



PREQUALIFICATION STATEMENT

(ENGLISH VER.)

 **DAEKYUNG BEND CO., LTD.**

CONTENTS

■ COMPANY PROFILE

- GREETING
- ADDRESS
- BRIEF HISTROY
- CAPITAL & WORK SITE
- ORGANIZATION
- SALES RECODS
- THE MAJOR SUPPLY RECORDS

■ PRODUCT

- SIZE AVAILABILITY
- PRODUCTS ITEM

■ MANUFACTURING PROCESS & CAPACITY

- MANUFACTURING PROCESS
- MANUFACTURING FACILITIES & CAPACITY

■ INSPECTION & TESTING FACILITIES

■ APPROVED CERTIFICATION



GREETING



PRESIDENT
HAK-CHUL.KIM

SINCE 1990, THE YEAR OF ESTABLISHMENT OF OUR COMPANY. WE ARE EXTENDING BUSINESS TO SUPPLY THE PRODUCTS TO THE CUSTOMERS IN EVERY FIELD SUCH AS PETROCHEMICAL, POWER GENERATION, ATOMIC ENERGY AND SHIPBUILDING.

WITH THE TECHNOLOGICAL INNOVATION OF INDUSTRY, WE ARE SUPPLYING PRODUCTS OF HIGH-QUALITY, IN ORDER TO MEET THE DEMAND OF CUSTOMERS TENDING TOWARD HIGH-GRADES AND VARIETY OF ITS KIND, BASED ON OUR REFINED QUALITY CONTROL SYSTEM AND WITH THE CLOSELY COOPERATE OF SUBCONTRACTORS.

FROM NOW AND ON, WE WILL EXERT OUR BEST EFFORT TO SUPPLY PRODUCTS FULLY MET THE REQUEST OF CUSTOMERS IN ALL ASPECTS.

ADDRESS

◇ **HEAD OFFICE**

ADDRESS : #856-5 EOGOK-DONG, YANGSAN-SI, GYEONGSANGNAM-DO, R.O. KOREA

TEL : 055-364-1800

FAX : 055-365-5570

◇ **2nd PLANT**

ADDRESS : #1175 EOGOK-DONG, YANGSAN-SI, GYEONGSANNAM-DO, R.O. KOREA

TEL : 055-364-1898

◇ **ULSAN OFFICE**

ADDRESS : DONGRIM BUILDING 101, #3455 YAEUM-1DONG, NAM-GU, ULSAN, R.O. KOREA

TEL : 052-265-3955

FAX : 052-265-3956

◇ **HOME PAGE** : www.daekyung21.com

BRIEF HISTORY

- 1990. 01. ESTABLISHED A DAEKYUNG METAL
(#890-21, JURYE-DONG, SASANG-GU, BUSAN, KOREA.)
- 1995. 01. MOVE AND EXPANSION OF PLANT
(#139-12, GAMJEON-DONG, SASANG-GU, BUSAN, KOREA.)
- 1996. 10. THE INTRODUCTION OF TQM
- 1997. 01. REGISTERED A QUALITY CIRCLE TO OUTSIDE THE COMPANY
- 1997. 02. SPECIFY OF QUALITY ASSURANCE Q MARK
(KOREA MACHINERY METER AND PETROCHEMICAL TESTING
RESEARCH INSTITUTE ARTICLE 970812-97059)
- 1997. 08. ACQUISITION OF KS CERTIFICATE (KSB 1541, 1543)
- 1998. 11. CERTIFICATE OF GQ FOR EXCELLENT PRODUCT MARK
- 2002. 06. MOVE AND EXPANSION OF PLANT AND CHANGED INTO A
CORPORATION.
- 2002. 07. RENEWAL AND ENLARGEMENT OF KS CERTIFICATE
- 2002. 10. ACQUISITION OF ISO 9001:2000, KSA 9001:2001
- 2003. 01. CERTIFICATE RENEWAL OF GQ FOR EXCELLENT PRODUCT
MARK (ARTICLE-EQUIPMENT-113)
- 2003. 02. RENEWAL AND ENLARGEMENT OF KS CERTIFICATE
- 2004. 05. CERTIFICATE RENEWAL OF GQ FOR EXCELLENT
PRODUCT MARK (ARTICLE-EQUIPMENT-113)
- 2005. 10. THE ACQUISITION OF KSA 9001:2001/ISO 9001:2000
- 2008. 06. MOVE AND EXPANSION OF PLANT (CURRENT ADDRESS)

BRIEF HISTORY

- 2008. 07. CERTIFICATE OF VARIOUS CLASSIFICATION
(BV/KR/ABS/DNV/RINA/LR/GL)
- 2008. 10. THE ACQUISITION OF KSA ISO 9001:2007/ISO 9001:2000
- 2008. 12. RE-ACQUISITION OF KS CERTIFICATE (KS B 1541, 1543)
- 2009. 02. THE ACQUISITION OF NEW JIS (JIS B 2312/2313)
- 2010. 01. THE ACQUISITION OF KR QA APPROVAL
- 2010. 05. THE ACQUISITION OF ASME NPT CERTIFICATE
- 2011. 01. THE ACQUISITION OF KEPIC CERTIFICATE
- 2011. 07. CERTIFICATE RENEWAL OF
KSA ISO 9001:2009/ISO 9001:2008
THE ACQUISITION OF ISO 14001:2009/ISO 14001:2004
- 2011. 11. THE ACQUISITION OF KC HYGIENE & SAFETY STANDARD
CERTIFICATION
- 2013. 03. CERTIFICATE RENEWAL OF KR QA APPROVAL
- 2013. 05. CERTIFICATE RENEWAL OF KR TYPE APPROVAL
- 2013. 07. CERTIFICATE RENEWAL OF
KSA ISO 14001:2009/ISO 14001:2004
- 2013. 08. THE ACQUISITION OF NEW JIS (JIS B 2309)
- 2013. 09. THE ACQUISITION OF APPROVAL OF MANUFACTURERS
OF MATERIALS BY RINA
- 2013. 10. THE ACQUISITION OF PED97/23/EC
- 2014. 01. CERTIFICATE RENEWAL OF ASME NPT
- 2014. 07. APPROVED VENDOR SAMSUNG HEAVY INDUSTRIES

CAPITAL & WORK SITE

CAPITAL STOCK : 700,000,000

PLANT SITE(HEAD OFFICE)

- #856-5 EOGOK-DONG, YANGSAN-SI, GYEONGSANNAM-DO, R.O. KOREA (137, EOGOKGONGDAN-RO)
- TOTAL AREA : 7,272.7m²
- FACTORY AREA : 4,961.6m²

2nd PLANT SITE

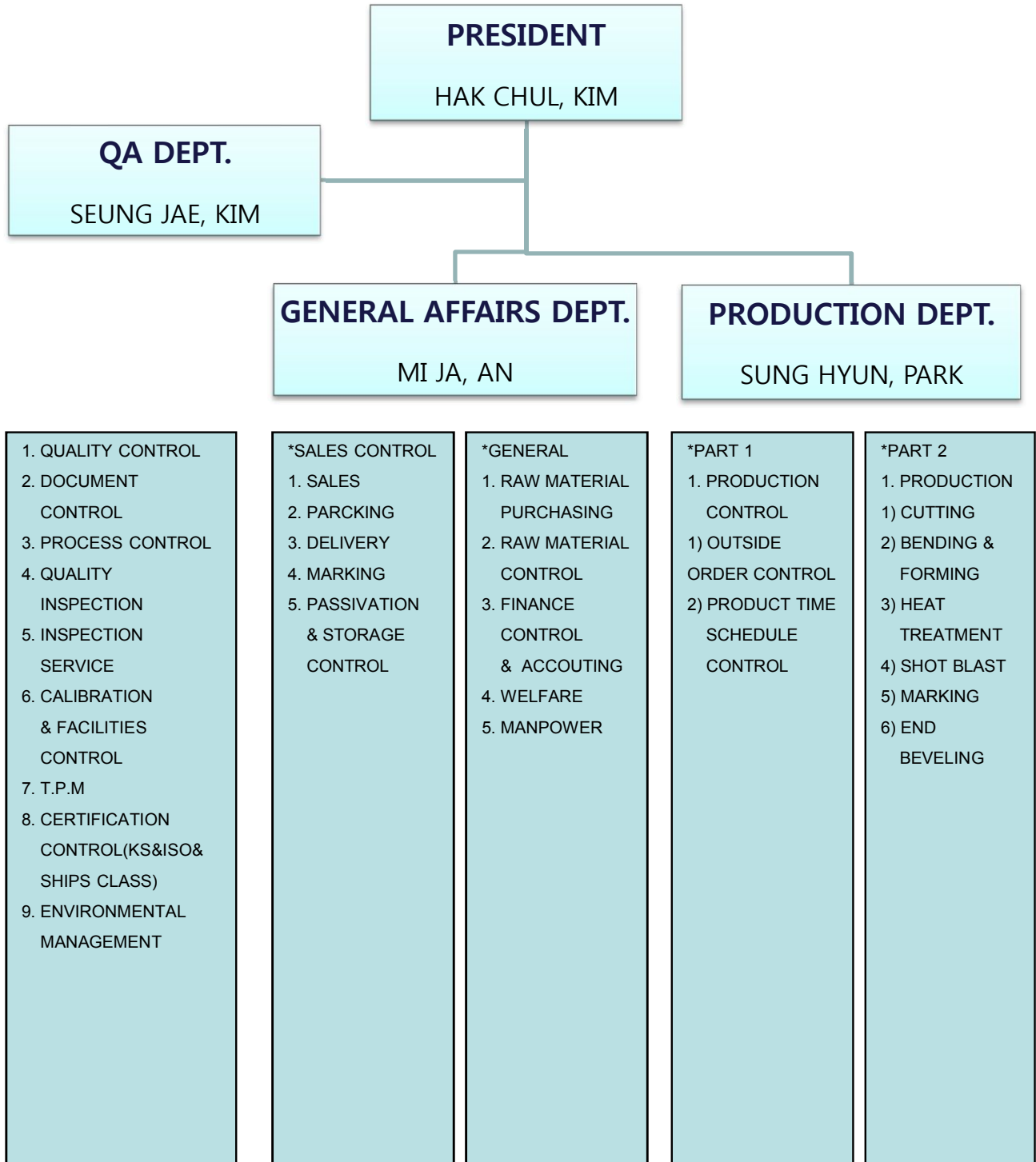
- #1175 EOGOK-DONG, YANGSAN-SI, GYEONGSANNAM-DO, R.O. KOREA (383-33, EOSIL-RO)
- TOTAL AREA : 4,206m²
- FACTORY AREA : 1766.2m²

