

**11 Tampines St 92 #03-05 Tampines Biz-Hub
Singapore 528872**

COMPLETE . SOLUTIONS . INTERNATIONAL



CSI is Part of pon Asia

pon

Pon Corporate Center

Pon logistics

Pon Passenger Cars



Pon Commercial Vehicles



Pon Automotive Retail



Pon Tyre Group



Pon Bicycle Group



Pon Valve International



Pon Material Handling



Pon Equipment

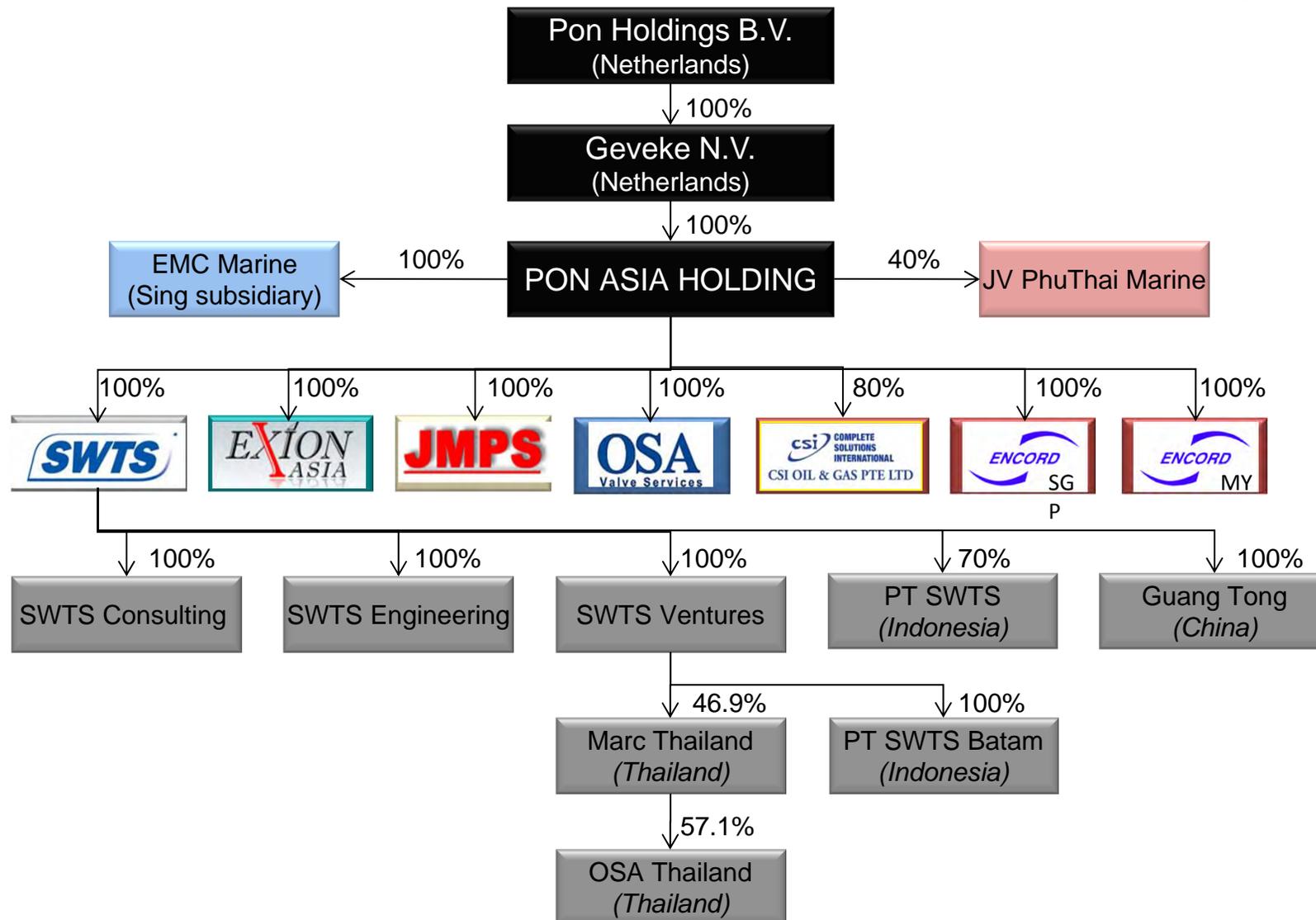


Pon Power



Pon Asia







Holdings
(international)
Sales: 13 billions

Selection of portfolio brands/companies

Pon Automotive	
Pon Bicycle Group	
Pon Material Handling	
Pon Power & Equipment	
PVI	

Pon Asia Holdings
(Sales: 120 millions)

Technical Services

Flow Control Solutions



Selection of Geographical Presence



Two Groups Under pon Asia

- Companies
- Employees
- Countries
- Budget 2013 (annualized)
- Activities

Technical Services

520

Singapore China Indonesia Thailand

Sales 82 million

Electrical and Mechanical Services, Projects, Licensing

Flow Control Solutions

130

Singapore Thailand Malaysia Vietnam

Sales 44 million

Valve and Pump Distribution and Services, Engineered Skid Manufacturing

Flow Control Solutions

Valves & Actuators



- Pressure Safety Valves
- Control Valves
- On/Off Valves
- Specialist Capabilities
- Actuators

Pumps



- Centrifugal Pumps and compressors
- Rotary Positive Displacement pumps
- Progressive Cavity Pumps
- Metering Pumps

Instruments



- Flow meters
- Level Switches/Transmitters
- Electro-pneumatic & Digital Positioners
- Moisture & Gas Analyzers

Skids



- Air Compressor / Dryer Skids
- Nitrogen Generator Skids
- CO2 Removal
- Chemical Injection Skid
- Fuel Gas Conditioning Package

CSI Oil & Gas Pte Ltd, an international hub serving the Oil & Gas, Petrochemical, Refinery, Power Generation and Marine Industries within South East Region.

