

Innovative, Customer-driven, Quality focused,  
Adherent, Responsive, Proactive

## OUR VALUE YOUR SUCCESS

Quality Value. Delivery Value. Price Value.



**SEWON CELLONTECH CO., LTD.**

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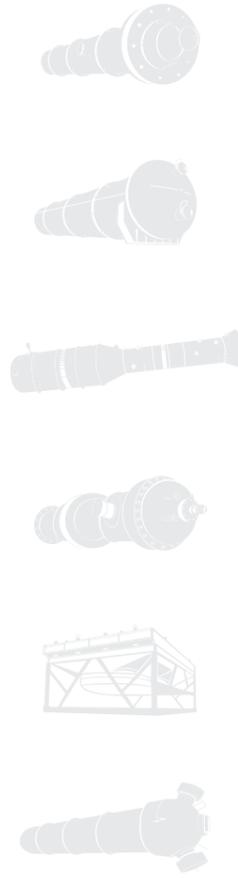
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# SEWON CELLONTECH

Our Value Your Success



# Message From The CEO



In its long journey with customers and partners since its foundation in 1971, SEWON CELLONTECH has sought to pioneer new approaches in manufacturing. These endeavors have yielded many products that have enriched the lives of people in the world and SEWON CELLONTECH has contributed to the development of the industries through these commitments. Over the past three decades we have become a leader in executing large, complex projects on time and within budget. The world, however, always present great challenges, and the work of solving them will never be finished.

To respond accurately to the challenges arising from the circumstances, we have reorganized not only our business platform but management system also based upon optimal business strategy. The newly introduced business platform, for instance from PLA(Production Line Assessment) Matrix to PFM(Production Field Manual), helped us align with our customers to ensure that we understand their unique requirements and we also recommitted to our solid focus on quality performance and delivery through these improved and effective solutions.

In the view of technology, we have constantly strengthened to implement new welding applications in various projects. These improvements were driven by our "Welding Technology Center" which has been tirelessly engaged in researching and developing high-end welding technologies. The efforts enabled us to be equipped with high-precision inner bore welding method, ultra-thickness narrow gap welding and high-speed automatic welding method in nozzle. Simultaneously, these newly adapted welding methods contribute to enhancing the company's ability to manufacture products timely and cost-effectively. Our continuing R&D innovations, therefore, became the fundamental resource in supplying products with much specialized materials such as low alloy steel and non-ferrous alloy steel, which accelerated new awards from top-class clients in oil & gas, petrochemical, and power plant industries.

By combining proven experience and newly developed technologies, we significantly expanded production line into sophisticated reactors like CCR platforming reactors, CCR reforming reactors, and FCC reactors. In addition, PDH reactors, Hydro-treating reactors, SM reactors, and HPPPO (Hydrogen Peroxide to Propylene Oxide) reactors were also supplied for various customers, and favorable reputations in the market have led us to a world-class reactors supplier.

Not only in traditional oil & gas and petrochemical field, but we have made substantial advancements in Ammonia, Urea, and Power Plant industries also. Especially, successfully completing projects of IGCC Power Plant and GTL process was the turning point in expanding business border to new challengeable market. The most innovative technology field we are recently involved in is the solar energy industry. SEWON CELLONTECH is providing various polysilicon production equipment that allow our customers to lower the cost of manufacturing high-quality advanced materials, which expands foundation of product that accelerate the adoption of energy-saving technology.

We are convinced that our customers will continue to rely on us as integral to their success by delivering their most valuable projects safely, on time, within budget, and to their quality requirements. We will work closely with them to find even more innovative solutions to lessen the impact of their every challenge and believe that SEWON CELLONTECH is well positioned in global market and will delivers innovations that answer global economy challenges.

With our talented employees and effective management system, we can inspire our customers around the world and focus on sustainable growth, building long-standing reputation as the go-to company.

CEO and Chairman *Chang, Cheong-No*



## Overview

Founded in 1971, SEWON CELLONTECH have been one of the most technologically focused plant manufacturing company in the world and major provider of various clients from all over the world.

During our history, we have acquired many innovative technologies and executed large projects for fabrication in the Oil & Gas and Energy industries the refinery complex to the energy sector successfully.

Today, Sewon cellontech is perfectly ready to support any projects from precious clients and our endeavors dedicated to the success of clients will become the hallmark of our business.

## Enterprise Structure

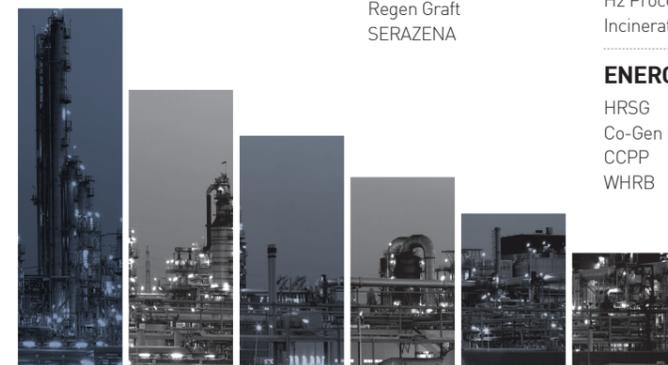
### SC FAMILY

#### SEWON CELLONTECH

- PE** Process Equipment  
Air Fin Cooler  
Power Plant Equipment
- ME** Hydraulic Equipment  
Hydraulic System & Unit  
Glass Lining Equipment
- RMS** Stem Cell System  
Regen Graft  
SERAZENA

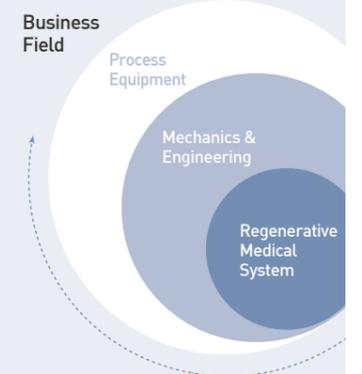
#### SC ENGINEERING

- MATERIAL-PLATFORM**  
Basic Material  
Chemical Material  
Bio material
- INDUSTRIAL-PLATFORM**  
Paper&Pulp  
KSLV-1 Fuel Ground Facility  
H2 Process  
Incinerator
- ENERGY-PLATFORM**  
HRSG  
Co-Gen PP  
CCPP  
WHRB



## Company Snapshot

**Company Name**  
SEWON CELLONTECH Co., Ltd.  
**Date of Establishment** 1971.01.14



**Location**  
1 Seoul, Korea  
2 Changwon, Korea  
3 Gunsan, Korea  
4 Busan, Korea

**Head Office**  
6th FL, HP Building, 83 Uisadang-daero, Yeongdeungpo-gu, Seoul, Korea

**Website** www.swcell.com



## Management System

The most predominant factor in executing projects is to meet quality requirements and complete any projects on time for customers. Working to provide a more vertically as well as horizontally integrated approach to executing projects, we created "SPORT(SC Project Optimization Report & Treatment) System", the state-of-the-art management solution, to care for customers' prime concerns in schedule and budget of their own projects.

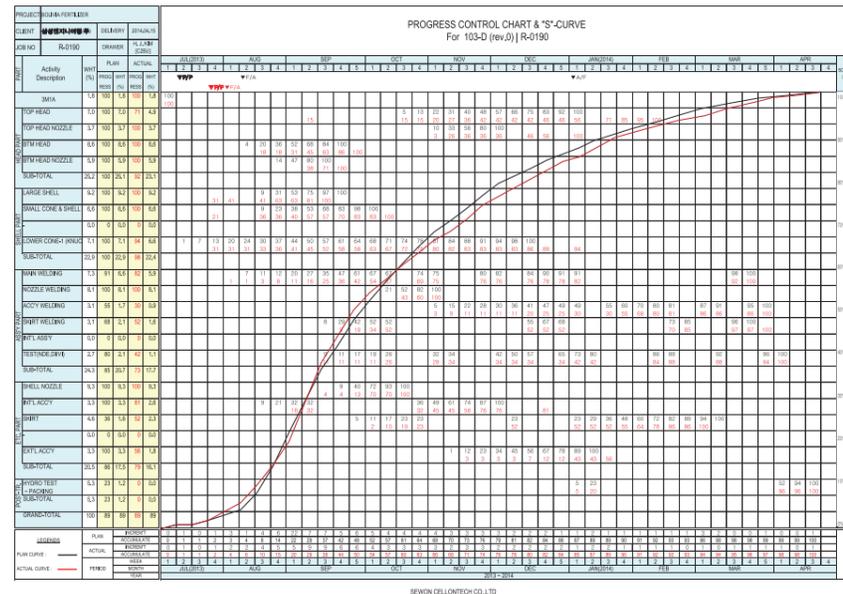
SPORT System is mainly composed of two methodological procedures called "PPCS(Process Control & Progress Control System)" and applied to all projects with strict principle and rule. Every projects we were awarded from our precious customers should be executed without delay, which is the cornerstone to implement the SPORT System. In the process of handling projects, any unexpected issues may arise and result in failure of on time delivery. To eliminate the gap between a planned schedule and an actual one, we are utilizing PPCS from the beginning of projects with strong attention and it proved to be one of the ultimate solutions in managing manufacturing process throughout on-the-job simulation.

**Process Control System monitors any deviations in budget and choose the optimal treatment to solve the issued deviations.**

In the course of executing projects, lot of changes in customers' requirements may appear. Process Control System can be applied to these changes and correct those with "Process IOMS(Issue Oriented Management Solution) Chart" that accurately designate which treatment would be the perfect solution to the deviation. Since the solutions are categorized and coded into serial number, operators can take the designated solution and do a correct actions according to the protocol of the program.

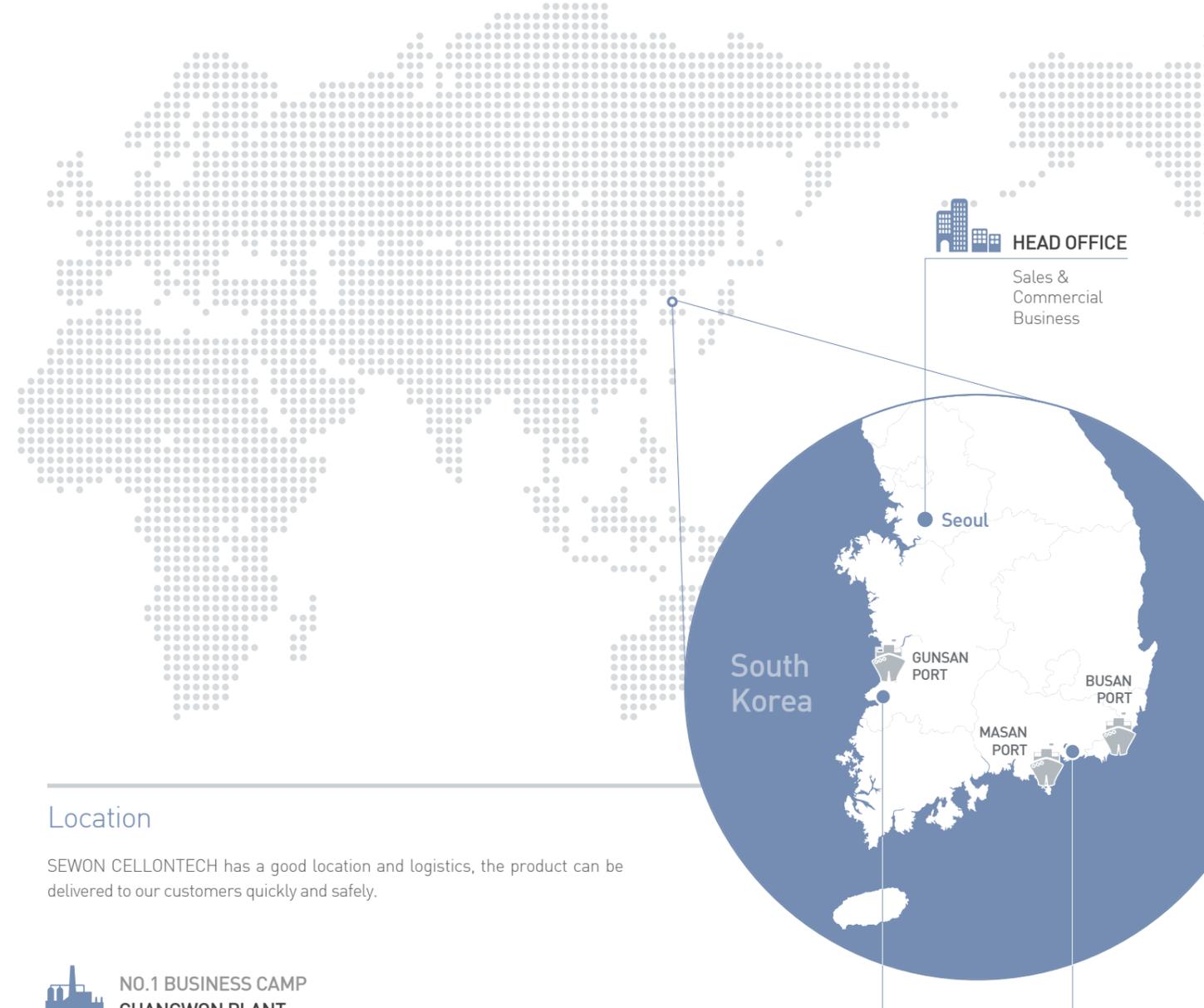
**Progress Control System checks any delay in fabrication progress and gives the most appropriate alternative to make up for the delay to meet the previously planned schedule.**