ULSAN OFFICE

- DONGRIM BUILDING 101, #3455 YAEUM-1DONG, NAM-GU, ULSAN, R,O. KOREA

PERSONNEL : APP 58

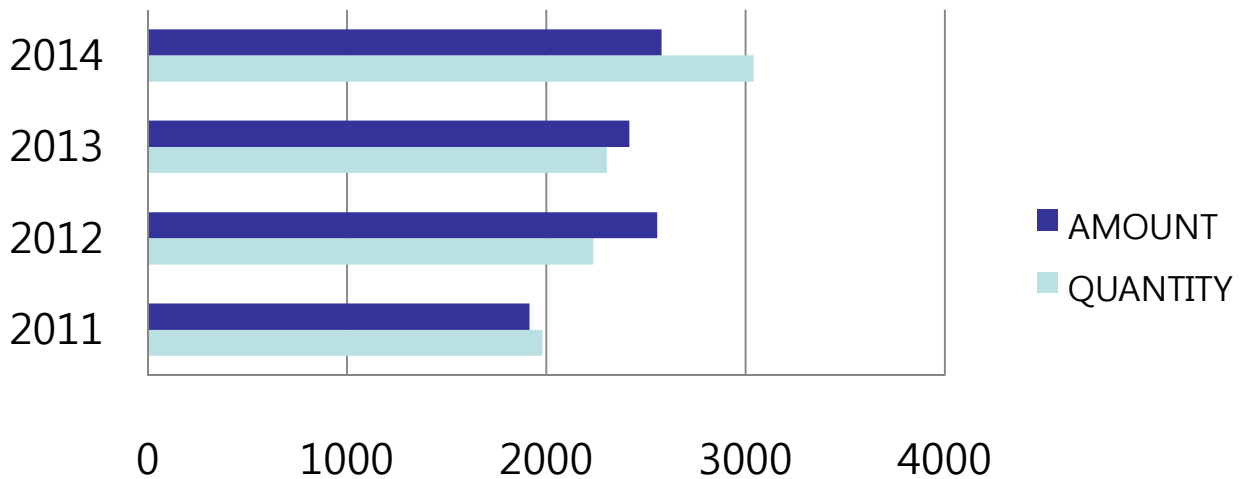
ORGANIZATION



SALES RECORDS

YEAR	QUANTITY (TON)	AMOUNT (MILLION WON)
2011	1980.2	19,156
2012	2235.5	25,568
2013	2303.9	24,180
2014	3041.9	25,799

SALES RECORDS OF DAEKYUNG BEND



THE MAJOR SUPPLY RECORDS (Domestic Demand)

PROJECT	CLIENT	DESCRIPTION	YEAR
High Purity Hydrogen Project	Samsung Total	A403 WP316L	2006
Dongyang OCI-P4 Project	eTEC E&C	A403 WP304L, WP316L	2009
Guui Water Purification Center -Advanced Water Treatment Process	Daewoo E&C	KS D3576 STS304	2009
Shin Uljin NPP #1,2	Daelim Industrial	A403 WP304, WP316L	2010
KOGAS -Samcheok LNG Receiving Terminal	Daelim Industrial Doosan Heavy I&C	A403 WP304	2011
Honam Mitsui Chemical-3PZ Project	eTEC E&C	A403 WP304	2011
Tongsuh Petrochemical-TS7000 Project	Daelim Industrial	A403 WP304, WP316L	2011
Kumho P&B -BPA IV Plant Extension Project	Daelim Industrial	A403 WP316L	2011
KOGAS -Pyeongtaek LNG Receiving Terminal	Daewoo E&C	A403 WP304	2011
HKS PS-2 Project	Hankook Silicone	KS D3576 STS304, A403 WP304	2011
Tongsuh Petrochemical -TS7000 NO.4 AN Project	eTEC E&C	A403 WP304, WP316L	2011
Huchems-#5 NA Project	Hanwha E&C	A403 WP316L	2011
Posco Gwangyang SNG Project	POSCO E&C	A403 WP316L	2012
SK Incheon V-Project	SK E&C	A403 WP304L	2012

THE MAJOR SUPPLY RECORDS (Domestic Demand)

PROJECT	CLIENT	DESCRIPTION	YEAR
Godeok Green Energy Fuel Cell Power Plant	SK E&C	KS D3576 STS304	2014
Guui Water Purification Center	Daewoo E&C	KS D3576 STS316L	2014
Dangjin Coal-Fired Power Plant #9,10	Daelim Industrial	A403 WP304	2014
Dongducheon LNG CCPP	Samsung C&T	A403 WP316L	2014
Donghae Bukpyeong Coal-Fired Power Plant	STX Heavy I&C	A403 WP304	2014
Samcheok Thermal Power Plant -Green Power #1,2	GS E&C	A403 WP304	2014
Samcheok LNG	Hanhwa E&C	A403 WP304	2014
Shin Boryeong Thermal Power Plant #1,2	Doosan Heavy I&C	A403 WP304, WP316L, A815 S31803	2014
Shin Uljin NPP #1,2 Wastewater Treatment	Daelim Industrial	A403 WP304	2014
Shin Hanul NPP #1 WBPP Package PJT	SK E&C	A403 WP316L	2014
Ansan LNG CCPP	Posco E&C	A403 WP304, WP316L	2014
Incheon Shinyeongheung Thermal Power Plant #5	Doosan Heavy I&C	A403 WP304, WP316L	2014
Taeon IGCC	Doosan Heavy I&C	A403 WP304L	2014
Taeon Thermal Power Plant #9,10	Daelim Industrial	A403 WP304	2014
Pyongtaek Thermal Power Plant #2	Daewoo E&C	A403 WP316L	2014
Posco Gwangyang SNG PJT	Posco E&C	A403 WP304/L, WP316L	2014
Icheon SK Hynix M14 PJT	SK E&C	KS D3576 STS304	2014
SK V PJT	SK E&C	A403 WP304L	2014
Lotte Chemical EC PJT #3	Lotte E&C	A403 WP304	2014
Saemangeum Integrated Energy System	Doosan Heavy I&C	A403 WP304	2014
Incheon Songdo Sewage Treatment Plant	Samho E&C	KS D3576 STS304	2014
Needle Cokes Plant PJT	Posco E&C	A403 WP304	2014
Tangjeong SMD-Y (A3) Line PJT	Samsung Eng	A403 WP304	2014
Shipbuild & Offshore	Samsung Heavy Industry	A403 WP304, WP316L KS D3576 STS304, 316L	2014

THE MAJOR SUPPLY RECORDS(EXPORT)

PROJECT	CLIENT	DESCRIPTION	CONTRY
EPC for Spiking Gas Compressor at SHAH CDS(ADCO Project NO.P90174)	Abu Dhabi Company for Onshore Oil Operations(ADCO) / Punj Lloyd		UAE
Guara-Petrobras FPSO Cidade de Sao Paulo MV-23 Project	Aibel Limited	A403 WP316L	Brazil
JRU Project	Aibel Limited	A403 WP316L	Thailand
OSX 3 FPSO	Aibel Limited	A403 WP316L	Thailand
Tupi Project	Aibel Limited	A403 WP316L, A815 S31803	Brazil
AYT Project	Ajinomoto Co.,Ltd	JIS B2313 SUS304, 316L	Thailand
Boi Project	Ajinomoto Co.,Ltd	JIS B2313 SUS304	Thailand
N4C, N5C of TNE3A Project	Ajinomoto Co.,Ltd	JIS B2313 SUS304L, 316L, 10K, JIS B2220 SUS304	Malaysia
IRAN-II PTA DBN Project	Arabian Industrial Fibers Company (IBN-RUSHD)		Iran
Zamzama Phase 1 Development	BHP Billiton Petroleum	A815 S31803	Pakistan
Macedon Gas Project	BHP Billiton Petroleum Pty Ltd / Technip		Australia
Bid Boland-II Gas Treating Plant Project	Bid Boland & Sepehr Co(BBSC)		Iran
Bien Dong 1 Project(Offshore Facilities)	Bien Dong Petroleum Operating Company		Vietnam
BLNG TANK T-4106 EPC Project	Brunei LNG Sdn Bhd(TKK)		Brunei
JDA Block B-17 Project - Phase 2 Development.	Carigali-PTTEPI Operation Company Sdn Bhd (CPOC)		Thailand/ Malaysia
Booster Comperession Project	Carigari Hess Operating Co Sdn Bhd	A815 S31803	Malaysia
Sand Management Project	Carigari Hess Operating Co Sdn Bhd	A403 WP316/L, A815 S31803	Malaysia
GORGON Gas Project , Barrow island LNG Plant	Chevron Australia Pty Ltd(CAPL)	A815 S31803	Australia
Singapore Expansion Project	Chevron Oronite Pte Ltd		
Jordan Research & Training Reactor(JRTR)	DAEWOO Engineering & Construction		Jordan
Raicing Factory	Daewoo Industry	A403 WP316L	Brazil
Suriya B Development Project	Dialog Otec Sdn Bhd	A815 S31803	Malaysia
Newfield Gas Mru Unit Project	Dialog PLNT Services Sdn Bhd	A815 S31803	Malaysia
Macedon Gas Project	Edgen Murray / Thai Nippon Steel	A403 WP316/L, A815 S31803	Australia

THE MAJOR SUPPLY RECORDS(EXPORT)

