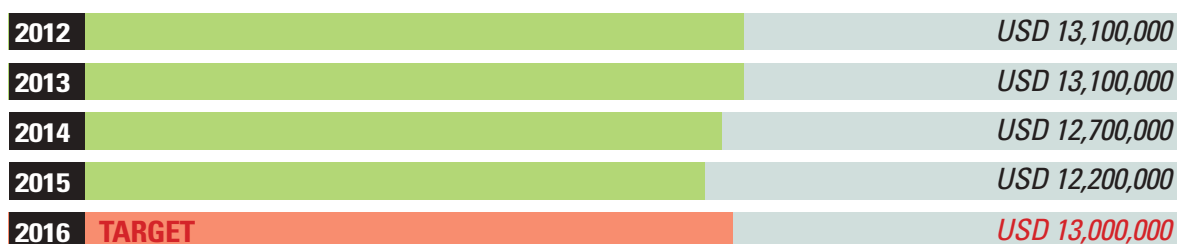
Factory Building area : 1,864 m²



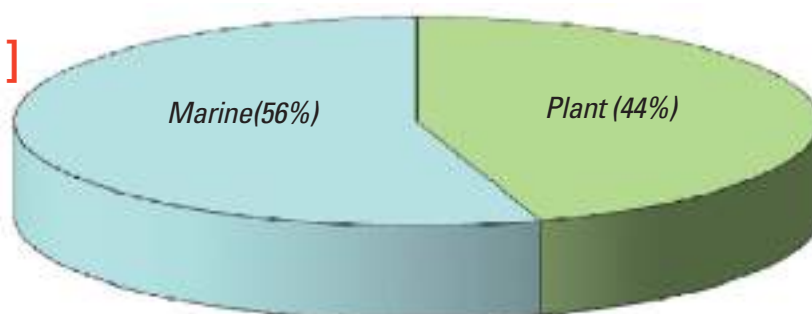
2. ORGANIZATION CHART



3. TURN-OVER (YEARLY SALES)



[Sales Breakdown]



4. MAIN CUSTOMER

1) FOREIGN CUSTOMER

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



2) DOMESTIC CUSTOMER

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



5. 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

6. MAIN PRODUCTS (Heat Exchanger for Plant Div.)

1) INTER/AFTER COOLER FOR COMPRESSOR

2) SHELL & TUBE TYPE HEAT EXCHANGER

3) H₂ / 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

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 & 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.

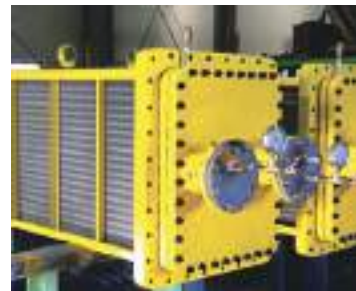
- **Applicable Code** : ASME(U-STMP with NB Cer't)
TEMA R.C.B.
KOREA KGS, KOSHA, KEMCO, KESCO and Etc.
JAPAN KHK, 2nd Pressure Vessel code
CE MARK (PED Cer't)
World Wide Local law (DOSH, MOL, TRCU for Russia & etc.)



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 & 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) 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 & 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 ²)
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, Heat Solution
May. 2015	Registered supplier of Air Liquide Japan
Jun. 2015	Registered Supplier of Hyundai Heavy Industries
Oct. 2015	Registered Supplier of IHI, Mitsubishi Hitachi Power Systems
Nov. 2015	Registered Supplier of Atlas Copco (America, France, Korea)
Dec. 2015	Registered Supplier of Kobe Steel

8. MAIN FACILITY

No.	Equipment	Specification	Q'ty
1	Crane	2.8 Ton, 5 ton, 15 ton, 20 ton	9
2	TIG Welding Machine	500A	10
3	CO2 Welding Machine	600A	12
4	Plate Fin Press Machine	80 Ton	3
5	CNC Pipe Burning 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 / 750 / 900	3
11	Vibration Tester	Lion / VA-12	1
12	Milling Machine	2호기	3
13	Hydro. Test Unit	80 kg/cm ²	3
14	Plate Fin & Tube Multi-Expander	231 Hole, etc	4
15	Oil Flushing Equipment	-	1