**Engineering
Products**

**Distribution of
Engineered
Products**



CSI is ISO9001 : 2008 certified.

The scope of certification for the Company's QMS Management Systems covers:

1. Design, engineering, procurement, project management, supply and installation of skid mounted equipment for oil & gas, petrochemical, refinery, power generation and marine industries
2. Sales and distribution of products, parts and other all kinds of equipment for oil & gas, petrochemical, refinery, power generation and marine industries

Date of issue: 29/07/2014



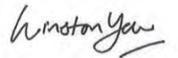
C E R T I F I C A T E

The Workplace Safety and Health Council
is pleased to certify that

CSI OIL & GAS PTE. LTD.

has fulfilled the requirements to attain bizSAFE Level 3

This certificate will expire on 23/07/2017



Winston Yew
Deputy Director, Industry Capability Building
Workplace Safety and Health Council



Certificate No. E18801

CSI is bizSAFE - Level 3 certified.

- The bizSAFE promotes workplace safety and health through the recognition of safety and health efforts.
- CSI is proud to have received the bizSAFE level 3 certification awarded by the Workplace Safety and Health (WSH) Council on 29 July 2014.
- The certification assures all CSI stakeholders – including staff and industry partners – that CSI is committed towards workplace safety.
- Achieving bizSAFE Level 3 is an important step towards striving for excellence in the WSH management system.



CSI COMPLETE SOLUTIONS INTERNATIONAL
CSI OIL & GAS PTE LTD

An international hub serving the Oil & Gas, Petrochemical, Refinery, Power Generation and Marine Industries within South East Region.

We have a wealth of experiences in the supplying of standard or design and manufacture equipment for the Air Compressors, Dryers & Filters and Nitrogen Generator and other Engineering Equipment, and are specialists in the management of multi-disciplined projects from conceptual design to project completion.

ENGINEERING
Our design, estimating, procurement, production and service departments work closely together as a highly flexible integrated team, in order to deliver a quality product on time and within budget.

People are fundamental to our success and we have established a skill base of highly trained and experienced engineers and associates.

QUALITY POLICY
CSI is committed to delivering the highest standards of quality, safety and responsiveness in the aviation engineering and services we provide for our customers.

We communicate our Quality Policy with our customers, employees, vendors and partners and solicit their inputs to enable us to meet their client expectations.

CSI OIL & GAS PTE LTD
Email: enquiry@csi-pl.com Website: www.csi-pl.com
Overseas Office: Korea, Thailand, Indonesia

- **We** provide a Complete Solutions International in the engineering consultancy, services, project management and supply of custom built system, and machine Spares parts.
- **Our** engineers and associates have many years of experience in the field of system integration of mechanical, instrumentation and electrical controls.

- **We** have a wealth of experience in the supplying of standard or design and manufacturing custom equipment for the Air Compressors, Dryers & Filters, Nitrogen Generator and other engineered equipment, and are specialists in the management of multi-disciplined projects from conceptual design to project completion.
- **We** also have capability to do design and manage the procurement activities in Singapore while the fabrication and testing could be carried out in other countries with the supervision of our project management team.



CSI OIL & GAS PTE LTD

An international hub serving the Oil & Gas, Petrochemical, Refinery, Power Generation and Marine Industries within South East Region.

We have a wealth of experiences in the supplying of standard or design and manufacture engineered equipment for:

- Air Compressors/Dryer/Nitrogen Generator
- CO₂ Removal
- Flow Metering Systems
- Al/Steel Helidecks
- Chemical Injection Packages
- Other Engineered Products




CSI OIL & GAS PTE LTD
 Email: enquiry@csi-pl.com Website: www.csi-pl.com
 Overseas Office: Korea, Thailand, Indonesia

- CSI manufacturing is focused and based in Singapore within east and west part of the Singapore. However, in order to be competitive in price and delivery, we have other overseas associate partner facilities include at Indonesia in Batam & Jakarta, China, Thailand & Korea.



- We communicate our Quality Policy with our customers, employees, vendors and partners and solicit their inputs to enable us to meet client expectations.

