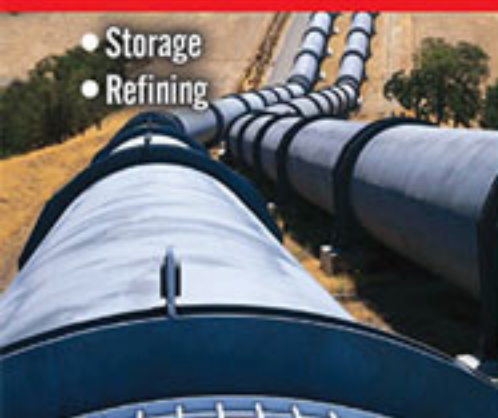


บริษัท สยามราช จำกัด (มหาชน) SIAMRAJ PUBLIC COMPANY LIMITED



- Storage
- Refining



- PRODUCTION
- Transportation
- Storage
- Refining



- Production
- Transportation
- STORAGE
- Refining



COLFAX
Fluid Handling

SIEMENS
TURBO

CORKEN
IBEX

VIKING PUMP

Imo
Pump

pompetravaini

wright flow
TECHNOLOGIES

SANDPIPER

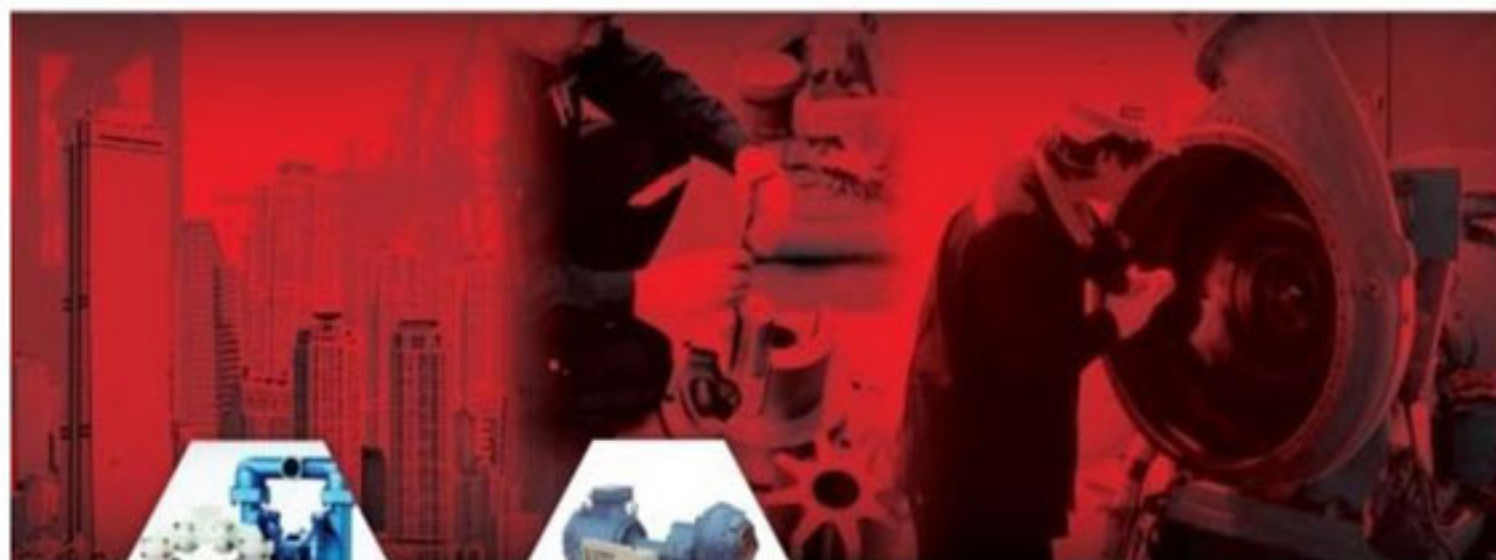
GOULDS
WATER TECHNOLOGY

Engineered Pumps And Systems Specialist



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Engineered Pumps And Systems Specialist

The Company

บริษัท สยามราช จำกัด (มหาชน) (เดิมชื่อบริษัท สยามราชธานี คอร์ปอเรชั่น จำกัด และ บริษัทเอ็นจีเนียริง โปรดัคส์ จำกัด) จัดทะเบียนก่อตั้งขึ้นเมื่อวันที่ 20 กุมภาพันธ์ 2527 ในนาม บริษัท เอ็นจีเนียริง โปรดัคส์ จำกัด ด้วยทุนจดทะเบียนเริ่มต้น 1,000,000.- บาท มีวัตถุประสงค์เริ่มแรกเพื่อออกแบบ และจำหน่ายระบบปั๊มอุตสาหกรรม รวมถึงให้บริการด้านวิศวกรรมเกี่ยวกับระบบปั๊มอุตสาหกรรมแก่โรงงานอุตสาหกรรมทั่วไป

