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# COMPANY BROCHURE

JEONJIN ENTECH will never save efforts in pursuing client's satisfaction by continuous utmost quality management and technology upgrading



**JEONJIN** ENTECH LTD.

# CONTENTS

<b>1. INTRODUCTION</b>	<b>---</b>	<b><u>3</u></b>
<b>2. HISTORY</b>	<b>---</b>	<b><u>4</u></b>
<b>3. BUSINESS FIELD</b>	<b>---</b>	<b><u>5</u></b>
<b>4. COMPANY INFORMATION</b>	<b>---</b>	<b><u>7</u></b>
<b>5. ORGANIZATION</b>	<b>---</b>	<b><u>12</u></b>
<b>6. CERTIFICATES</b>	<b>---</b>	<b><u>14</u></b>
<b>7. MAJOR CLIENTS</b>	<b>---</b>	<b><u>16</u></b>
<b>8. MAJOR PRODUCT &amp; EXPERIENCE LIST</b>	<b>---</b>	<b><u>18</u></b>
<b>9. INTERNALS</b>	<b>---</b>	<b><u>35</u></b>
<b>10. QUICK OPENING CLOSURE</b>	<b>---</b>	<b><u>41</u></b>

# 1. INTRODUCTION

**President / Founder**

Byung Gook Kim

**Foundation Years**

2003

**Main Business**

Oil & Gas, Petrochemical and Mining Equipments  
Pressure Vessel & Internal(On/Offshore)  
Steel Plants

**Manpower**

Total employees: 135  
Direct employee : 75  
Sub contractor (in-house) : 60

**Shop Area**

Total Area : 18,830m<sup>2</sup>  
Covered Area : 12,694m<sup>2</sup>

# 2. HISTORY

2003

**Established JEONJIN ENTECH.**

2004

Registered the factory.  
Developed a high-speed opening and closing device.

2005

**Established R&D Center.**

2006

**Awarded Certificate of Approval ISO 9001.**

2007

Designated as a promising small-medium company.  
Obtained certificate as a venture company [Kibo Technology Fund]

2008

Designated as a partner company by Busan Techno park.  
Obtained INNO-BIZ certificate[Small and Medium Business Administration]  
Designated as a partner company by Korea Institute of Industrial Technology.

2009

Designated as an export promising small-medium company.  
Designated as a leading enterprise for strategic business [Busan Metropolitan City]

2012

**Awarded ASME Stamps U,S for Fabrication of Pressure Vessel & Boiler.**  
**Awarded ISO 14001 & OHSAS 18001 Certificate.**

2014

**Renewed ASME Stamps U,S and Awarded ASME Stamps U2.**

2016

**Built a new factory JEONJIN ENTECH in Saenggok-Dong, Busan.**

# 3. BUSINESS FIELD

## 3-1) ITEMS

Oil & Gas, Chemical,  
Petrochemical,  
Refinery, Offshore

- Pressure Vessel
- Heat Exchanger (shell & tube, double pipe, etc)
- Distillation & Absorption Column
- Separator
- Storage tank
- Package Unit (Vapor Recovery, Lube Oil, Chemical Injection, Filtration unit etc)

Column  
Internals

- Trays (Sieve, Valve, Bubble cap etc.)
- Distributor, Support Plate, Bed Limiter
- Packing (Random, Structured)
- Mist Eliminator (Wire, Vane)
- Coalescer
- Wire Screen

QUICK OPENING  
CLOSURE

- Locking Band Type
- Locking Head Type
- Locking Ring Type
- Clamp Ring Type
- Swing Bolt Type

POWER PLANT

- Steam Drum with Internals
- HP & LP Feed Water Heater
- De-aerator

## 3-2) PROCESS

### Engineering & Design

- Thermal Design : (Distillation & Absorption Column, Separator, De-aerator, Feed Water Heater, Shell & Tube type heat exchanger, Double pipe, etc)
- Strength Calculation
- 3D Modeling & Finite Element Analysis
  - Ansys
  - Aspen Plus (Column Sizing, Hydraulic calculation)

### Material Procurement

- Plate, pipe, tube, forging, fitting, valves, instruments, electric, Insulation, etc.
- Material Code Compliance : ASME, ASTM, JIS, EN, DIN, GOST, KS, Class Society (ABS, BV, DNV, Lloyd, KR, NK)
- Main Sources of Material : Korea , Japan, Europe, USA (Chinese and Indian material are also applicable)

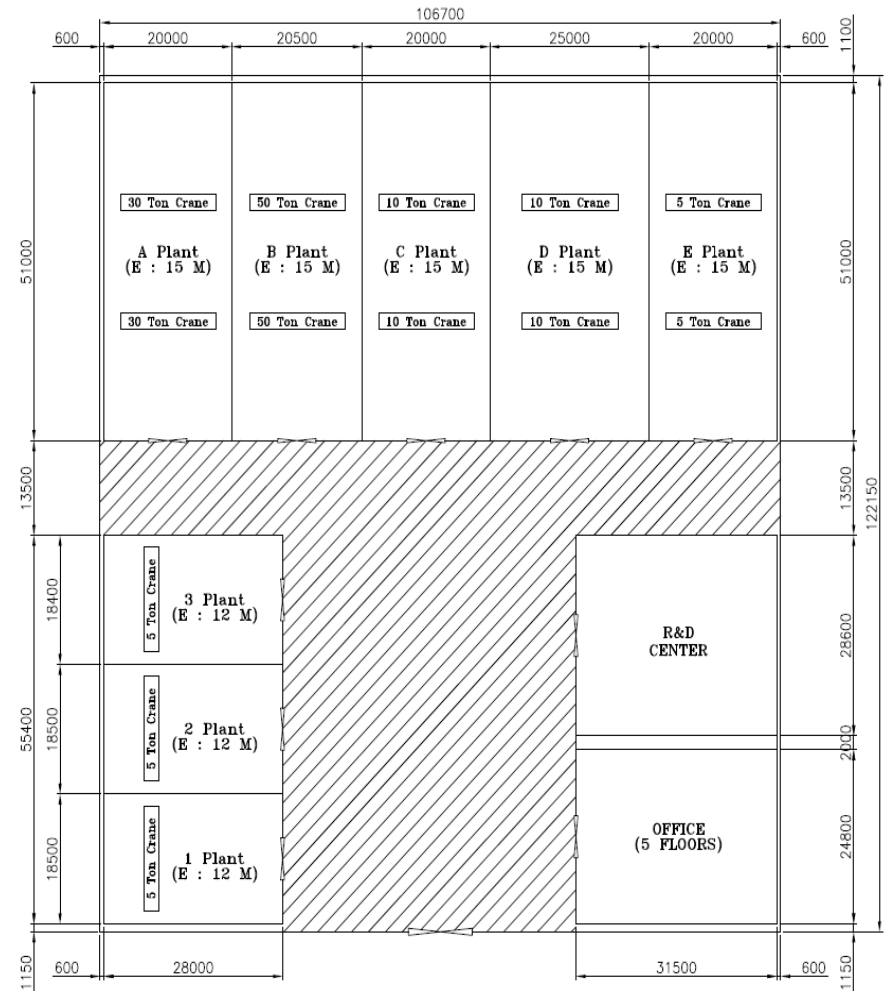
### Quality Control & Management (Inspection & test)