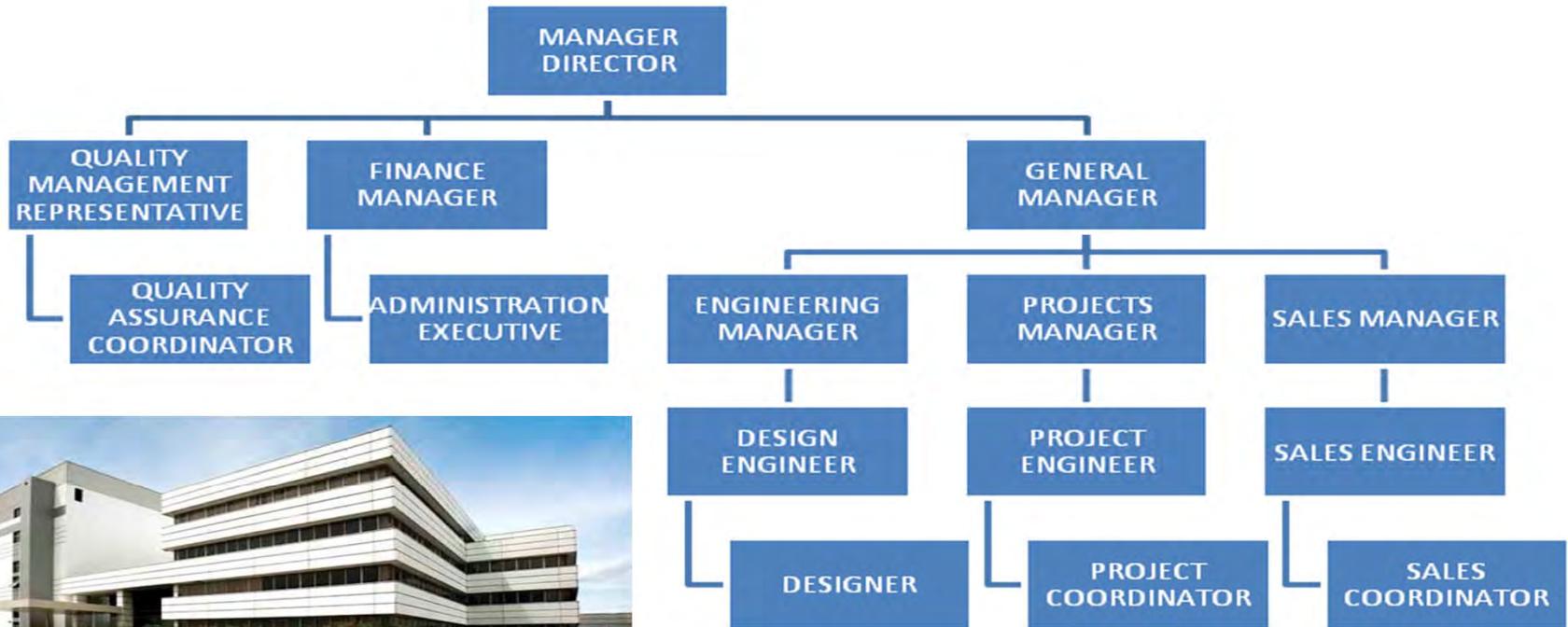


- **Mission Statement**

CSI is committed to deliver the highest standards of quality, safety and responsiveness in the engineering and services we provide for our customers.

- **Vision Statement**

To become preferred choice by Customer in the Oil & Gas for the engineered equipment for offshore industry.





Korea - Busan Shop



Korea - Mokpo Shop



Indonesia – Batu Ampar ,Batam

- **CSI operates with partners in our product offering to meet customers' requirement. They are as follows:**
 - Atlas Copco / Quincy / Sullair / Garden Denver Air Compressors
 - SPX Hankinson / Van Air for Dryers
 - Membranes from On Site / Parker / Air Product for Nitrogen Generators
 - Milton Roy for Chemical Metering Pumps
 - Eprocess for Hydrocyclones in Desander / Deoiler
 - Peco / Peerless / Jord Int'l for Fuel Gas Packages

- Cetal / Ex-Heat for Electric Heater and controller
- Krohne Flow Metering Skid
- Parker Separators and Air Purifiers
- Fire Protection Equipment / Fire Alarm System / Fire Fighting Equipment



February 16, 2011

Ref N°: 0211-YMAK-8E59TM

CSI Oil & Gas Pte Ltd
No 6 Ubi Road 1
#03-09 Wintech Centre
SINGAPORE 408726

ATTENTION: MR WONG MING FEI

Dear Mr Wong

RE: PTTEP BONGKOT FIELD-CENTRAL FACILITIES

This is to confirm that Atlas Copco (SEA) Pte Ltd will support CSI Oil & Gas Pte Ltd to offer Atlas Copco's compressor if CSI Oil & Gas Pte Ltd participates in the above mentioned project compressor requirement.

CSI Oil & Gas Pte Ltd shall offer Atlas Copco's Compressor as part of their package. Atlas Copco offers all necessary support on the Atlas Copco's equipment.

Yours faithfully


Roger Tan
Business Line Manager

cc Mr Long Ai Kok



Tractors Singapore Limited
(Authorized Singapore Sullair Dealer)

26 Benoi Sector
Singapore 529858

1st April 2013

To Whom It Concerns

CSI OIL & GAS PTE LTD (hereafter as "CSI") is Tractors Singapore Limited (hereafter as "TSL") preferred strategic partner and air compressor packager. TSL as the Authorized Sullair distributor in Singapore will support CSI in all technical and aftermarket support in term of warranty* matters, service attention and parts requirement supplied by CSI for all Sullair's equipment.

*Sullair & other manufacturer's warranty terms and conditions apply

Yours Sincerely:



Joe Yang
Manager, Associated Equipment
Mobile: 92277775
Email: joe.yang.enghui@tractors.simedarby.com.sg

Tractors Singapore Limited
Company Registration No: 10058033H
P: +65 6261 2222
F: +65 6265 8315
W: www.tractors.com.sg
29 Benoi Sector
Singapore 529858



Agency Contract

KROHNE Oil and Gas B.V.
Minervum 7441
4817 ZG Breda

CSI OIL & GAS PTE LTD
No 6, UBI ROAD 1
#03-09 WINTECH CENTRE
SINGAPORE 408726

(Hereinafter referred to as „Principal“)

(Hereinafter referred to as „Agent“)

Whereas, the Principal designs, manufactures and sells certain products and systems (hereinafter referred to as „Products“);
Whereas, the Agent has established certain relations with customers in the Territory;
Whereas, the Principal is willing to engage the Agent in order to enlarge his business opportunities within the Territory;
Now, in consideration of all the terms and conditions set out hereunder, the parties convene and agree as follows:

Art. 1 - Appointment

- (1) The Principal hereby appoints the Agent as his sole agent for the Territory of:
Singapore
- (2) The Agent shall solicit the sale of the Products within the Territory according Annex 1.

