# Prequalification

SAMWON ENGINEERING CO., LTD.

# C O N T E N T S


# GREETING

**Samwon Engineering** is a authentic, strong business entity.
As a forerunner of the research & planning in the field of EJECTOR, VACUUM SYSTEM, DESUPERHEATER, IN LINE HEATER, STATIC MIXER we have the country's most advanced quality, produce Custom designs for enterprises.

Our products are used in many industries (Petrochemical Industry, Power Plant, Textile Industry, Water Treatment) to increase efficiency and to achieve the efficient energy use.
In special, Samwon Engineering carries out daring investment on technical development, manpower resources.

We focus on the improvement of existing products and the development of new products.
With that, we have become -21st century the world's leading brands EJECTOR- and will be the leader of its kind based on the various experiences and rich fund& techniques.

We promise that all of executives and staffers will do our best wholeheartedly to give trust and heart-moving sincerity with one accord.

# COMPANY PROFILE


Site Area : 1,514.1 ㎡ (Office: 556.5 ㎡, Factory: 957.6 ㎡)

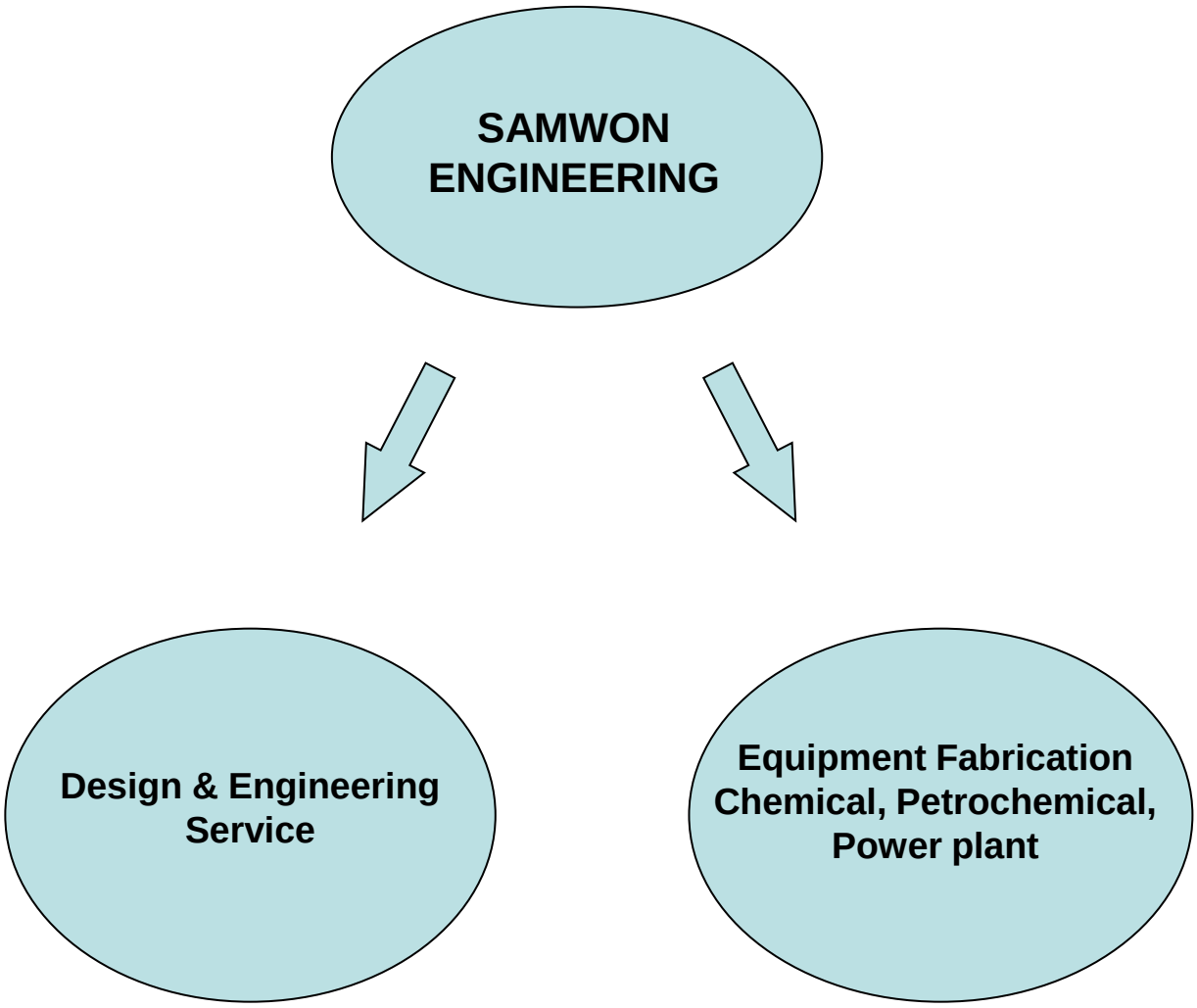
- COMPANY : SAMWON ENGENEERING CO., LTD
- CEO : IL DONG KIM
- MAJOR PRODUCT : EJECTOR, DESUPERHEATER, INLINE MIXER
- ADRESS (Office & Factory) : 12 Bodeum-4ro, Seo-gu, Inchon-si, Korea. 22664
  Tell : +82 32-553-5276 /
  Fax : +82 32-553-5297
- HOME PAGE : http://samwoneng.kr/
- E-MAIL : samwon@samwoneng.net