- In compliance with project & customer requirements.
- - NDE
- - PMI
- - Hydro & Leakage test

### Fabrication

- In compliance with various industrial codes, standards, and Engineering standards and specification
- Experience in material : Carbon steel (HIC, with clad), low alloy, Stainless steel, duplex, Monel, Hastelloy, 3.5Ni, Titanium, 9Cr. etc.
- Compliance & Experience in lining & coating : Rubber, PTFE, TSA(Thermal Sprayed Aluminum, Glass Flake, etc.)

# 4. COMPANY INFORMATION-HEAD OFFICE

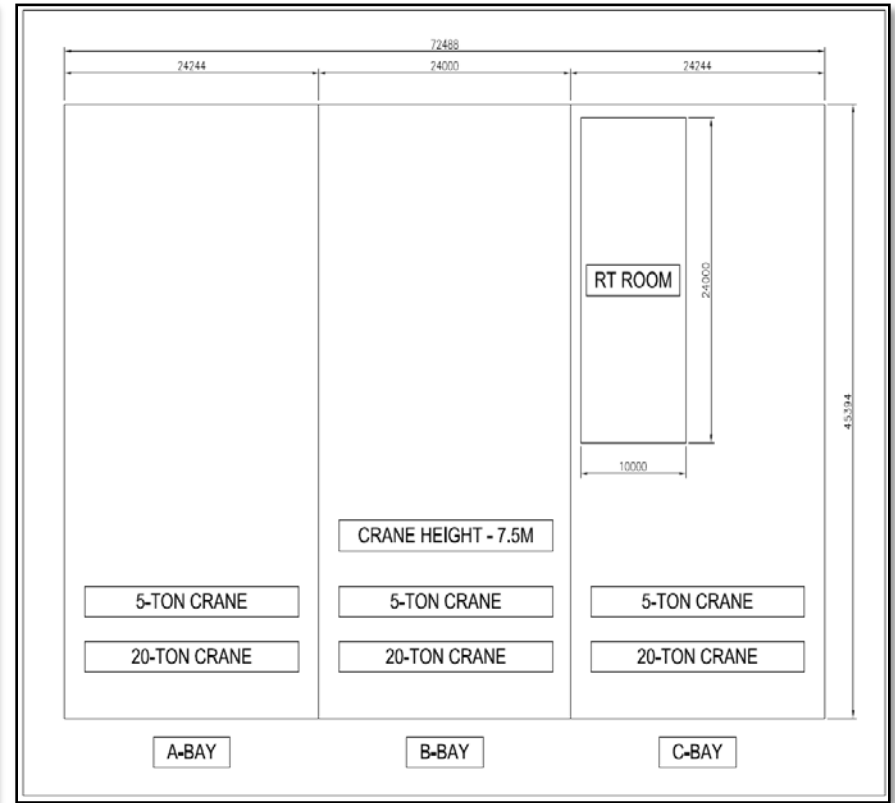


NEW KANGSEO FACTORY

Capacity : 13,924 m<sup>3</sup>

Shop size : 120m Span × 15m Height × 111m Length

# 4-1. COMPANY INFORMATION-HWAJEON FACTORY



**TOTAL AREA**

**4,906m<sup>2</sup>**

**SHOP SIZE : 45m(W) × 72m(L) × 10m(H)**



## RADIOGRAPHIC TEST ROOM



**INSIDE DIMENSION : 9.3m(W) x 22.5m(L) x 7.8m(H)**

## DISTILLATION COLUMN



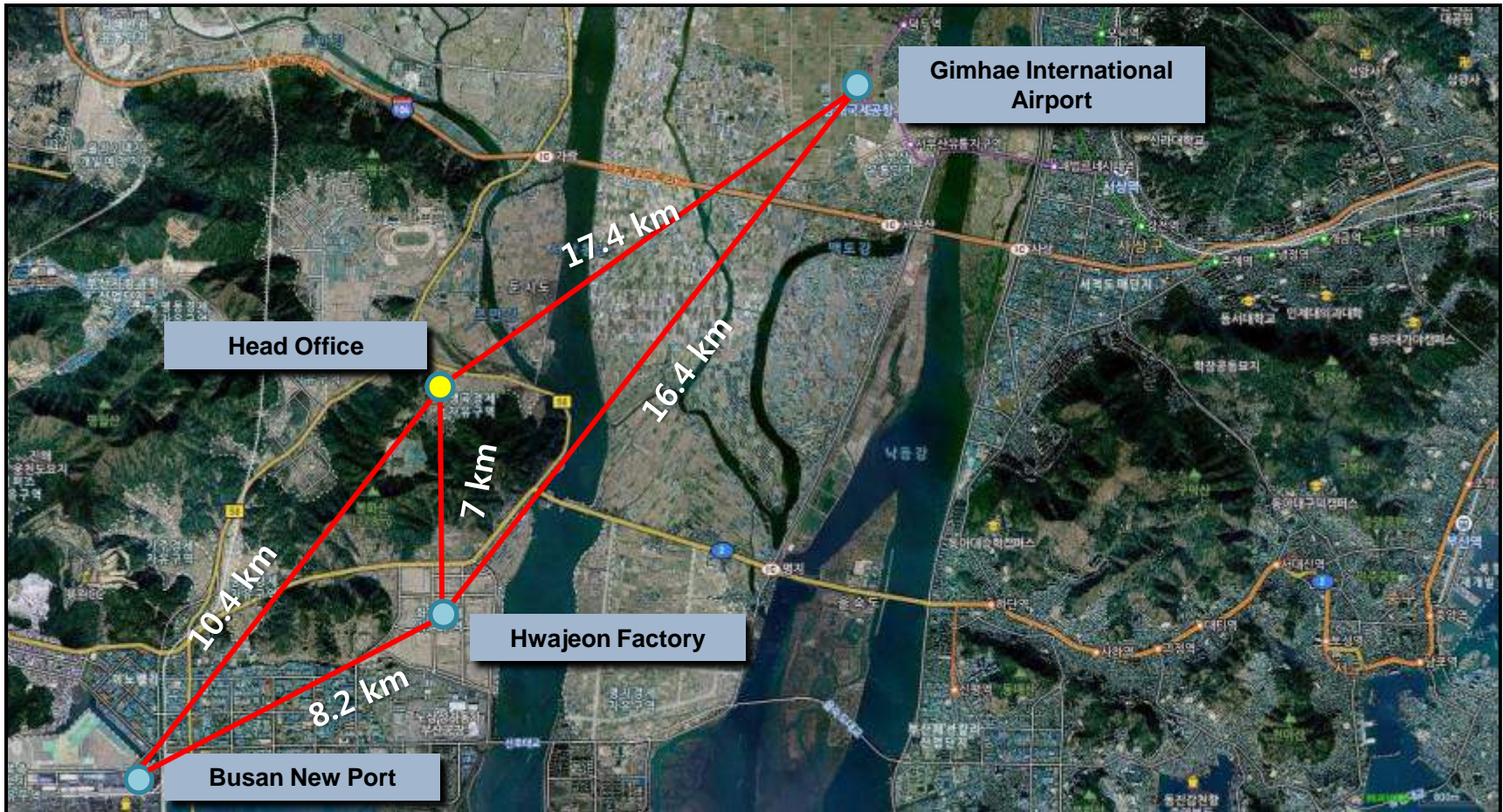