Plate Fin Press Machine



**Plate Fin & Tube Multi
Expander**

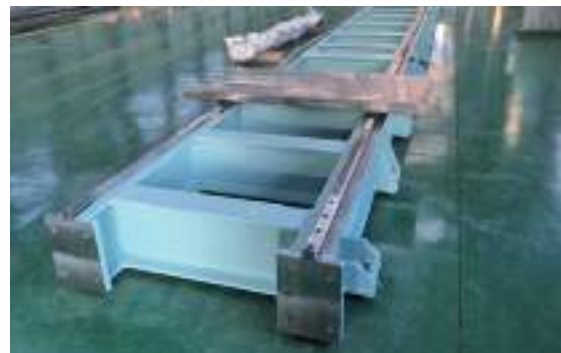


8. MAIN FACILITY

Fin-Tube Bundle Ass'y Jig



Fin-tube Bundle Expanding & Ass'y Table

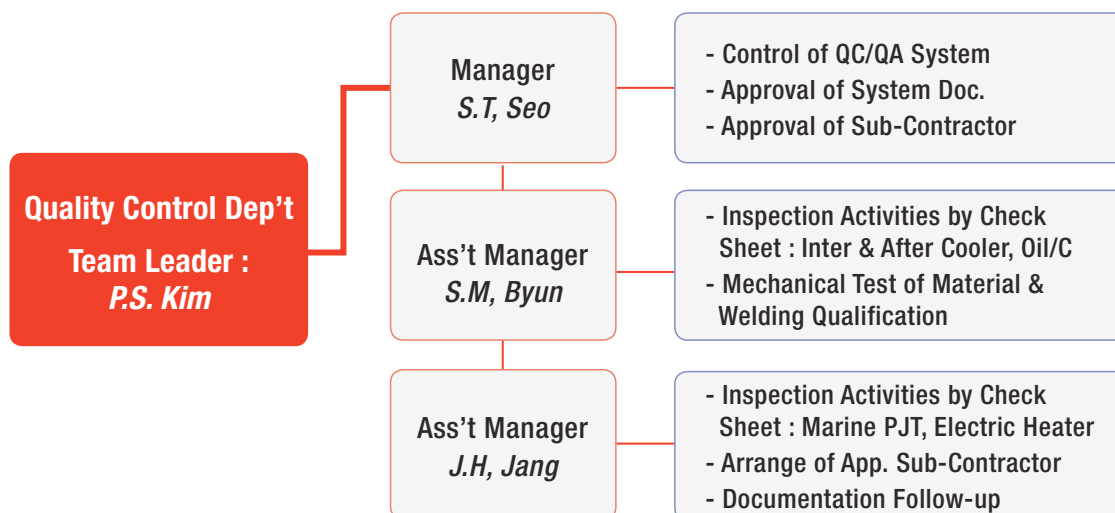


Oil Flushing Equipment



9. QUALITY MANAGEMENT

1) ORGANIZATION OF QC DEP'T



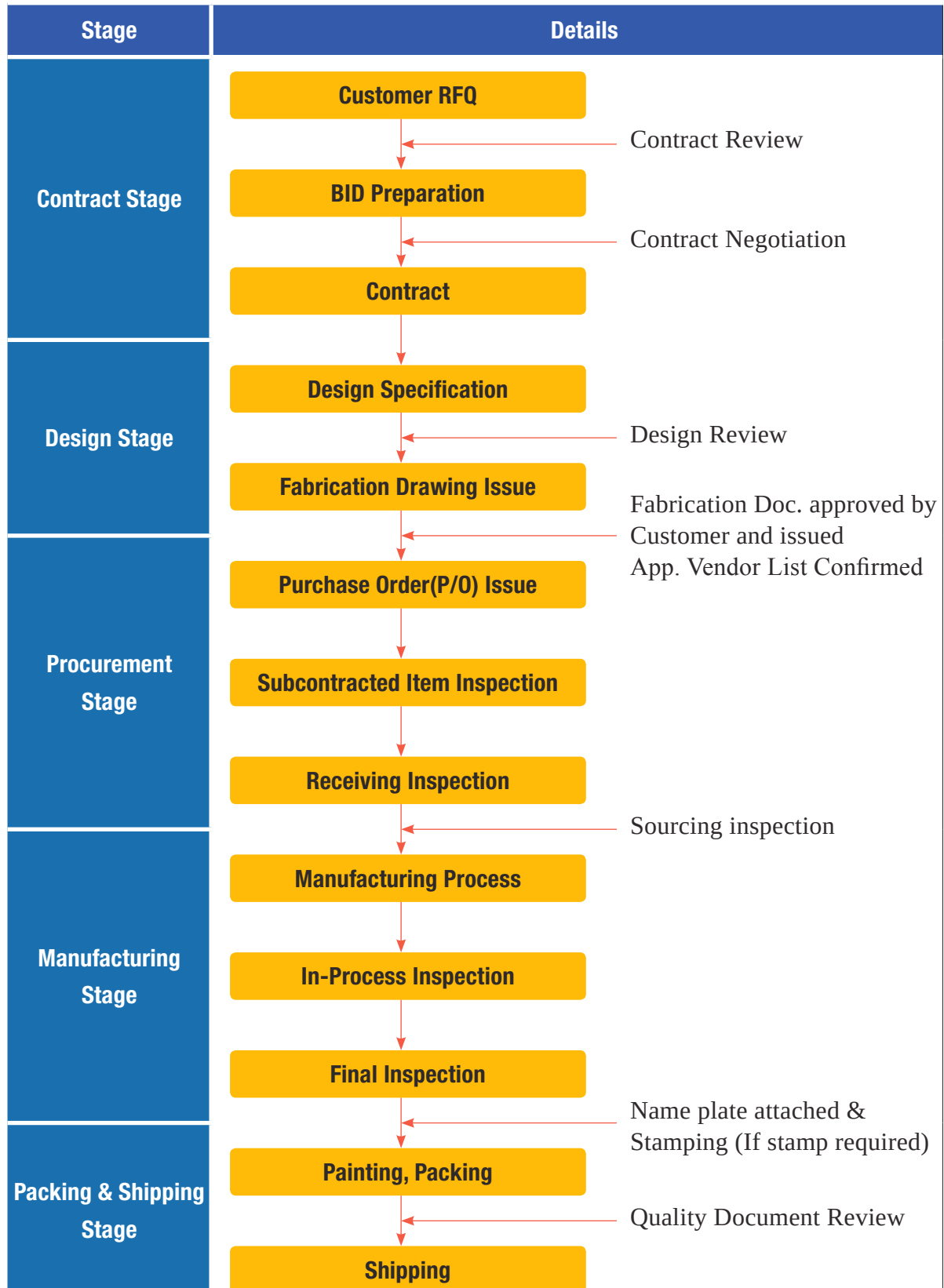
2) QUALIFIED WELDER LIST BY ASME

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	Kim, Kye-You	RT, UT, MT, PT	III	May. 31, 2020	ASNT Level III 231370
3	Moon, Sung-Bae	RT, UT, MT, PT	III	Aug. 31, 2019	14090101
4	Lee, Woo-Sung	RT, UT, MT, PT	II	Dec. 26, 2017	08123001
5	Park, Jung-Kyeong	RT, UT, MT, PT	II	Oct. 27, 2016	07102902
6	Seok, Won Jae	RT, UT, MT, PT	II	Oct. 27, 2016	07102904
7	Ji, Je-Hoon	RT, UT, MT, PT	II	Aug. 29, 2018	12050212

4) QUALITY PLAN OF THE MANUFACTURING PROCESS



10. STATUS OF QUALITY CERTIFICATION

Organization	Certificate Item	Expiry Date	Number
ABS Q.E	ISO 9001	2017.07.14	QMS-1404
ASME	U-STAMP	2018.12.10	#39135
ASME	S-STAMP	2018.12.10	#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
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 2.2)
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

8y52

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 MemberQAB 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

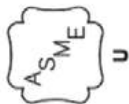
AUTHORIZED: December 3, 2015
EXPIRES: December 10, 2018
CERTIFICATE NUMBER: 39,134

Richard Rottman
Board Chair, Conformity Assessment

Joseph Hwang
Director, Conformity Assessment



The American Society of Mechanical Engineers



CERTIFICATE OF AUTHORIZATION

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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: December 3, 2015
EXPIRES: December 10, 2018
CERTIFICATE NUMBER: 39,135

Richard Rottman
Board Chair, Conformity Assessment

Joseph Hwang
Director, Conformity Assessment



The American Society of Mechanical Engineers



**BUREAU
VERITAS**
MARINE DIVISION
DIRECTION MARINE

International Standards for Classification of Ships - Subchapter 100
Rules International de Classification de Navires - 3^e partie 100