PROJECT	CLIENT	DESCRIPTION	CONTRY
Chana Combined Cycle Power Plant Block 2 / Train 1&2	Electricity Generating Authority of Thailand	A403 WP304L	Thailand
Wang Noi CCPP Block 4	Electricity Generating Authority of Thailand	A403 WP304L	Thailand
	Engineers India Limited(EIL)	A815 S32750	
Topis R Topside	Exxon Mobile Exploration & Production Malaysia Inc	A815 S31803	Malaysia
Sakhalin 1 Project	Exxon Neftegas Limited(ENL)-Subsidiary of ExxonMobil		Russia
Upstream Project(MPDS)	ExxonMobil Exploration & Production Malaysia Inc		Malaysia
Foster Wheeler Project	Foster Wheeler E&C Sdn Bhd	A403 WP321, A403 WP316	Malaysia
PSR-2 Revamp Project	Foster Wheeler Energy Limited(FWEL)	A403 WP321, WP304L, WP304H	Malaysia
Ribigh Development Project	Foster Wheeler Energy Limited(FWEL)	A403 WP316, WP304L	SaudiArabia
TPO Project	Foster Wheeler Energy Limited(FWEL)	A403 WP304	Thailand
Amonia and Urea Plant in MARY	Genoyer(KAWASAKI Plant System)		
HYNIX	HYNIX	A403 WP316L	China
PUSRI-II B Project	Indonesia, Palembang		Indonesia
Ichthys Gas Field Development Project, Offshore Facilities Feed	Inpex Browse Ltd		Australia
Block 06.1 Phase III Lan Do Development Project	INTEC SEA-Worley Parsons Group		Vietnam
Nestor Oil Tuas Power Scop Project	Jacobs Engineering Singapore Pte Ltd	A403 WP316L	Singapore
NoiBai International Airport Terminal 2 Construction Project	JFE Engineering Corporation		Vietnam
Samco Jubail AcrylIC Acid Complex -K1005052	KNM		SaudiArabia
LPG 4 - MAA Project	Kuwait National Petroleum Company(KNPC)		Kuwait
Middle East Southeast Asia	Kuwait National Petroleum Company(KNPC)	A403 WP321, WP304, WP316L	Malaysia
Floating Feed Desliming Project	Lane Xang Minerals Limited(LXML)		
BTR Singapore Project	Lanxess Butyl Pte Ltd		Singapore
BE & BG Platform	Maersk Oil Qatar(MOQ)	A403 WP316L	Malaysia
MOQ 16	Maersk Oil Qatar(MOQ)	A403 WP316L	Malaysia

THE MAJOR SUPPLY RECORDS(EXPORT)

PROJECT	CLIENT	DESCRIPTION	CONTRY
VRL PROJECT	Malaysia LNG Sdn Bhd(MLNG)	A403 WP304L	Malaysia
Gumusut-Kakap Topsides	Malaysia Marine and Heavy Engineering (MMHE)		Malaysia
Maintenance	Malaysian Refining Company Sdn Bhd	A403 WP321	Malaysia
MOC Project	Map Ta Phut Olefins Co., Ltd(MOC)	A403 WP304	Thailand
Brine Line Replacement Project	Mighty River Power Limited(MRP)		
Sohar Fertiliser Project	Mitsubishi Heavy Industries	A403 WP316L	Omen
Petrobras FPSO Cidade de Sao Paulo MV-23	Mitsui Ocean Development & Engineering Company (MODEC)		
Borf Centrifugal Compressor Project	Muppy Sarawak Oil Co.,Ltd	A403 WP316L, A815 S31803	Malaysia
NIOEC Project	National Iranian Oil Engineering & Construction Company		Iran
SAWAN Gas Field Development Porject	OMV(Pakistan) Exploration Gmbh		Pakistan
Telok Gas Field Project	Pantech		Malaysia
RPLC Deep Conversion Project	PDVSA		Venezuela
Jambi Merang Development Project	Pertamina - Hess / PT Tripatra	A403 WP304, WP316L, A182 F51, A815 S31803	Indonesia
Minas Surfactant Project	Petresco Process Systems Cameron	A403 WP304, WP316	Jakarta
NF3 Plant of BIPC	Petrochemical Industries Development	A182 F316	Iran
Betara Complex Development Project	Petro-China International Jabung Ltd		Indonesia
Kharyaga Phase III Project	Petrofac		Russia
Refinery Master Plan 2(RMP-2) Project	Petron Corporation(Philippines)		Philippines
Petronas Lng Train 9 Project	Petronas		
PFLNG EPCIC Project	Petronas		
Plant Rejuvenation & Revamp 2 Project	Petronas	A403 WP316L	Malaysia
Turkmenistan block-1 Project	Petronas Carigali (Turkmenistan) SDN BHD.		Turkmenistan
Yetagun Phase 4 Development Project	Petronas Carigali Myanmar (Hong Kong) Limited		Myanmar
Kumang Cluster Development Project	Petronas Carigali Sdn Bhd	A403 WP316L	Malaysia

THE MAJOR SUPPLY RECORDS(EXPORT)

PROJECT	CLIENT	DESCRIPTION	CONTRY
Sabah Oil and Gas Terminal Project	Petronas Carigali Sdn Bhd	A403 WP321	Malaysia
Petronet 2.5 MMTA LNG Receiving Terminal Project	Petronet Lng Ltd(PLL)		Indonesia
HSD/HST Chemical & Methanol Injection Pumps Skid	PetroVietnam Gas Corporation	A182 F316/L	Vietnam
South Sumatra NGL Project	PT E1 - Pertamina / PT Tripatra	A403 WP304	Indonesia
Ammonium Nitrate Prill Plant Project	PT Kaltim Nitrate Indonesia(KNI)	A403 WP304, WP316, A815 S31803	Jakarta
Jambi Merang Development Gas Production Facilities	PT Tripatra-Jambi Merang		Indonesia
Grissik-Pagardewa Pipit Line Project	PT. Perusahaan Gas Negara Tbk(PT. PGN)	A403 WP304S	Indonesia
ROPP Project	PT. Rekayasa Industri	A182 F304, A403 WP304	Indonesia
Banyu Urip Project	PT. Worley parsons Indonesia		Indonesia
PPCL BPA Project(BOI Project)	PTT Phenol Co., Ltd	A403 WP304, WP304L	Thailand
Ethane Cracker Project	PTT Polyethylene Company Limited(PTTPE)	WPB, WPL6, A403 WP304	Thailand
LDPE Plant Project	PTT Polyethylene Company Limited(PTTPE)	A403 WP304	Thailand
PPCL BPA Project	PTT Polyethylene Company Limited(PTTPE)	A403 WP304	Thailand
Platform Compression Facilities Project	Punj Lloyd Group Joint Venture	A403 WP316L	Malaysia
EPIC for Gas Sweetening Facilities Project	Qatar Petroleum / Petrofac		Qatar
Rasgas Long Term EPCM Services Contract Project	Rasgas Company Limited		Qatar
PG Tank and Distributer Project	Rayong Terminal Company Limited(RTC)		Thailand
ABS Cert. SSK H785 LPGC.	Sasebo Shipbuilding(Nippon)		
AR Razi Plant V Project	Saudi Methanol Company	A403 WP304	SaudiArabia
FPSO / Siakap North Petai Development EPCIC	SBM Offshore / Murphy Sabah Oil		Malaysia
Corporate Engineering Standard Project	SBM Production Contractors		
MESC Spec	Shell		
Maintenance	Shell Global Solutions International	A815 S31803	Malaysia
Shell Project	Shell Global Solutions International	A403 WP304L, WP316L, A815 S31803	Malaysia

THE MAJOR SUPPLY RECORDS(EXPORT)

PROJECT	CLIENT	DESCRIPTION	CONTRY
SMDS Jetty Upgrade Phase 1	Shell MDS	A182 F321, A403 WP321	Malaysia
D12 Field Development	Shell Sarawak	A403 WP316L, A815 S31803	Malaysia
Choryo	Sumitomo	A403 WP316L	Japan
Northern Field Bunga Orkid Development Project	Talisman Malaysia Limited		
PVC 9 Project	Thai Plastic and Chemicals Public Co.,Ltd	A403 WP304, WP316L	Thailand
HST Full field Development & HSD Early Production System Development Project	Thang Long Joint Operating Company / Petro Vietnam Technical Services Corporation	A182 F316L, A403 WP304	Vietnam
Waste Water Treatment Plant Project (WWTPP)	The Bahrain Petroleum Company(BAPCO)		
Petronet LNG Ahej Expansion Project	Toyo Engineering Corporation	A403 WP304	India
Carigali Hess MRU Project	Tuah Nusa Sdn Bhd	A403 WP316L	Malaysia
Melaka Refinery PSR2 Revamp Project	Tuah Nusa Sdn Bhd	A403 WP316L, WP321, WP304L	Malaysia
PCTSB Turkmenistan, West Diyarbekir Project	Tuah Nusp(MMHE)		Turkmenistan
Barakah Nuclear Power Plant(BNPP) Project	UAE ENEC		UAE
DBN3 Project	UBE Chemicals Public Company	A403 WP304, 316L	Malaysia
Abadan Refinery Cooling Water System Project	Unknown		Iran
Asturi Metal Builders(M) Sdn Bhd	Unknown	A403 WP316L	Malaysia
CGC & RD Project	Unknown	A403 WP304	Malaysia
GS EP PVV 619	Unknown	A403 WP304, WP316L, A815 S31803	Malaysia
JG Summit PE Capacity Expansion Project	Unknown	A403 WP304	Philippines
Mep Project	Unknown	A403 WP304, WP304L	Malaysia
Mingbo LNG Project	Unknown	A403 WP316L	China
MT1 & HT1 Project	Unknown	A815 S31803	Vietnam
PNG LNG Epc4(Fuel Gas Conditioning System)	Unknown	A182 F316L	Singapore
PT Profab Indonesia	Unknown	A182 F316L	Indonesia
SBM OXS2 Topside	Unknown	A403 WP316L, A815 S31803	Singapore

THE MAJOR SUPPLY RECORDS(EXPORT)

PROJECT	CLIENT	DESCRIPTION	CONTRY
Tupi 3 Project	Unknown	A403 WP316L, A815 S32750	Singapore
Vietnam Oil	Unknown	A403 WP316L, A106-B	Vietnam
Bien Dong 1 Project	Worley Parsons Petro Vietnam Engineering	A815 S31803	Vietnam
QCLNG Upstream Project	Worley Parsons Resources & Energy		Australia
YANSAB U & O Project	Yanbu National Petrochemical company	A182 F304, A403 WP304	SaudiArabia

[SUPPLY RECORDS ('2014)]