The Distillation Column is the operation of purifying a mixture by virtue of the difference in boiling point of the components that comprise that mixture.

## ABSORPTION COLUMN



An absorption process where a soluble gas is scrubbed from a mixture of gases by means of a liquid.

# 4-3. COMPANY LOCATION AND DISTANCE



## ◆ Expected Advantages.

1. Less than 10km from the Port.
2. Far easier to Transport and Deliver.
3. The bigger Space & the bigger Products.

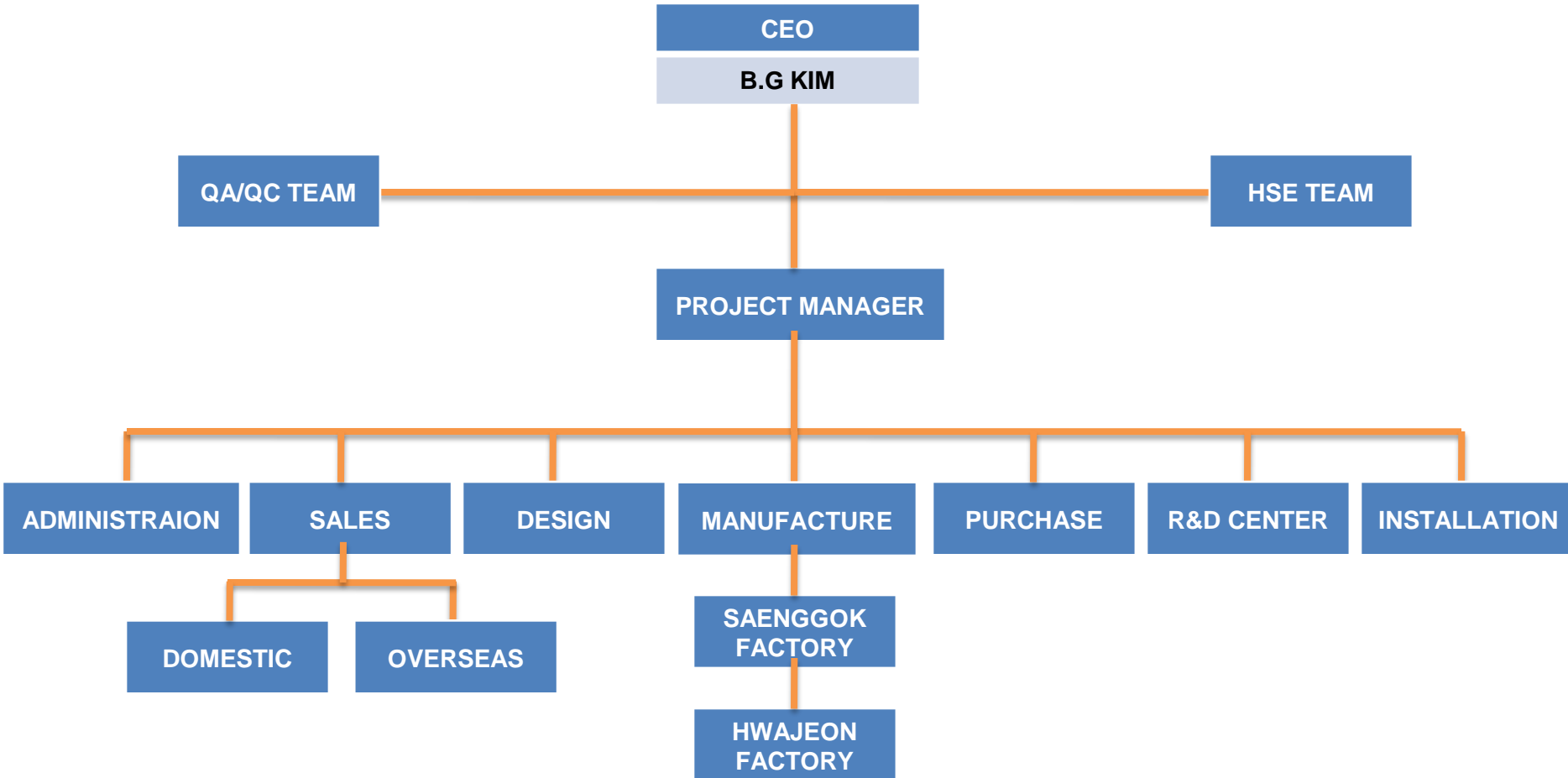
# 5. ORGANIZATION

## 5-1) PERSONNEL

DEPARTMENT	NUMBER
President	1
Directors	7
Administration	4
Sales & Business	7
Design & Technical	9
Procurement	4
R&D Center	4
Installation	1
QA/QC	6
HSE	2
Project Manager	4
Production Management	8
Sub-total	57
Workers (direct)	18
Workers (indirect)	60
Sub-total	78
<b>TOTAL</b>	<b>135</b>