Art. 2 – Obligations of the Agent

- (1) The Agent shall endeavor to obtain business in the name and for the account of the Principal and shall serve the interests of the Principal to the best of his ability. He shall not be entitled to enter into any sales contracts with third parties thereby binding the Principal.
- (2) He shall provide all information necessary for the purpose of promoting business, and shall inform the Principal immediately about every order received, thereby transmitting the original of the order so solicited to the Principal for acceptance.

Art. 3 – Obligations of the Principal

- (1) The Principal shall endeavor to support the Agent in obtaining business within the Territory.
- (2) The Principal shall supply to the Agent at regular intervals all information for the conduct of his business. Furthermore he will inform him, without delay, if any order placed has been accepted or refused. He will also inform the Agent without delay, if it is likely that he can only accept orders in parts.

Breda, 01 December 2010

Place, Date



Name: Th.A.J. Koeweiden
Function: Sales Director SEA
Krohne Oil and Gas B.V.



Name: Mike Chee
Function: General Manager
(For the Agent)



Future Pipe Industries LLC
P.O. Box 62501
Dubai, United Arab Emirates
Tel: +971 4 210 1234
Fax: +971 4 210 1299

Our Ref : SL/0720/10-NT

20 July 2010

To Whom It May Concern

LETTER OF APPOINTMENT

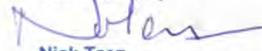
Dear Sir

We, Future Pipe Industries LLC hereby confirm that the following company has been appointed as our working partner / agent for the Offshore market in Indonesia, Singapore and Thailand within our range of fiberglass pipe system.

CSI Oil & Gas Pte Ltd
No. 6 Ubi Road 1, #03-09
Wintech Centre
Singapore 408726

Appointment shall be made effective immediately and can be terminated by either party by giving 30 days notice.

Yours Sincerely



Nick Tong
Area Sales Manager (Asia Pacific)
Sales & Marketing
GCC & Asia



2950 Mechanic Street, Lake City, PA 16423 USA
(814) 774-2631 • (800) 840-9906 • Fax: (814) 774-0778
E-Mail: vanair@vanairsystems.com • www.vanairsystems.com



AUTHORIZED DISTRIBUTOR

CSI Oil & Gas Pte Ltd
190, MacPherson Road,
#04-05, Royal Sporting House
Singapore 348548

The above named company is an authorized representative on non-exclusive basis for Hankison products in Singapore. **CSI Oil & Gas Pte Ltd** is authorized to solicit orders on behalf of Hankison and is assured of our support for sales, service, warranty and application assistance.

This authorization is valid until December 31, 2010.

January 1, 2010

G. S. Lim
Regional Manager



SPX DEHYDRATION & FILTRATION
1000 PHILADELPHIA STREET
CANCERSBURG, PA 15011-1700
UNITED STATES

January 22, 2010

To Whom It May Concern:

I am writing to confirm that Mr. David Theng, on behalf of CSI Oil & Gas Pte Ltd., has been duly appointed to represent the full range of products of Van Air Systems in geographies including, but not limited to, Singapore, Malaysia, Thailand, Vietnam, and Indonesia.

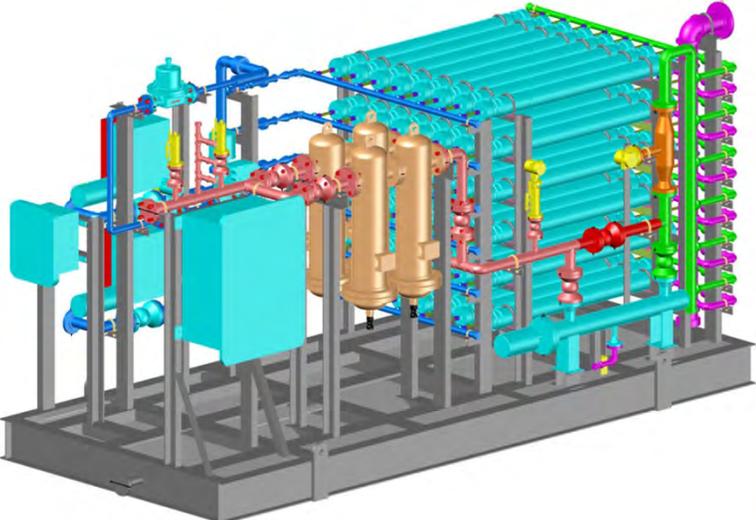
I am glad to respond to any questions that you may have.