Approval Cert. No. PSN/WP/08/046/RB

APPROVAL OF WELDING PROCEDURE

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

Messrs : **DASCO CO., LTD.**

#800, Byeonggongri, Hadlim-myeon, Gimhae, Gyeongsang, 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. : GGT-FC-1.1-101 (Rev. 0)
- Material grade : JS B3301 SS400 or Equivalent
- Thickness range : 6.0 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 E70T5-G(GTAW) & AWS A5.20 E71T1-1C(FCAW)
- Brand name : SI-SG(GTAW) Ø 2.4 mm & 5F-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. : GGT-1.1-101 (Rev. 0)
- Material grade : JS B3654 SPG370 or Equivalent
- Thickness range : 3.0 mm to 14.2 mm
- Min. preheat temp. : 82.6 mm to Unlimited
- Max. interpass temp. : 10 °C
- Current type : Max. 200 °C
- Joint type : DCSP
- Position : Single V Groove (without backing)
- Welding technique : PA(Flat)
- Classification of welding consumable : AWS A5.18 E70T5-G
- Brand name : SI-SG(GTAW) Ø 2.4 mm (HYUNDAI WELDING)



The signed and dated copy of this document is the property of the Bureau Veritas Marine Division and the Client. The Client is responsible for its use and for its distribution. The Client is also responsible for its storage and for its protection against unauthorized access.

Every person who signs or countersigns this document is responsible for its content and for its distribution. The Client is also responsible for its storage and for its protection against unauthorized access. The Client is also responsible for its use and for its distribution. The Client is also responsible for its storage and for its protection against unauthorized access.

REV. 001 04.08.2010



MISCELLANEOUS SURVEY REPORT

ABS

Page 1 of 2

SURVEY OF:		WELDING PROCEDURE APPROVAL	
Report No. : BK500040-A	Date : 24 July 2008	From : Busan, Korea	
Veritas Name :		Class No. : 70000	
Manufacturer : DASCO Co., Ltd.		Mo No. :	
Purchaser/Client : Y.		PO No. : 1	
Location : Korea, Korea		Rating (interpass) :	
Serial Number :		Weight :	Test Pressure :
Material Test Report No. or Mill Sheet Verified :		Service Use :	
Classing No. and Date Approved or for Multiple Drawing, Plan Approval Office :		WPS No. : GT-FC-1.1-101	
ABS Survey Task No. : 340028	13 May 2008/ABS Busan Engg Office	PQR No. : GGT-FC-1.1-101	
		Welding Process : GTAW + FCAW	
		Welding Position : 1G	
		Type of Joint : Single V Groove	
		Thickness Range Qualifier : 3 - 32mm	
		Shielding Gas : Ar or CO2	
		Base Metal : FCAW, SS400/JS B3301, 16mm	
		Filler Metal : AWS A5.18 E70T5-G, AWS A5.20 E71T1-1C	
		(Hyundai, SI-SG, 2.4mm & 5F-71, 1.2mm)	
		Preheat Temp. : 10°C	
		Interpass Temp. : Max. 250°C	
		Post Weld Heat Treatment : N/A	
		Stacking Materials : N/A	
		Preheat Temp. : 10°C	
		Interpass Temp. : Max. 250°C	
		Post Weld Heat Treatment : N/A	
		Surveyor : American Bureau of Shipping	

THIS IS TO CERTIFY that the undersigned Surveyor to the Bureau attended for the above survey and reports as follows:
The following welding procedure approval forms were carried out in accordance with approved welding specifications and the applicable rules, examined, tested as required and considered satisfactory.

WPS No. : GT-FC-1.1-101
PQR No. : GGT-FC-1.1-101
Welding Process : GTAW + FCAW
Welding Position : 1G
Type of Joint : Single V Groove
Thickness Range Qualifier : 3 - 32mm
Shielding Gas : Ar or CO2
Base Metal : FCAW, SS400/JS B3301, 16mm
Filler Metal : AWS A5.18 E70T5-G, AWS A5.20 E71T1-1C
(Hyundai, SI-SG, 2.4mm & 5F-71, 1.2mm)
Preheat Temp. : 10°C
Interpass Temp. : Max. 250°C
Post Weld Heat Treatment : N/A
Stacking Materials : N/A
Preheat Temp. : 10°C
Interpass Temp. : Max. 250°C
Post Weld Heat Treatment : N/A
Surveyor : American Bureau of Shipping

Signature

ABS 113



Certificate No : MD3020320000290

DASCO CO.LTD
#850 Beyongdong-gil
Haeinsa-myeon, Gimhae-si
Gyeongsangnam-do
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 Nizankari
 Principal Specialist to Lloyd's Register (D&A)
 A member of the Lloyd's Register Group


Lloyd's Register is a member of the Lloyd's Register Group, a company limited by guarantee, incorporated in England and Wales, registered office: 15, Abchurch Lane, London EC4N 3DF, United Kingdom. Lloyd's Register is a member of the Lloyd's Register Group, a company limited by guarantee, incorporated in England and Wales, registered office: 15, Abchurch Lane, London EC4N 3DF, United Kingdom. Lloyd's Register is a member of the Lloyd's Register Group, a company limited by guarantee, incorporated in England and Wales, registered office: 15, Abchurch Lane, London EC4N 3DF, United Kingdom.



DET NORSKE VERITAS
APPROVAL OF MANUFACTURER CERTIFICATE

CERTIFICATE NO. T-1533

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

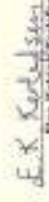
is approved for the
Manufacture of Welded Pressure Vessels, Class B

This approval is granted on condition that
Det Norske Veritas Rules for Classification of Ships
are complied with in all respect

Haeik, 2012.12.12
for Det Norske Veritas AS


 Gyeong-Soo
 Acting Head of Section


 DMV local office
 Changwon


 E.K. Kim
 Senior Engineer

This Certificate is valid until
 2018-12-31

This certificate is issued to firms and companies engaged in the manufacture of pressure vessels, and is subject to the conditions of approval set out in the certificate. It is not valid unless the manufacturer is a member of the Lloyd's Register Group, a company limited by guarantee, incorporated in England and Wales, registered office: 15, Abchurch Lane, London EC4N 3DF, United Kingdom. Lloyd's Register is a member of the Lloyd's Register Group, a company limited by guarantee, incorporated in England and Wales, registered office: 15, Abchurch Lane, London EC4N 3DF, United Kingdom. Lloyd's Register is a member of the Lloyd's Register Group, a company limited by guarantee, incorporated in England and Wales, registered office: 15, Abchurch Lane, London EC4N 3DF, United Kingdom.