# 5. ORGANIZATION

## 5-2) CHART



# 6. CERTIFICATES

## ISO Certificates Accredited by SMR



ISO 9001 : 2008











ISO 14001 : 2004



OHSAS 18001 : 2007

# 6. CERTIFICATES

## “U”, “S” “U2” Certificates Accredited by ASME

 <p><b>CERTIFICATE OF AUTHORIZATION</b></p> <p>The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the ASME Boiler and Pressure Vessel Code. The use of the authority granted by this Certificate of Authorization are subject to the agreement set forth in the application. Any construction stamp mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.</p> <p><b>COMPANY:</b> JEONJIN ENTECH LTD. 38, Gadal 1-ro Gangseo-gu, Busan 46729 Republic of Korea</p> <p><b>SCOPE:</b> Manufacture of pressure vessels at the above location and the above location (This authorization does not cover the above location)</p> <p><b>AUTHORIZED:</b> December 8, 2014    <b>REVISED:</b> December 8, 2017 <b>EXPIRES:</b> December 8, 2017 <b>CERTIFICATE NUMBER:</b> 42,065</p> <p><i>Richard Rottman</i> Board Chair, Conformity Assessment</p> <p><i>Joseph Lawrence</i> Director, Conformity Assessment</p> 	 <p><b>CERTIFICATE OF AUTHORIZATION</b></p> <p>The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the ASME Boiler and Pressure Vessel Code. The use of the authority granted by this Certificate of Authorization are subject to the agreement set forth in the application. Any construction stamp mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.</p> <p><b>COMPANY:</b> JEONJIN ENTECH LTD. 38, Gadal 1-ro Gangseo-gu, Busan 46729 Republic of Korea</p> <p><b>SCOPE:</b> Manufacture and assembly of power boilers at the above location and the above location controlled by the above location</p> <p><b>AUTHORIZED:</b> December 8, 2014    <b>REVISED:</b> December 8, 2017 <b>EXPIRES:</b> December 8, 2017 <b>CERTIFICATE NUMBER:</b> 42,807</p> <p><i>Richard Rottman</i> Board Chair, Conformity Assessment</p> <p><i>Joseph Lawrence</i> Director, Conformity Assessment</p> 	 <p><b>CERTIFICATE OF AUTHORIZATION</b></p> <p>The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the ASME Boiler and Pressure Vessel Code. The use of the authority granted by this Certificate of Authorization are subject to the agreement set forth in the application. Any construction stamp mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.</p> <p><b>COMPANY:</b> JEONJIN ENTECH LTD. 38, Gadal 1-ro Gangseo-gu, Busan 46729 Republic of Korea</p> <p><b>SCOPE:</b> Manufacture of pressure vessels at the above location and the above location</p> <p><b>AUTHORIZED:</b> December 8, 2014    <b>REVISED:</b> December 8, 2017 <b>EXPIRES:</b> December 8, 2017 <b>CERTIFICATE NUMBER:</b> 48,483</p> <p><i>Richard Rottman</i> Board Chair, Conformity Assessment</p> <p><i>Joseph Lawrence</i> Director, Conformity Assessment</p> 	<p><b>THE NATIONAL BOARD OF BOILER &amp; PRESSURE VESSEL INSPECTORS</b></p> <p><i>Certificate of Authorization to Register</i></p>  <p><i>This is to certify that</i></p> <p><b>JEONJIN ENTECH LTD.</b> 17, HWAJEONSANDAN 5-RO, 84 BEON-GIL GANGSEO-GU, BUSAN 618-280 REPUBLIC OF KOREA</p> <p><i>is authorized to apply the "NB" mark and register boilers, pressure vessels or other pressure retaining items with the National Board.</i></p> <p><i>The scope of Authorization is limited to items manufactured in accordance with:</i></p> <p>ASME Designator(s): U U2 S</p> <p><b>ISSUE DATE:</b> January 12, 2015</p> <p><i>This Certificate of Authorization to Register will remain in effect as long as the manufacturing organization holds a valid Certificate of Authorization issued by the American Society of Mechanical Engineers.</i></p> <p>Executive Director <i>[Signature]</i></p>  <p>02.127 Rev. 1</p>
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ASME “U”

ASME “S”

ASME “U2”

NATIONAL BOARD

# 7. MAJOR CLIENTS

## 7-1) OVERSEAS

### PETRO & CHEMICAL COMPANY



### EPC



### MODULE



### VESSEL MANUFACTURER





# 7. MAJOR CLIENTS

## 7-2) DOMESTIC

### PETRO & CHEMICAL COMPANY



### EPC



### VESSEL MANUFACTURER



### STEEL MAKER



# 8. EXPERIENCE

## 8-1-1) MAJOR PRODUCT - PRESSURE VESSEL & H.EX



- ◆ PROJECT : APLNG UPSTREAM #1
- ◆ END USER : ORIGIN ENERGY
- ◆ ENGINEERING : AUSTRALIA PACIFIC LNG
- ◆ UNIT NAME : IX-VESSEL
- ◆ MATERIAL : SA516-70N
- ◆ SIZE : 16/20t x 3,048 ID x 3,552 L (mm)



- ◆ PROJECT : APLNG UPSTREAM #1
- ◆ END USER : ORIGIN ENERGY
- ◆ ENGINEERING : AUSTRALIA PACIFIC LNG
- ◆ UNIT NAME : SLUG CATCHER
- ◆ MATERIAL : SA516-70N
- ◆ SIZE : 106/106t x 1,912 ID x 8,700 L (mm)

# 8. EXPERIENCE

## 8-1-1) MAJOR PRODUCT - PRESSURE VESSEL & H.EX



- ◆ PROJECT : P-75 & 77 PJT
- ◆ END USER : PETROBRAS
- ◆ ENGINEERING : QGI Brasil S.A
- ◆ MATERIAL : SA240-316L
- ◆ SIZE : 15/15t x 4,500 ID x 12,300L (mm)