Every project is strictly calculated and planned to keep originally required schedule. The scheduling is operated by the "Progress S-Curve" in combination with the support of well-designed IT solution. The best solution, if any delays behind the planned schedule, would be suggested to narrow down the gap of changes according to "Progress IOMS Chart" which has the pool of solutions with coded serial numbers as the same as in Process Control System. Operators can find the right remedial action on changes as done in Process Control System.



**Reciprocally interacting, Process Control System and Progress Control System play an unprecedentedly important role in managing every process in production to demonstrate a "customer-oriented" approach for completing projects more quickly. The two key resources of the SPORT System, Process Control System and Progress Control System, are inextricably linked to each other to reduce costs and increase the possibility of success in any projects.**

The fundamental trait of our management system, SPORT, drives better-qualified products and well-balanced competitiveness in the industries. In combination, SPORT is the evidence of our commitment to meeting people's needs whether they are customers, suppliers, or employee.



## Location

SEWON CELLONTECH has a good location and logistics, the product can be delivered to our customers quickly and safely.

**NO.1 BUSINESS CAMP  
CHANGWON PLANT**

Distance from Workshop to  
**Masan Port 5 km**  
Distance from Workshop to  
**Busan Port 50 km**



**NO.2 BUSINESS CAMP  
GUNSAN PLANT**

Distance from Workshop to  
**Gunsan Port 1 km**



# Line of Business

## Reactors

SEWON CELLONTECH is capable of designing in strict compliance with the client's requirements and supplied reactors in the world make us build up a strong relationship with clients and licensors. Zero-tolerance quality control and technical research of welding and heat treatment are always a strong basement for supporting clients' request.

- 01 CCR Platforming Reactor(UOP)
- 02 CCR Reforming Reactor(Axens)
- 03 FCC Reactor & Regenerator
- 04 PDH Reactor
- 05 Water Cooled Methanol Reactor
- 06 Hydro-Treating Reactor
- 07 SMART Reactor(UOP)
- 08 HPPD Reactor



## Shell & Tube Heat Exchangers

Various types of shell & tube heat exchangers are supplied by over 40 years experienced engineering and manufacturing Know-how.

- 01 Post Reactor Heater
- 02 Hot Combined Feed Exchanger
- 03 Inner Bore Welding



## Drums

SEWON CELLONTECH's heavy wall pressure vessels are in use for a wide range of pressure, temperature and fluid flow in process plants. With decades of experience, SEWON CELLONTECH has been fully committed to provide our services and products to our clients' satisfaction.

- 01 Molecular Sieve Adsorber
- 02 Separator



## Air Fin Coolers

SEWON CELLONTECH designs and manufactures finned tubes, tube bundles and header boxes, and supplies these products in an air fin cooler package.

- 01 Induced Type
- 02 Forced Type



## Power Plant Equipment

SEWON CELLONTECH is the domestic unique manufacturer supplied huge Gasification Vessel. We manufacture various shell and tube heat exchangers for solar power project. Also we do design and manufacture Dearator & Feed Water Tank of all types of the Power Plant.

- 01 Gasifier & Economizer
- 02 Surface Condenser(wet type)
- 03 HP & LP Feed Water Heater
- 04 Deaerator



## Towers & Columns

SEWON CELLONTECH is a reputed fabricator of several types of packed and tray columns.

- 01 High Pressure Elevation Degasser
- 02 H.P. Demethaniser





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# REACTORS

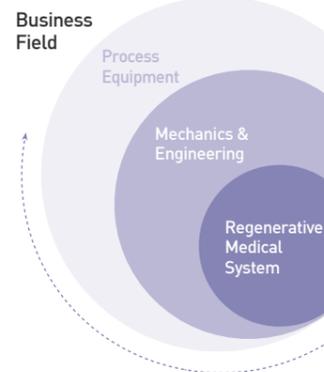
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# Company Profile Since 1971



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## SC FAMILY



### SEWON CELLONTECH

**PE** Process Equipment  
Air Fin Cooler  
Power Plant Equipment

**ME** Hydraulic Equipment  
Hydraulic System & Unit  
Glass Lining Equipment

**RMS** Stem Cell System  
Regen Graft  
SERAZENA

### SC ENGINEERING

**MATERIAL-PLATFORM**  
Basic Material  
Chemical Material  
Bio material

**INDUSTRIAL-PLATFORM**  
Paper&Pulp  
KSLV-1 Fuel Ground Facility  
H2 Process  
Incinerator

**ENERGY-PLATFORM**  
HRSG  
Co-Gen PP  
CCPP  
WHRB



## Reactors



- 01 CCR Platforming Reactor (UOP)
- 02 CCR Reforming Reactor (Axens)
- 03 FCC Reactor & Regenerator
- 04 PDH (Propane Dehydrogenation) Reactor - Oleflex Reactor (UOP)
- 05 Water Cooled Methanol Reactor
- 06 Hydro-Treating Reactor
- 07 SM (Styrene Monomer) Reactor - SMART Reactor (UOP)
- 08 HPPD Reactor(Hydrogen Peroxide to Propylene Oxide)

01 Changwon Plant (102,128 m<sup>2</sup>)  
02 Gunsan Plant (102,482 m<sup>2</sup>)

SEWON CELLONTECH has manufacturing plant in Changwon and Gunsan.



# CCR Platforming Reactor (UOP)

Our rich experiences have made us to develop know-how to fabricate the reactor on-time with required quality. Its high temperature service needs very careful mechanical design. This reactor is usually very long because each section of reactors is stacked vertically. Thus tolerances including straightness are quite severe. We know well how to handle all these difficulties. And good relationship and cooperation with licensor and internal parts suppliers enable us to be better for this equipment.



Design Specification	
Material	Weight
Plate : SA387-11 CL.1 or SA387-22 CL.2 Forging : SA336-F11 CL.2, SA182-F11 CL.2	167 – 533 Ton

Experience List					
Customer	Project	Description	Material	Weight (Ton)	Year
GS Engineering & Construction	Lidong Aromatics	CCR Platforming Reactor #1-#4 (Moon Type)	A387-11 CL.1	300	2005
SK Engineering & Construction	ATC Aromatics Complex 2	CCR Platforming Reactor (Moon Type)	A387-11 CL.1	330	2006
GS Caltex Corporation	CCR Revamping	CCR Revamping (Moon Type)	A387-11 CL.1	175	2007
SK Engineering & Construction	KPPC Aromatics	CCR Platforming Reactor (Moon Type)	A387-11 CL.2	533	2007
Bechtel-Jacobs Joint Venture	Motiva Crude Expansion	CCR Platforming Reactor (Optimizer Type)	A387-22 CL.2	468	2008
Daelim Industrial Co., LTD.	Yanbu	CCR Platforming Reactor (Optimizer Type)	A387-11 CL.1	281	2011
SK Engineering & Construction	Jurong Aromatic	CCR Platforming Reactor (Moon Type)	A387-11 CL.1	244	2012
Hyundai Engineering & Construction	V-Project	CCR Platforming Reactor (Moon Type)	A387-11 CL.1	168	2013
UOP	Roseneft	CCR Platforming Reactor (Moon Type)	A387-11 CL.1	167	2013
UOP	Antipinsky Russia	CCR Platforming Reactor (Moon Type)	A387-11 CL.1	100	2015
Technip Malaysia	NSRP	CCR Platforming Reactor (Optimizer Type)	A387-22 CL.2	336	2015

## Reference

- 1 Internal Part (Centerpipe, Catalyst Transfer Pipe) shall be separately packed, assembled at site after trial-assembly at CCR manufacturer's shop.
- 2 Referring scallop type, assembly scope can be managed at the shop or site.



## Reactors

- 01 CCR Platforming Reactor (UOP)
- 02 CCR Reforming Reactor (Axens)
- 03 FCC Reactor & Regenerator
- 04 PDH (Propane Dehydrogenation)
- 05 Water Cooled Methanol Reactor
- 06 Hydro-Treating Reactor
- 07 SM (Styrene Monomer) Reactor - SMART Reactor (UOP)
- 08 HPP0 Reactor (Hydrogen Peroxide to Propylene Oxide)

# CCR Reforming Reactor (Axens)

This reactor is made of CrMo low alloy steel. Heat control is very important for welding of this material to maintain required quality. We know how to handle this material very well. There are very complicate catalyst transfer pipes installed to connect upper & lower hopper to reactor. It needs very careful 3 dimensional pipes bending to fit perfectly. Our successful supplying experiences prove our capability.



Design Specification	
Material	Weight
Plate : SA387-11 CL.1 Forging : SA336-F11 CL.2, SA182-F11 CL.2	15 ~ 99 Ton

Experience List					
Customer	Project	Description	Material	Weight (Ton)	Year
GS Engineering & Construction	No.4 Aromatics	CCR Reactor	A387-11 CL.1	51	2002
SK Engineering & Construction	NRCX	CCR Reactor	A387-11 CL.1	41 ~ 58	2005
GS Engineering & Construction	Sohar Aromatic	CCR Reactor	A387-11 CL.1	33 ~ 54	2007
Samsung Engineering	Aromatics	CCR Reactor	A387-11 CL.1	50 ~ 99	2011
Technip	Rehabilitation & Adaption Project	CCR Reactor	A387-11 CL.1	15 ~ 22	2013



## Reference

- The bending tolerance of catalyst transfer piping shall be considered to connect reactor from catalyst hopper.
- Internal Part (Centerpipe, Catalyst Transfer Pipe) shall be separately packed, assembled at site after trial-assembly at CCR manufacturer's shop, and scallop or outside grid shall be assembled at shop.