With regards,

Tyler Currie
Van Air Systems
+(302) 444-2869

tcurrie@vanairinc.com









END USER : SALAMANDER ENERGY (BUALUANG) LTD.
PROJECT : BUALUANG FIELD DEVELOPMENT-PROCESS AND UTILITY MODULES BLPMB
EQUIPMENT : INSTRUMENT AIR COMPRESSOR AND DRYER PACKAGE
JOB NO : JN12-3016



A customized Air Compressor with PLC & HMI package for Yolla Project in Australia



A customized Air Dryer package for Yolla Project in Australia



A customized Air Compressor package for Chevron Saturn CPP Project



END USER : MAERSK CONTRACTORS
PROJECT : B331, B332 & B347
EQUIPMENT : Fresh Water Cooled Service Air Compressor
Model : GA160-10.4-60 HAT
JOB NO : JN11-3002



END USER : MAERSK CONTRACTORS
PROJECT : B331, B332 & B347
EQUIPMENT : Fresh Water Cooled Service Variable Speed Drive Air Compressor
MODEL : GA160VSD -10.4-60W
JOB NO : JN11-3002



A customized Compressor package for Chevron in Thailand



A customized Marine Startup Air Compressor package for P53 Petrobras FPU Conversion Project



END USER : MAERSK CONTRACTORS
PROJECT : B331
EQUIPMENT : WATER COOLED PISTON STARTING AIR COMPRESSOR
JOB NO : JN11-3002

END USER : MAERSK CONTRACTORS
PROJECT : B331
EQUIPMENT : DIESEL ENGINE COLD START AIR COMPRESSOR
JOB NO : JN11-3002



A customized Air Dryer package for Bukit Tua FPSO for M3ENERGY

Nitrogen Generator



END USER : PTTEP INTERNATIONAL LTD
PROJECT : ZAWTIKA DEVELOPMENT PROJECT PHASE 1A
EQUIPMENT : NITROGEN GENERATOR PACKAGE
JOB NO : JN11-3166



A customized Nitrogen Generator package for Yolla Project in Australia



A customized Emergency Diesel Generator package for Banuwati-K Project



Instrument Air Receiver (ASME 8)



END USER: CHONG SIAI LTD
PROJECT: LOW PRESSURE VESSELS AND WELDED TANKS
EQUIPMENT: INSTRUMENT AIR RECEIVER
JOB NO: J10-2108

Fresh Water Tank (API 650)



END USER: CHONG SIAI LTD
PROJECT: LOW PRESSURE VESSELS AND WELDED TANKS
EQUIPMENT: FRESH WATER TANK
JOB NO: J10-2108

Chemical Injection System



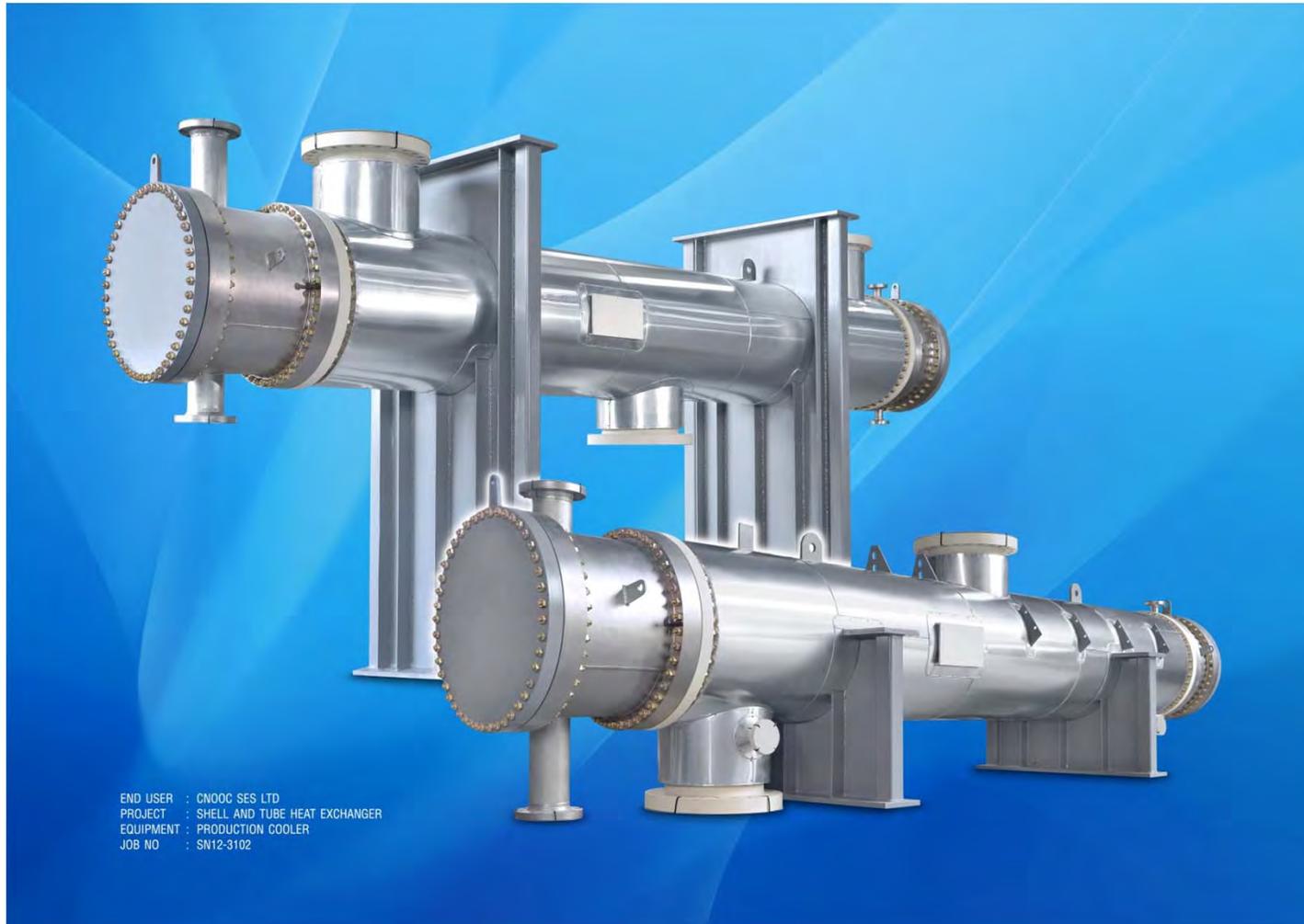
Closed Drain Vessel (ASME 8)