- ◆ PROJECT : P-75 & 77 PJT
- ◆ END USER : PETROBRAS
- ◆ ENGINEERING : QGI Brasil S.A
- ◆ MATERIAL : SA516-70N + HIC
- ◆ SIZE : 94/103t x 3,960 ID x 6,000L (mm)

# 8. EXPERIENCE

## 8-1-1) MAJOR PRODUCT - PRESSURE VESSEL & H.EX



- ◆ PROJECT : P-75 & 77 PJT
- ◆ END USER : PETROBRAS
- ◆ ENGINEERING : QGI Brasil S.A
- ◆ MATERIAL : SA516-70N + HIC
- ◆ SIZE : 58/68t x 2,700 ID x 8,100L (mm)



- ◆ PROJECT : P-75 & 77 PJT
- ◆ END USER : PETROBRAS
- ◆ ENGINEERING : QGI Brasil S.A
- ◆ MATERIAL : SA516-70N + HIC
- ◆ SIZE : 50/57t x 2,000 ID x 5,850L (mm)

# 8. EXPERIENCE

## 8-1-1) MAJOR PRODUCT - PRESSURE VESSEL & H.EX



- ◆ PROJECT : PETROBRAS 01B&02B PJT
- ◆ END USER : PETROBRAS
- ◆ ENGINEERING : FIELDS ENGINEERING
- ◆ MATERIAL : SA765-Gr.III + 3mm Lining SS 316L
- ◆ SIZE : 245+3t x 1,500 ID x 3,410 L (mm)

# 8. EXPERIENCE

## 8-1-1) MAJOR PRODUCT - PRESSURE VESSEL & H.EX



- ◆ PROJECT : PETROBRAS 01B&02B PJT
- ◆ END USER : PETROBRAS
- ◆ ENGINEERING : FIELDS ENGINEERING
- ◆ MATERIAL : SA516-70N+ 3mm Lining SS 316L
- ◆ SIZE : 13+3t x 1,100 ID x 6,000 L (mm)

- ◆ PROJECT : PETROBRAS 01B&02B PJT
- ◆ END USER : PETROBRAS
- ◆ ENGINEERING : FIELDS ENGINEERING
- ◆ MATERIAL : SA516-70N+HIC
- ◆ SIZE : 36t x 1,200 ID x 3,400 L (mm)

# 8. EXPERIENCE

## 8-1-2) MAJOR PRODUCT - CYCLONE



- ◆ PROJECT : SK IPC VRU PJT
- ◆ END USER : SK INCHEON PETROCHEM
- ◆ UNIT NAME : CYCLONE
- ◆ SIZE : 6t x 768 ID x 2,500L (mm)



- ◆ PROJECT : SADARA PJT
- ◆ END USER : SAUDI ARAMCO
- ◆ UNIT NAME : CYCLONE
- ◆ SIZE : 10t x 500 ID x 2,500L (mm)

# 8. EXPERIENCE

## 8-1-3) EXPERIENCE LIST - VESSEL & HEAT EXCHANGER

No	Client	Project	Item Name	Size (mm) Th'k x Dia x L	Total Weight (ton)	Material	Q'ty	Code	Year
1	ORIGIN ENERGY	APLNG UPSTREAM DEVELOPMENT PJT	Pressure Vessel	16t x 3,048 x 3,552	107	SA516-70	7	ASME (U)	2012
2	ORIGIN ENERGY	APLNG UPSTREAM DEVELOPMENT PJT	Pressure Vessel	16t x 3,048 x 3,552	138	SA516-70	9	ASME (U)	2012
3	ORIGIN ENERGY	TALINGA PJT	Slug Catcher+ Filter Coalescer	106t x 1,912 x 8,700	83	SA516-70N	3	ASME (U)	2014
4	ORIGIN ENERGY	WANDOAN PJT	Slug Catcher	106t x 1,700 x 7,000	53	SA516-70N	1	ASME (U)	2014
5	ORIGIN ENERGY	SPRING GULLY PJT	Slug Catcher+ Filter Coalescer	106t x 1,700 x 8,700	78	SA516-70N	3	ASME (U)	2014
6	PETROBRAS	P-75 & P-77 PJT	Hydrocarbon Dew Point Control System Cold Separator	50t x 2,000 x 5,850	60	SA516-70N + HIC	2	ASME ABS	2014
7	PETROBRAS	P-75 & P-77 PJT	Fuel Gas K.O Drum	58t x 2,700 x 8,100	108	SA516-70N + HIC	2	ASME ABS	2014
8	PETROBRAS	P-75 & P-77 PJT	High Pressure Flare K.O. Drum	15t x 4,500 x 12,300	106	SA240-316L	2	ASME ABS	2014



# 8. EXPERIENCE

## 8-1-3) EXPERIENCE LIST - VESSEL & HEAT EXCHANGER

No	Client	Project	Item Name	Size (mm) Th'k x Dia x L	Total Weight (ton)	Material	Q'ty	Code	Year
9	PETROBRAS	P-75 & P-77 PJT	Low Pressure Flare K.O. Drum	15T x 4,500 x 12,300	94	SA240-316L	2	ASME ABS	2014
10	PETROBRAS	P-75 & P-77 PJT	Dilution Gas For Flare	94T x 3,960 x 6,000	215	SA240-316L	2	ASME ABS	2014
11	HYUNDAI OIL BANK	TERMINAL TRUCK PJT	Carbon Bed	13T x 2,743 x 3,130	19	SA516-70	2	ASME (U)	2014
12	HYUNDAI OIL BANK	TERMINAL TRUCK PJT	Absorber	8T x 1,143 x 6,157	2.5	SA516-70	1	ASME (U)	2014
13	HYUNDAI OIL BANK	TERMINAL TRUCK PJT	Glycol Separator	8T x 1,651 x 2,197	1.8	SA516-70	1	ASME (U)	2014
14	HYUNDAI OIL BANK	MARINE VRU PJT	Carbon Bed	21T x 3,810 x 6,470	50.6	SA516-70	2	ASME (U)	2014
15	HYUNDAI OIL BANK	MARINE VRU PJT	Absorber	10T x 1,570 x 9,208	6.7	SA516-70	1	ASME (U)	2014
16	HYUNDAI OIL BANK	MARINE VRU PJT	Glycol Separator	10T x 2,440 x 2,530	5.2	SA516-70	1	ASME (U)	2014