ในปี พ.ศ.2547 ภาวะอุตสาหกรรมก๊าซธรรมชาติ NGV มีการเติบโตอย่างมากและราคาน้ำมันเชื้อเพลิงปรับตัวสูงขึ้นอย่างต่อเนื่อง รวมทั้งรัฐบาลได้ส่งเสริมการใช้ก๊าซ NGV ทดแทนน้ำมันเชื้อเพลิงสำหรับยานยนต์บริษัทได้มองเห็นโอกาสและขยายธุรกิจไปยังการให้บริการที่เกี่ยวข้องกับก๊าซ NGV ส่งผลให้ธุรกิจของบริษัทเติบโตอย่างมากโดยมีกลุ่มธุรกิจก่อสร้างสถานีวัดและระบบท่อส่งก๊าซธรรมชาติ (Metering and Pipeline Transmission Business Unit), กลุ่มธุรกิจก๊าซธรรมชาติสำหรับยานยนต์ (Natural Gas for Vehicles Business Unit) และกลุ่มธุรกิจระบบปั๊มอุตสาหกรรม (Engineered Pumps and Systems Business Unit) เป็น 3กลุ่มธุรกิจหลักที่ดำเนินการมาจนถึงปัจจุบัน

เมื่อวันที่ 4 กุมภาพันธ์ 2551 บริษัท เอ็นจีเนียริง โปรดัคส์ จำกัด ได้เปลี่ยนชื่อบริษัทใหม่เป็น บริษัท สยามราช คอร์ปอเรชั่น จำกัด และเมื่อวันที่ 2 กุมภาพันธ์ 2558 ได้แปรรูปเป็น บริษัทมหาชน พร้อมเปลี่ยนชื่อบริษัทเป็น “บริษัท สยามราช จำกัด (มหาชน)” มีทุนจดทะเบียนจำนวน 300,000,000 บาท ทุนที่ชำระแล้วจำนวน 225,000,000 บาท สำหรับหุ้นสามัญที่เหลืออีกจำนวน 75,000,000 บาท ออกไว้เพื่อรองรับการเสนอขายหุ้นสามัญต่อประชาชนเป็นครั้งแรก (Initial Public Offering : IPO)

Content **สารบัญ**

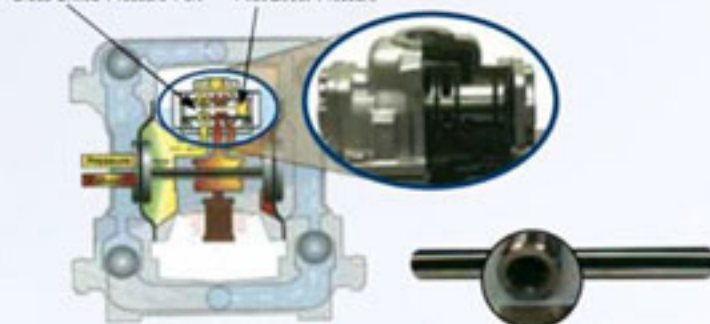
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Responsibility
with QUALITY



Air-Operated Double Diaphragm Pumps

Cross-Drilled Pressure Port Pilot/Boost Pressure



Patented cross-drilled design

Connecting Rod Guarantee



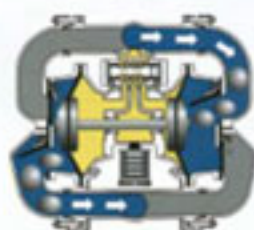
All Bolted Construction



"In-Line" Serviceable

Signature Design

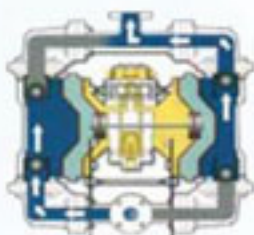
Signature Configurations



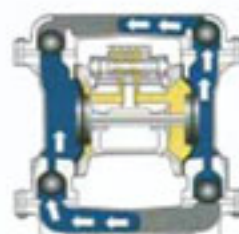
Heavy Duty Flap



Heavy Duty Ball



Containment Duty



Standard Duty



Tranquilizer



Special Duty



Sludge Master
Submersible, Air-Powered
Trash Pump

High Pressure
Deliver Discharge
Pressure up to 250 PSI (17Bar)



AIR VANTAGE



Heavy Duty Flap

Parts Kist



Natural Gas
Operated Pumps

HD20F Non-Metallic

- Port Size 2" NPT (Internal) 2" BSP (Tapered)
- Capacity 0 to 150 gpm (567 lpm)
- Air Distribution Valve No-lube, no-stall design
- Solids-Handling Up to 1.8" (45.7 mm)
- Heads Up To 100 psi or (7 bar or 70 meters)
- Displacement/Stroke 50 gallons (1.9 liters)