END USER: CHONG SIAI LTD
PROJECT: LOW PRESSURE VESSELS AND WELDED TANKS
EQUIPMENT: CLOSED DRAIN VESSEL
JOB NO: J10-2108



Diesel Day Tank (API 650)

END USER: CHONG SIAI LTD
PROJECT: LOW PRESSURE VESSELS AND WELDED TANKS
EQUIPMENT: DIESEL DAY TANK
JOB NO: J10-2108



A customized Heat Exchanger (shell & tube) package for CNOOC SES LTD



Corrosion Inhibitor Skid Package for GSPC – NIKO Resources Ltd



Batch Corrosion Inhibitor Skid Package for EMEPMI



Open Drain Pump Skid for Petronas Carigali Vietnam



Closed Drain Sump Pump Skid for CPOC





END USER : MAERSK CONTRACTORS
PROJECT : B301
EQUIPMENT : DESSICANT BLOWER PURGE EXTERNAL HEATED DRYER
JOB NO : JN11-3002



END USER : MAERSK CONTRACTORS
PROJECT : B331 & B332
EQUIPMENT : FILTRATION UNITS
JOB NO : JN11-3002

KROHNE



KROHNE





SKM Head Office

Sharjah, United Arab Emirates

SKM with premium international quality Air Conditioning equipment and commitment to total customer satisfaction, is proud to have its equipment work efficiently in various geographic locations like:



UAE | Saudi Arabia | Kuwait | Bahrain | Qatar | Egypt | Lebanon | Jordan | Oman | India | Tanzania | Syria | Libya | Yemen | Thailand | Pakistan | Bangladesh | Iran | Iraq | Sudan | Philippines & Eritrea

Certifications



ISO 9001 2008
ISO 14001 2004
OHSAS 18001
Bureau Veritas Certification



AHRI
Certified Performance for
CW/HW Coils



Eurovent Certified
Certified Performance for MAH/AHU
Check ongoing validity of certificate
www.eurovent-certification.com
www.certiflash.com © Certiflash



CE Certified



TÜV SÜD
Certified Testing Laboratory



TÜV SÜD
Production monitored &
capacity tested for PAEL

ISO 9001-2008, ISO 14001-2004, OHSAS 18001
AHRI Certified - Chilled Water / Hot Water Coils
Eurovent Certified for MAH/AHU, CE, TÜV-SUD Middle East Certified Laboratory /
TÜV-SUD Industrie Service GmbH, Germany Capacity tested for PAEL Series

Brands:





Air Handling Unit



Chiller Unit



Packaged Unit



Condensing Unit



Split Unit



Decorative Unit



Fan Coil Unit



Swimpool Unit

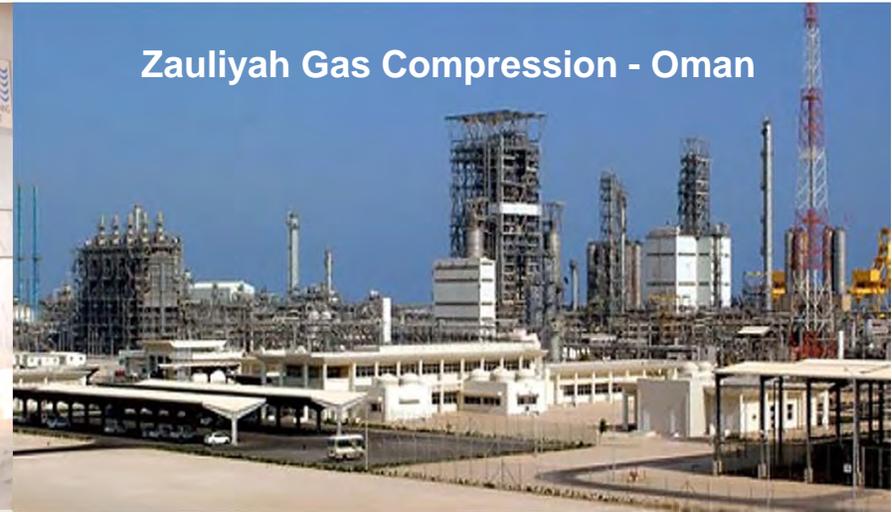


Ducted Mini Split Unit

Deen Dayal Field Development Project - India



Zauliyah Gas Compression - Oman



Giza North Power Station - Egypt



SALES OFFICE
 P.O. Box 2333 -
 Al-Badaiyah - Doha -
 Qatar
 Tel: +974 4411 2222
 Fax: +974 4411 2222
 Email: info@csi.com.qa
 Website: www.csi.com.qa