# HISTORY

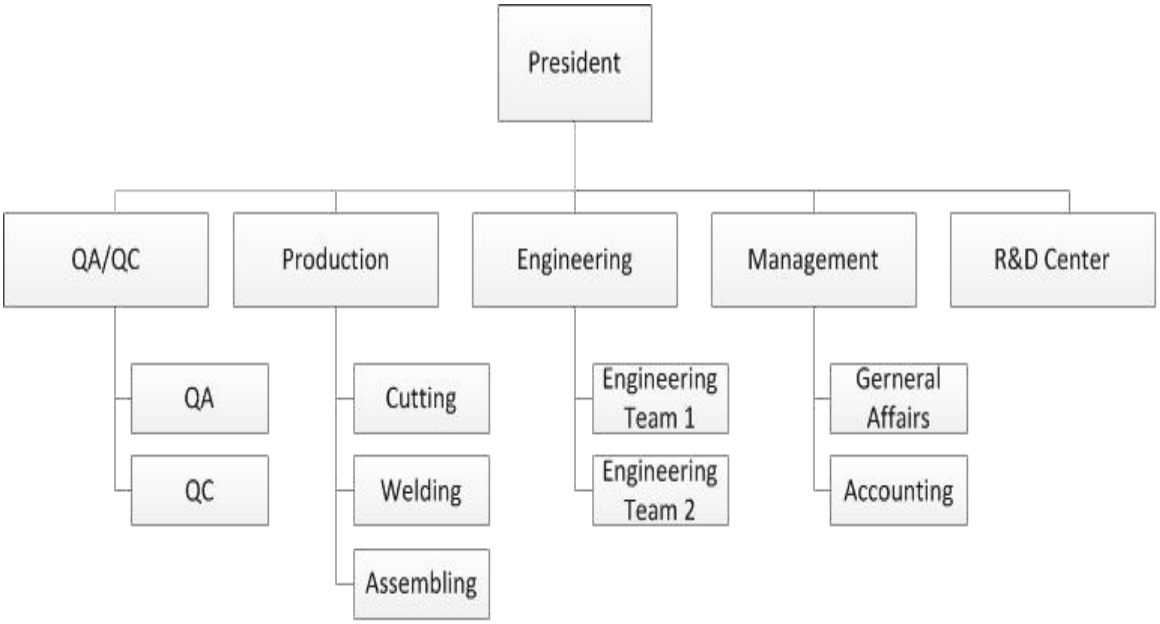
| | | |
|---|---|---|
| 2017 | Oct | ASME STAMP(U, S) 2017 Update |
| | Aug | Registered supplier of 'Amec foster wheeler' |
| | Jul | Designated as a promising export firm by the small & Medium Business Administration |
| 2016 | Dec | Agent contract with 'BASEERA ENGINEERING(in malaysia)' |
| | Sep | ISO 9001/14001 : 2015 Update |
| | Jul | Certificate of maintenance qualified company(Korea power plant) |
| | Jan | Establishment of R&D center |
| 2014 | Dec | ASME STAMP (U, S) |
| | Jul | Agreement for technology development project(Small and medium enterprises) |
| | Jun | Moved head office and factory to Inchon-Si |
| 2013 | Oct | ISO 14001:2004 certification is obstained |
| 2012 | Dec | Agreement for "Family company "(Cheju national university & Samwon engineering ). |
| | Nov | Registered gimpo factory. |
| | Apr | Obtained INNO-BIZZ certification |
| 2011 | Sep | Registered research department. |
| 2009 | Jan | Registered as 'Samwon ENG' corporation. |
| 2003 | Oct | Renamed to Samwon ENG. From Samwon Engineering Co. |
| | Apr | SO 9001:2000 certification is obstained |
| 1995 | Mar | Developed in DESUPERHEATER |
| 1992 | Sep | Developed STREAM JET EJECTOR |
| 1990 | May | Developed WATER JET EJECTOR |
| 1989 | Nov | Developed INTANK, INTANK MIXER |
| 1988 | Aug | Established Samwon Engineering Co. |