PROJECT	CLIENT	DESCRIPTION	CONTRY
BNPP #3, 4	Emirate Nuclear Energy Corporation(ENEC)	A403 WP304, WP304L	UAE
CSP Cokes Plant	Companhia Siderurgica do Pecem	A403 WP304, 316L	Brazil
Oman Barka #1,2 Waste Water	Sohar Power Company SAOC	A403 WP316L,304L	Oman
BESAR PJT	Petronas Carigali SDN.BHD	A815 S31803, S32750	Malaysia
BOD Flowline Headers Extension PJT	Taliaman	A815 S31803	Malaysia
Booster Comperession PJT	Carigali Hess Operating Company SDN.BHD	A815 S31803/S32205	Malaysia
GTPOGT PJT	Petronas Carigari Sdn.Bhd.	A403 WP316L	Turkmenistan
Jijel & Biskra Mega CCPP Plant	Sonelgaz SPE	A403 WP304, 316L	Algeria
NOV PJT STV-Closed Drain Skid	None	A403 WP316L	Vietnam
NSRP PJT-Thanh Hoa Refinery	NSRP LLC	A403 WP304, 316L	Vietnam
PTT Phenol Train II Project	PTT GC	A403 WP304L, 316L	Thailand
S1EX17 & S1EX19 PJT	MES Mitr Project Services Co., Ltd.	A182 F304	Thailand
SHELL Malikai EPC TLP PJT	Petronas	A182 F316/L, A815 S31803	Malaysia
SHELL PJT	Shell Global Solutions	A403 WP316/L, A815 S31803	Malaysia
SM200 PJT-Coal fired Power Plant	Conal Holdings Corporation	A403 WP304, 316L	Philippines
STV-CIS PJT	None	A403 WP316L	Vietnam
Yanbu 3 Steam Surface Condenser	Saline Water Conversion Corporation(SWCC)	A403 WP304	SaudiArabia
Morocco ODI	Office Chérifien des Phosphates(OCP)	A403 WP904L	Morocco
Saudi QIPP PJT	Saudi Electricity Co(SEC)	A403 WP304	SaudiArabia
Cochrane-Coal Fired Power Plant	AES Gener	A403 WP304	Chile

SIZE AVAILABILITY

NO	PRODUCT	RAW MATERIAL (STS 304/304L/316/316L/DUPLEX) (WP 304/304L/316/316L/DUPLEX)		MANUFACTURING RANGE	
		MATERIAL	TYPE	RANGE	
A	ELBOW 90D, 45D (LONG, SHORT)	PIPE	SEAMLESS	L	15A~500A(1/2"~20")
				S	25A~600A(1"~24")
		PIPE&PLATE	WELD	15A~1200A(1/2"~48")	
B	TEE(S)	PIPE	SEAMLESS	15A~600A(1/2"~24")	
		PIPE&PLATE	WELD	15A~1200A(1/2"~48")	
	TEE(R)	PIPE	SEAMLESS	20X15A~600X400A (3/4"X1/2"~24X16")	
		PIPE&PLATE	WELD	20X15A~1200X1150A (3/4"X1/2"~48X46")	
C	REDUCER (CON,ECC)	PIPE	SEAMLESS	20X15A~600X500A (3/4"X1/2"~24X20")	
		PIPE&PLATE	WELD	20X15A~1200X1150A (3/4X1/2"~48X46")	
D	CAP	PLATE	SEAMLESS	15A~1200A(1/2"~48")	
E	STUB-END	STAINLESS STEEL (PIPE+PLATE) WELDING	SEAMLESS	15A~300A(1/2"~12")	
			WELD	15A~1000A(1/2"~40")	

PRODUCTS ITEM

NO	PRODUCTS	TYPE		USING CONDITION	APPROVAL
1	STAINLESS STEEL BUTT- WELDING PIPE FITTINGS	ELBOW	45E(L)	A) INDUSTRIAL PLANT B) SHIPBUILDING CONSTRUCTION C) ON LAND CONSTRUCTION D) PETROCHEMICAL PLANT E) OFFSHORE PLANT F) NUCLEAR POWER PLANT G) POWER PLANT H) LNG GAS TERMINAL	A) PRODUCTS 1)KS B 1541 (JIS B 2312) 2) ASTM A403 3) ASTM A815 4) ASTM B366 B) RAW- MATERIAL 1) KS D 3576 2) KS D 3588 3) KS D 3698 4) KS D 3705 5) ASTM A312 6) ASTM A240 7) ASTM A790 8) NI ALLOY
			90E(L)		
			90E(S)		
		REDUCER	R(C)		
			R(E)		
		TEE	T(S)		
			T(R)		
		CAP			
STUB-END					

NO	PRODUCTS	TYPE		USING CONDITION	APPROVAL
1	STAINLESS STEEL PLATE BUTT- WELDING PIPE FITTINGS	ELBOW	45E(L)	A) INDUSTRIAL PLANT B) SHIPBUILDING CONSTRUCTION C) ON LAND CONSTRUCTION D) PETROCHEMICAL PLANT E) OFFSHORE PLANT F) NUCLEAR POWER PLANT G) POWER PLANT H) LNG GAS TERMINAL	A) PRODUCTS 1)KS B 1543 (JIS B 2313) 2) ASTM A403 3) ASTM A815 4) ASTM B366 B) RAW- MATERIAL 1) KS D 3576 2) KS D 3588 3) KS D 3698 4) KS D 3705 5) ASTM A312 6) ASTM A240 7) ASTM A790
			90E(L)		
			90E(S)		
		REDUCER	R(C)		
			R(E)		
		TEE	T(S)		
			T(R)		
		CAP			
STUB-END					

*INTRODUCTORY REMARKS

-E(L) : ELBOW LONG

-R(C) : CONCENTRIC REDUCER

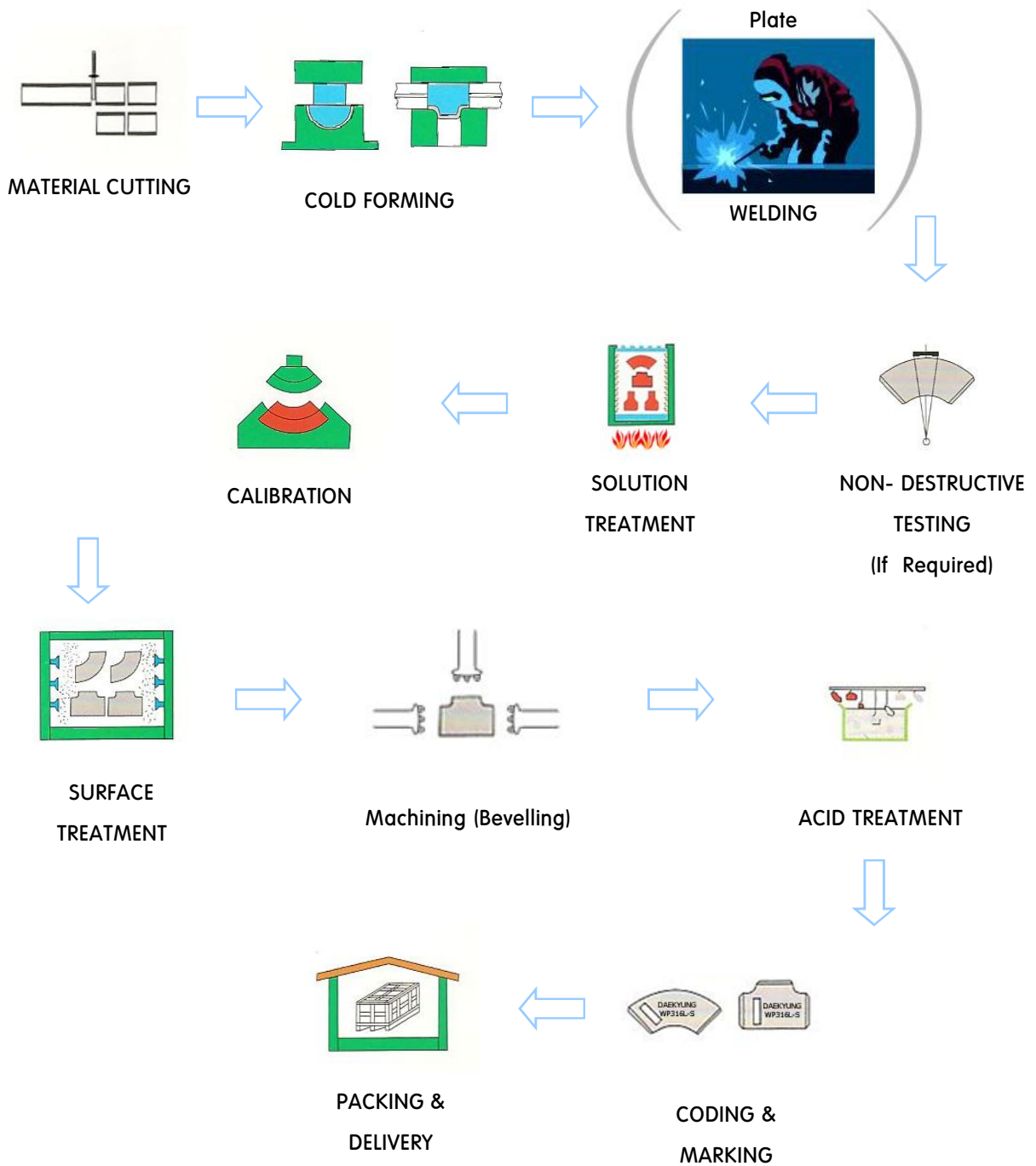
-T(S) : STRAIGHT TEE

-E(S) : ELBOW SHORT

-R(E) : ECCENTRIC REDUCER

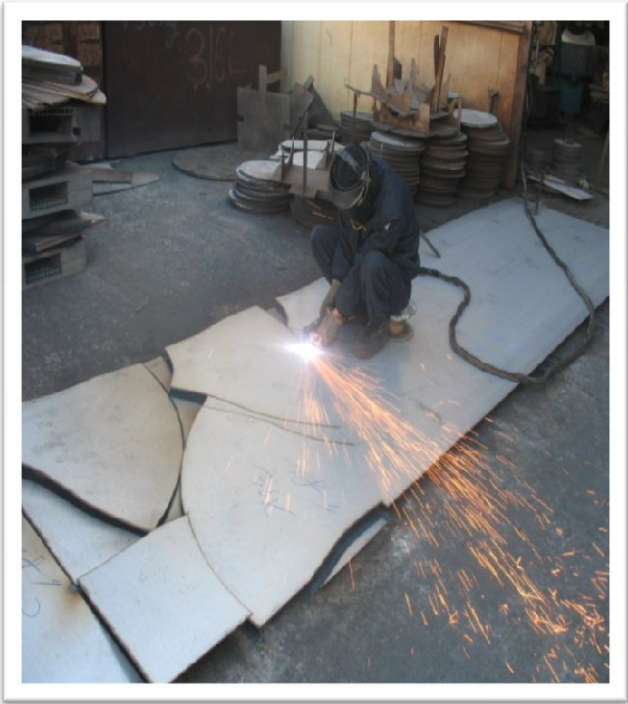
-T(R) : REDUCING TEE

MANUFACTURING PROCESS & CAPACITY



MANUFACTURING PROCESS & CAPACITY

MATERIAL CUTTING



COLD FORMING



 DAEKYUNG BEND CO., LTD.