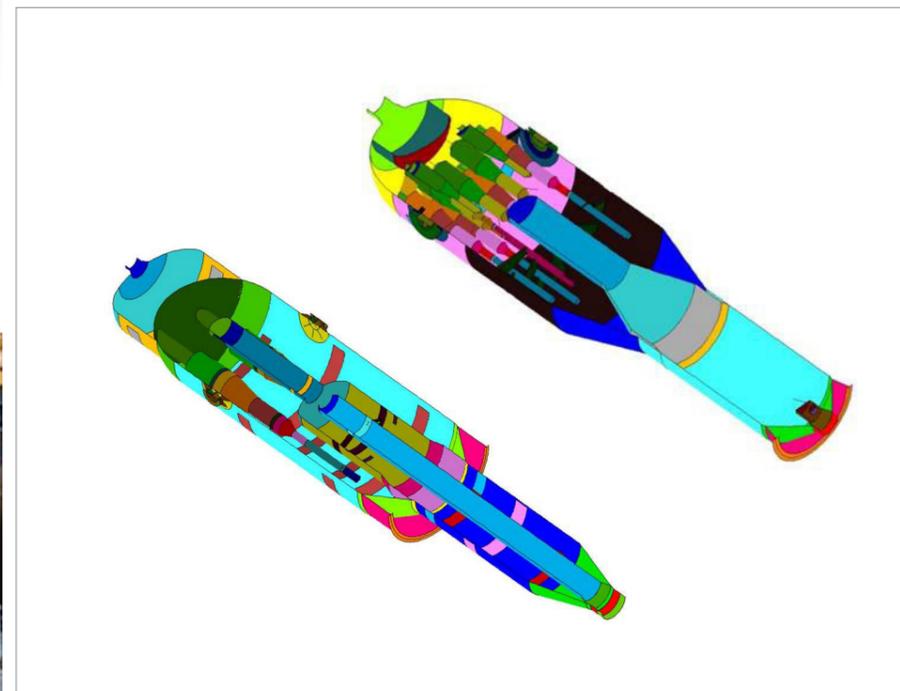


## Reactors

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- 08 HPP0 Reactor (Hydrogen Peroxide to Propylene Oxide)

# FCC Reactor & Regenerator

FCC reactor and regenerator are key-equipments for FCC process. Due to its process requirement, many complicate internal parts and refractory lining shall be installed inside of the equipments. Working sequences are very important to maintain quality & on-time delivery. Through extensive experiences, we know how to fabricate the equipments and assemble the parts including refractory lining work.



## Reactors

- 01 CCR Platforming Reactor (UOP)
- 02 CCR Reforming Reactor (Axens)
- 03 FCC Reactor & Regenerator**
- 04 PDH (Propane Dehydrogenation)
- 05 Water Cooled Methanol Reactor
- 06 Hydro-Treating Reactor
- 07 SM (Styrene Monomer) Reactor - SMART Reactor (UOP)
- 08 HPP0 Reactor (Hydrogen Peroxide to Propylene Oxide)

Design Specification	
Material	Weight
Plate : SA387-11 CL.1 + 410 S.S(Reactor) / SA516-70(Regenerator) Forging : SA182-F11 CL.2	Rx : 235 ~ 480 Ton / Rg : 480 ~ 911.Ton

Experience List					
Customer	Project	Description	Material	Weight (Ton)	Year
Daelim Industry	Petro FCC, Philippines	UOP FCC reactor [Full package]	A516-70	235(Rx) / 365(Rg)	2007
CB&I	Cartagena Refinery Expansion	UOP FCC reactor	A387-11 CL.1 + 410 S.S / A516-70	480(Rx) / 911(Rg)	2012

## Reference

- 1 Composition**
  - Reactor / Regenerator / Stand pipe / Orifice Chamber
- 2 Detailed Part**
  - Spent Catalyst Stripper
  - Combustor
  - Cyclone
  - Air Distributor
  - Refractory Lining Work
  - Expansion Joint
  - Slide Valve
- 3 ETC**
  - Packing the Stand pipe separately



# PDH Reactor - Oleflex Reactor (UOP)

(Propane Dehydrogenation)

Due to low price of natural gas, gas based process are now very popular. PDH process is one of them. With strong capability of manufacturing complicate reactors, we are very good at this PDH reactor also. Complicate internal parts shall be installed inside of the reactor. Precise sequence of working procedure, know-how & good cooperation with internal suppliers are also crucial to successful delivery.



Design Specification	
Material	Weight
SA240-304H / SA182-304H / SA403-304H	68 ~ 205 Ton

Experience List					
Customer	Project	Description	Material	Weight (Ton)	Year
Taekwang Industries	Taekwang ANP	R#1 / #2 / #3 / #4	A240-304	100.7	1996
Alujain Corp.	PDH Al Fasel	R-1001 / 1002 / 1003 / 1004	A240-304	68	2006
Tobolsk Polymer LLC	PDH Tobolsk	R-11201 / 2 / 3 / 4	A240-304	115.6	2010
Samsung	Carbon Black & Delayed Coker	2640-D-016/017/018	A240-304H	205	2013

## Reference

- Internal Part (Basket, Transfer Pipe, Cover Plate, Centerpipe, Plug Distributor, Expansion Joint) shall be separately packed, assembled at site after trial-assembly at manufacturer's shop.
- Carbon content shall be 0.04% to 0.06% on base metal heat analysis and welding consumables.



## Reactors

- 01 CCR Platforming Reactor (UOP)
- 02 CCR Reforming Reactor (Axens)
- 03 FCC Reactor & Regenerator
- 04 PDH (Propane Dehydrogenation)**
- 05 Water Cooled Methanol Reactor
- 06 Hydro-Treating Reactor
- 07 SM (Styrene Monomer) Reactor - SMART Reactor (UOP)
- 08 HPO Reactor (Hydrogen Peroxide to Propylene Oxide)

# Water Cooled Methanol Reactor

Water Cooled Methanol reactor is one of the core equipments of Mega Methanol process. This reactor is very heavy tubular reactor. Careful handling of big numbers of tubes, tube to tubesheets welding is required and also precise heat control for welding is very important to overall quality. We have capability to supply good quality reactors on time, of course can meet all requirements from process, licensor, code & project specification.



Design Specification	
Material	Weight
Plate : SA387-11 CL.2 Forging : SA182-F11 CL.2	305.14 Ton

Experience List					
Customer	Project	Description	Material	Weight (Ton)	Year
Air Liquide	Petronas Methanol	Water Cooled Methanol Reactor	SA387-11 CL.2	305.14	2006

## Reference

- 1 Piping shall be designed as per ASME B31.1
- 2 Tube shall be ordered as per tolerance limits of Licensor (SA789 UNS S31500)
- 3 Catalyst shall be filled in tube inside



## Reactors

- 01 CCR Platforming Reactor (UOP)
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- 06 Hydro-Treating Reactor
- 07 SM (Styrene Monomer) Reactor - SMART Reactor (UOP)
- 08 HPP0 Reactor (Hydrogen Peroxide to Propylene Oxide)

# Hydro-Treating Reactor

Operational condition of Hydro-treating reactors are very severe, thus high-temperature service CrMo low alloy steel shall be used as base material and SS cladding or weld-overlay is also required because of hydrogen. Very sensitive control of all working procedure, especially welding is key factor of good quality and on-time delivery. Only few capable manufactures can supply this reactor with required quality on time. We are very proud we are one of them, even better we can supply it with competitive price.



Design Specification	
Material	Weight
SA387-CL2	148 Ton

Experience List					
Customer	Project	Description	Material	Weight (Ton)	Year
Fluor Daniel	BP Toledo Clean Fuels	A-DHT Reactor	SA387-22+347 Cald	173	2004
SK Corp.	No. 2 & 3 FCC	HDS Reactor	SA387-22 CL2 + 347 W/O	62 / 33	2007
Foster Wheeler	Bukom Refinery Modification	HDS Reactor	SA387-11 CL2 + 347 W/O	148	2009
SKEC	Jurong Aromatic Complex	DHT Reactor No. 1 & 2	SA387-11 CL2 + 347 W/O	127 / 192	2012
SECL	Samsung Total No.2 Aromatics Complex	DHT Reactor	SA387-11 CL2 + 347 W/O	125	2013
GSEC	The ERC Hydro-Cracker	Diesel Hydrotreating Reactor	SA387-11 CL2 + 347 W/O	421	2014

## Reference

- 1 Support ring for Catalyst Bed support Grid shall be fabricated with weld built-up or Forged ring type.
- 2 Internal Part (Equiflow Distributor Tray, Catalyst Bed Support Grid, Equiflow Mixing Tray) shall be separately packed, assembled at site after trial Ass'y at manufacturer's shop.



## Reactors

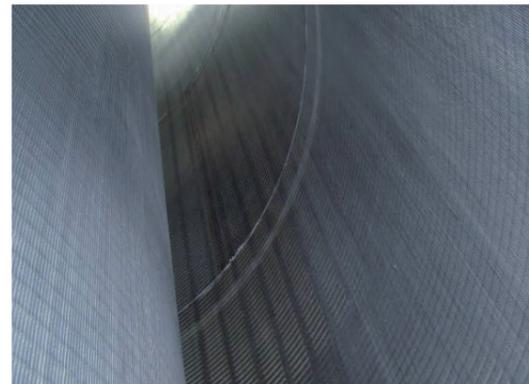
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- 07 SM (Styrene Monomer) Reactor - SMART Reactor (UOP)
- 08 HPO Reactor (Hydrogen Peroxide to Propylene Oxide)



# SM Reactor - SMART Reactor (UOP)

(Stylene Monomer)

Stylene Monomer is feed stock of polystyrene and key process of BTX chain. We are one of the most experienced suppliers of this reactor. This reactor needs careful design, work procedure, control of welding, assembling internal parts & proper quality control. Thanks to customers' satisfaction, we could have many experiences supplying this reactor.



Design Specification	
Material	Weight
SA240-304H	71 ~ 94 Ton

Experience List					
Customer	Project	Description	Material	Weight (Ton)	Year
LG Chem	EB/SM Revamping	Intermediate Stage "Smart" Dehydrogenation Reactor	SA240-304H	71	2003
Dongbu Hiteck	SM2plant Smart Reactor	Smart Dehydrogenation Reactor	SA240-304H	71	2005
Hitachi Plant Technologies	NS	First Stage Dehydrogenation Reactor	SA240-304H	94	2012

## Reference

- 1 All internal Parts (Displacement Cylinder, Inner Cylinder, etc) shall be assembled at manufacturer's shop.
- 2 Field hydrotest of reactor is not recommended.
- 3 Displacement cylinder shall be leak tested with 1.05 Kg/cm<sup>2</sup> air to check guide bar welds.



## Reactors

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- 08 HPP0 Reactor (Hydrogen Peroxide to Propylene Oxide)

# HPP0 Reactor

(Hydrogen Peroxide to Propylene Oxide)

This reactor is a very heavy tubular reactor and made of solid Stainless steel. HPP0 is a kind of very advanced process of downstream of petrochemical. Our know-how to manufacture tubular reactors enables us to deliver the reactors with good quality on-time. We are proud that we could supply the reactor for the first commercial plant of the customer. Due to customers' satisfaction, we could have another chance to manufacture this reactor again.



Design Specification	
Material	Weight
Plate : SA240-321	379 ~ 389 Ton

Experience List					
Customer	Project	Description	Material	Weight (Ton)	Year
Siam Styrene Monomer Co., LTD	Confidential	Tubular Reactor	SA240-321	379	2010
The Dow Chemical	Confidential	Tubular Reactor	SA240-321	389	2013

## Reference

- 1 Hydrogen Peroxide Cleaning, Pickling and Passivation.
- 2 Tube shall be ordered as per tolerance limits of SA1016M.