# BUSINESS SCOPE

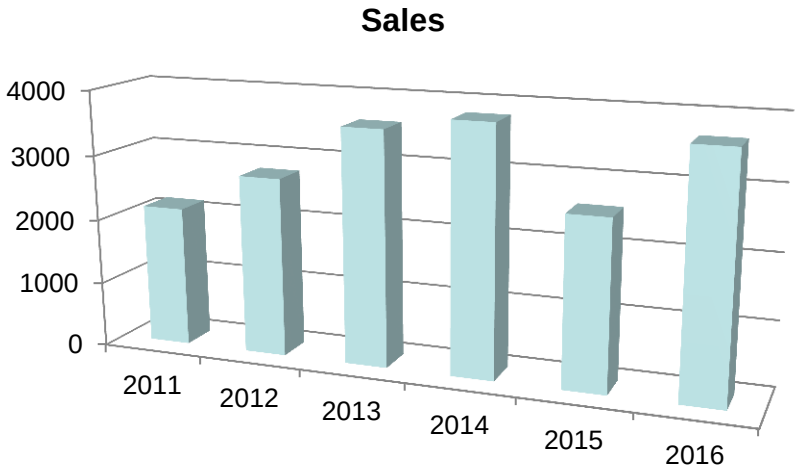
**“The 21th Century’s first class of EJECTOR maker in the world”**



# ORGARNIZATION




# FNANCIAL STATEMENT




**Unit : Million KRW**

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| Sales | 2158 | 2752 | 3,600 | 3,800 | 2,586 | 3,625 |

# MAJOR PRODUCT

## EJECTOR

Air Ejector
Water Ejector
Gas Ejector
Steam Jet Ejector
TVR (Thermo Vapor Recompressure)
Ejector System (Vacuum Unit)