MANUFACTURING PROCESS & CAPACITY

TAG WELDING



WELDING



NON- DESTRUCTIVE TESTING



 DAEKYUNG BEND CO., LTD.

MANUFACTURING PROCESS & CAPACITY

SOLUTION TREATMENT



CALIBRATION



CALIBRATION



SURFACE TREATMENT



 DAEKYUNG BEND CO., LTD.

MANUFACTURING PROCESS & CAPACITY

SURFACE TREATMENT



MACHINING (BEVELLING)



 DAEKYUNG BEND CO., LTD.

MANUFACTURING PROCESS & CAPACITY

MACHINING (BEVELLING)



ACID TREATMENT



ACID TREATMENT



CODING & MARKING



 **DAEKYUNG BEND CO., LTD.**

MANUFACTURING PROCESS & CAPACITY

PACKING & DELIVERY



 DAEKYUNG BEND CO., LTD.

MANUFACTURING FACILITIES & CAPACITY

NO	FACILITIES	DESCRIPTION	Q'TY	SPECIFICATION
1	CUTTING MACHINE	AUTO SAWING MACHINE	9	250mm~550mm
		PLASMA CUTTER	9	120A~160A
2	AUTO PIPE BENDING MACHINE	AUTO HYD-PRESS	15	50Ton~2000Ton
		TEE BULGING MACHINE	3	600Ton, 1000Ton, 6000Ton
		STUB END BULGING MACHINE	1	2"~12"
		POWER PRESS	2	0.5Ton, 1Ton
3	WELDING MACHINE	ARC WELDING MACHINE	3	300A, 500A
		ARGON WELDING MACHINE	2	500A
		CO ₂ WELDING MACHINE	3	500A
4	SURFACE TREATING	SHOT BLAST MACHINE	2	800kg, 1200kg
5	HEAT TREATING	HEAT TREATMENT FURNACE	2	1300 °C
6	END BEVELLING MACHINE	LATHE MACHINE	4	400X1060, 580X1050, 710X1050, 530X1050
		END BEVELLING MACHINE (ONE SIDE)	8	50A, 100A, 200A, 500A, 600A, 1000A, 1200A
		END BEVELLING MACHINE (BOTH SIDE)	4	100A, 200A, 300A
		END BEVELLING MACHINE (TRIPLE SIDE)	3	150A, 350A
		END BEVELLING MACHINE	4	25A, 50A, 100A, 150A
7	THE OTHERS	UNIVERSAL MILLING MACHINE	1	370mmX600mm
		BENCH DRILLING MACHINE	1	600A
		GRINDER CUTTING MACHINE	1	16"
		BENCH GRINDER	1	7", 8"
		HAND GRINDER	4	4", 7"
		INK JET MARKING MACHINE	1	¾"~6"
		LASER MARKING MACHINE	1	½"~8"
		COMPRESSOR	2	7.5kW, 37.3kW
		HOIST(CRAIN)	10	0.5Ton, 2Ton, 2.8Ton, 5Ton, 10Ton
		FORKLIFT TRUCK	8	1Ton, 1.5Ton, 3Ton
		ROLLER BENDING MACHINE	1	500Φ
		SANDING MACHINE	1	5800mmX5400mmX4500mm
		A PREHEATER WELDING ROD	1	400 °C

INSPECTION & TESTING FACILITIES

NO	FACILITIES	DESCRIPTION	Q'TY	SPECIFICATION	ACCURACY	
1	UTM	UNIVERSAL TEST MACHINE	1	0~294.2kn	1kn	
2	HARDNESS TESTER	ROCKWELL	1	0~150kgf	1kgf	
		BRINELL	1	0~3000kg	1kg	
3	THERMOMETER	THERMOCOUPLE THERMOMETER	1	0~1200℃	1℃	
		INFRARED THERMOMETER	1	-20℃~315℃	1℃	
		A MINIMUM THERMOMETER	1	-300℃~200℃	1℃	
4	GAUGE	PRESSURE GAUGE	1	0~4.9MPa	0.1MPa	
			2	0~15MPa	0.1MPa	
			2	0~25MPa	0.1MPa	
			1	0~49.9MPa	0.1MPa	
		HYDROSTATIC TESTING MACHINE	1	0~100MPa	1MPa	
5	DIMENSION EQUIPMENT	DIAL THICKNESS GAUGE	1	0~10mm	0.01mm	
		MICRO METER	1	0~25mm	0.01mm	
		DIGITAL MICRO METER	1	0~25mm	0.001mm	
		VERNIER CALIPERS	3	0~300mm	0.05mm	
			3	0~600mm	0.05mm	
			1	0~1000mm	0.05mm	
		DIGITAL VERNIER CALIPERS	2	0~150mm	0.01mm	
			2	0~200mm	0.01mm	
		THICKNESS GAUGE	1	0~10mm	0.05mm	
		ULTRASONIC THICKNESS GAUGE	2	1~225mm	0.1mm	
			1	0.6~500mm	0.01mm	
		HEIGHT GAUGE	3	0~300mm	0.02mm	
			2	0~600mm	0.02mm	
			2	0~1000mm	0.02mm	
		UNIVERSAL BEVEL PROTRACTOR	1	1°~180°	1°	
		BEVEL PROTRACTOR	10 cm	1	1°~180°	1°
			20 cm	1	1°~180°	1°
30 cm	1		1°~180°	0.5°		
100 cm	1		1°~180°	0.5°		
DIGITAL BEVEL PROTRACTOR	1	1°~180°	0.1°			
LASER DISTANCE METER	1	0.05~600mm	1.5mm			
6	CHEMICAL ANALYSIS	PMI	2	Fe Base, Ni Base	0.0001%	
		Portable PMI tester	2	Ni, Mn, Cr, Ti, Mo, Fe....	0.0001%	
7	PRECISION SURFACE PLATE	-	1	750mmX500mm		
8	OTHER	CLAMP METER	1	0~1000A(V)	0.01V	
		IMPACT TESTER	1	0~294.2J/(M)	1.0J/(M)	
		MICRO SCOPE	1	X40~X400	X5	
		HYDRO TESTER	1	0~40MPa	0.1MPa	
		TEST PIECE SURFACE GRINDING	1	20~240Mesh	2Mesh	
		LEEB HARDNESS TESTER	1	0~900HB	1HB	
		FERRITE SCOPE	1	0~105% Fe	0.1%	

APPROVED CERTIFICATION

CERTIFICATE AUTHORITY		CERTIFICATE No.	EXPIRATION
Korean Standards Association KS B 1541 / 1543		08-0470 08-0471	2017-05-28
Korean Standards Association JIS B 2312 / 2313		KSKR08139 KSKR08140	2018-03-11
Korean Standards Association KS Q ISO 9001:2009		QMS-1751	2017-07-15
Korean Standards Association KS I ISO 14001:2009		EMS-0934	2016-07-15
Korean Standards Association K-OHSMS 18001:2007/OHSAS 18001:2007		HSS-0146	2017-10-27
Korean Register of Shipping KR Type Approval Certificate		BSN21379-PE001	2018-05-25
Korean Register of Shipping KR Approval Certificate for QA System		BSN21379-QA001	2016-01-21
American Society of Mechanical Engineers (NPT)		N-4429	2017-01-07
American Society of Mechanical Engineers (NB)		-	2017-01-07
BUREAU VERITAS		SMS.W.II/68935/B.0	2016-06-16
ABS		BK821888-B	-
RINA	Welding Process	N.07/PU/AL/0867-1.ULT.	-
	Manufactures of Materials	FAB129013PU	2018-09-03
DNV		-	-
Lloyd's Register	Welding PQR	BUS0703492/1	-
	WPS/PQR/WPQ (A240 TYPE 316L 8T, 10T, 25T)	BUS1403843/2~10	-
	PED 97/23/EC	0038/PED/MUM/1310009/1	2016-10-27
GL		WZ 2044 HH	-
Korea Water and Wastewater Works Association KC Hygiene & Safety Standard Certification		KCW-2011-0146 KCW-2011-0147	2016-11-19
Korea Testing & Research Institute JIS B 2309		CRKR13006	2016-08-15

KS CERTIFICATE
 This is to certify that the Korean Industrial Standard Mark(KS mark) of
Dae Kyung Bend
 #856-5, Eogok-dong, Yangsan-si, Gyeongsangnam-do,
 SEOUL, KOREA
 Hak-Chul, Kim
 has been approved by Korean Standards Association to the following Korean Industrial Standard :

KS B 1541
 Steel butt-welding pipe fittings

in accordance with the Korean Industrial Standardization Act.

Certificate Number : 08-0470 Certification Date : Nov. 17, 2008
 Current Certificate : Jan. 20, 2009

Certified by *Kaphan Choi*
 President
Korean Standards Association
 Korea Technology Center, 701-7, Yeosu-dong, Gangnam-gu, Seoul, Korea

KS CERTIFICATE
 This is to certify that the Korean Industrial Standard Mark(KS mark) of
Dae Kyung Bend
 #856-5, Eogok-dong, Yangsan-si, Gyeongsangnam-do,
 SEOUL, KOREA
 Hak-Chul, Kim
 has been approved by Korean Standards Association to the following Korean Industrial Standard :

KS B 1543
 Steel plate butt-welding pipe fittings
 90° elbow (L.F. IS 750mm, ISF 20° 750mm,
 45° elbow (L.F. IS 750mm,
 T/Straight diameter (25° 500mm), Reducing diameter (20X15° X 40mm)
 reducer-Concentric T type (20X15° 500X 450mm),
 Eccentric T type (20X15° 500X 450mm).

in accordance with the Korean Industrial Standardization Act.