# 8. EXPERIENCE

## 8-1-3) EXPERIENCE LIST - VESSEL & HEAT EXCHANGER

No	Client	Project	Item Name	Size (mm) Th'k x Dia x L	Total Weight (ton)	Material	Q'ty	Code	Year
17	SK ENERGY	SKC IPC VRU PJT	Cyclone	6T x 768 x 2,587	5	SA516-70	5	ASME (U)	2014
18	HYUNDAI ENG	TORE PJT	Carbon Bed	10T x 1,780 x 2,100	12.8	SA516-70	2	ASME (U)	2014
19	HYUNDAI ENG	TORE PJT	Absorber	10T x 600 x 5,359	1.8	SA516-70	1	ASME (U)	2014
20	PETROBRAS	PETROBRAS 01B/02B PJT	Hic Vessel	69T×1,245×3,600	96	SA516-70N	6	ASME BV	2015
21	PETROBRAS	PETROBRAS 01B/02B PJT	Clad Vessel	28T×2,470×5,240	38	SA516-70 + CLAD SS316L	2	ASME BV	2015
22	PETROBRAS	PETROBRAS 01B/02B PJT	Clad Vessel	39T×1,750×4,310	78	SA516-70N + CLAD SS316L	6	ASME BV	2015
23	PETROBRAS	PETROBRAS 01B/02B PJT	Clad Vessel	39T×1,215×3,250	49.2	SA516-70N + CLAD SS316L	6	ASME BV	2015
24	PETROBRAS	PETROBRAS 01B/02B PJT	Heat Exchanger	16T×1,100×6,000	26	SA516-70 + CLAD SS316L	2	ASME BV	2015

# 8. EXPERIENCE

## 8-1-3) EXPERIENCE LIST - VESSEL & HEAT EXCHANGER

No	Client	Project	Item Name	Size (mm) Th'k x Dia x L	Total Weight (ton)	Material	Q'ty	Code	Year
25	PETROBRAS	PETROBRAS 01B/02B PJT	Forged Vessel	248T×1,500×4,000	240	SA765- Gr.III+3mm Lining SS316L	4	ASME BV	2015
26	LAMPRELL ENERGY	YIBAL KHUFF PJT	Deaerator	14T×2,200×7,000	1.3	SA516-70	1	ASME (U)	2016
27	PETROBRAS	PETROBRAS 03B PJT	Hic Vessel	69T×1,245×3,600	48	SA516-70N	3	ASME BV	2016
28	PETROBRAS	PETROBRAS 03B PJT	Clad Vessel	28T×2,470×5,240	19	SA516-70 + CLAD SS316L	1	ASME BV	2016
29	PETROBRAS	PETROBRAS 03B PJT	Clad Vessel	39T×1,750×4,310	39	SA516-70N + CLAD SS316L	3	ASME BV	2016
30	PETROBRAS	PETROBRAS 03B PJT	Clad Vessel	39T×1,215×3,250	24.6	SA516-70N + CLAD SS316L	3	ASME BV	2016
31	PETROBRAS	PETROBRAS 03B PJT	Heat Exchanger	16T×1,100×6,000	13	SA516-70 + CLAD SS316L	1	ASME BV	2016
32	PETROBRAS	PETROBRAS 03B PJT	Forged Vessel	248T×1,500×4,000	120	SA765- Gr.III+3mm Lining SS316L	2	ASME BV	2016

# 8. EXPERIENCE

## 8-1-3) EXPERIENCE LIST - VESSEL & HEAT EXCHANGER

No	Client	Project	Item Name	Size (mm) Th'k x Dia x L	Total Weight (ton)	Material	Q'ty	Code	Year
33	ASAHIMAS	ASAHIMAS CHEMICAL PJT	Tower	9T×3,500×11,000	13	SS400+RUBBER LINING 3mm	1	ASME	2016
34	ASAHIMAS	ASAHIMAS CHEMICAL PJT	Tower	9T×1,650×10,100	8	SS400+RUBBER LINING 3mm	1	ASME	2016
35	AZTECH	PTA-2 PJT	HEAT EXCHANGER	10T×700×10,000L	15	SA266-4 +Titanium Gr.2 Lining	1	ASME	2017

# 8. EXPERIENCE

## 8-2-1) MAJOR PRODUCT - SKID UNIT & PACKAGE



- ◆ PROJECT : TORE PJT
- ◆ END USER : TNGIZT
- ◆ ENGINEERING : JORDAN TECH KOREA
- ◆ UNIT NAME : VAPOR RECOVERY UNIT
- ◆ SCOPE : DETAIL DESIGN, FABRICATION, ASSEMBLY (INSTRUMENTS + ELECTRIC)
- ◆ SIZE : 5,000(W) x 7,100(L) x 7,000(H)

# 8. EXPERIENCE

## 8-2-1) MAJOR PRODUCT - SKID UNIT & PACKAGE



- ◆ PROJECT : MARINE VRU PJT
- ◆ END USER : HYUNDAIL OIL BANK
- ◆ UNIT NAME : VAPOR RECOVERY UNIT
- ◆ SCOPE : DESIGN, FABRICATION, ASSEMBLY (INSTRUMENTS + ELECTRIC)

# 8. EXPERIENCE

## 8-2-1) MAJOR PRODUCT - SKID UNIT & PACKAGE



- ◆ PROJECT : TERMINAL TRUCK PJT
- ◆ END USER : HYUNDAI OIL BANK
- ◆ UNIT NAME : VAPOR RECOVERY UNIT
- ◆ SCOPE : DETAIL DESIGN, FABRICATION, INSTALLATION (INSTRUMENTS & ELECTRIC)

# 8. EXPERIENCE

## 8-2-1) MAJOR PRODUCT - SKID UNIT & PACKAGE



- ◆ PROJECT : HDO #2 HOU PJT
- ◆ END USER : HYUNDAI OIL BANK
- ◆ UNIT NAME : LUBE OIL UNIT
- ◆ SIZE : 4,000(W) x 9,000(L) x 4,000(H)



- ◆ PROJECT : MARS CARGO PJT
- ◆ END USER : ROYAL NAVY
- ◆ UNIT NAME : FRESH WATER TREATMENT
- ◆ SIZE : 2,500(W) x 3,500(L) x 3,000(H)