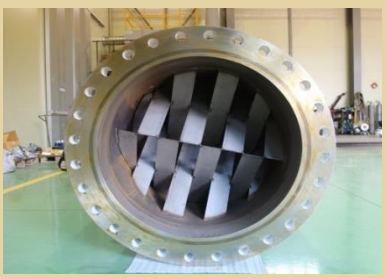
## DESUPERHEATER

Single nozzle type
Multi nozzle type
Venturi type

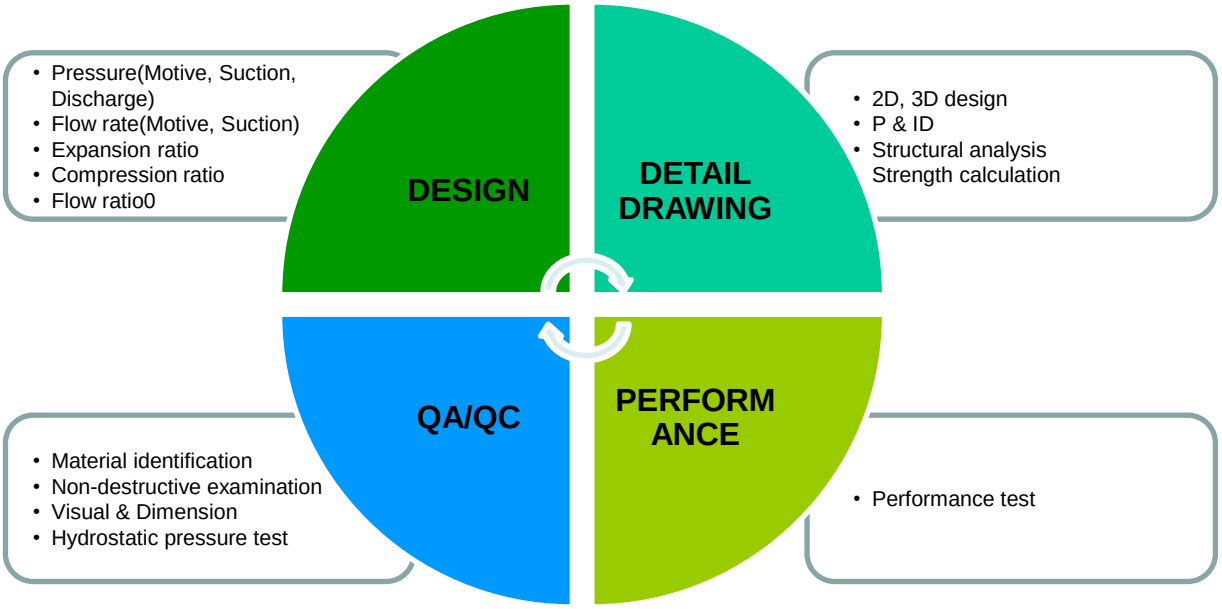


## MIXER

Helical type
SMX/SMXL
SMV


# WORKING PROCESS

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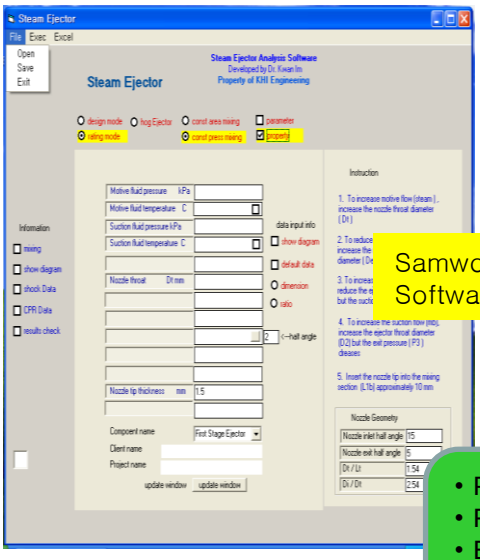
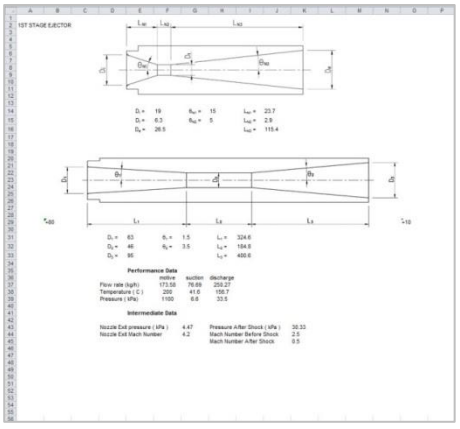
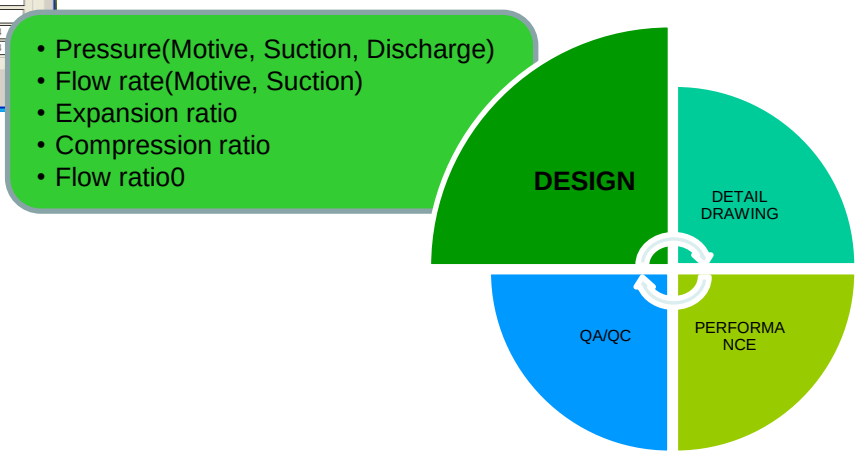
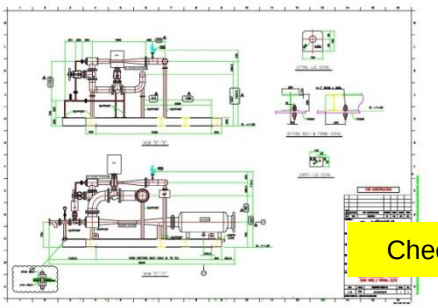
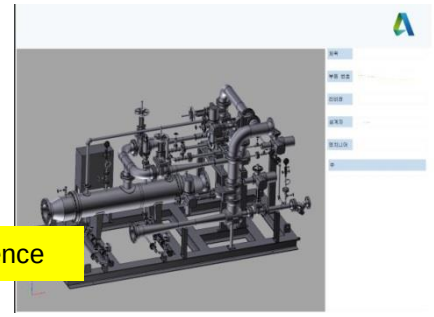