Certificate Number : 08-0471 Certification Date : Nov. 17, 2008
 Current Certificate : Jan. 20, 2009

Certified by *Kaphan Choi*
 President
Korean Standards Association
 Korea Technology Center, 701-7, Yeosu-dong, Gangnam-gu, Seoul, Korea

JIS MARK CERTIFICATE
 Certification No. KSKF08139
DAE KYUNG BEND Co., Ltd.
 137, Eogokdong-ro, Yangsan-si, Gyeongsangnam-do, Korea
 Korean Standards Association hereby certifies the JIS Mark factory
 in accordance with the provision of Article 23
 of the Japanese Industrial Standardization Law as follows

JIS NUMBER & TITLE
 JIS B 2312 : Steel butt-welding pipe fittings

GRADE OR TYPE
 Stainless steel
 Seamless steel pipe
 Elbow, Reducer, Tee, Cap
 OTHERS

Certificate Valid Date : 12 March, 2015 - 11 March, 2018
 Original Certification Date : 12 March, 2009
 Date of Issue : 06 March, 2015

Back, Soo Hyun
 CHAIRMAN OF KSA

KOREAN STANDARDS ASSOCIATION
 305, Teheran-ro, Gangnam-gu, Seoul, Korea

JIS MARK CERTIFICATE
 Certification No. KSKF08140
DAE KYUNG BEND Co., Ltd.
 137, Eogokdong-ro, Yangsan-si, Gyeongsangnam-do, Korea
 Korean Standards Association hereby certifies the JIS Mark factory
 in accordance with the provision of Article 23
 of the Japanese Industrial Standardization Law as follows

JIS NUMBER & TITLE
 JIS B 2313 : Steel plate butt-welding pipe fittings

GRADE OR TYPE
 Stainless Steel
 Seamless, Welded
 Elbow, Reducer, Tee
 OTHERS

Certificate Valid Date : 12 March, 2015 - 11 March, 2018
 Original Certification Date : 12 March, 2009
 Date of Issue : 06 March, 2015

Back, Soo Hyun
 CHAIRMAN OF KSA

KOREAN STANDARDS ASSOCIATION
 305, Teheran-ro, Gangnam-gu, Seoul, Korea

CERTIFICATE OF APPROVAL
DAE KYUNG BEND Co., Ltd.
 137, EOGOKDONG-RO, YANGSAN-SI, GYEONGSANGNAM-DO, KOREA
 Korean Standards Association 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 certification detailed below:

CERTIFICATION No
 QMS-1751

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

SCOPE OF CERTIFICATION
 PRODUCTION OF STEEL AND STEEL PLATE BUTT-WELDING PIPE FITTINGS

VALID FROM : 16 July, 2014 VALID UNTIL : 15 July, 2017
 Original Certificate No. : 09/19/08-0000
Chang Ryong Kim
 CHAIRMAN OF KSA

Date of Issue : 10 June, 2014
KOREAN STANDARDS ASSOCIATION
 305, Teheran-ro, Gangnam-gu, Seoul, Korea

CERTIFICATE OF APPROVAL
DAE KYUNG BEND Co., Ltd.
 137, EOGOKDONG-RO, YANGSAN-SI, GYEONGSANGNAM-DO, KOREA
 Korean Standards Association hereby certifies that the Environmental Management System of the above organization has been assessed and found to meet the requirements of the standard and scope of certification detailed below:

CERTIFICATION No
 EMS-0934

STANDARD
 KS ISO 14001:2009/ISO 14001:2004

SCOPE OF CERTIFICATION
 PRODUCTION OF STEEL AND STEEL PLATE BUTT-WELDING PIPE FITTINGS

VALID FROM : 16 July, 2013 VALID UNTIL : 15 July, 2016
 Original Certificate No. : 09/19/08-0000
Chang Ryong Kim
 CHAIRMAN OF KSA

Date of Issue : 10 June, 2014
KOREAN STANDARDS ASSOCIATION
 305, Teheran-ro, Gangnam-gu, Seoul, Korea

TYPE APPROVAL CERTIFICATE

Certificate No. : BSN21379-PE001 Initial Approval : 28th May, 2008.
 Product : Pipe Fittings
 Manufacturer : Dae Kyung Bend Co., Ltd.
 #56-5, Ulgok-dong, Yangsan-city, Kyungnam, Korea

Product Description : Stainless Steel Pipe & Plate Butt-Welding Pipe Fittings(KS B 1541/1542)

- Elbow : 45°, 90°, Elbow Long & Short
- Reducer : Reducing Tee, Reducing Tee
- Tee : Straight Tee, Reducing Tee
- Cap : Reducing Tee, Reducing Tee
- Stub-End : Reducing Tee

Material : STS 304(L), STS 316(L)

Approval Condition : Individual Product Certification is required in case of pipes belonging to Class 1 or 2.

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".
 Ch. 3, Sec. 101, Art. 1 of the Guidance for Approval of Manufacturing Process and Type Approval, etc. & KS B 1541/1543.
 This Certificate is valid until 25th May, 2018.
 Issued at Busan, Korea on 27th May, 2013.

KOREAN REGISTER OF SHIPPING
Hwanmyeong
 General Manager of Busan Branch Office

Note 1: The approval will be automatically suspended and the Certificate become invalid from the expiry date of the Certificate if the manufacturer has not been granted or the renewal of the Certificate is not undertaken.
 2: The manufacturer should notify this Society of any modification or changes that may affect the validity of this Certificate.

APPROVAL CERTIFICATE FOR QUALITY ASSURANCE SYSTEM

Certificate No. : BSN21379-QA001 Initial Approval : 22nd January, 2010.
 Product / Service : Pipe Fittings
 Company / Works : Dae Kyung Bend Co., Ltd.
 #56-5, Ulgok-dong, Yangsan-city, Kyungnam, Korea

Approval Condition : * See Appendix 1 & 2 *

THIS IS TO CERTIFY that the Quality Assurance System of the above-mentioned company / works including production methods, inspection and testing, quality control and general standards of workmanship has been audited by this Society and that the System is found to be in compliance with the requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".
 Ch. 5 of the Guidance for Approval of Manufacturing Process and Type Approval, etc.

This Certificate is valid until 21st January, 2016 subject to periodical audit.
 Issued at Busan, Korea on 4th March, 2013.

KOREAN REGISTER OF SHIPPING
Hwanmyeong
 General Manager of Busan Branch Office

Note 1: The approval will be automatically suspended and the Certificate become invalid from the expiry date of the Certificate if the manufacturer has not been granted or the renewal of the Certificate is not undertaken.
 2: The manufacturer should notify this Society of any modification or changes that may affect the validity of this Certificate.

CERTIFICATE OF AUTHORIZATION

ASME NPT

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:
 Daekyung Bend Co., Ltd
 #56-5, Eogok-Dong
 Yangsan-Si, Gyeongsangnam-Do 626-220
 Republic of Korea

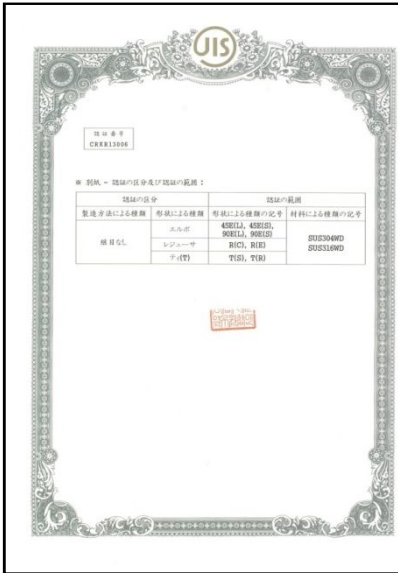
SCOPE:
 Class 1, 2, 3, & MC fabrication without design responsibility and as a Material Organization manufacturing and supplying ferrous & nonferrous material at the above location only

AUTHORIZED: January 7, 2014
EXPIRES: January 7, 2017
CERTIFICATE NUMBER: N-4429

Egon B. Sch.
 Vice President, Conformity Assessment

Paul M. W. J.
 Director, Conformity Assessment

The American Society of Mechanical Engineers



안전보건경영시스템인증서

(주)대경벤드

정장동도 행정시 서울광역시 137

한국표준협회와 위 조직의 안전보건경영시스템이
아래의 표준과 인증범위에 적합함을 인증함

인증번호
IHS-0146
표준
K-OHSMS 18001:2007/OHSAS 18001:2007

인증범위
배관용 강재 및 강판에 맞대기 용접의 용접공의 생산

유효기간
2014년 10월 28일부터 2017년 10월 27일까지
재인증일: 2014년 10월 28일
2014년 10월 28일

한국표준협회
서울특별시 강남구 테헤란로 35

KSA

Welding Procedure Specification (WPS)

Certificate No. BUS 14038421
Page 1 of 2

Manufacturer's Name: **DAEYOUNG BEND CO., LTD.**

WPS Number and Revision: **DK-WPS-080 Rev. 0** Date: **23-OCT-2014**

Welding Process: **GTAW/CAW**

Welding Variables: **PLATE G-CONNECT BUTT WELD Without Backing Material**

Weld Preparation Details (Sketch):

Base Material Details:
 ASTM A240 TYPE 304 P No 8 No 1
 ASTM A240 TYPE 304 P No 8 No 1
 Plate Thickness: 12.5mm - 19.0mm
 Pipe Outside Diameter: 750mm and over

Consumable Details:
 Electrode: **E308L**
 Shielding Gas: **Ar, 99.995%**
 Preheat: **10 - 25°C Min**

Postheat Treatment Details

Certificate No. BUS 14038421
Page 1 of 2

Minimum Temperature: **150** Hold Time: **120**

Solution Annealing + Rapid Cooling
 Heating and Cooling Rate: **N/A** Temperature: **1050** Time: **170/1hour**

Welding Maximum width of root:
 Root: **N/A** Frequency: **N/A** Dwell time: **N/A**

Welding Details	Process	Size of Electrode	Current	Voltage	Travel Speed	Heat Input	Heat Input Factor
1-7	GTAW	2.4	160-240	12-18	DCEN	16-29	0.22-1.48
8-10	FCAW	2.4	220-280	14-20	DCSP	16-25	1.03-1.86

Other Information:
 1. This WPS is valid only if used by the authorized manufacturer.
 2. The manufacturer is responsible for ensuring that WPS meets the technical requirements for the application.