## Reactors

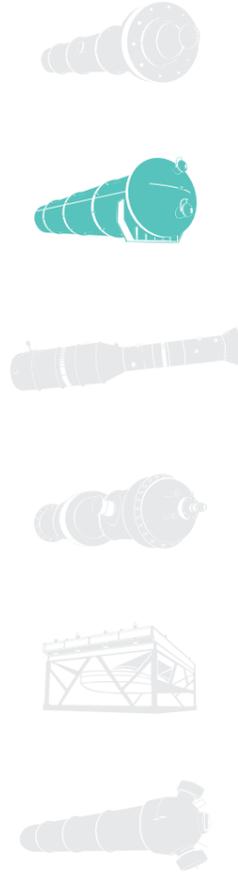
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- 08 HPP0 Reactor (Hydrogen Peroxide to Propylene Oxide)





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# DRUMS

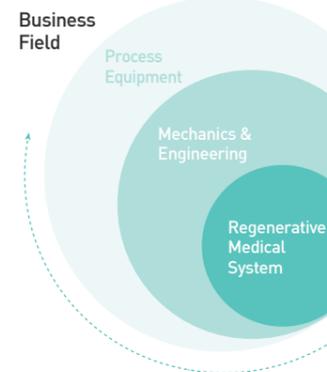
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# Company Profile Since 1971



**Company Name**  
SEWON CELLONTECH Co., Ltd.  
**Date of Establishment** 1971.01.14



**Location**

- 1 Seoul, Korea
- 2 Changwon, Korea
- 3 Gunsan, Korea
- 4 Busan, Korea

**Head Office**  
6th FL, HP Building, 83 Uisadang-daero, Yeongdeungpo-gu, Seoul, Korea

**Website** [www.swcell.com](http://www.swcell.com)

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## SC FAMILY



### SEWON CELLONTECH

**PE** Process Equipment  
Air Fin Cooler  
Power Plant Equipment

**ME** Hydraulic Equipment  
Hydraulic System & Unit  
Glass Lining Equipment

**RMS** Stem Cell System  
Regen Graft  
SERAZENA

### SC ENGINEERING

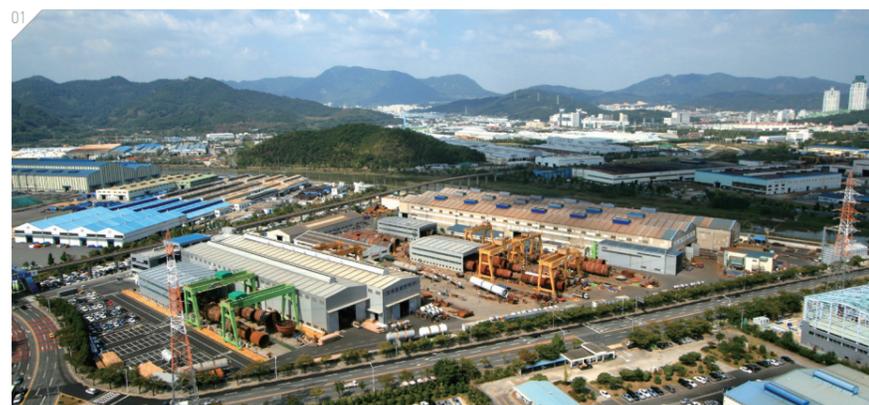
**MATERIAL-PLATFORM**  
Basic Material  
Chemical Material  
Bio material

**INDUSTRIAL-PLATFORM**  
Paper&Pulp  
KSLV-1 Fuel Ground Facility  
H2 Process  
Incinerator

**ENERGY-PLATFORM**  
HRSG  
Co-Gen PP  
CCPP  
WHRB

01 NO.1 BUSINESS CAMP/Changwon Plant (102,128 m<sup>2</sup>)  
02 NO.2 BUSINESS CAMP/Gunsan Plant (102,482 m<sup>2</sup>)

SEWON CELLONTECH has manufacturing plant in Changwon and Gunsan.



## Adsorber (Horizontal Type)

**Project** MIRFAI, U.A.E.  
**Dimension** 5,000ID x 35T x 25,000L, 133 Ton  
**Material** SA516-70



## Drums

### Overview of Shell Inside Part



SEWON CELLONTECH is building and supplying a variety of pressure vessels necessary for the oil, gas and petrochemical industries by performing all manufacturing stages from design and manufacture to inspection and test, and shipping in compliance with the codes of different countries including ASME, PD5500, JIS and PED, and the provisions of ISO 9001 Quality Management System and ISO 14001 Environment Management System.

# Drums

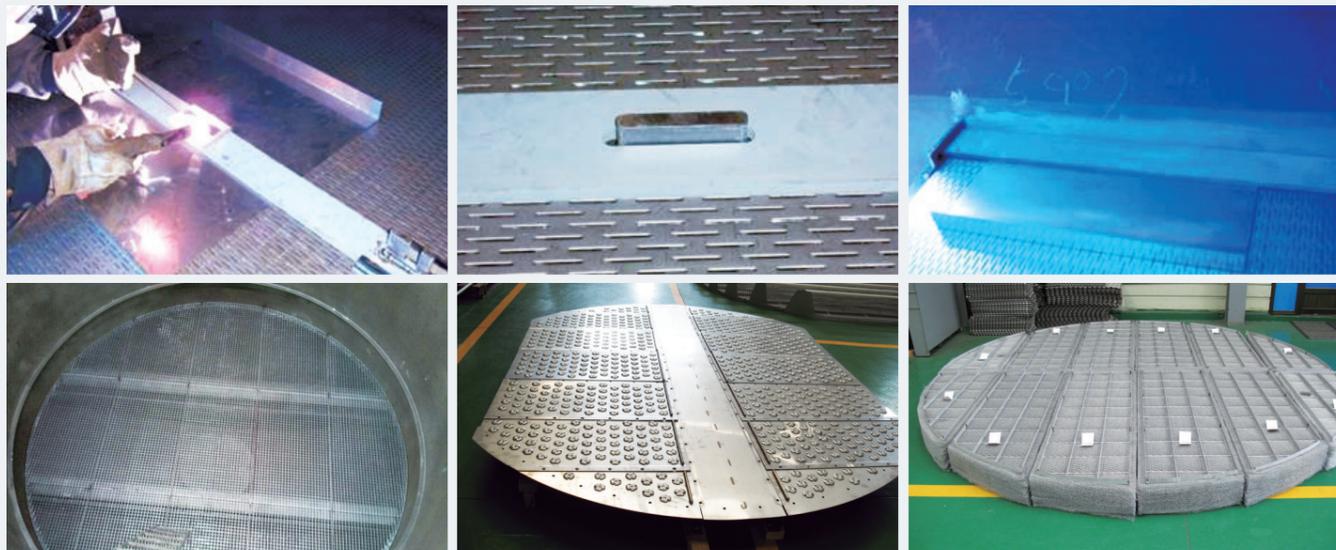
In addition, we have sufficient experience in using various materials, welding techniques and testing to meet diverse requirements of each process.

## Adsorber (Vertical Type)



Project NEW FCC, Ulsan, Korea.  
 Dimension 1,800ID x 38T x 12,000L  
 Material SA516-70

## Installation of Internals



### Experience List

Customer	Project	Description	Material	Weight (Ton)
Linde AG	Cantarell 5	Molecular sieve adsorber	SA516-70	123
Linde AG	PSA	PSA Adsorber	SA516-70	32
Air Liquide	EGTL (Escravos Gas Liquids)	PSA Adsorber	SA516-70+N	20
Linde AG	LBPP(Corpus Christi)	PSA Adsorber	SA516-70	13
Linde AG	Mirfa 1	Molecular sieve Adsorber	SA516-70	35
Linde AG	Hwasung 2	Molecular sieve Adsorber	SA516-70	29
Air Liquide	Al Heracles Rotterdam	CO Adsorber	SA516-70	13
Linde AG	#2 HOU	PSA Adsorber	SA516-70	29
Air Liquide	Al Nova	CO Adsorber	SA516-70	18
Linde AG	Cuddalore	PSA Adsorber	SA516-70	14
Linde AG	Singapore 3	PSA Adsorber	SA516-70	49

## Adsorber for Vertical Type Bottom Head Welding

▶ Head Buttering



▶ Head to Skirt Fit up



## Fabrication



▶ Rolling

▶ Shell to Nozzle Welding



▶ Hemi Head Fabrication

# Drums

Charge Gas Compressor  
2nd Stage Suction Drum

Project SHELL, Singapore  
Dimension 2,500ID x 50T x 12,000L, 90Ton  
Material SA516-70



Ammonia Separator

Project QAFCO-5, Qatar  
Dimension 2,700ID x 194T x 8,600L, 105T  
Material SA516-70



BFW Preheater

Project AOF, Algeria  
Dimension 1,800ID x 150T x 800L, 80Ton  
Material SA516-70



Third Stage Separator

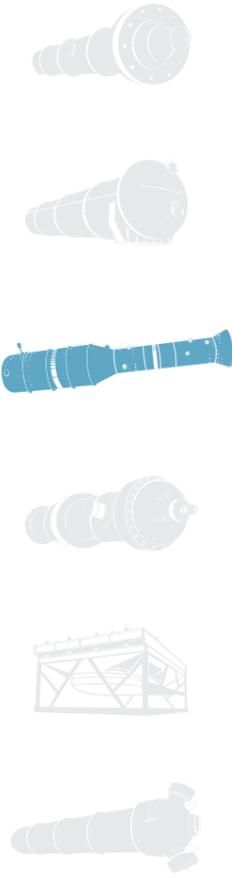
Project Cilacap RFCC Project  
Dimension 9,040ID x 20T x 15,030L, 65Ton  
Material SA516-70





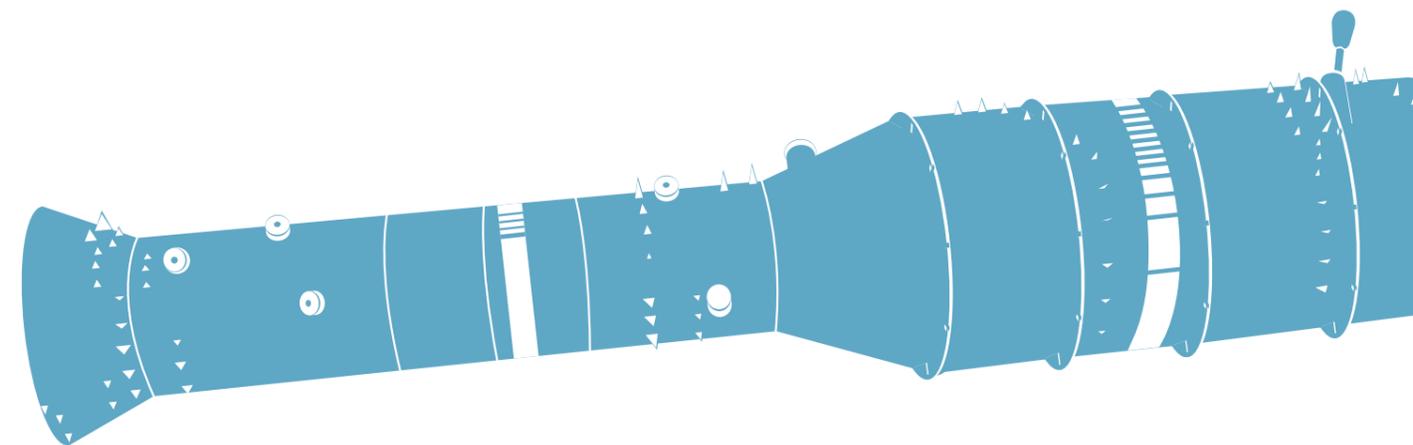
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# TOWERS & COLUMNS

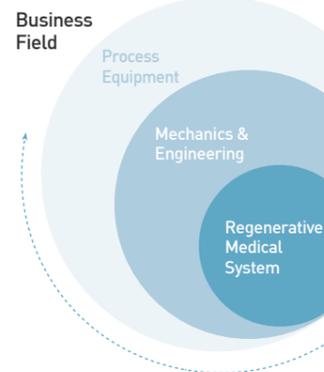
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**RMS** Stem Cell System  
Regen Graft  
SERAZENA

### SC ENGINEERING

**MATERIAL-PLATFORM**  
Basic Material  
Chemical Material  
Bio material

**INDUSTRIAL-PLATFORM**  
Paper&Pulp  
KSLV-1 Fuel Ground Facility  
H2 Process  
Incinerator

**ENERGY-PLATFORM**  
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01 NO.1 BUSINESS CAMP/Changwon Plant (102,128 m<sup>2</sup>)  
02 NO.2 BUSINESS CAMP/Gunsan Plant (102,482 m<sup>2</sup>)



## Large Tower

**Project** TAF, Russia  
**Dimension** 6,430ID x 35+3T x 70,750L, 376Ton  
**Material** SA516-70+SA316L



## Towers & Columns



SEWON CELLONTECH has numerous experience in building different types of columns such as packed columns and tray columns used in the oil, gas and petrochemical industries. Having the necessary facilities to build large-size columns.