Samwon's Design Software

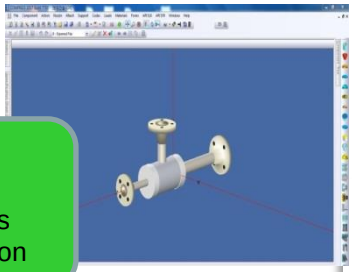


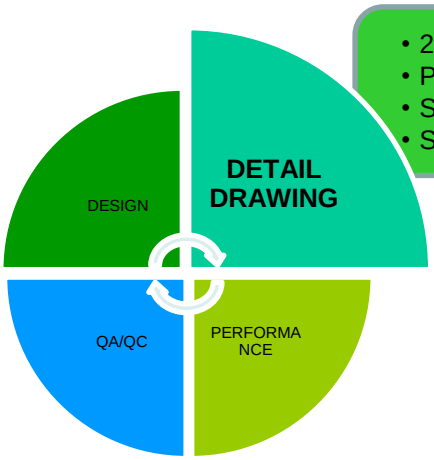






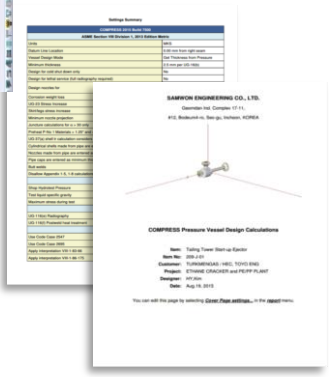
Check pipeline interference

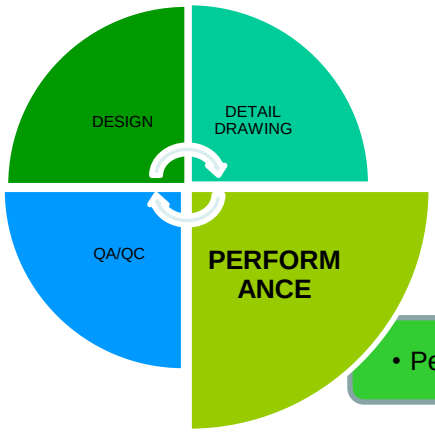





- 2D, 3D design
- P & ID
- Structural analysis
- Strength calculation

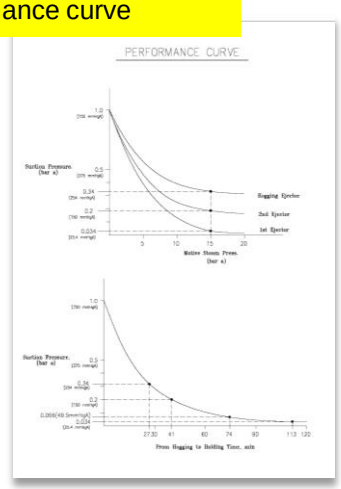
Product strength calculation



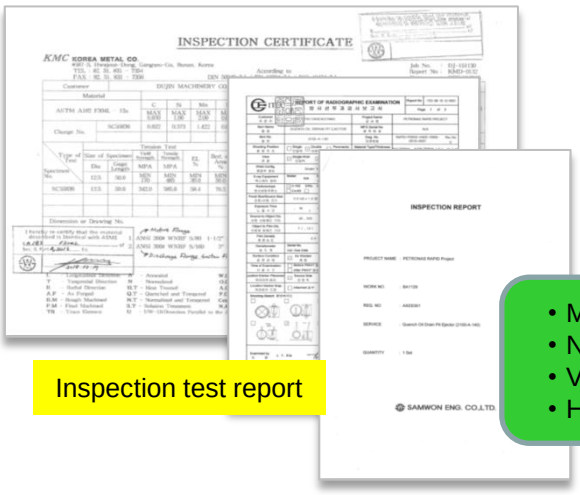



- Performance test

Shop performance test & performance curve

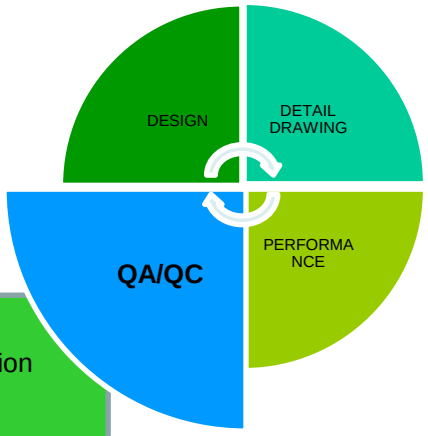



Motive & suction & discharge condition control




Inspection test report

- Material identification
- Non-destructive examination
- Visual & Dimension
- Hydrostatic pressure test




Nondestructive Testing Room

Material test

# CERTIFICATES

| Description | Ref. No. | Certification Authority |
|---|---|---|
| CERTIFICATE OF INOBIZ | R120701-00741 | Small and Medium Business Administration |
| Certificate of maintenance qualified company (korea power plant) | WITHU20160702718 | WITH-U |
| INDUSTRIAL R&D CENTER | 2016110039 | KOITA |
| ASME CERTIFICATES “U” | 48866 | ASME |
| ASME CERTIFICATES “S” | 48865 | ASME |
| ENVIRONMENTAL MANAGEMENT SYSTEM (ISO 14001:2015) | KO211-QC-EC | AGS KOREA |
| QUALITY MANAGEMENT SYSTEM (ISO 9001:2015) | KO211-QC-EC | AGS KOREA |
| PROMISING EXPORT FIRM CERTIFICATE | The 17th Incheon-13 | Incheon Export Center, SMBA |

Certificate for Business Registration

Plant Registration Certification


INOBIZ


Certificate of maintenance qualified company (korea power plant)


R&D CENTER


ASME U, S STAMP


ISO 9001,14001 : 2015


PROMISING EXPORT FIRM CERTIFICATE

# EQUIPMENT

### 1) Production Equipment

| Item Name | Manufacturer | Model | Quantity |
|---|---|---|---|
| Lathe | Hwacheon | HL 580*2000GN, HL460*1000 | 2 |
| Milling M/C | Heunghwan | HHM-1350HUD | 1 |
| Drilling M/C | Kyungmin processing | KM-DM23 | 1 |
| Band sawing M/C | PABALmachine | - | 1 |
| Argon welding M/C | Weld line, Shinwoo Tech | AC, DC, 500AD, TIG-500ST *5 | 2 |
| Arc welding M/C | Daesin Industry | 7.5KW | 1 |
| Tig(DC/AC) Welding M/C | Perfect | - | 1 |
| CO2 Welding M/C | Dewell Tech | 500A | 1 |
| Oxygen Welding M/C | - | - | 1 |
| Plasma Welding M/C | DAIDEN | SC-61C | 1 |
| Overhead Crane | bando | 7.5TON / 2.8TON / 1 TON | 3 |