Welding Procedure Qualification Record (PQR)

Certificate No. BUS 14038422
Page 1 of 4

Welding Process: **GTAW/CAW**

Date of Issue: **23 October 2014**

Manufacturer's Name: **DAEYOUNG BEND CO., LTD.**

Manufacturer's Address: **137, DODONGGONGDANG-RO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA**

Base Material, Consumable and Welding Details:
 ASTM A240 TYPE 304 P No 8 No 1
 Electrode: **E308L**
 Shielding Gas: **Ar, 99.995%**

Preheat and Interpass Temperature Method and Control:
 Interpass Temp. Max 120 °C
 Solution Annealing 1050 °C, Rapid Cooling @ 170/1hour

This joint details sketch with dimensions of weld preparation:

Test Results

Certificate No. BUS 14038422
Page 2 of 4

Date of Issue: **23 October 2014**

Office: **Busan Port**

Root bevel detail sketch to include weld thickness and back gouging where applicable:

Procedure Detail	Process	Size of Electrode	Current	Voltage	AC/DC	Pre-heat/Interpass	Heat Input Factor
1	GTAW	2.4	220	14	DCEN	16.0	1.02
2	GTAW	2.4	220	15	DCEN	16.6	1.11
3	GTAW	2.4	220	15	DCEN	16.2	1.02
4	GTAW	2.4	220	14	DCEN	16.3	1.01
5	GTAW	2.4	220	16	DCEN	17.2	1.11
6	GTAW	2.4	220	15	DCEN	16.6	1.06
7	GTAW	2.4	220	15	DCEN	16.6	1.06
8	FCAW	1.2	240	16	DCSP	32.8	0.70
9	FCAW	1.2	220	15	DCSP	31.3	0.62
10	FCAW	1.2	220	15	DCSP	32.1	0.62
11	FCAW	1.2	220	16	DCSP	32.9	0.67
12	FCAW	1.2	220	14	DCSP	31.1	0.58
13	FCAW	1.2	220	15	DCSP	32.3	0.59
14	FCAW	1.2	220	16	DCSP	32.1	0.64
15	FCAW	1.2	220	16	DCSP	32.6	0.67

Test Results

Certificate No. BUS 14038422
Page 3 of 4

Date of Issue: **23 October 2014**

Office: **Busan Port**

Non-Destructive Examination (State acceptable, unacceptable, or none):
 Acceptable

Mechanical Properties:
 Yield Strength: **518 ± 27** Tensile Strength: **518 ± 27** Elongation: **27** Reduction of Area: **48** Ductility: **8.8 M**

Hardness Survey:
 Location of Hardness Measurements (Sketch):

Test Results

Certificate No. BUS 14038422
Page 3 of 4

Date of Issue: **23 October 2014**

Office: **Busan Port**

Additional tests and results (Chemical analysis, tensile examination, form factor measurement):
 Fully Compliant (100% / 100%) (1.2 / 1.2)

This certifies that the foregoing statements are correct and the test results were prepared, welded and tested in accordance with the specified Codes of Standards.
 S. A. KIM
 C. S. PARK

Welder Performance Qualification (WPO) Certificate

Certificate No. BUS 14038423
Page 1 of 2

Manufacturer's Name: **DAEYOUNG BEND CO., LTD.**

WPS Number and Revision: **DK-WPS-080 Rev. 0** Date: **23-Oct-2014**

Welding Process: **GTAW/CAW**

Welding Variables: **PLATE G-CONNECT BUTT WELD Without Backing Material**

Weld Preparation Details (Sketch):

Base Material Details:
 ASTM A240 TYPE 304 P No 8 No 1
 ASTM A240 TYPE 304 P No 8 No 1
 Plate Thickness: 12.5mm - 19.0mm
 Pipe Outside Diameter: 750mm and over

Consumable Details:
 Electrode: **E308L**
 Shielding Gas: **Ar, 99.995%**

Preheat and Interpass Temperature Method and Control:
 Interpass Temp. Max 120 °C
 Solution Annealing 1050 °C, Rapid Cooling @ 170/1hour

This joint details sketch with dimensions of weld preparation:

WPS Certificate number: **BUS 140384/S**
Page 1 of 2

Qualification Code/Standard: **LR Rule 2013-ASME SEC II**
Manufacturer's name: **DAEWYUNG BEND CO., LTD**
Issue date: **02 October 2014**
Issue name: **H.N. KONG**
Issue place: **Busan Port**

This certificate remains valid for a period of two years only if the welder named on sheet 1 has been employed on the Class or Type of Welding with satisfactory results, during the periods of six months from initial approval or last employment.

Proficiency of welder shall be subject to the supervisor's satisfaction with respect to the welder's documented record and any specific Code requirements.



Endorsement or monitoring: Signature and position of employer representative (working environment and working performance) Signature of Employer (working performance, working performance) Job knowledge (working performance) Office stamp and date

Proficiency of welder (Signature): _____

From: SDR (2014.01)

Certificate No: **BUS 140384/S**
Page 1 of 2

Welding Procedure Specification (WPS)


Qualification Code/Standard: **LR Rule 2013-ASME SEC II**
Manufacturer's name: **DAEWYUNG BEND CO., LTD**
Issue date: **23 OCT 2014**
Issue name: **H.N. KONG**
Issue place: **Busan Port**

Manufacturer's address: **131, EODONGGONGNAM, YANGSAN-SI, GYEONGSANGNAM-DO SOUTH KOREA.**
Welding process: **GTAW-FCAW**
Welding technique: **PLATE V-GROOVE BUTT WELD WITHOUT BACKING MATERIAL**
Welding position: **1G**

Weld Preparation Details (Sketch):
Groove angle (B) : 60°±5
Root face (F) : 0-2mm
Root gap (G) : 0-3mm
Base Material Thickness : 8mm

Base Material Details:
Base metal and cover: **ASTM A516 TYPENL P No 6 G No 1**
Plate:
Plate thickness: **3.0mm - 16.0mm**
Plate type and grade name: **A516**

Consumable Details:
Welding: **ER70S-G**
Shielding gas: **Ar, 95-99.95%**
Preheat: **None**
Interpass Temp: **Max 120°C**
Solution Annealing: **1500 °F Rapid Cooling of 1" Hour**



From: SDR (2014.01)

Certificate no: **BUS 140384/S**
Page 2 of 2

Preheat/Heat Treatment Details:
Preheat Temperature: **None**
Minimum Temperature: **120**
Solution Annealing: **1500**
Rapid Cooling: **1" Hour**

Technical Details:
Welding: **GTAW-FCAW**
Shielding Gas: **Ar**
Welding Position: **1G**
Welding Process: **GTAW-FCAW**
Welding Technique: **PLATE V-GROOVE BUTT WELD WITHOUT BACKING MATERIAL**

Welding Details	Welding Position	Welding Process	Welding Technique	Welding Position	Welding Process	Welding Technique	
1-2	GTAW	2.4	190-200	15-18	DCEN	16-20	0.73-1.40
3-20	FCAW	1.2	220-280	14-20	DCEN	18-20	1.03-1.84

Other Information:
Manufacturer: **DAEWYUNG BEND CO., LTD**
Name: **H.N. KONG**
Signature: _____
Date: **23 OCT 2014**
Issue place: **Busan Port**

From: SDR (2014.01)

PQR Certificate no: **BUS140384/S**
Page 1 of 4

Welding Procedure Qualification Record (PQR)

Qualification Code/Standard: **LR Rule 2013-ASME SEC II**
Manufacturer's name: **DAEWYUNG BEND CO., LTD**
Issue date: **28 August 2014**
Issue name: **H.N. KONG**
Issue place: **Busan Port**

Manufacturer's address: **131, EODONGGONGNAM, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA.**
Welding process: **GTAW-FCAW**
Welding position: **1G**
Welding technique: **PLATE V-GROOVE BUTT WELD WITHOUT BACKING MATERIAL**

Base Material, Consumable and Welding Details:
Base metal and cover: **ASTM A516 TYPENL P No 6 G No 1**
Plate:
Plate thickness: **3.0mm - 16.0mm**
Plate type and grade name: **A516**

Consumable Details:
Welding: **ER70S-G**
Shielding gas: **Ar, 95-99.95%**
Preheat: **None**
Interpass Temp: **Max 120°C**
Solution Annealing: **1500 °F Rapid Cooling of 1" Hour**



From: SDR (2014.01)

PQR Certificate no: **BUS140384/S**
Page 2 of 4

Test Results:
Base metal and cover: **ASTM A516 TYPENL P No 6 G No 1**
Plate:
Plate thickness: **3.0mm - 16.0mm**

Procedure Detail	Run number	Welding process	Welding position	Welding technique	Welding position	Welding process	Welding technique	Welding position	Welding process	Welding technique
1	GTAW	2.4	190-200	15-18	DCEN	16-20	0.73-1.40			
2	GTAW	2.4	200-210	15-18	DCEN	16.0	1.04			
3	FCAW	1.2	240	16	DCEN	32.8	0.70			

From: SDR (2014.01)

PQR Certificate no: **BUS140384/S**
Page 3 of 4

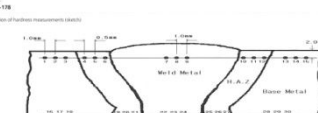
Test Results:
Base metal and cover: **ASTM A516 TYPENL P No 6 G No 1**
Plate:
Plate thickness: **3.0mm - 16.0mm**

Non-Destructive Examination (State acceptable, unacceptable, or none):
Visual: **Acceptable**
Radiography: **Acceptable**
Ultrasonic: **Acceptable**

Destructive Tests:
Tensile: **Good**
Charpy: **Good**
Impact: **Good**

Impact Tests:
Charpy: **Good**
Impact: **Good**

Hardness Survey:
Rockwell: **Good**
Vickers: **Good**
Brinell: **Good**



From: SDR (2014.01)

PQR Certificate no: **BUS140384/S**
Page 4 of 4

Test Results:
Base metal and cover: **ASTM A516 TYPENL P No 6 G No 1**
Plate:
Plate thickness: **3.0mm - 16.0mm**

From: SDR (2014.01)

WPS Certificate number: **BUS 140384/S**
Page 1 of 2

Welder Performance Qualification (WPQ) Certificate

Qualification Code/Standard: **LR Rule 2013-ASME SEC II**
Manufacturer's name: **DAEWYUNG BEND CO., LTD**
Issue date: **23 OCT 2014**
Issue name: **H.N. KONG**
Issue place: **Busan Port**