**Project** TAF, Russia  
**Dimension** 5,250ID x 72T x 50,800L, 392Ton  
**Material** SA516-70



# Towers & Columns

## Deethaniser



Project QGPC NGL-4, Qatar  
Dimension 5,800ID x 99T x 80,000L, 440Ton  
Material SA240-316L

## H.P. Demethaniser

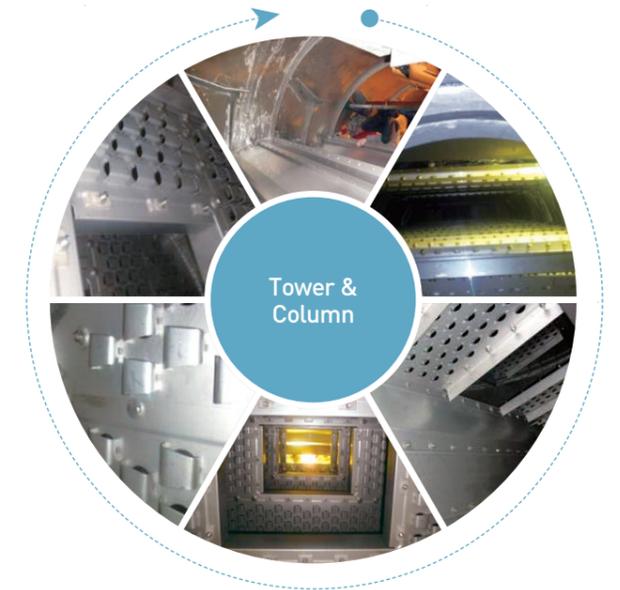


Project Algeria Oman Fertilizer, Algeria  
Dimension 4,200ID x 99T x 51,000L, 409Ton  
Material SA240-316

## Tray Installation

SEWON CELLONTECH is a reputed fabricator of several types of packed and tray columns.

Algeria Oman Fertilizer Project  
65mm wall thickness



## Fabrication of Each Block

▶ PWHT



▶ Final Docking



▶ Shipping Arrangement



▶ Transportation



# Towers & Columns

## Urea Plant



Project Eagrium-NH3, Egypt  
 Dimension 3,800ID x 79T x 58,000L, 177Ton  
 Material SA516Gr.70

## LP Refining Column



Project EBM, Brunei  
 Dimension 5,500ID x 32T x 60,000L, 390Ton  
 Material SA516Gr.60

Experience List				
Customer	Project	Qt'y	Material	Code
Tecnimont	Borouge 2	27	A516-70N	ASME / VIII "U"Stamp
MTP HPPO Manufacturing Company	HPPO II	4	A240-304L	ASME / VIII "U"Stamp
Mitsubishi Heavy Industries Co., Ltd.	AOFP	4	A516-70+304L SS	ASME / VIII
Valero Port Arthur Refinery	Benzene Reduction	1	A516-70	ASME / VIII "U"Stamp
Diamond Shamrock Refining Company	Benzene Reduction	1	A516-70	ASME / VIII "U"Stamp
Valero Refining Company	Benzene Reduction	1	A516-70	ASME / VIII "U"Stamp
Saipem S.A.	LPG Hassi Messaoud "ZCINA"	9	A516-70	ASME / VIII
PTT Aramatics & Refining Public Company Limited	PTTAR Clean Fuel	5	A516-60N	ASME / VIII "U"Stamp
Kellogg JV Gorgon	Gorgon LNG	14	A516-70+304L SS	ASME / VIII "U"Stamp
Kawasaki Plant Systems Ltd.	Turkmenistan Fertilizer	2	A387-11-1+SS316L	ASME / VIII
Chiyoda Corporation	PNG LNG	2	A240-304 / 304L DUAL	ASME / VIII
Chiyoda Corporation	PNG LNG	2	A240-304 / 304L DUAL	ASME / VIII
Adnoco and Conoco Phillips JV	Shah Gas Development	3	A240-316L	ASME / VIII "U"Stamp
Dow Chemical Thailand Limited	PG	14	SA516-70	ASME / VIII DIV.1
Mitsubishi Heavy Industries Co., Ltd.	TAF	4	A516-70+SA240-304L	ASME / VIII DIV.1 2010ED
JGC Corporation	Barzan Onshore	6	A240-304L	ASME / VIII DIV.1
Kellogg Brown & Root	Ras Tanura Integrated (RTIP)	4	UNS S31803 / Alloy UNS N10276	ASME / VIII DIV.1

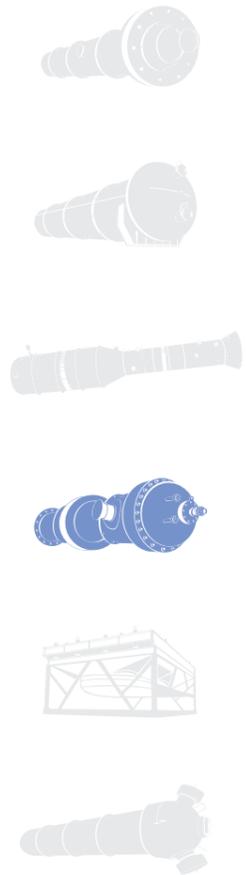
## LP Flash Drum / CO2 Stripper / HP Flash Drum





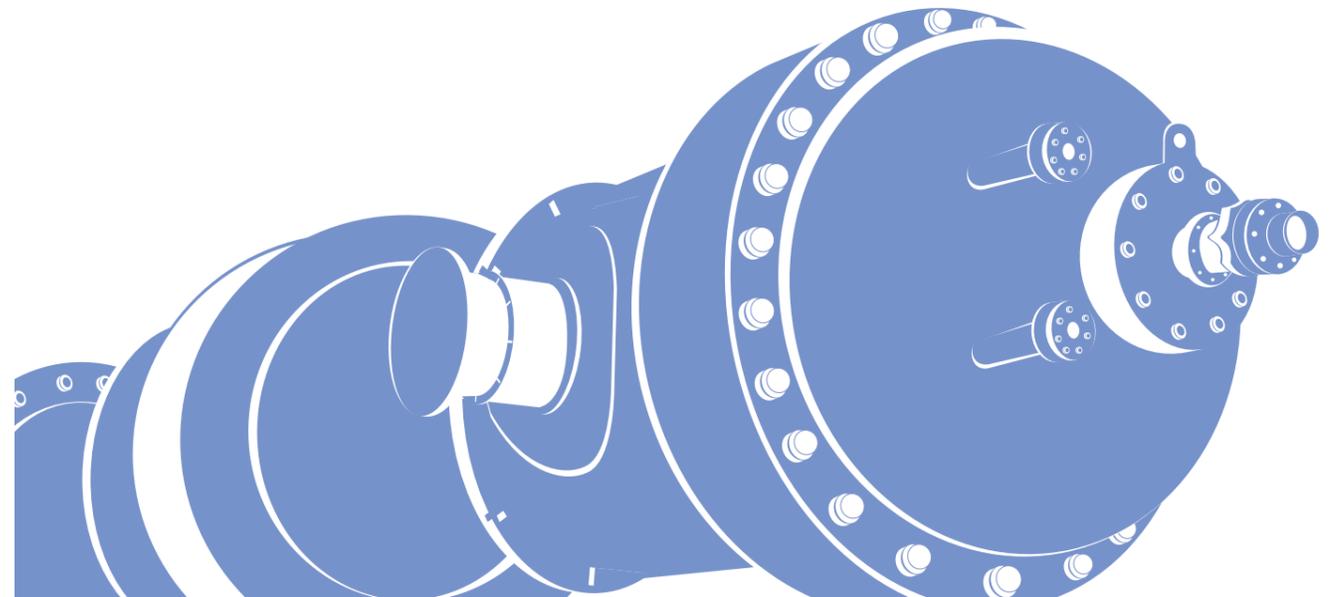
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# SHELL & TUBE HEAT EXCHANGERS

Our Value Your Success



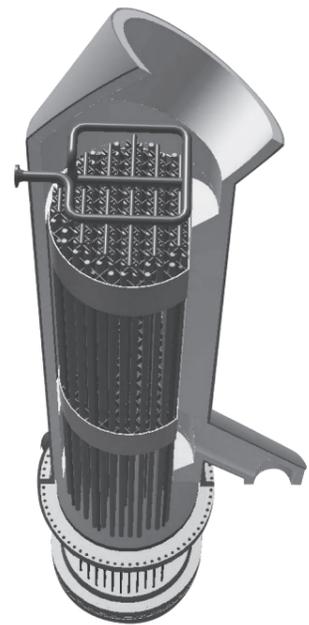


# Shell & Tube Heat Exchangers

SEWON CELLONTECH has been pursued to provide a wide spectrum of metallurgies ranging from carbon steel to stainless steel including nonferrous & duplex for specific applications.

## Catalyst Cooler

Project Cilacap RFCC Project  
 Dimension 2,540ID x 36T x 9,220L  
 Material SA516-70



## Fabrication of Shell & Tube Heat Exchanger

Project Confidential



Project Ras Tanura Refinery, Saudi Arabia

### ▶ Tubesheet Overlay



## Tube to Tubesheet Welding



Manual Welding



Orbital Welding Head (8 sets)



Inner Bore Welding (IBW)

## NDE & Bolt tensioning with UT check



TOFD on circum. weld joint



Bolt tensioning with tensioner

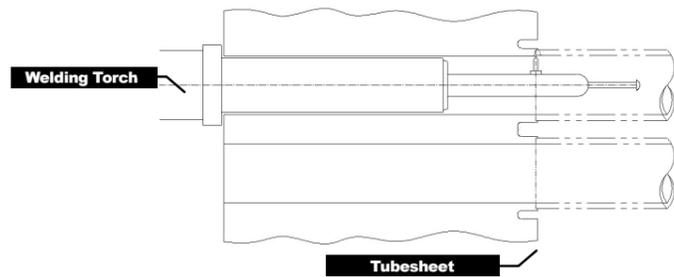


UT check before / after tensioning with tensioner

# Shell & Tube Heat Exchangers

## Hot Combined Feed Exchanger

Project PDH ALFASEL, Saudi Arabia  
Dimension 2,500ID x 25,200L, 133Ton



## D-type & High Pressure Equipment

Project TAF Project & Tatarstan  
Dimension 1,600ID x 7,900L, 19Ton (Type : V-DEU)  
Test Pressure 396kg/cm<sup>2</sup>

Project TEC Ammonia Project / Russia  
Dimension 1,800ID x 10,000L, 83Ton (Type: H-CFU)  
Test Pressure 474kg/cm<sup>2</sup>

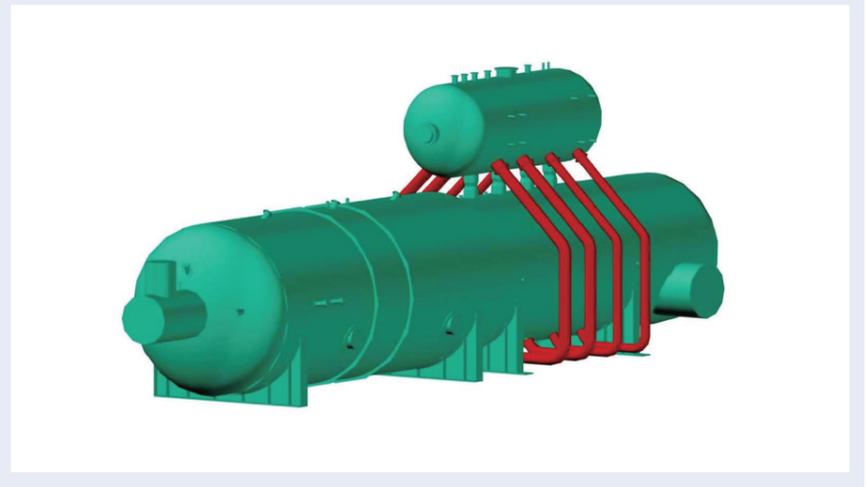


## Heavy Weight Equipment

Project Shah Gas Develop.(SGD) & U.A.E  
Dimension 6,100ID x 30,100L, 440Ton  
Equipment CLAUS Package of Reaction Furnace + WHB + Steam Drum