### 2) Inspection equipment.

| Item Name | Manufacturer | Model | Quantity |
|---|---|---|---|
| Flow meter | KOMETER | 0~150㎥/h | 7 |
| Multimeter | KAISE | SK-7718 | 1 |
| Film thickness meter | QUANIX, POSITECTOR, JFE ADVANTECH | QN-4500-FN, 6000-FNS1, TI-45N | 3 |
| Temperature Meter | CENTER | `-200 ~ 1370℃ | 1 |
| Infrared Thermometer | Testo, OPTEX | `-30 ~ +400 ℃, PT-2LD | 2 |
| Thermograph | HANWOOL | 0~100 ℃ | 2 |
| High Pressure Compressor | 아일에어텍 | 100 (Kg/㎠) | 1 |
| Water circulation pump | 효성 종합 중전기 | 65㎥/h x 140m x 60HP | 1 |
| Wet Vacuum Pump | 청원제작소 | 5.5㎥/minx73cm/Hg x 15kw | 1 |
| PRESSURE RECORDER | HANWOOL | 0~25 Mpa | 2 |
| Silencer | DB ENG CO., LTD. | - | 1 |
| Pressure gage | HISCO | -0.1 ~ 35Mpa | 90 |
| Vacuum pressure gauge | KANE | 0~1040 mbar | 1 |
| Cylinder bore gauge | KRAIS | 13.97~18.034mm | 1 |
| Performance test (Steam boiler, Cooling tower, vacuum pump) | Dujin ENG | - | 1 |

# MAJOR CUSTOMERS

## Overseas company


## Domestic company

# MAJOR EXPERIENCE

## Vacuum system

RAPID 5

Two stage, condensing type with shell and tube intercondenser and aftercondenser

| | |
|---|---|
| Location | Johor, Malasia |
| Capacity : | 53.1 kg/hr air & water vapor |
| Suction P : | 25 mmHg |
| Discharge P : | 990 mmHg |
| Material : | A106 (Steam chest, Body), A276 TP316(Jet nozzle), A516(Diffuser) |

S-OIL SUPER PROJECT PACKAGE 2

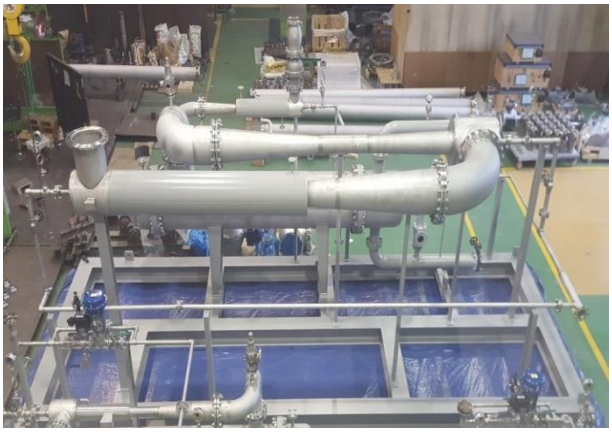
Two stage, condensing type with shell and tube intercondenser and aftercondenser

| | |
|---|---|
| Location | Onsan, Korea |
| Capacity : | 255.3kg/hr air & water vapor |
| Suction P : | 0.185 kg/cm2 a |
| Discharge P : | 1.38 kg/cm2 a |
| Material : | A106 (Steam chest)<br>A276 TP316(Jet nozzle)<br>A312 (Body)<br>A240(Diffuser) |

CHP DCP

Two stage, condensing type with shell and tube condenser(to vacuum pump)

| | |
|---|---|
| Location | Yeosu, Korea |
| Capacity : | 74.6 kg/hr air & water vapor |
| Suction P : | 1.2 mmHg A |
| Discharge P : | 80 mmHg A |
| Material : | SUS316 (Jacket)<br>SUS316 (Jet nozzle)<br>SUS316 (Body)<br>SUS316 (Diffuser) |



# MAJOR EXPERIENCE

## Vacuum system

Gimcheon Combined Heat and Power Plant(60 MW)

Two stage, condensing type with shell and tube intercondenser and aftercondenser

| | | |
|---|---|---|
| Location | : | Kimcheon, Korea |
| Capacity | : | 65.3 kg/hr air & water vapor |
| Suction P | : | 0.08 bar a |
| Discharge P | : | 1.07 bar a |
| Material | : | A106 (Steam chest, Body),<br>A276 TP304(Jet nozzle),<br>A105(Diffuser) |

KIRIKKALE IPP

Two stage, condensing type with shell and tube intercondenser and aftercondenser

| | | |
|---|---|---|
| Location | : | Kirikkale Province, Turkey |
| Capacity | : | 98 kg/hr air & water vapor |
| Suction P | : | 0.034 bar G |
| Discharge P | : | 1.06 bar G |
| Material | : | A106 (Steam chest, Body),<br>A479 TP316(Jet nozzle),<br>A516(Diffuser) |