Positive Displacement Pumping Solutions



Plastics / Resins / Rubbers



Paint & Applied Products



Polyurethane Foam Products



Soaps & Cleaning Compounds



Refined Fuel, LPG



Petroleum Refining



Heavy Thick Liquids



Hazardous & Hard-To-Seal Liquids



Animal Food

Focusing on Your Application

Universal Seal Series



Standard-Jacketed Pump



Fully-Jacketed Pump



- Capacity up to 365 m³/hr (1,600 GPM)
- Pressure up to 14 Bar (200 PSI)
- Viscosity up to 440,000 cst (2,000,000 ssu)
- Temp up to 427 °C (800 °F)

Universal Seal Series

API XPD 676 Series



Partial Compliance

- Models 4123A, 4223A & 4323A
- Cartridge seal, with exceptions
- List of exceptions to API 676 in TR-701



- Models 4123AA, 4223AA & 4323AA
- Category 1, 2 or 3 API 682 cartridge seal
- Same exceptions, except seal and bearing L-10 life compliance.

XPD 676 Series



Full Compliance

- Models 4223AX & 4323AX
- Category 1, 2 or 3 API 682 cartridge seal
- Compliance with all API 676 design specifications

Universal Mag Drive Pumps



- Capacity up to 114 m³/hr (500 GPM)
- Pressure up to 14 Bar (200 PSI)
- Viscosity up to 55,000 cst (250,000 ssu)
- Temp up to 260 °C (500 °F)

Vane Pumps



Vane Pump for Corrosive, Thin Liquids at Higher Pressures



- Capacity up to 36 m³/hr (160 GPM)
- Pressure up to 14 Bar (200 PSI)
- Viscosity up to 500 cst (2,300 ssu)
- Temp up to 260 °C (500 °F)

External Gear Pumps



- Capacity up to 43 m³/hr (190 GPM)
- Pressure up to 14 Bar (2,500 PSI)
- Viscosity up to 1,000,000 cst
- Temp up to 230 °C (450 °F)

Duplex Basket Strainers



Ball Type Model 53Btx



SIZES 1/4", 1", 1-1/2", 2", 2-1/2", 3", 4"

MATERIALS Iron, Carbon Steel, Stainless Steel

Plug Type Model 50



SIZES 5", 6", 8"

MATERIALS Iron, Carbon Steel, Stainless Steel

Accessories

Basket Strainers



Gear Reducers



Power Load Monitors



GOULDS PUMPS

ANSI CHEMICAL PROCESS PUMP



3196

PROCESS PUMP



'i-ALERT'
Condition Monitor



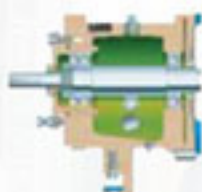
Inpro VBXX-D Hybrid
Bearing Isolator



LTI Power End
Increased L'10 Bearing Life 150% to 200%



Shaft & Bearing Engineered
for Maximum Reliability



Optimized Oil
Sump Design



GOULDS PATENTED

'i-FRAME'
POWER ENDS

ANSI Process Pumps •



3196 i-FRAME
Process Pumps



CV 3196 i-FRAME
Non-Clog
Process Pumps



HT 3196 i-FRAME
High Temp
Process Pumps



LF 3196 i-FRAME
Low Flow
Process Pumps

Sealed Lined & Non-Metallic •



3198 i-FRAME
PFA TEFLON-Lined
Process Pumps



NM 3196 i-FRAME
Non-Metallic
Process Pumps

Self-Priming •



Trash Hog
Self-Priming Solid
Handling Pump



3796 i-FRAME
Self-Priming
Process Pumps

Sealless Process Pumps •



Model 3296 EZMAG
Magnetic Drive ANSI Process



Model 3299
Magnetic Drive ANSI Lined

Vertical Process Pump •



Model 3996
In-Line
ANSI Process



3171
Vertical Sump
Process Pumps

Special Pumps •



5500
Severe Duty
Slurry Pumps



AF
Axial Flow
Pumps



3400
Double Suction
Pumps

Centrifugal Pumps ISO 2858/DIN 24256



Model : TCH Centrifugal mono stage
Flow rate : up to 500 m³/Hr
Pressure : 16 Bar



Model : TCD Centrifugal for Thermal Oil
Flow rate : up to 350 m³/Hr
Pressure : 10 Bar
Temperature : up to 320 degree C



Model : TBH-TBA Self Priming Centrifugal multi stage
Flow rate : up to 70 m³/Hr
Pressure : 40 Bar