LIST OF SELECTED OFFSHORE PROJECTS

S. NO.	PROJECT TITLE	PROJECT LOCATION	SCOPE	CLIENT	UNIT DETAILS		REMARKS	BUILDING TYPE	YEARS OF SUPPLY
					UNIT TYPE	CAPACITY RANGE			
1	PS2 & PS3 PLAT FORM (QATAR)	QATAR	SUPPLY	QATAR PETROLIOUM	- SPLIT UNITS - PACKAGE UNITS	4 TR TO 12 TR	EXPLOSSION PROOF UNITS WITH R-134A	Substations, Instrument Equipmnet Shelters & Main Control Building	2003
2	MAERSK OIL (3 PACKAGES)	QATAR	SUPPLY	MAERSK OIL	- WATER COOLED CHILLERS - AIR HANDLING UNITS	45 TR TO 120TR 4500 CFM TO 30000 CFM	SEA WATER COOLED CHILLERS WITH STAINLESS STEEL CONSTRUCTION	Plat Form and Rig	2003 TO 2008
3	RAS LAFFAN CCIW PROJECT	QATAR	SUPPLY	QATAR PETROLIOUM	-CONDENSING UNITS -AIR HANDLING UNIT	17 TR TO 90 TR 2500 CFM TO 42000 CFM	UNITS WITH R-134a & selected based on S2C	Substations, Instrument Equipmnet Shelters & Main Control Building	2006
4	DEENDAYAL FIELD DEVELOPMENT - GSPG PROCESS CUM LIVING QUARTERS PLATFORM	INDIA	SUPPLY	CONTROL CONTRACTING	-AIR HANDLING UNITS -CHILLERS	3200CFM TO 32000 CFM 42 TR to 225 TR	EXPLOSSION PROOF UNITS WITH R-134A	Plat Form and Quarters	2012



Our Product Ranges

- Automatic High Velocity PV Valve – *Tekno Mar Gemicilik*
- CO₂/FM-200 System – *Marine Fire*
- Deluge Valves – *Cla-Val, OCV*
- Dual Agent Skid / Dry Chemical Skid – *Mechfire*
- Fire Monitors & Hand line Nozzles – *Protek*
- Helideck Foam System – *Matre Maskin, Norway*
- Helicopter Refueling System – *Sypack*
- High & Low Expansion Foam System – *Chemguard*
- Water Mist System – *Ultrafog SA & X-Mist TankTech*





**Deluge Valves Project for Tanga Barat
Central Processing Platform in Malaysia**



4" Deluge Valve Skid
(MP/o8/o7/CPOC) - Malaysia



Twin Agent Skid
(MP/o8/o8/TAS) - Singapore



CO2 Snuffing System
(MP/08/09/CO2SP) – Vietnam



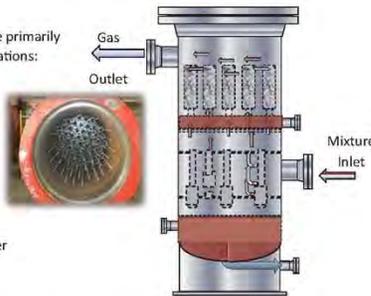
Deck Foam System
(MP/08/12/FFMS) – China

Reverse-Flow Coalescer

Reverse-Flow Coalescers are used where ultimate efficiency for separating smaller particles is required. These units can be combined with other separation devices to ensure proper efficiency and/or promote element life. These units are designed for 2-stage separation, similar to the filter separators; however in the coalescer configuration, the elements provide finer particle removal and flow from inside to out. Typically the first stage consists of a basic inlet baffle, multi-cyclone or vanes. The second stage elements coalesce the liquid droplets into larger particles that are gravity separated exiting the elements. These units are available in vertical installation.

Reverse-Flow Coalescers are primarily used in the following applications:

- Mole Sieve Protection
- Final Discharge Resip Compressor
- Compressor Seal Gas
- Glycol Carry-Over
- Foam & Paraffin
- Performance: 100% of Liquids .3µ & larger



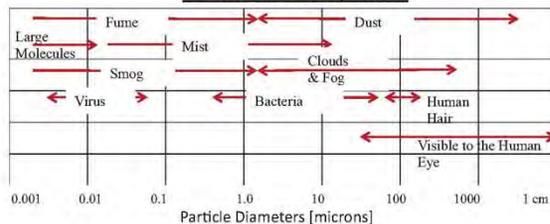
Separation Process

SPS utilizes mechanical separation in the following common applications:

- Solids from Gas or Liquids
- Liquid from Liquid w/ Gas (3-Phase)
- Liquids from Gas
- Solids & Liquids from Gas

Utilizing SPS's most efficient method of separation, we are able to remove .3µ particles from the gas stream.

Particle Size Comparison



Schultz Process Services, Inc. (SPS) specializes in state of the art mechanical separation technology. Our product line offers the latest in separation technology and includes:

- Vane Separator (Patent Approved)
- Filter Separator
- Multi-Cyclone
- Reverse-Flow Coalescer
- Gas Filter
- LAPS (Laser Accuracy Performance Study)
- Fabrication
- 3-Phase Separator
- Fuel Gas Skid
- KO Drum
- Sand Trap Separator
- CFD Study
- Retrofit

SPS utilizes over 150 years experience specializing in the separation industry to provide the most efficient & economical solution for your processing needs. We are dedicated to working with clients to achieve their processing requirements and offering alternative solutions on a case-by-case basis. SPS prides itself on service to our customers and has a proven track record of managing projects efficiently while providing quick turn-around proposals as well as expediting deliveries.

"Service may be our last name, but it's our first priority"
- Don Schultz, President

Product Support

SPS is committed to providing high quality products that operate efficiently and effectively. Support is continuously verified through use of the latest technology including FEA, CFD, Laser Accuracy Performance Services (LAPS), production prototype testing, both in house and in the field.