Therma Visayas Energy Project

Two stage, condensing type with shell and tube intercondenser and aftercondenser

| | | |
|---|---|---|
| Location | : | Toledo City, Philippines |
| Capacity | : | 81.6 kg/hr air & water vapor |
| Suction P | : | 25.4 mmHg |
| Discharge P | : | 800 mmHg |
| Material | : | A106 (Steam chest, Body),<br>A276 TP316(Jet nozzle),<br>A516(Diffuser) |

# MAJOR EXPERIENCE

## Vacuum system

GE3 Project(60 MW)

Two stage, condensing type with shell and tube intercondenser and aftercondenser

| | | |
|---|---|---|
| Location | : | Gusan City, Korea |
| Capacity | : | 65.3 kg/hr air & water vapor |
| Suction P | : | 0.065 kg/cm2 a |
| Discharge P | : | 1.07 kg/cm2 a |
| Material | : | A106 (Steam chest, Body), A276 TP304(Jet nozzle), A105(Diffuser) |

RAS DJINET CCPP Project (1131.1 MW)

Two stage, condensing type with shell and tube intercondenser and aftercondenser

| | | |
|---|---|---|
| Location | : | Alger, Algeria |
| Capacity | : | 81.6 kg/hr air & water vapor |
| Suction P | : | 0.034 bar a |
| Discharge P | : | 1.07 bar a |
| Material | : | A106 (Steam chest, Body), A276 TP304(Jet nozzle), A516(Diffuser) |

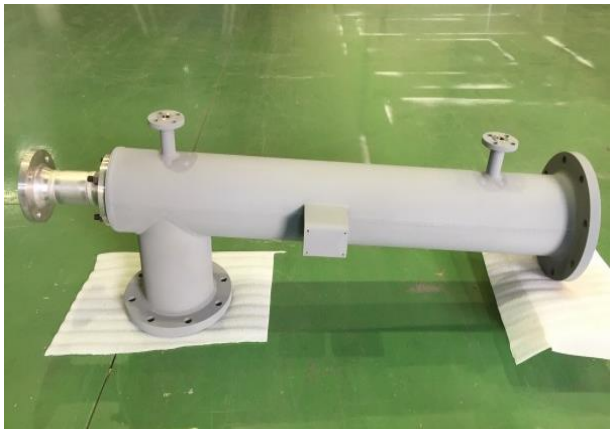
UCH II EXPANSION Project(136.9 MW)

Two stage, condensing type with shell and tube intercondenser and aftercondenser

| | | |
|---|---|---|
| Location | : | Pakistan |
| Capacity | : | 98 kg/hr air & water vapor |
| Suction P | : | 0.034 bar a |
| Discharge P | : | 1.07 bar a |
| Material | : | A106 (Steam chest, Body), A276 TP304(Jet nozzle), A516(Diffuser) |

# MAJOR EXPERIENCE

## Ejector



HOU PROJECT

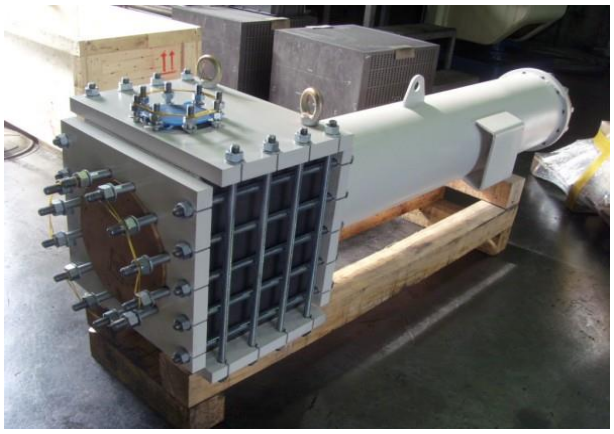
Jacket type steam jet ejector

| | | |
|---|---|---|
| Location | : | Ulsan, Korea |
| Capacity | : | 1878 kg/hr air & H2S |
| Suction P | : | -0.08 kg/cm2 g |
| Discharge P | : | 0.11 kg/cm2 a |
| Material | : | A312 (Steam chest, Body)<br>A279 TP304(Jet nozzle)<br>A106 (jacket)<br>A240 TP316(Diffuser) |

ASC Phase-VI PROJECT

Jacket type steam jet ejector

| | | |
|---|---|---|
| Location | : | Banten, Indonesia |
| Capacity | : | 506 kg/hr mixed vapor |
| Suction P | : | 0.75 kg/cm2 g |
| Discharge P | : | 0.4 kg/cm2 g |
| Material | : | Graphite + C.S(Body)<br>Graphite (Jet nozzle, Diffuser) |