Project Shah Gas Develop.(SGD) & U.A.E  
Dimension 5,900ID x 19,800L, 375Ton  
Equipment Sulphur Condenser



### Experience List

UOP Catalyst Cooler					
Customer	Project	Qt'y	Description	Code	Year
UOP & Sohlar Refinery Co.	SOHAR Refinery	3	Outer tube Inner tube	ASME / VIII Div.1	2003
UOP & Valero Energy Corp.	FCCU Modifications	2	Outer tube Inner tube	ASME / VIII Div.1	2009
GS E&C & PT. Pertamina	CILACAP RFCC	2	Outer tube Inner tube	ASME / VIII Div.1	2013
UOP & Valero Energy Corp.	FCCU Modifications	1	Outer tube Inner tube	ASME / VIII Div.1	2013
HOT Combined Feed Exchanger					
Customer	Project	Qt'y	Description	Code	Year
Lurgi & Natpet	PDH Alfaasel	2	SA240-304	ASME / VIII Div.1	2006
CTCI & HMC Polymer	PDH	2	SA240-304 / 304H	ASME / VIII Div.1	2008
Hitachi & NSStyrene Monomer	NS	2	SA240-304H	ASME / VIII Div.1	2012

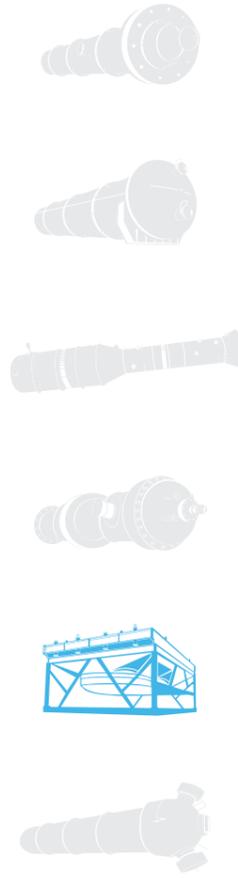


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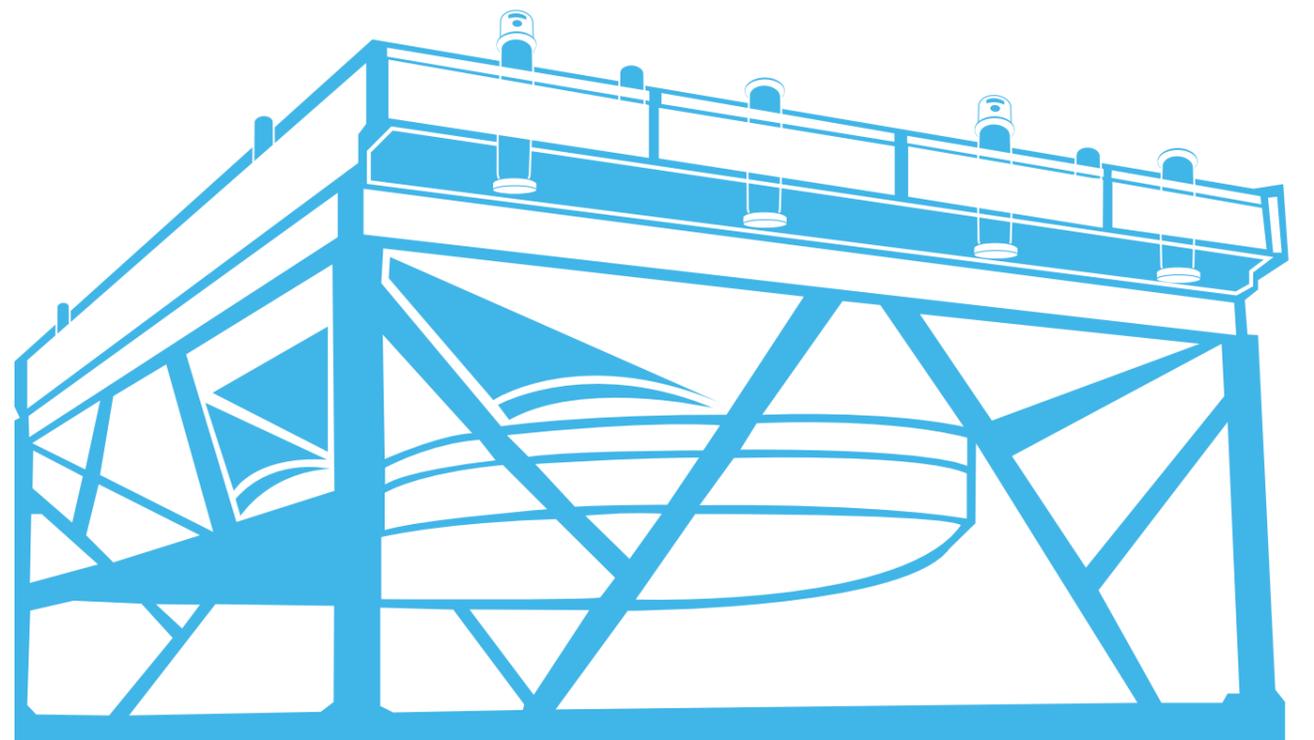


SEWON CELLONTECH

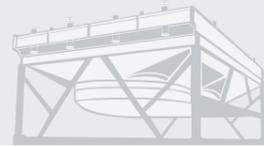


# AIR FIN COOLERS

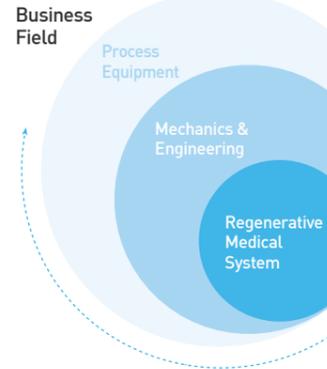
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Regen Graft  
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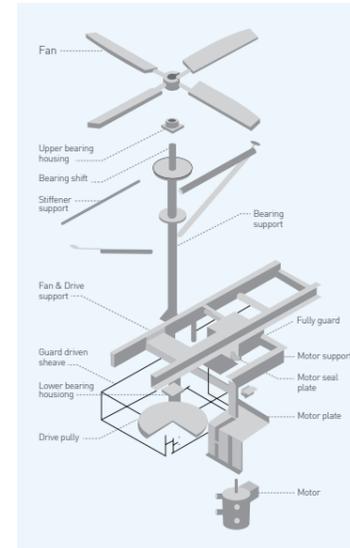
### SC ENGINEERING

**MATERIAL-PLATFORM**  
Basic Material  
Chemical Material  
Bio material

**INDUSTRIAL-PLATFORM**  
Paper&Pulp  
KSLV-1 Fuel Ground Facility  
H2 Process  
Incinerator

**ENERGY-PLATFORM**  
HRSG  
Co-Gen PP  
CCPP  
WHRB

## Mechanical Assembly of Induced type Air Fin Cooler



01 NO.1 BUSINESS CAMP/Changwon Plant (102,128 m<sup>2</sup>)  
02 NO.2 BUSINESS CAMP/Gunsan Plant (102,482 m<sup>2</sup>)

SEWON CELLONTECH has manufacturing plant in Changwon and Gunsan.



## Air Fin Coolers

An Air Fin Cooler is a system that cools down fluids running through a finned tube by forcibly circulating air. Unlike shell and tube type heat exchangers that cool down fluids by using coolants such as water, air fin coolers are environmentally friendly products that do not require additional supply of water. SEWON CELLONTECH designs and manufactures finned tubes, tube bundles, header boxes and assembling in a package.

- 01 Supplied to EXXON in Nigeria (ExxonMobil Project, 2004)
- 02 Supplied to CHEVRON in Nigeria (ESCRAVOS Project, 2007)

### 01 Cutting & Fit up



### 02 In & Outside Welding

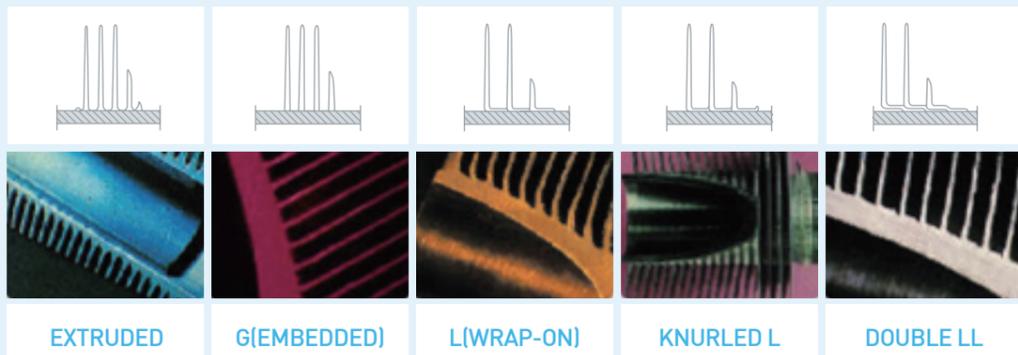


### 03 Nozzle & End Plate Welding



# Air Fin Coolers

## Fining Types



**EXTRUDED**    **G(EMBEDDED)**    **L(WRAP-ON)**    **KNURLED L**    **DOUBLE LL**

## Maximum Working temperature

300°C/750°F    400°C/750°F    120°C/250°F    250°C/480°F    120°C/250°F

## Atmospheric corrosion resistance

EXCELLENT    POOR    ACCEPTABLE    MEDIUM    MEDIUM

## Mechanical resistance

EXCELLENT    ACCEPTABLE    POOR    ACCEPTABLE    POOR

## Headers

The plug header is the most commonly used up to 250 bar working pressure.

The cover plate header is used for fluids with high fouling factors up to 30 bars when a frequent mechanical cleaning is necessary.

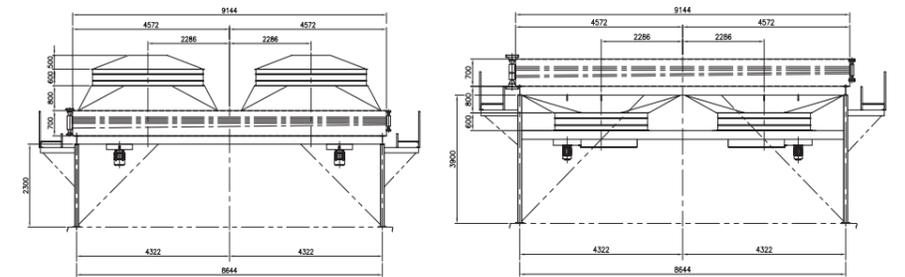
The pipe header is used for working pressure over 200 bars when no inner access is necessary.

The welded bonnet header is used for ammonia condensers and aircooled steam condensers. The advantage is the full welded construction, suitable for vacuum applications.