# 8. EXPERIENCE

## 8-2-1) MAJOR PRODUCT - SKID UNIT & PACKAGE



- ◆ PROJECT : RABIGH II REFINING & PETROCHEMICAL PJT
- ◆ END USER : SAUDI ARAMCO / ENGINEERING : AMANO CORPORATION
- ◆ UNIT NAME : CATALYST COLLECTOR UNIT
- ◆ SCOPE : DESIGN, FABRICATION, ASSEMBLY (INSTRUMENTS + ELECTRIC)
- ◆ SIZE : 3,300(W) x 7,000(L) x 7,800(H)

# 8. EXPERIENCE

## 8-2-2) EXPERIENCE LIST - SKID UNIT & PACKAGE

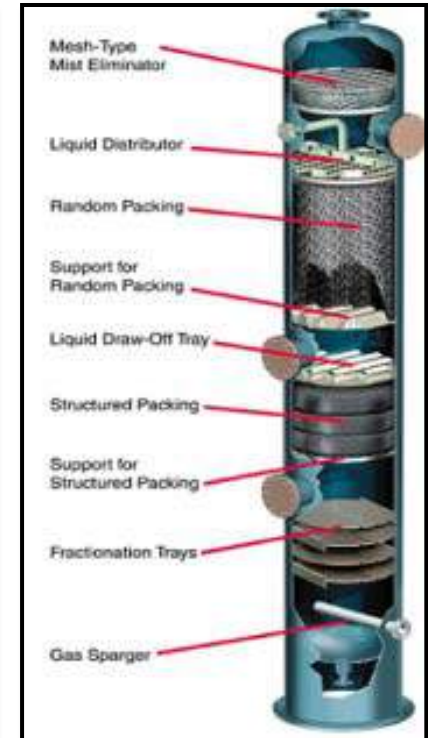
No	Client	Project	Item Name	Total Weight (ton)	Material	Q'ty	Code	Year
1	HYUNDAI ENG	TORE PJT	VAPOR RECOVERY UNIT	20	SA516-70	1	ASME	2014
2	SK ENERGY	VRU FOR SK INCHEON CLX V PJT	SKID	15	SS400	1	ASME	2014
3	HYUNDAI OIL BANK	MARINE VRU PJT	VAPOR RECOVERY UNIT	110	SA516-70	1	ASME	2014
4	HYUNDAI OIL BANK	TERMINAL TRUCK PJT	VAPOR RECOVERY UNIT	50	SA516-70	1	ASME	2014
5	HYUNDAI OIL BANK	HDO #2 HOU PJT	LUBE OIL UNIT	35	SA240-316L	1	ASME	2014
6	DSME	MARS CARGO PJT	FRESH WATER TREATMENT UNIT	12	SA240-316L	4	ASME	2014
7	SAUDI ARAMCO	RABIGH II REFINING & PETROCHEMICAL PJT	CATALYST COLLECTOR UNIT	91	SA516-70	3	ASME	2014

# 9. INTERNALS

## 9-1) INTERNAL

### Column Internals

- ALL KINDS OF INTERNALS IN AN OIL REFINERY CHEMICAL, PETROCHEMICAL AND GAS PROCESSING INDUSTRIES.



# 9. INTERNALS

## 9-2) TRAY & INTERNAL



**Bubble Cap Tray**



**Sieve Tray**



**Valve Tray**



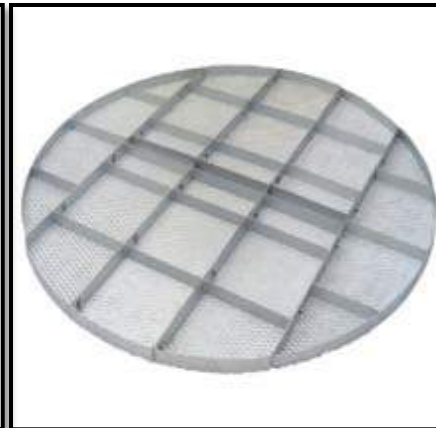
**Fixed Valve Tray**



**Liquid Distributor**



**Liquid Distributor**



**Bed Limiter**



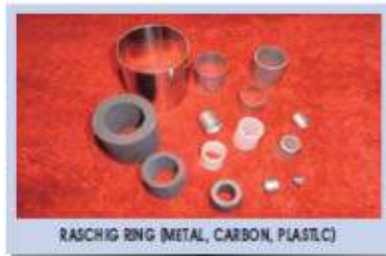
**Support Plate**

# 9. INTERNALS

## 9-3) COLUMN PACKING



PALL RING (METAL)



RASCHIG RING (METAL, CARBON, PLASTIC)



RASCHIG RING (ALUMINA)



TRI-PACK / LAN PACK (PLASTIC)



HY-PAK (METAL)



IMTP (METAL)



CROSS RING (CERAMIC)



SADDLE (CERAMIC)



HI-FLOW RING, FLOATING BALL (PLASTIC)



PALL RING (PLASTIC)



STRUCTURED PACKING (METAL, CERAMIC)



CASCADE MINI RING (METAL, PLASTIC)



SUPER SADDLE, HEL-LEX (PLASTIC)



TELLERETTE (PLASTIC)



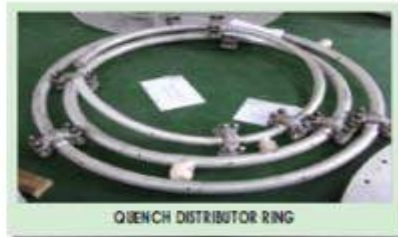
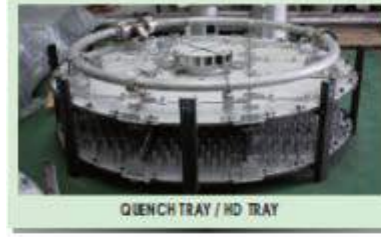
GRID BLOCK & BAR (CERAMIC, ALUMINA)