SK GAS ULSAN PDH PROJECT

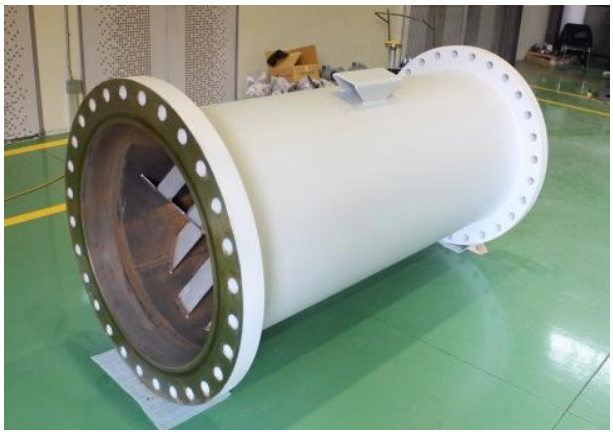
Steam jet ejector

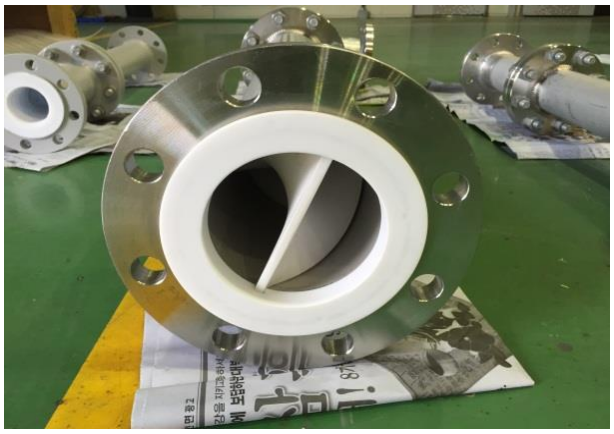
| | | |
|---|---|---|
| Location | : | Ulsan, Korea |
| Capacity | : | 21,445 kg/hr mixed vapor |
| Suction P | : | -0.53 kg/cm2 g |
| Discharge P | : | 0.135 kg/cm2 a |
| Material | : | A312 (Steam chest)<br>A182 (Jet nozzle)<br>A240 (Body, Diffuser) |

# MAJOR EXPERIENCE

## Mixer

| | | |
|---|---|---|
| Phase−1 SPOF Project | | |
| SMX type static mixer | | |
| Location | : | Rabigh, Saudi-arabia |
| Capacity | : | 1,800 Ton/hr |
| Material | : | SA516(Housing)<br>SA105(Flange)<br>SA240-316L(Element) |





| | | |
|---|---|---|
| MODERNIZATION PROJECT | | |
| Helical type static mixer | | |
| Location | : | Changwon, Korea |
| Capacity | : | 153,790 kg/hr, steam |
| Material | : | A240-304H(Housing, Element)<br>SA182-F304(Socket) |

| | | |
|---|---|---|
| CR PROJECT | | |
| Helical type static mixer | | |
| Location | : | Shenyang city, China |
| Capacity | : | 100 Ton/hr |
| Material | : | SUS316(Housing)<br>SUS304L(Flange)<br>TEFLON (Element) |

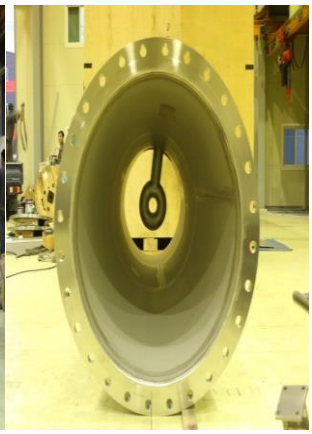
# MAJOR EXPERIENCE

## Desuperheater


| CPC No.11 DHDS PROJECT | | |
|---|---|---|
| Venturi nozzle type desuperheater | | |
| Location | : | Kaoshiung, Taiwan |
| Capacity | : | Steam 1,000kg/hr<br>Water 290kg/hr |
| Turn down ratio | : | 5:1 |
| Material | : | A312 TP304H(Body)<br>A276 TP304(Venturi nozzle)<br>A182 F304H(Flange) |

| JAZAN REFINERY AND TERMINAL PROJECT | | |
|---|---|---|
| Spray nozzle type desuperheater | | |
| Location | : | Jazan, Saudi-arabia |
| Capacity | : | Steam 14,579kg/hr<br>Water 1,204kg/hr |
| Turn down ratio | : | 50% |
| Material | : | A240 TP316L(Body)<br>A276 TP316L(spray nozzle)<br>A182 F316L(Flange) |





| Steam Introduced to the polymer plant PROJECT | | |
|---|---|---|
| Venturi nozzle type desuperheater | | |
| Location | : | Ulsan, Korea |
| Capacity | : | Steam 43,783kg/hr<br>Water 2,317kg/hr |
| Turn down ratio | : | 10% |
| Material | : | A516 (Body)<br>A276 TP304(Venturi nozzle)<br>A182 F304H(Flange) |