SPS Regional Representatives

- Eastern US: PA, OH & WV:** Centri Dyne - CDRandymorris@aol.com Tel: 412-856-5300
- Central US: AR, KS, & OK:** APEX Instruments - nick@apex-instruments.com Tel: 918-906-0788
- NE:** APEX Instruments - patrick@apex-instruments.com Tel: 303-506-5925
- Houston:** Gulf Coast Engineering Solutions, Inc. - bryan@gces-inc.com Tel: 281-685-6621
- Mountain US: CO, WY & ND:** Nichols Given - bg@ngainc.com Tel: 303-773-1404
- MT & SD:** APEX Instruments - jared@apex-instruments.com Tel: 307-259-5115
- Western US: AZ & NM:** APEX Instruments - jean@apex-instruments.com Tel: 505-609-0582
- ID & UT:** APEX Instruments - dave@apex-instruments.com Tel: 801-884-7014
- Mexico:** Octopus - lact@octopus-grp.com Tel: 01-728-285-4640
- Canada:** Petromesh - rod.bratton@petromesh.com Tel: 403-301-0111



Keeps the Energy Industry Moving



Houston, TX
(281) 894-2100
www.sps-houston.com

Vane-Type Separator

SPS utilizes enhanced double-pocket (EDP-Patented) vane technology under a license agreement with Petromesh-Canada. The "EDP" vane technology offers higher capacity using innovative compact designs that allows greater vapor flow with better efficiency. Vane-Type Separators are designed to remove liquid particles from a vapor stream with high efficiency and low pressure drops. The entrained liquid particles are captured and removed through impact against the vane blades & channeled from the vapor stream. SPS can design these separators for either Horizontal or Vertical installation.

Gas Separators are primarily used in the following applications:

- Slug Catchers
- Metering stations
- Compression Stations
- Pipelines
- Chemical Plants
- Performance: 100% of Liquids 8-10 μ & larger

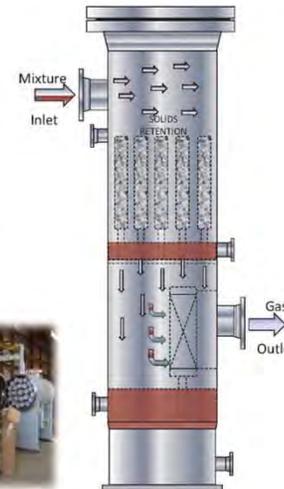


Filter Separator

Filter Separators are utilized when higher efficiency for separating smaller particles are required. Filters are typically used on suction stages of compressor runs, where solids and other particulate are present. Filter Separators incorporate 2 technologies (Filter Cartridge & Vane Unit); when in unison, these technologies are able to offer 3 μ removal efficiency. These units are also available in either Horizontal or Vertical configuration. SPS has designed a compact model for use with fuel gas that requires only 1 set of instrumentation for liquid level control.

Filter Separators are primarily used in the following applications:

- Fuel Gas Condition for Engines and Turbines
- Compression Stations
- Chemical Process
- Performance: 100% of Solids AND Liquids 3 μ & larger; 99.5% of Solids .3 μ & larger



Multi-Cyclone Separator

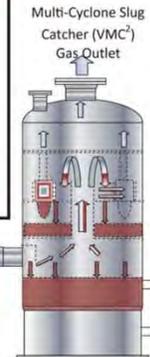
Multi-Cyclones are designed to remove solids, heavy liquids & large amounts of debris from a vapor current. SPS has standardized on 316/316L cyclone construction, creating a very robust mechanical design that has the capacity to remove: wax, rust, foam, paraffin, solids, heavy particulate, emulsions, & various difficult applications. Since the removal efficiency is directly related to the radius of curvature, SPS has standardized on installing a fixed radius of multiple cyclones in a separator varying on process conditions. While the only drawbacks associated with cyclones are turnaround restrictions and pressure drop, multi-cyclones NEVER require maintenance and depending on allowable ΔP , are designed to fit in smaller vessels.

Multi-Cyclones are primarily used in the following applications:

- Slug Catchers
- Difficult Applications
- Compression Stations
- Pipelines
- Foam & Paraffin
- Performance: 100% of Liquids 8-10 μ & larger; 100% of Solids 5-7 μ & larger



As seen in Fig. A, the solid and liquid particles are removed from the gas current through centrifugal separation. Particulates enter the scroll openings and are forced down the cone in a cyclonic motion, creating a film-type layer of solids and liquids inside the bullet nose shell. The stream continues down into the nose until it reaches the lower mid portion of the cone. Only the lighter phase (vapor stream) can make the turn into the exit tube; the heavier phase contaminates (liquids and solids) are forced down the cone and exit through the bottom outlet.





3-Phase Separator



Details

- Gas – Oil – Water separation
- Performance:

Gas phase: 100% liquid removal 8-10 microns and larger

Oil in water: <1,000 ppm or 0.1% by volume

Water in oil: 5,000 ppm or 0.5% by volume

Related



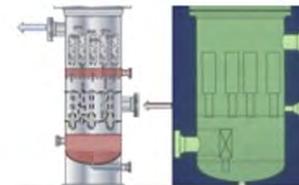
Multi-cyclone Separator
Gas – liquid & Solid separation
Performance:...



Dry Gas Filter
Gas – Solid Filtration
Performance: 100% solid...



Filter Separator
Gas – liquid & Solid separation
Performance:...



Filter Coalescer
Gas – Liquid Coalescing, or Gas

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