GLASS RASCHIG RING

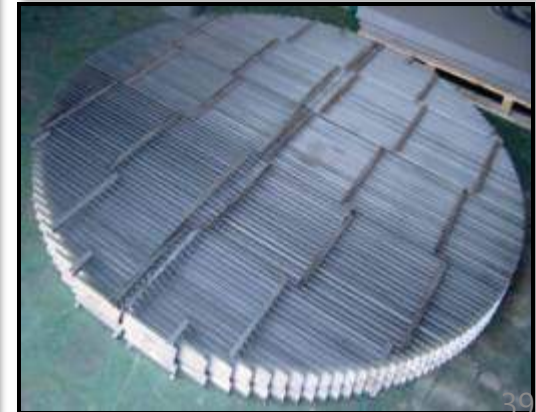
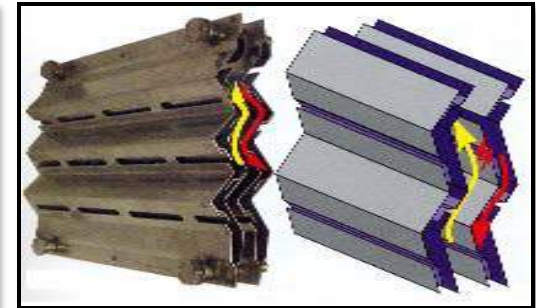
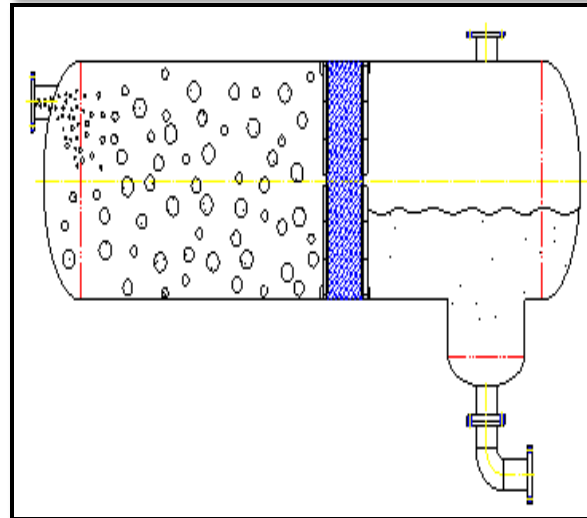
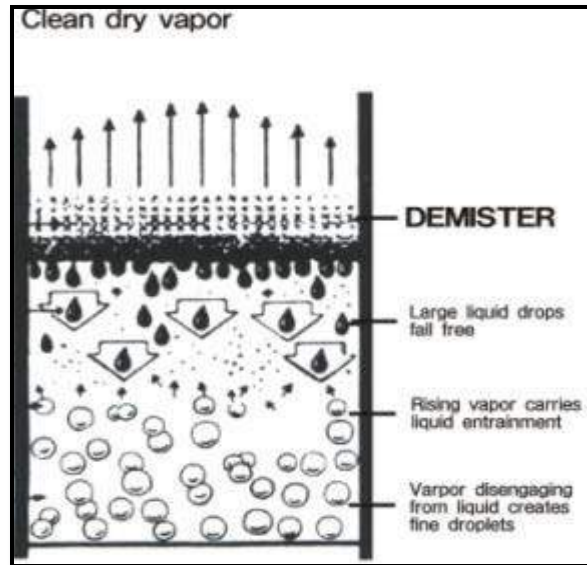
# 9. INTERNALS

## 9-4) REACTOR INTERNAL



# 9. INTERNALS

## 9-5) MIST ELIMINATOR & COALESCER



# 9. INTERNALS

## 9-6) INSTALLATION WORK & SUPERVISION





# 10. QUICK OPENING CLOSURE

## Quick Opening Closure

- Quick Opening Door is the device to close and open pressure vessel such as manhole, which is attached to column, more safely and quickly with a high pressure.
- Application is possible to all parts that can replace flange.



In the case of dismantling bolting type, a great large of manpower and time will be consumed.  
→ the generation of tremendous loss costs due to the stop of operation  
→ The occurrence of worker's injury



Swing-Bolt Type



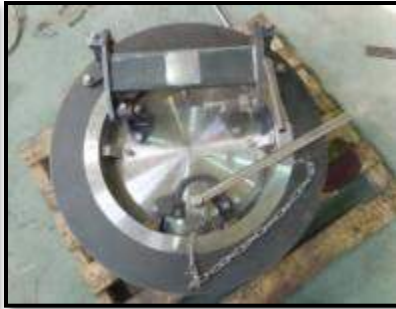
Locking-Ring Type



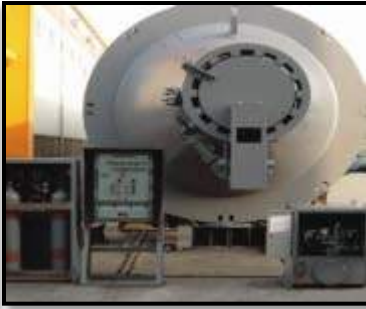
Clamp-Ring Type



Locking-Head Type



Locking-Band Type



Automation

# 10. QUICK OPENING CLOSURE

## 10-1) Locking Head Type

### Design Features

The shape is similar to Locking Ring Type without a Locking Ring, and it consists of Reducer or Gear Box, Hub, Head and Self-Energized Gasket



### Operating

After rotating the Head to the Unlock location by turning the Handle on the Gear Box or the Reducer, open the Head

# 10. QUICK OPENING CLOSURE

## 10-2) Locking Ring Type



### Operating

After opening the Split Clamp Ring to the left and the right by turning the Handle Bolt, open the Head.

### Design Features

Locking Ring Type QOC. Consists of Reducer or Gear Box, Hub, Head, Locking Ring, and Self-Energized Gasket. Standard Size is 20"~96", however, various sizes are available on customer's demand.



# 10. QUICK OPENING CLOSURE

## 10-3) Clamp Ring Type



### Design Features

Clamp Ring Type QOC. consist of single or double Handle Bolt, Hub, Head, Spilt Clamp Ring and Self-Gasket. Standard size is 2"~42" however, various sizes are available on customer's demand.

### Operating

After opening the Spilt Clamp Ring to the left and the right by turning the Handle Bolt, open the Head.



# 10. QUICK OPENING CLOSURE

## 10-4) Locking Band Type



### Operating

Release band-lock After full out the safety pin. Open the head

## 10-5) Special Operation



### **Electric Automatic Operating**

It consists of Electric Motor, Gear Box, Junction Box, and Control Panel.

### **Pneumatic Automatic Operating**

It consists of Motor, Gear Box, Control Panel and Control valve.

### **Hydraulic Automatic Operating**

It consists of Hydraulic Motor, Hydraulic Pump and Control Panel

\*As for regions under specific explosion-proof levels, system production is available in compliance with the explosion-proof levels.



# Thank You !

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