Form No. ADM 1467a Issue October 2008

Page 1 of 2

KOREAN REGISTER OF SHIPPING

List of Welder Performance Qualification Certificate

Company		DASCO CO., LTD.				Code / Standard		KR Rules of Korean Register of Shipping			
Address		경기도 고양시 권선구 화곡로 808									

No.	Name of Welder		Weld test detail			Range of approval						Valid Date		
	ID Number	Thickness (mm)		Position	Type of Weld (T)	Welding Process	Base Material	Plate Grade		Pipe Grade	Pipe Thickness	Welding Position		Cert. No.
		Plate	Pipe					Plate Thickness	Pipe					
1	J-500 WOD 761225-1895411	Thic. 7.1 O.D. 185.3	IG-P	Manual / WID,WO,TIW	GTAW	CUA	Grade 2	Grade 2	5 ~ 18mm 100mm & over		F		2008.10.13 ~ 2009.09.04 CWRWQ-0350-08	
2	DONG-WOO KANG 760723-1896025	Thic. 7.1 O.D. 185.3	IG-P	Manual / WID,WO,TIW	GTAW	CUA	Grade 2	Grade 2	5 ~ 18mm 100mm & over		F		2008.10.13 ~ 2009.09.04 CWRWQ-0351-08	
3	SO-KIL LEE 820460-1810517	Thic. 7.1 O.D. 185.3	IG-P	Manual / WID,WO,TIW	GTAW	CUA	Grade 2	Grade 2	5 ~ 18mm 100mm & over	F	F		2008.10.13 ~ 2009.09.04 CWRWQ-0352-08	
4	J-500 WOD 761225-1895411	Thic. 7.1 O.D. 185.3	IG	Manual / WID,WO,TIW	FCARE GTAW	CUA	3.2 ~ 32 mm				F		2008.10.13 ~ 2009.09.04 CWRWQ-0353-08	
5	DONG-WOO KANG 760723-1896025	Thic. 7.1 O.D. 185.3	IG	Manual / WID,WO,TIW	FCARE GTAW	CUA	3.2 ~ 32 mm				F		2008.10.13 ~ 2009.09.04 CWRWQ-0354-08	
6	SO-KIL LEE 820460-1810517	Thic. 7.1 O.D. 185.3	IG	Manual / WID,WO,TIW	FCARE GTAW	CUA	3.2 ~ 32 mm				F	F	2008.10.13 ~ 2009.09.04 CWRWQ-0355-08	

(Remarks) (1) WID : Welding, WO : Welding Operator, TIW : Tack Welder
(Remarks) (2) CUA : Carbon & Low Alloy Steel, SS : Stainless Steel, AL : Aluminum Alloy, CU : 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 etc.
Head 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 awhile, 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. 955-930-3331~2 Fax. 955-930-3330

Surveyor () Kim Jee-pyo ()

Form RW-018(2007.05)

1 / 1

Date issued: July 01, 2006

CERTIFICATE No.: SPS-06-0186 S C LV

CERTIFICATE OF LVD COMPLIANCE

Product submitted:

FAN HEATER
Model L-series

Rated Input: 230 V~, 50/60 Hz, 100-4530 W, Class II

Applicant (Manufacturer):

DASCO Co., Ltd.

48300 Seonggongri-ri, Haein-myeon, Gyeongsang-do, Korea

Testing Laboratory:

SGS Testing Korea Co., Ltd. Electrical Safety Laboratory

Test Report Number(s):

SPS-06-0186 S R LV

Specification Referenced:

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 specific under described. In compliance with the test data included above, it does not permit the sale of the SGS PRODUCT CERTIFICATION logo.

This CE mark as a means to be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.


Winder Kim
Manager




Arthur Kern
General Manager

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SGS Testing Korea CO., LTD.

16-000 Seonggongri-myeon, Haein-myeon, Gyeongsang-do, Korea

Tel: 82 (0)52 428 9333 Fax: 82 (0)52 427 0000 E-mail: ksgs@sgs.co.kr

Member of SGS Group (Societe Generale de Surveillance)

PS84501

This document is issued as the Certificate of Approval by the European Union for the purpose of demonstrating compliance with the Low Voltage Directive (LVD) and the EMC Directive (EMC).

The data contained in this document is based on the information provided by the manufacturer. The manufacturer is responsible for the accuracy of the information provided. The manufacturer is also responsible for the accuracy of the information provided. The manufacturer is also responsible for the accuracy of the information provided.