Manufacturer's address: **131, EODONGGONGNAM, YANGSAN-SI, GYEONGSANGNAM-DO SOUTH KOREA.**
Welding process: **GTAW-FCAW**
Welding position: **1G**
Welding technique: **PLATE V-GROOVE BUTT WELD WITHOUT BACKING MATERIAL**

Welder's name: **H.N. KONG**
Welder's ID number: **DK-WPS-001**
Welder's signature: _____

WPS number: **DK-WPS-001**
Date of qualification: **23 OCT 2014**
Welding process: **GTAW-FCAW**
Welding position: **1G**
Welding technique: **PLATE V-GROOVE BUTT WELD WITHOUT BACKING MATERIAL**

Base Material, Consumable and Welding Details:
Base metal and cover: **ASTM A516 TYPENL P No 6 G No 1**
Plate:
Plate thickness: **3.0mm - 16.0mm**
Plate type and grade name: **A516**

Consumable Details:
Welding: **ER70S-G**
Shielding gas: **Ar, 95-99.95%**
Preheat: **None**
Interpass Temp: **Max 120°C**
Solution Annealing: **1500 °F Rapid Cooling of 1" Hour**

Variables	WPS Test Details	Range of Approval	Variables	WPS Test Details	Range of Approval
Welding Process	GTAW-FCAW	GTAW-FCAW	Welding Position	1G	1G
Welding Technique	PLATE V-GROOVE BUTT WELD WITHOUT BACKING MATERIAL	PLATE V-GROOVE BUTT WELD WITHOUT BACKING MATERIAL	Welding Position	1G	1G
Welding Position	1G	1G	Welding Position	1G	1G
Welding Process	GTAW-FCAW	GTAW-FCAW	Welding Position	1G	1G
Welding Technique	PLATE V-GROOVE BUTT WELD WITHOUT BACKING MATERIAL	PLATE V-GROOVE BUTT WELD WITHOUT BACKING MATERIAL	Welding Position	1G	1G
Welding Position	1G	1G	Welding Position	1G	1G

From: SDR (2014.01)

WPS Certificate number: **BUS 140384/S**
Page 2 of 2

Qualification Code/Standard: **LR Rule 2013-ASME SEC II**
Manufacturer's name: **DAEWYUNG BEND CO., LTD**
Issue date: **02 October 2014**
Issue name: **H.N. KONG**
Issue place: **Busan Port**

This certificate remains valid for a period of two years only if the welder named on sheet 1 has been employed on the Class or Type of Welding with satisfactory results, during the periods of six months from initial approval or last employment.

Proficiency of welder shall be subject to the supervisor's satisfaction with respect to the welder's documented record and any specific Code requirements.



Endorsement or monitoring: Signature and position of employer representative (working environment and working performance) Signature of Employer (working performance, working performance) Job knowledge (working performance) Office stamp and date

Proficiency of welder (Signature): _____

From: SDR (2014.01)

Welding Procedure Specification (WPS)

Qualification Codebook: LR Rule 2013-ASME SEC.IX
 Manufacturer Name: DAEKYUNG BEND CO., LTD
 137, DODONGGONGSANGNO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA

WPS Number and Revision: DK-WPS-082 Rev.0
 Date: 23 OCT 2014
 WPS Issue No: 01

Welding Process: GTAW
 Filler Metal: ER316L
 Shielding Gas: Ar, 99.9995%
 Root Face: 10mm

Plate Thickness (mm): 10T

Base Material Details:
 ASTM A304 Type 304, P No 8 & No 1
 Thickness Range (mm): 3.0mm - 20.0mm

Consumable Details:
 ER316L
 Ar, 99.9995%

Welding Parameters:
 Groove angle (D): 60±15
 Root face (F): 0-2mm
 Root gap (G): 0-3mm
 Base Material Thickness: 10mm

Welding Procedure Qualification Record (PQR)

Qualification Codebook: LR Rule 2013-ASME SEC.IX
 Manufacturer Name: DAEKYUNG BEND CO., LTD
 137, DODONGGONGSANGNO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA

PQR Number and Revision: DK-WPS-082 Rev.0
 Date of Testing: 28 August 2014

Welding Process: GTAW
 Filler Metal: ER316L
 Shielding Gas: Ar, 99.9995%
 Root Face: 10mm

Plate Thickness (mm): 10T

Base Material Details:
 ASTM A304 Type 304, P No 8 & No 1
 Thickness Range (mm): 3.0mm - 20.0mm

Consumable Details:
 ER316L
 Ar, 99.9995%

Welding Parameters:
 Groove angle (D): 66±15
 Root face (F): 0-2mm
 Root gap (G): 0-3mm
 Base Material Thickness: 10mm

Test Results

Qualification Codebook: LR Rule 2013-ASME SEC.IX
 Manufacturer Name: DAEKYUNG BEND CO., LTD
 137, DODONGGONGSANGNO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA

PQR Certificate No: BUS 14038418
 Page 2 of 4
 Date of Issue: 23 October 2014
 Issue Part: Base Part

Additional tests and results: e.g. chemical analysis, micro-examination, tensile measurement
 Penetration Contents: 14979-02206 (R 0 / Satisfactory)

Use certify that the foregoing statements are correct and the test results were prepared, verified and tested in accordance with the specified Code or Standards.

Manufacturer's Signature: S. K. AHN
 Date: 23 Oct 2014

Witness to Lead's Register: C. S. PARK
 Date: 23 Oct 2014

Welding Procedure Qualification Record (PQR)

Qualification Codebook: LR Rule 2013-ASME SEC.IX
 Manufacturer Name: DAEKYUNG BEND CO., LTD
 137, DODONGGONGSANGNO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA

PQR Certificate No: BUS 14038418
 Page 2 of 4
 Date of Issue: 23 October 2014
 Issue Part: Base Part

Additional tests and results: e.g. chemical analysis, micro-examination, tensile measurement
 Penetration Contents: 14979-02206 (R 0 / Satisfactory)

Use certify that the foregoing statements are correct and the test results were prepared, verified and tested in accordance with the specified Code or Standards.

Manufacturer's Signature: S. K. AHN
 Date: 23 Oct 2014

Witness to Lead's Register: C. S. PARK
 Date: 23 Oct 2014

Test Results

Qualification Codebook: LR Rule 2013-ASME SEC.IX
 Manufacturer Name: DAEKYUNG BEND CO., LTD
 137, DODONGGONGSANGNO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA

PQR Certificate No: BUS 14038418
 Page 2 of 4
 Date of Issue: 23 October 2014
 Issue Part: Base Part

Additional tests and results: e.g. chemical analysis, micro-examination, tensile measurement
 Penetration Contents: 14979-02206 (R 0 / Satisfactory)

Use certify that the foregoing statements are correct and the test results were prepared, verified and tested in accordance with the specified Code or Standards.

Manufacturer's Signature: S. K. AHN
 Date: 23 Oct 2014

Witness to Lead's Register: C. S. PARK
 Date: 23 Oct 2014

Welding Procedure Qualification Record (PQR)

Qualification Codebook: LR Rule 2013-ASME SEC.IX
 Manufacturer Name: DAEKYUNG BEND CO., LTD
 137, DODONGGONGSANGNO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA

PQR Certificate No: BUS 14038418
 Page 2 of 4
 Date of Issue: 23 October 2014
 Issue Part: Base Part

Additional tests and results: e.g. chemical analysis, micro-examination, tensile measurement
 Penetration Contents: 14979-02206 (R 0 / Satisfactory)

Use certify that the foregoing statements are correct and the test results were prepared, verified and tested in accordance with the specified Code or Standards.

Manufacturer's Signature: S. K. AHN
 Date: 23 Oct 2014

Witness to Lead's Register: C. S. PARK
 Date: 23 Oct 2014

Welder Performance Qualification (WPO) Certificate

Qualification Codebook: LR Rule 2013-ASME SEC.IX
 Manufacturer Name: DAEKYUNG BEND CO., LTD
 137, DODONGGONGSANGNO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA

WPS Number: DK-WPS-082
 Date: 23 Oct 2014

Welder Name: B.N. JOONG
 WPS Certificate Number: BUS 14038419

Welding Process: GTAW
 Filler Metal: ER316L
 Shielding Gas: Ar, 99.9995%

Plate Thickness (mm): 10T

Base Material Details:
 ASTM A304 Type 304, P No 8 & No 1
 Thickness Range (mm): 3.0mm - 20.0mm

Consumable Details:
 ER316L
 Ar, 99.9995%

Welding Parameters:
 Groove angle (D): 60±15
 Root face (F): 0-2mm
 Root gap (G): 0-3mm
 Base Material Thickness: 10mm

Welder Performance Qualification (WPO) Certificate

Qualification Codebook: LR Rule 2013-ASME SEC.IX
 Manufacturer Name: DAEKYUNG BEND CO., LTD
 137, DODONGGONGSANGNO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA

WPS Number: DK-WPS-082
 Date: 23 Oct 2014

Welder Name: B.N. JOONG
 WPS Certificate Number: BUS 14038419

Welding Process: GTAW
 Filler Metal: ER316L
 Shielding Gas: Ar, 99.9995%

Plate Thickness (mm): 10T

Base Material Details:
 ASTM A304 Type 304, P No 8 & No 1
 Thickness Range (mm): 3.0mm - 20.0mm

Consumable Details:
 ER316L
 Ar, 99.9995%

Welding Parameters:
 Groove angle (D): 60±15
 Root face (F): 0-2mm
 Root gap (G): 0-3mm
 Base Material Thickness: 10mm

Welder Performance Qualification (WPO) Certificate

Qualification Codebook: LR Rule 2013-ASME SEC.IX
 Manufacturer Name: DAEKYUNG BEND CO., LTD
 137, DODONGGONGSANGNO, YANGSAN-SI, GYEONGSANGNAM-DO, SOUTH KOREA

WPS Number: DK-WPS-082
 Date: 23 Oct 2014

Welder Name: B.N. JOONG
 WPS Certificate Number: BUS 14038419

Welding Process: GTAW
 Filler Metal: ER316L
 Shielding Gas: Ar, 99.9995%

Plate Thickness (mm): 10T

Base Material Details:
 ASTM A304 Type 304, P No 8 & No 1
 Thickness Range (mm): 3.0mm - 20.0mm

Consumable Details:
 ER316L
 Ar, 99.9995%

Welding Parameters:
 Groove angle (D): 60±15
 Root face (F): 0-2mm
 Root gap (G): 0-3mm
 Base Material Thickness: 10mm