01, 02 Supplied to SHELL in Sakhalin (SAKHALIN LNG II Project, 2005)

03 Supplied to TOTAL in Congo (MOHO BILONDO Project, 2006)



04 Tube & Plug Hole Opening

05 Final Painting

06 Finning

07 Bundle & Tubing Setting

08 Hydrostatic Test

09 Completed the Module Assembly



# Air Fin Coolers



▲ Knock Down Packing

▼ General Packing & Transportation

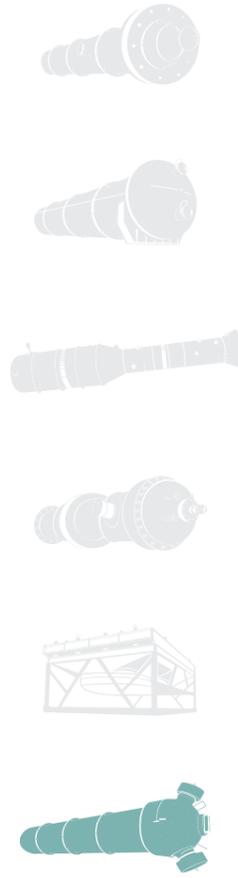


Experience List			
Customer	Project / Site	Material	Bays / Bundlers
Samsung Engineering	Ethane Separation Plant / Thailand	A179, A213TP304L	77Bays / 153Bundles
Samsung Engineering	Aramco Ras Tanura Refinery DHT / Saudi Arabia	A179	23Bays / 40Bundles
Foster Wheeler UK	Esso Sriracha Clean Fuels / Thailand (Exxon Mobil)	A179	11Bays / 24Bundles
Saipem	MANIFA Core Hydrocarbon Facilities / Saudi Arabia (ARAMCO)	A179	59Bays / 118Bundles
Hyundai Engineering	Gas Desulfurization Plant / Turkmenistan (Turkmengas)	A179, A213TP316L	47Bays / 94Bundles
Daelim Industrial	Jubail Export Refinery #2B / Saudi Arabia (ARAMCO)	A179, A213TP316L	72Bays / 101Bundles
Samsung Engineering & Chiyoda	Jubail Export Refinery #4 / Saudi Arabia (ARAMCO)	A179	46Bays / 89Bundles
Petrofac	South Yoloten Gas Field Development Turkmenistan (Turkmengas)	A179, SA213TP316L, Alloy825, Duplex	74Bays / 135Bundles
Tecnimont	New AGRP / Kuwait (KNPC/SHELL)	Alloy825, Duplex	31Bays / 55Bundles
Saipem	Shah Gas Development / U.A.E (GASCO)	Alloy625, A179, S904L, S316L, Alloy625	108Bays / 198bundles
Hyundai Engineering	Group III Base Oil / UAE (Tarkeer)	A179, A213T11	29Bays / 32Bundles
Technip	Algeria Refinery / Algeria (Sonatrach)	A179, A213TP304L	57Bays / 103Bundles
Daelim Industrial Co.,Ltd.	SADARA Isocyanates Plant / Saudi Arabia(DOW & Saudi ARAMCO)	A179, A789S31803	28Bays / 46Bundles
Daelim Industrial Co.,Ltd.	RABIGH II CP1 / Saudi Arabia (SUMITOMO & ARAMCO)	S32750, A179	6 Bays / 9 Bundles
Tecnicas Reunidas	SADARA / Saudi Arabia (DOW & Saudi ARAMCO)	SA179, SA213TP316L, SA789S31803	23 Bays / 29 Bundles



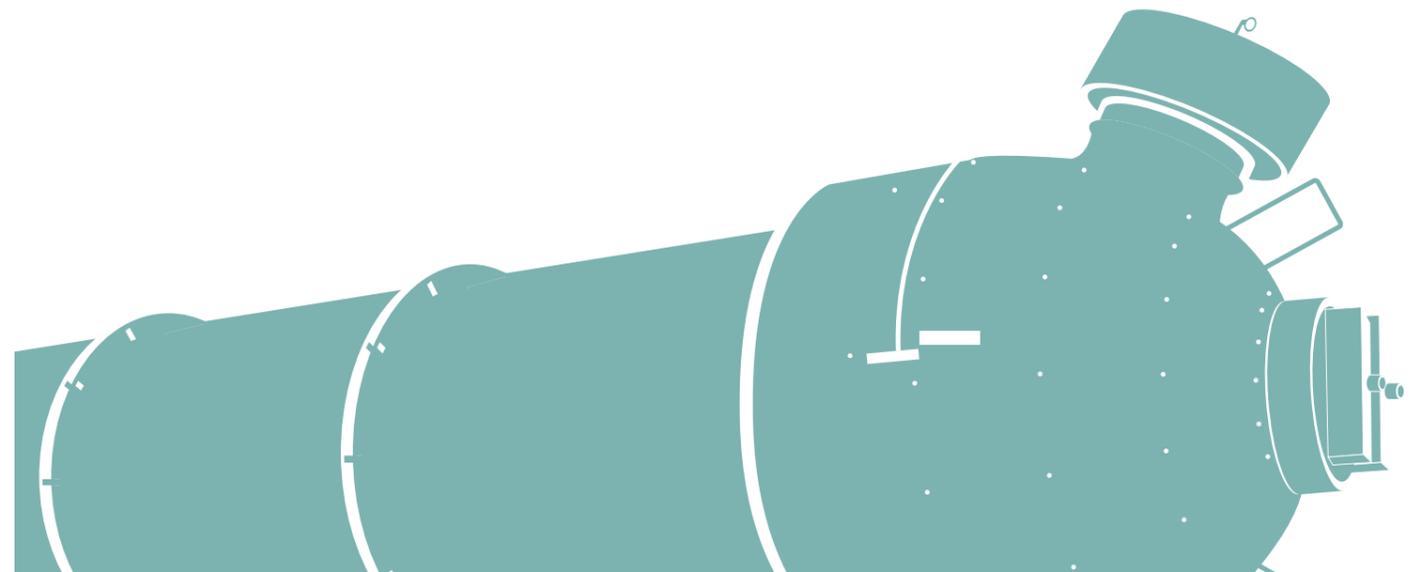
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# POWER PLANT EQUIPMENT

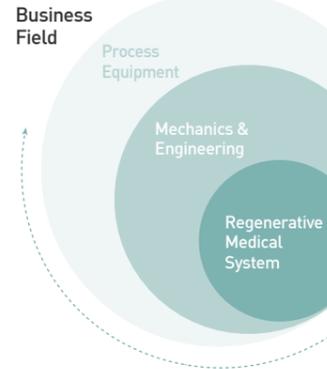
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**MATERIAL-PLATFORM**  
Basic Material  
Chemical Material  
Bio material

**INDUSTRIAL-PLATFORM**  
Paper&Pulp  
KSLV-1 Fuel Ground Facility  
H2 Process  
Incinerator

**ENERGY-PLATFORM**  
HRSG  
Co-Gen PP  
CCPP  
WHRB

01 NO.1 BUSINESS CAMP/Changwon Plant (102,128 m<sup>2</sup>)  
02 NO.2 BUSINESS CAMP/Gunsan Plant (102,482 m<sup>2</sup>)

SEWON CELLONTECH has manufacturing plant in Changwon and Gunsan.



## HP Feed Water Heater

HP Feedwater Heater for Pyeongtaek CFPP 450MW, Korea



## HP & LP Feed Water Heater



## Power Plant Equipment

We design and manufactures BOP equipment for Coal power, CCPP, Solar, IGCC, even for Nuclear power generation system. Our best-pursued goal is to obtain client's satisfaction with high quality equipment.

Hyundai Green Power Steel Thermal Power Plant Unit #5,6				
Description	Qt'y	Material [Tube]	Size	Weight per Unit (Ton / total)
#1 LP FEED WATER HEATER	4	SA688TP304L	O.D 19.05 X 0.889 T X 23,484 L X 1,228 Q'TY I.D 970 X 13,250 L	56.8
#2 LP FEED WATER HEATER	4	SA688TP304L	O.D19.05 X 0.889 T X 19,584 L X 1,032 Q'TY I.D 820 X 11,150 L	37.2
#3 LP FEED WATER HEATER	4	SA688TP304L	O.D19.05 X 0.889 T X 17,560 L X 932 Q'TY I.D 740 X 9,750 L	27.6
#5 HP FEED WATER HEATER	4	SA213TP304N	O.D15.88 X 1.47 T X 14,746 L X 1,464 Q'TY I.D 742 X 8,800 L	43.4
#6 HP FEED WATER HEATER	4	SA213TP304N	O.D15.88 X 1.47 T X 16,521 L X 1,600 Q'TY I.D 759 X 9,200 L	52

# Power Plant Equipment

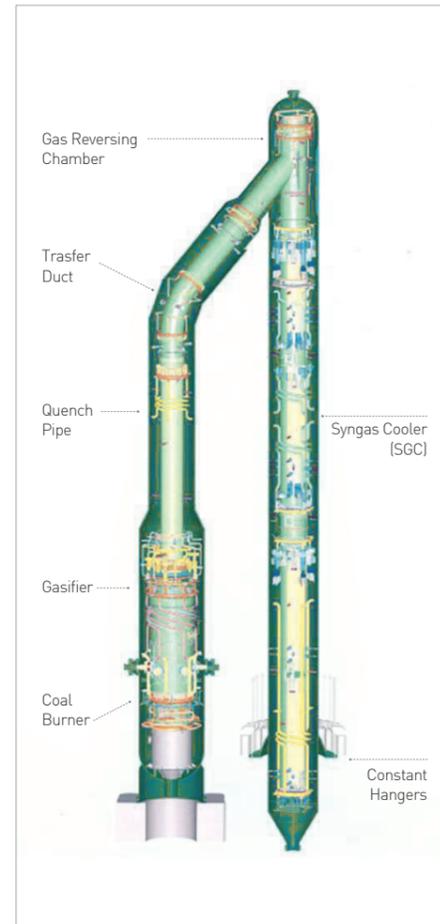
## Gasifier & Economizer

Project POSCO SNG, Korea  
 Dimension 4,100ID x 37,795L, 450Ton  
 Material SA516-70, SA516-70+304L



POSCO SNG Project				
Description	Qt'y	Material	Size	Weight per Unit(Ton)
Gasifier Reactor	3	SA516-70N, SA516-70N + 304L	4,100ID X 37,800L	450
Post Reactor Residence Vessel	3	SA516-70N	3,200ID X 41,100L	260
180°C Transition Piece	3	SA516-70N	2,100ID X 12,030L	60
Transition Piece	3	SA516-70N	12,000ID X 45,120L	150

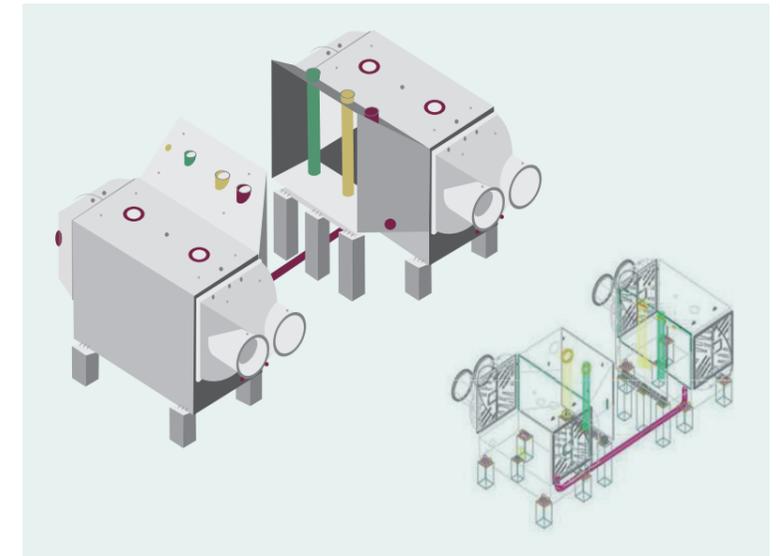
Taeon IGCC Power Plant Project				
Description	Qt'y	Material	Size	Weight per Unit(Ton)
Gasifier	1	SA387.11.CL2	5,900ID X 33,105L	502.40
Transfer Duct	1	SA387.11.CL2	3,250ID X 11,352L	73.20
GRC	1	SA387.11.CL2	3,600ID X 12,435L	195.80
Syngas Cooler	1	SA387.11.CL2	3,600ID X 68,200L	612.64
Economizer	1	SA387.11.CL2	1,560ID X 1,500L	60.65



We are the domestic unique manufacturer supplied huge Gasification Vessel. Gasifier is the most important unit for gasification project. The demand of gasification plant is expected to be dramatically increased.

SEWON CELLONTECH has a collaboration relation with HOLTEC INTERNATIONAL for Surface Condenser & Feed water Heater. SEWON CELLONTECH can manufacture Surface Condenser under the partnership with HOLTEC INTERNATIONAL. HOLTEC provide the world-best design for Surface Condenser & Feed water Heater based on their World-Wide Experience and knowledge. SEWON CELLONTECH manufacture the Surface Condenser as a sub-manufacturer of HOLTEC INTERNATIONAL. The reliable partnership between HOLTEC & SEWON CELLONTECH will lead us to World-Wide Market.