SGS SPS 0186 S
0186 SPS 0186 S

11. TEST & MEASURING EQUIPMENT

Doc No. : DSCP-711-02(0) Date : 2016. 03. 29 Rev. No. : 0 Page No. : 1 of 2 Section : B (Others)										Doc No. : DSCP-711-01(0) Date : 2016. 03. 28 Rev. No. : 0 Page No. : 1 of 1 Section : A (PRESSURE G/G)			
검 사 설 비 목 록 I.M.T.E CONTROL LIST													
NO. 순서	POS. 위치	CONT. NO 관리번호	EQUIP. NAME 계 측 기 명	SIZE / MODEL 규 격	SERIAL NO. 고유번호	MFG. 제조회사	DATE OF CALIBRATION 교 정 일 자	DUE CYCLE 교정주기	Page				
1	B동	DSCE-B-1	Cylinder/bore gauges	10 ~ 18.5 mm	866128 외 1EA	Mitutoyo	2015.12.15	12 Months	-				
2	B동	DSCE-B-3	Vernier Calipers	0 ~ 300 mm 0 ~ 600 mm 0 ~ 1500 mm	10150220 외 3EA	MITUTOYO	2015.05.29	12 Months	-				
3	B동	DSCE-B-7	Digital Calipers	0 ~ 150 mm	10061248	MITUTOYO	2015.06.25	12 Months	-				
4	B동	DSCE-B-8	Outside Micrometer	0 ~ 25 mm 25 ~ 50 mm	L070402501 외 4EA	MITUTOYO	2015.05.29	12 Months	-				
5	B동	DSCE-B-13	Depth Gauge	0 ~ 10 mm 0 ~ 150 mm	91101384 외 1EA	MITUTOYO	2015.05.29	12 Months	-				
6	B동	DSCE-B-15	Squares	1000X550 600X500	L11072501 외 1EA	RSK	2014.07.21	24 Months	-				
7	B동	DSCE-B-17	Height Gauge	0 ~ 600 mm	051287	MITUTOYO	2015.05.29	12 Months	-				
8	OFFICE	DSCE-B-18	Coating Thickness Tester	0 ~ 1600µm	GA0604 외 1EA	ELCOMETER	2015.05.29	12 Months	-				
9	OFFICE	DSCE-B-20	Welding Gauge	0 ~ 20 mm 0 ~ 25 mm	L14062501 외 1EA	SB	2015.06.25	12 Months	-				
10	용접부 참고	DSCE-B-22	Digital temperature	-	TH000234 외 1EA	-	2015.06.26	12 Months	-				
11	B동	DSCE-B-24	TEST INDICATOR	0 ~ 40 mm	GZX939	MITUTOYO	2015.05.29	12 Months	-				
12	OFFICE	DSCE-B-25	Ultrasonic Th'k Gauge	0.75 ~ 300mm	L09102701	Mitech	2015.06.25	12 Months	-				
13	B동	DSCE-B-26	Standard tape rules	0 ~ 7.5 m	L15060101	Komelon	2015.06.01	24 Months	-				
14	office	DSCE-B-27	Vibro meter	-	00700223	RION	2016.03.12	24 Months	-				
15	OFFICE	DSCE-B-28	DIGITAL CLAMP METER	-	0213698 외 1EA	KYORITSU	2015.12.16	12 Months	-				
16	office	DSCE-B-30	AC/DC Clamp Meter	600V/1000A	0382437 외 1EA	KYORITSU	2015.11.11	12 Months	-				

DSCP-711-01(0)

DASCO Co.,Ltd.

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Doc No. : DSCP-711-01(0) Date : 2016. 03. 28 Rev. No. : 0 Page No. : 1 of 1 Section : A (PRESSURE G/G)										Doc No. : DSCP-711-01(0) Date : 2016. 03. 28 Rev. No. : 0 Page No. : 1 of 1 Section : A (PRESSURE G/G)			
검 사 설 비 목 록 I.M.T.E CONTROL LIST													
NO. 순서	POS. 위치	CONT. NO 관리번호	EQUIP. NAME 계 측 기 명	SIZE / MODEL 규 격	SERIAL NO. 고유번호	MFG. 제조회사	DATE OF CALIBRATION 교 정 일 자	DUE CYCLE 교정주기	Page				
1	창고	DSCPR-A-01	Dial Pressure Gauge	0 ~ 0.4 MPa(4")	P14052168 외 9EA	WIKA	2015.05.29	12 Months	-				
2	창고	DSCPR-A-11	Dial Pressure Gauge	0 ~ 0.6 MPa	P12082401 외 5EA	WIKA	2015.08.31	12 Months	-				
3	B동	DSCPR-A-17	Dial Pressure Gauge	0 ~ 1.0 MPa	P09052604 외 22EA	M.S	2016.03.28	12 Months	-				
4	창고	DSCPR-A-40	Dial Pressure Gauge	0 ~ 1.6 MPa(4")	P12122001 외 4EA	WIKA	2015.12.15	12 Months	-				
5	B동	DSCPR-A-45	Dial Pressure Gauge	0 ~ 1.6 MPa	P13040103 외 1EA	WIKA	2015.05.29	12 Months	-				
6	창고	DSCPR-A-47	Dial Pressure Gauge	0 ~ 2.5 MPa	P12082425 외 37EA	WIKA	2015.08.31	12 Months	-				
7	창고	DSCPR-A-85	Dial Pressure Gauge	0 ~ 2.5 MPa(4")	P1201 외 6EA	WIKA	2015.08.31	12 Months	-				
8	창고	DSCPR-A-92	Dial Pressure Gauge	0 ~ 4.0 MPa	P006 외 41EA	WIKA	2016.03.28	12 Months	-				
9	창고	DSCPR-A-134	Dial Pressure Gauge	0 ~ 6.0 MPa(4")	P11101401 외 1EA	WIKA	2016.03.28	12 Months	-				
10	창고	DSCPR-A-136	Dial Pressure Gauge	0 ~ 10 MPa	P09052605 외 13EA	WIKA	2016.03.28	12 Months	-				
11	창고	DSCPR-A-150	Dial Pressure Gauge	0 ~ 16 MPa	P14010301	WIKA	2016.01.19	12 Months	-				
12	창고	DSCPR-A-151	Dial Pressure Gauge	0 ~ 25 MPa	S0734 외 7EA	DAHO	2015.09.04	12 Months	-				
13	창고	DSCPR-A-159	Dial Pressure Gauge	0 ~ 60 MPa	P14010303 외 1EA	WIKA	2016.01.18	12 Months	-				

WRITTEN BY : 장 지 호
 QM Dept

APPROVED BY : 서 상 탁
 QM Dept Manager

DASCO Co., Ltd.

A4(210x297)mm

[illegible]

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	TOTAL	SAMSUNG TECHWIN	26 PROJECT / INTER COOLER (STANDARD TYPE)	TOTAL	26	42 UNIT	2006
2007	TOTAL	SAMSUNG TECHWIN	138 PROJECT / INTER COOLER (STANDARD TYPE)	TOTAL	138	247 UNIT	2007
2008	TOTAL	SAMSUNG TECHWIN	193 PROJECT / INTER COOLER (STANDARD TYPE)	TOTAL	193	285 UNIT	2008
2009	TOTAL	SAMSUNG TECHWIN	59 PROJECT / INTER COOLER (STANDARD TYPE)	TOTAL	59	120 UNIT	2009
2010	TOTAL	SAMSUNG TECHWIN	59 PROJECT / INTER COOLER (STANDARD TYPE)	TOTAL	100	160 UNIT	2010
2011	TOTAL	SAMSUNG TECHWIN	INTER COOLER (STANDARD TYPE)	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 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	TOTAL	SAMSUNG TECHWIN	INTER COOLER (STANDARD TYPE)	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	WEST QURNA	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 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	TOTAL	SAMSUNG TECHWIN	INTER 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	SAMSUNG TECHWIN	SK NEXLENE / INTER COOLER BUNDLE WITH SHELL	KOREA	3	3 UNIT	2013
2013-5	BOC TATA STEEL	SAMSUNG TECHWIN	BOC TATA STEEL / AFTER COOLER BUNDLE WITH SHELL	INDIA	1	1 UNIT	2013
2013-6	KEPCO	SAMSUNG TECHWIN	DANGJIN / INTER COOLER BUNDLE WITH SHELL (KESCO)	KOREA	3	4 UNIT	2013
2013-7	SAMSUNG TECHWIN	SAMSUNG TECHWIN	DMKD / INTER COOLER BUNDLE WITH SHELL	UZBEKISTAN	1	2 UNIT	2013
2013-8	SAMSUNG TECHWIN	SAMSUNG TECHWIN	FORTUNE / INTER COOLER BUNDLE WITH SHELL	RUSSIA	2	2 UNIT	2013
2013-9	COSMODYNE	SAMSUNG TECHWIN	COSMODYNE RNC / INTER COOLER BUNDLE WITH SHELL	USA	3	2 UNIT	2013
2013-10	CRYOGENMASH	SAMSUNG TECHWIN	JOBA BAC / I/C BUNDLE WITH SHELL (ASME U-STAMP)	RUSSIA	3	1 UNIT	2014

DASCO Co., Ltd.

Experience List (for Inter/ After Cooler for Compressor)

JOB No	END USER	CONTRACTOR	PROJECT Name / ITEM Name	LOCATION	ITEM	Q'TY	DELIVERY
2013-11	KEPCO	SUNGSAN	DANGJIN / TRANSFORMER OIL COOLER	KOREA	1	1 UNIT	2013
2014	TOTAL	SAMSUNG TECHWIN	INTER 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	SAMSUNG TECHWIN	LITHUANIA / PRE COOLER WITH SHELL (PED-CE Mark)	RUSSIA	1	1 UNIT	2014
2014-3	KEPCO	SAMSUNG TECHWIN	BUKPYEONG / INTER COOLER BUNDLE WITH SHELL	KOREA	1	3 UNIT	2014
2014-4	KEPCO	SAMSUNG TECHWIN	TAEAN #9
 / INTER COOLER BUNDLE WITH SHELL	KOREA	1	2 UNIT	2014
2014-5	EGYPT ERC	SAMSUNG TECHWIN	EGYPT ERC / INTER COOLER BUNDLE WITH SHELL	EGYPT	1	2 UNIT	2014
2014-6	KOLON	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	SAMSUNG TECHWIN	SARB IA / INTER COOLER	UAE	1	3 UNIT	2014
2015	TOTAL	SAMSUNG TECHWIN	INTER COOLER (STANDARD TYPE)	ALL ITEMS	ALL	204 UNIT	2015
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	SAMSUNG TECHWIN	AZERBAIJAN / AFTER COOLER	AZERBAIJAN	1	2 UNIT	2015
2015-5	IRAN HORMOZGAN STEEL	SAMSUNG TECHWIN	IRAN HORMOZGAN MACI / INTER, AFTER COOLER	IRAN	4	1 UNIT	2015
2015-6	IRAN HORMOZGAN STEEL	SAMSUNG TECHWIN	IRAN HORMOZGAN BACI / INTER, AFTER COOLER	IRAN	2	1 UNIT	2015
2015-7	INOTERA	AIR LIQUIDE	ALFE INOTERA / AFTER COOLER	TAIWAN	1	1 UNIT	2015
2015-8	HYUNDAI HEAVY INDUSTRIES	HYUNDAI HEAVY INDUSTRIES	HYUNDAI VINASIN 900HP / INTER, AFTER COOLER	KOREA	2	3 UNIT	2015
2015-9	HYUNDAI HEAVY INDUSTRIES	HYUNDAI HEAVY INDUSTRIES	HYUNDAI STEEL 1500HP / INTER, AFTER COOLER	KOREA	1	3 UNIT	2015
2015-10	SK E&C	SAMSUNG TECHWIN	GUNSAN GE3 / AFTER COOLER	KOREA	1	1 UNIT	2015
2015-11	SIAD	SAMSUNG TECHWIN	SIAD N2 / AFTER COOLER	ITALY	1	1 UNIT	2015
2015-12	STAR REFINERY A.S.	SAMSUNG TECHWIN	AEAGEAN REFINERY PROJECT (ARP) / INTER COOLER	U.S.A	1	6 UNIT	2015
2015-13	STATE COMPANY FOR OIL PROJECT (SCOP)	SAMSUNG TECHWIN	KARBALA REFINERY FEED / INTER, AFTER COOLER	IRAQ	3	3 UNIT	2016
2015-14	KUWAIT NATIONAL PETROLEUM COMPANY	SAMSUNG TECHWIN	KNPC MMA IA / INTER, AFTER COOLER	KUWAIT	3	2 UNIT	2016
2015-15	KOREA DISTRICT HEATING CORP.	SAMSUNG TECHWIN	HWASUNG DONGTAN2 FGC / AFTER COOLER	KOREA	1	3 UNIT	2016
2015-16	JFE STEEL CORPORATION	IHI	3051-073(F95A3S-13300 KW) / AFTER COOLER	JAPAN	3	1 UNIT	2016
2015-17	POSCO E&C	HYUNDAI HEAVY INDUSTRIES	CHUNCHEON CHP / AFTER COOLER	KOREA	1	2 UNIT	2016
2015-18	PRAXAIR	HANWHA TECHWIN	PRAXAIR - PRENTISS / INTER, AFTER COOLER	CANADA	2	2 UNIT	2016
2015-19	HYUNDAI HEAVY INDUSTRIES	HYUNDAI HEAVY INDUSTRIES	600HP AL FIN / INTER COOLER	KOREA	1	1 UNIT	2016
2015-20	HANWHA TECHWIN	HANWHA TECHWIN	SM4000 MEISAIER / AFTER COOLER	KOREA	1	1 UNIT	2016
2015-21	HYUNDAI HEAVY INDUSTRIES	HYUNDAI HEAVY INDUSTRIES	HYUNDAI VINASIN 900HP / INTER, AFTER COOLER	KOREA	1	1 UNIT	2016
2015-22	DAELIM IND.	HANWHA TECHWIN	DAELIM PB2 REVAMPING / RECYCLE COOLER	KOREA	2	1 UNIT	2016

Experience List (for Inter/ After Cooler for Compressor)

[illegible]

Experience List (for Shell & Tube Heat Exchanger)