Surface Condenser Under the Partnership with



## HOLTEC INTERNATIONAL,

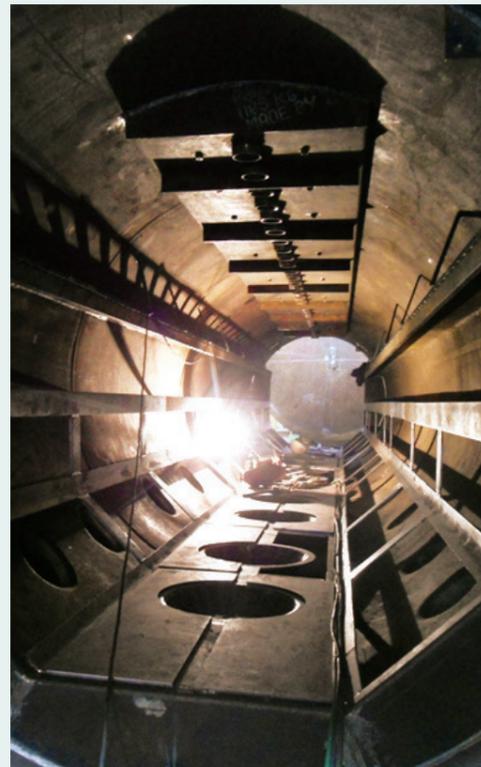
headquartered in Jupiter, FL(USA), with its Corporate Technology Center in Marlton, NJ(USA), is the global turnkey supplier of equipment and systems for the Nuclear, Renewable(solar, geothermal and biomass) and Fossil Power Generation sectors of the energy industry. The company is a leading provider of power generation technologies worldwide, having supplied custom engineered capital equipment and systems worth billions of dollars to power plants in Asia, Europe, North America, South America, Australia, and Africa.



# Power Plant Equipment

We manufacture various shell and tube heat exchangers for solar power project. Also we do design and manufacture Dearator & Feed Water Tank of all type of Power Plant.

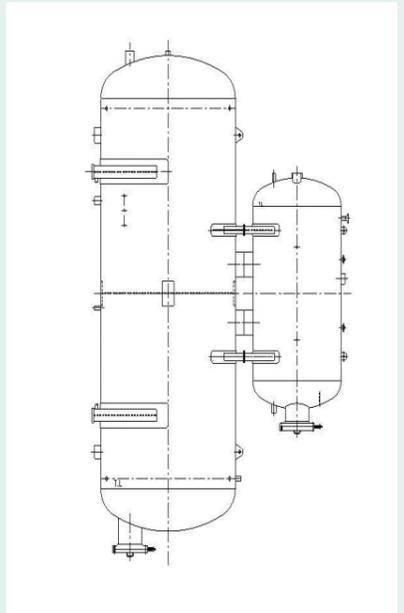
## Steam Drum for Solar Power



Mohave Solar Power Plant Equipment				
Description	Qt'y	Material	Size	Weight per Unit(Ton)
Steam Drum	4	SA302B	2,032ID X 14,186L	220.20
Evaporator	8	SA302B	1,840ID X 13,174L	249.12
Superheater	4	SA516-70	1,474ID X 9,785L	200.40
Preheater	4	SA516-70	1,560ID X 11,972L	217.60
Reheater 1	4	SA516-70	1,524ID X 7,600L	104.00
Reheater 2	4	SA516-70	1,770ID X 10,806L	176.60



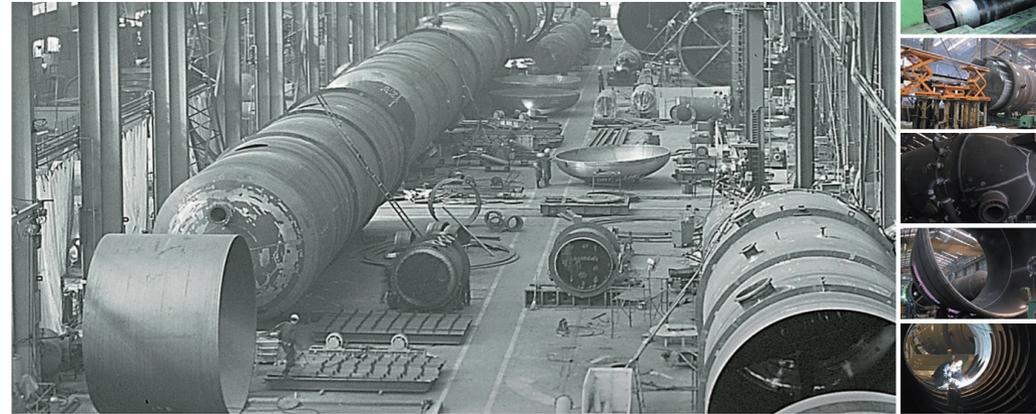
## Dearator & Feed Water Tank



Hyundai Green Power Steel Thermal Power Plant Unit #5,6				
Description	Qt'y	Material	Size	Weight per Unit(Ton)
Deaerator	2	SA516-70	2,286ID X 3,580L	7.60
Feedwater Tank	2	SA516-70	3,500ID X 8,000L	21.55

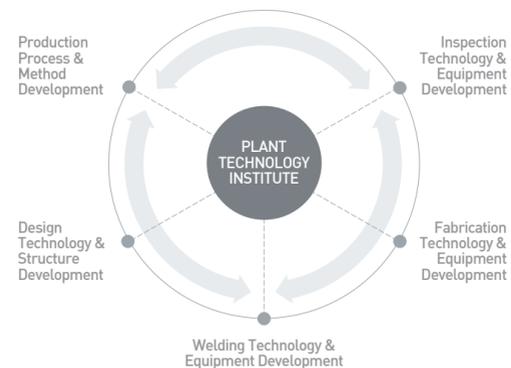
# FABRICATION

Since 1971, we have supplied over 10,000 sets of process equipment to around 40 countries worldwide with quality and on-time delivery.

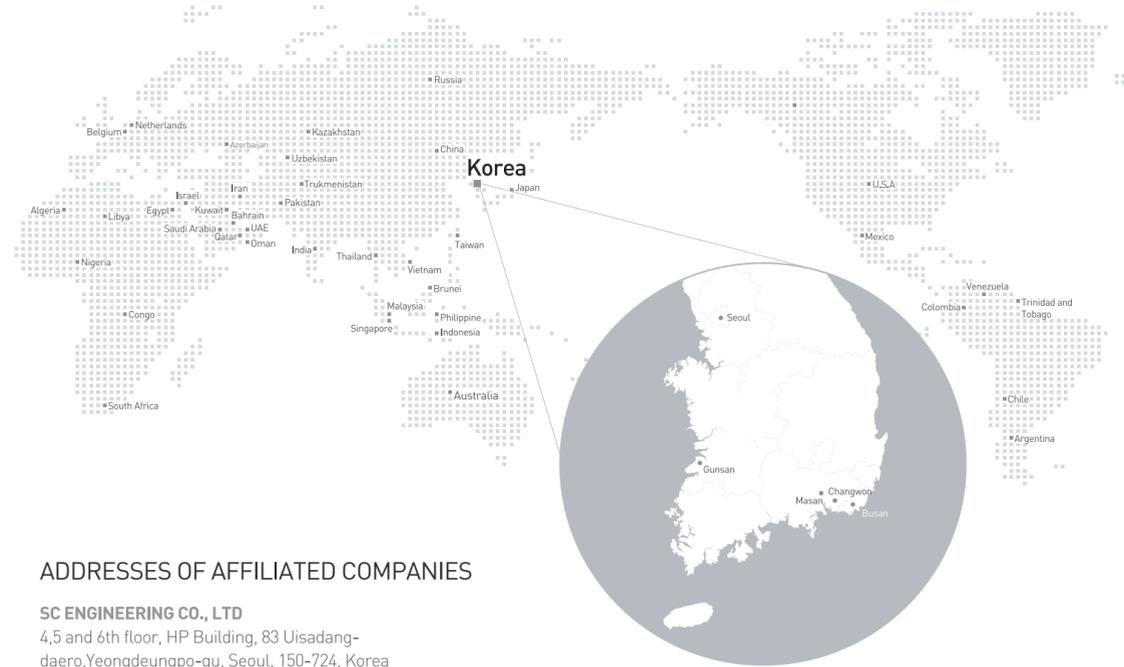


# PLANT TECHNOLOGY INSTITUTE

The Plant Technology Institute is pioneering R & D in plant equipment with its qualified technology. Its accumulated performances in welding technology, fabrication technology and design technology have been the key to innovative challenges in this field.



# GLOBAL SUPPLIER

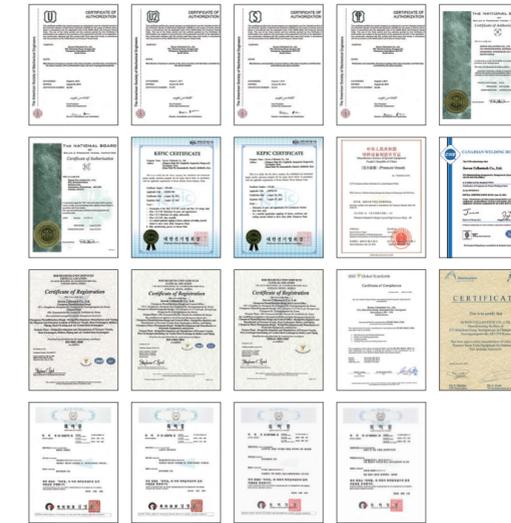


## ADDRESSES OF AFFILIATED COMPANIES

**SC ENGINEERING CO., LTD**  
4,5 and 6th floor, HP Building, 83 Uisadang-daero, Yeongdeungpo-gu, Seoul, 150-724, Korea  
Tel : +82.2.2167.9090 / Fax : +82.2.2167.9160

**SC PLAN CO., LTD**  
6th floor, HP Building, 83 Uisadang-daero, Yeongdeungpo-gu, Seoul, 150-724, Korea  
Tel : +82.2.2167.9035 / Fax : +82.2.2167.9360

# QUALITY MANAGEMENT SYSTEM



## Quality Assurance

We are applying the latest version for inspection and has developed a Quality Control System, Quality Assurance Manual and Procedures.

## QMS Certificate

- 01 U (Pressure Vessel)
- 02 U2 (Pressure Vessel Alternative Rules)
- 03 S (Power Boiler)
- 04 PP (Pressure Piping)
- 05 R (Repair of National Board)
- 06 NB (National Board)
- 07 KEPIC (MN-430)
- 08 KEPIC (SN-431)
- 09 ML
- 10 CWB
- 11 ISO 9001
- 12 ISO 14001
- 13 OHSAS 18001
- 14 EN ISO 3834-2
- 15 Stamicarbon

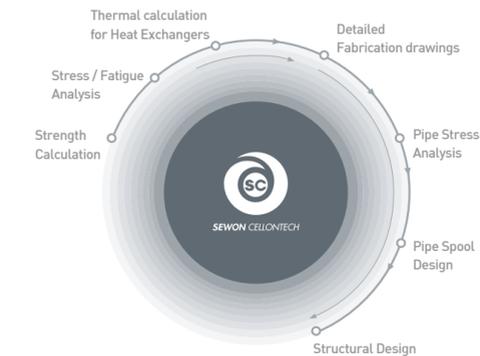
## Certificate of Patent

- 16 Welding Method for Shell and Tube
- 17 Apparatus for Circle-Welding Nozzle to Shell
- 18 Reactor Using Gasket for Sealing Spiral and Manufacturing Method of The Reactor
- 19 An annealing furnace and annealing system thereof

01	02	03	04	05
06	07	08	09	10
11	12	13	14	15
16	17	18	19	

We intend to make a great leap forward to becoming an advanced engineering enterprise armed with the technical power, best design and analysis that is one-step further upgraded.

# ENGINEERING, DESIGN & ANALYSIS



Our aim is to provide you with the most sound, cost effective design