JOB No	END USER	CONTRACTOR	PROJECT Name / ITEM Name	LOCATION	ITEM	Q'TY	DELIVERY
2009-1	LG ELECTRONICS	LG ELECTRONICS	10RT / EVAPORATOR	KOREA	1	1 UNIT	2009. 07
2009-2	LG ELECTRONICS	LG ELECTRONICS	10RT / CONDENSER	KOREA	1	1 UNIT	2009. 11
2009-3	LG ELECTRONICS	LG ELECTRONICS	100RT / EVAPORATOR	KOREA	1	1 UNIT	2009. 10
2009-4	LG ELECTRONICS	LG ELECTRONICS	100RT / CONDENSER	KOREA	1	1 UNIT	2009. 11
2010-1	LG ELECTRONICS	LG ELECTRONICS	200RT / EVAPORATOR	KOREA	1	1 UNIT	2010. 02
2010-2	LG ELECTRONICS	LG ELECTRONICS	200RT / CONDENSER	KOREA	1	1 UNIT	2010. 02
2010-3	LG ELECTRONICS	LG ELECTRONICS	500RT / EVAPORATOR	KOREA	1	1 UNIT	2010. 04
2010-4	LG ELECTRONICS	LG ELECTRONICS	500RT / CONDENSER	KOREA	1	1 UNIT	2010. 04
2010-5	LG ELECTRONICS	LG ELECTRONICS	500RT / EVAPORATOR	KOREA	1	1 UNIT	2010. 07
2010-6	LG ELECTRONICS	LG ELECTRONICS	500RT / CONDENSER	KOREA	1	1 UNIT	2010. 07
2010-7	LG ELECTRONICS	LG ELECTRONICS	500RT / EVAPORATOR	KOREA	1	1 UNIT	2010. 08
2010-8	LG ELECTRONICS	LG ELECTRONICS	500RT / CONDENSER	KOREA	1	1 UNIT	2010. 08
2010-9	LG ELECTRONICS	LG ELECTRONICS	250RT / EVAPORATOR	KOREA	1	1 UNIT	2010. 12
2010-10	LG ELECTRONICS	LG ELECTRONICS	250RT / CONDENSER	KOREA	1	1 UNIT	2010. 12
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 INDUSTRIES	KOLON INDUSTRIES	DEW HEATER	KOREA	1	1 UNIT	2010
2010-4	KOLON INDUSTRIES	KOLON INDUSTRIES	EG CONDENSER	KOREA	1	1 UNIT	2011
2010-5	KOLON INDUSTRIES	KOLON INDUSTRIES	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 INDUSTRIES	KOLON INDUSTRIES	TOTAL CONDENSER	KOREA	1	1 UNIT	2011
2011-3	KOLON INDUSTRIES	KOLON INDUSTRIES	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	KOREA EAST-WEST POWER	SAMSUNG TECHWIN	ULSAN FGC / DUAL OIL COOLER	KOREA	1	3 UNIT	2013
2012-5	KOREA WESTERN POWER	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 INDUSTRIES	KOLON INDUSTRIES	HTM COOLER	KOREA	1	1 UNIT	2013
2013-5	KOREA EAST-WEST POWER	SAMSUNG TECHWIN	ULSAN FGC / GAS RECYCLE COOLER	KOREA	1	3 UNIT	2014
2013-6	MEDA	SAMSUNG TECHWIN	IREP / DUAL OIL COOLER	INDIA	1	4 UNIT	2014

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Experience List (for Hydrogen Cooler & Air Cooler)

JOB No	END USER	CONTRACTOR	PROJECT Name / ITEM Name	LOCATION	ITEM	Q'TY	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 CCPP / 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-VCIM	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.H.I.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
2013-1	EVN	DOOSAN HEAVY INDUSTRIES	MONG DOUNG-1 / H2 COOLER (ASME U-STAMP)	VIETNAM	1	2 UNIT	2013

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Experience List (for Steam Air Heater)

JOB No.	End User	Contractor	PROJECT Name / ITEM Name	Location	Item	Quantity	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

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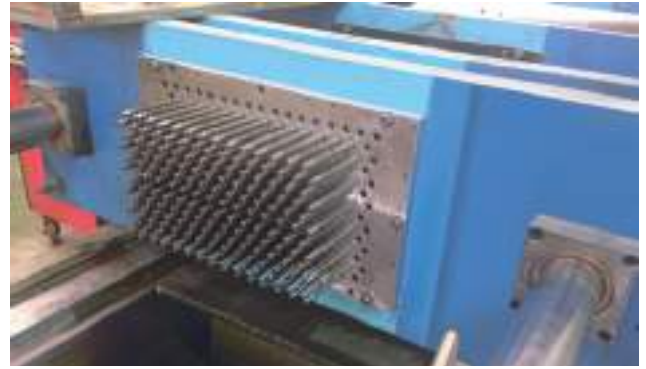
Experience List (for Oil Cooler)

JOB No	END USER	CONTRACTOR	PROJECT Name / ITEM Name	LOCATION	ITEM	Q'TY	DELIVERY
2010-1	KEPCO	DOOSAN	YEHEON / L.O COOLER	KOREA	1	2 UNIT	2010
2010-3	KEPCO	DOOSAN	YEHEON / L.O COOLER	KOREA	1	2 UNIT	2010
2011-1	NIPPON STEEL CORPORATION	NIPPON STEEL CORPORATION	OIL COOLER	JAPAN	1	1 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	KOREA EAST-WEST POWER	SAMSUNG TECHWIN	ULSAN FGC / DUAL OIL COOLER	KOREA	1	3 UNIT	2013
2012-5	KOREA WESTERN POWER	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
2013-6	MEDA	SAMSUNG TECHWIN	INDIA IREP / DUAL OIL COOLER	INDIA	1	4 UNIT	2014
2013-7	YPFB	SAMSUNG TECHWIN	BOLIVIA YPFB / DUAL OIL COOLER (ASME U-STAMP)	BOLIVIA	1	1 UNIT	2014
2014-1	ABU DHABI MARINE OPERATING COMPANY	SAMSUNG TECHWIN	SARB IA / OIL COOLER	UAE	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	STATE COMPANY FOR OIL PROJECT (SCOP)	SAMSUNG TECHWIN	KARBALA REFINERY FEED / OIL COOLER	IRAQ	1	3 UNIT	2016
2015-3	KUWAIT NATIONAL PETROLEUM COMPANY	SAMSUNG TECHWIN	KNPC MMA 1A / DUAL OIL COOLER	KUWAIT	1	4 UNIT	2016
2015-4	KOREA DISTRICT HEATING CORP.	SAMSUNG TECHWIN	HWASUNG DONGTAN2 FGC / OIL COOLER	KOREA	1	3 UNIT	2016
2015-5	POSCO E&C	HYUNDAI HEAVY INDUSTRIES	CHUNCHEON CHP / OIL COOLER	KOREA	1	4 UNIT	2016
2015-6	DAEWOO E&C	ATLAS COPCO	YOUNGNAM CCPP / OIL COOLER (PLATE TYPE)	KOREA	1	2 UNIT	2016
2016-1	FORMOSA PLASTICS CORP.	KOBE STEEL	15-00375-UJFORMOSA / OIL COOLER	TAIWAN	1	1 UNIT	2016

Experience List for Oil & Gas Plant

JOB No.	END USER	Contractor	PROJECT Name / ITEM Name	LOCATION	ITEM	Quantity	DELIVERY
1	LINDE	SAMSUNG TECHWIN	KARRATHA / INTER COOLER BUNDLE WITH SHELL	AUSTRALIA	4	1 UNIT	2011
2	COSMODYNE	SAMSUNG TECHWIN	COSMODYNE RAC / INTER COOLER BUNDLE WITH SHELL	USA	2	1 UNIT	2011
3	SK INNOVATION	SAMSUNG TECHWIN	SK INNOVATION / INTER COOLER BUNDLE WITH SHELL	KOREA	3	1 UNIT	2011
4	KISLORODMASH-BNC	SAMSUNG TECHWIN	KISLORODMASH / INTER COOLER BUNDLE WITH SHELL	RUSSIA	2	2 UNIT	2011
5	WEST QURNA	SAMSUNG TECHWIN	WEST QURNA / INTER COOLER	IRAQ	3	2 UNIT	2012
6	KISLORODMASH-BAC	SAMSUNG TECHWIN	KISLORODMASH / INTER COOLER BUNDLE WITH SHELL	RUSSIA	3	6 UNIT	2012
7	WEST QURNA	SAMSUNG TECHWIN	WEST QURNA / INTER COOLER BUNDLE WITH SHELL	IRAQ	3	2 UNIT	2012
8	HONAM PETROCHEMICAL	HONAM PETROCHEMICAL	C-1301 / INTER COOLER	KOREA	1	1 UNIT	2012
9	SK ENERGY	SK ENERGY	NO.2 FCC REVAMP / OIL COOLER	KOREA	1	2 UNIT	2013
10	SKEC	SAMSUNG TECHWIN	SK NEXLENE / OIL COOLER	KOREA	1	3 UNIT	2013
11	SKEC	SAMSUNG TECHWIN	SK NEXLENE / INTER COOLER BUNDLE WITH SHELL	KOREA	3	3 UNIT	2013
12	EGYPT ERC	SAMSUNG TECHWIN	EGYPT ERC / INTER COOLER BUNDLE WITH SHELL	EGYPT	1	2 UNIT	2014
13	EGYPT ERC	SAMSUNG TECHWIN	EGYPT ERC / INTER COOLER	EGYPT	1	2 UNIT	2014
14	ABU DHABI MARINE OPERATING COMPANY	SAMSUNG TECHWIN	SARB IA / INTER COOLER BUNDLE WITH SHELL	SAUDI ARABIA	1	3 UNIT	2014
15	ABU DHABI MARINE OPERATING COMPANY	SAMSUNG TECHWIN	SARB IA / INTER COOLER	UAE	1	3 UNIT	2014
16	ABU DHABI MARINE OPERATING COMPANY	SAMSUNG TECHWIN	SARB IA / OIL COOLER	UAE	1	3 UNIT	2014
17	YPFB	SAMSUNG TECHWIN	BOLIVIA YPFB / OIL COOLER	BOLIVIA	1	1 UNIT	2014
18	SKEC	SAMSUNG TECHWIN	SK ULSAN CLX / OIL COOLER	KOREA	1	1 UNIT	2014
19	KUWAIT NATIONAL PETROLEUM COMPANY	EBARA ELLIOTT / MISUZU	U-3913-5 KNPC CLEAN FUEL / DRAIN POT	KUWAIT	1	3 UNIT	2015
20	KUWAIT NATIONAL PETROLEUM COMPANY	EBARA ELLIOTT / MISUZU	U-3913-5 KNPC CLEAN FUEL / N2 GAS FILTER	KUWAIT	1	6 UNIT	2015
21	PETROLEUM MEXICANOS	EBARA ELLIOTT / MISUZU	U-3919 SALAMANCA ULSD / DRAIN POT	MEXICO	1	1 UNIT	2015
22	PETROLEUM MEXICANOS	EBARA ELLIOTT / MISUZU	U-3919 SALAMANCA ULSD / N2 GAS FILTER	MEXICO	1	2 UNIT	2015
23	HYUNDAI CHEMICAL CO., LTD	EBARA ELLIOTT / MISUZU	U-3905-8 HDC MX LL / PJT / DRAIN POT	KUWAIT	1	8 UNIT	2015
24	SK E&C	SAMSUNG TECHWIN	GUNSAN GE3 / AFTER COOLER	KOREA	1	1 UNIT	2015
25	SIAD	SAMSUNG TECHWIN	SIAD N2 / AFTER COOLER	ITALY	1	1 UNIT	2015
26	STAR REFINERY A.S.	SAMSUNG TECHWIN	AEGEAN REFINERY PROJECT (ARP) / INTER COOLER	U.S.A	1	6 UNIT	2015
27	STATE COMPANY FOR OIL PROJECT (SCOP)	SAMSUNG TECHWIN	KARBALA REFINERY FEED / INTER, AFTER COOLER	IRAQ	3	3 UNIT	2016
28	STATE COMPANY FOR OIL PROJECT (SCOP)	SAMSUNG TECHWIN	KARBALA REFINERY FEED / OIL COOLER	IRAQ	1	3 UNIT	2016
29	KUWAIT NATIONAL PETROLEUM COMPANY	SAMSUNG TECHWIN	KNPC MMA IA / INTER, AFTER COOLER	KUWAIT	3	2 UNIT	2016
30	KUWAIT NATIONAL PETROLEUM COMPANY	SAMSUNG TECHWIN	KNPC MMA IA / OIL COOLER	KUWAIT	1	4 UNIT	2016

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DYNAMIC & SPECIAL COMPANY

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