Vacuum Pumps



Model : TRH-TRS Liquid ring Vacuum pump
Flow rate : up to 3500 m³/Hr
Max Vacuum : 33 mBar



Model : TRMB Liquid ring Vacuum pump mono block
Flow rate : up to 280 m³/Hr
Max Vacuum : 33 mBar



Model : TRVX Liquid ring Vacuum pump (New Model) Certified to ATEX 94/9/CE
Flow rate : up to 1050 m³/Hr
Max Vacuum : 33 mBar

Vacuum Skids



Oilsys



Hydropack



Hydrosys

CONVERSIONI UNITA' DI MISURA UNITS CONVERSION

Pressione assoluta
Absolute pressure

Vuoto
Vacuum

Volume di aria secca a 15 °C
Volume of dry air at 15 °C

Volume di vapore acqueo saturo
Volume of saturated steam

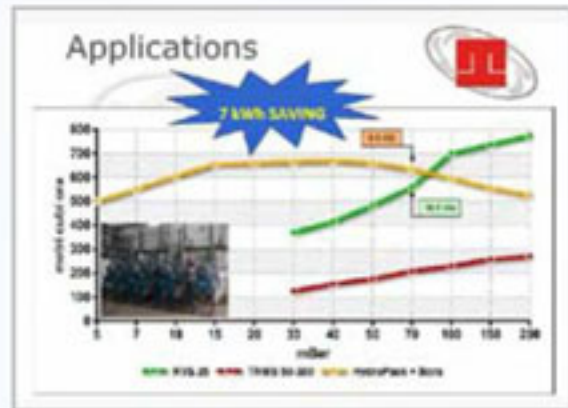
Temperatura di saturazione
dell'acqua
Saturation temperature of
water

Calore di vaporizzazione
Heat of vaporization

KPa	mBar	Torr	°Hg	Atm	% mHCO	cmHg	°Hg	m³/kg	m³/kg	°C	°F	kJ/kg
100	1000	750	30	1.000	0	0	0	0.000	0.000	100	212	2260
90	900	675	27	0.9	10	10	10	0.010	0.010	90	204	2210
80	800	600	24	0.8	20	20	20	0.020	0.020	80	196	2160
70	700	525	21	0.7	30	30	30	0.030	0.030	70	188	2110
60	600	450	18	0.6	40	40	40	0.040	0.040	60	180	2060
50	500	375	15	0.5	50	50	50	0.050	0.050	50	172	2010
40	400	300	12	0.4	60	60	60	0.060	0.060	40	164	1960
30	300	225	9	0.3	70	70	70	0.070	0.070	30	156	1910
25	250	188	7.5	0.25	75	75	75	0.075	0.075	25	149	1860
20	200	150	6	0.2	80	80	80	0.080	0.080	20	141	1810
15	150	112	4.5	0.15	85	85	85	0.085	0.085	15	133	1760
10	100	75	3	0.1	90	90	90	0.090	0.090	10	125	1710
9	90	67.5	2.7	0.09	95	95	95	0.095	0.095	9	117	1660
8	80	60	2.4	0.08	100	100	100	0.100	0.100	8	109	1610
7	70	52.5	2.1	0.07	105	105	105	0.105	0.105	7	101	1560
6	60	45	1.8	0.06	110	110	110	0.110	0.110	6	93	1510
5	50	37.5	1.5	0.05	115	115	115	0.115	0.115	5	85	1460
4	40	30	1.2	0.04	120	120	120	0.120	0.120	4	77	1410
3	30	22.5	0.9	0.03	125	125	125	0.125	0.125	3	69	1360
2.5	25	18.8	0.75	0.025	130	130	130	0.130	0.130	2.5	61	1310
2	20	15	0.6	0.02	135	135	135	0.135	0.135	2	53	1260
1.5	15	11.2	0.45	0.015	140	140	140	0.140	0.140	1.5	45	1210
1	10	7.5	0.3	0.01	145	145	145	0.145	0.145	1	37	1160
0.9	9	6.75	0.27	0.009	150	150	150	0.150	0.150	0.9	29	1110
0.8	8	6	0.24	0.008	155	155	155	0.155	0.155	0.8	21	1060
0.7	7	5.25	0.21	0.007	160	160	160	0.160	0.160	0.7	13	1010
0.6	6	4.5	0.18	0.006	165	165	165	0.165	0.165	0.6	5	960
0.5	5	3.75	0.15	0.005	170	170	170	0.170	0.170	0.5	-3	910

Pump+Roots Blower vacuum systems with total water or oil recirculation for very high vacuum PLC controlled

HYDRO TWIN



Pump+Roots Blower vacuum systems with total water or oil recirculation for very high vacuum PLC controlled up to 2 mBar.abs (Oil) or 5 mbar.abs (Water)

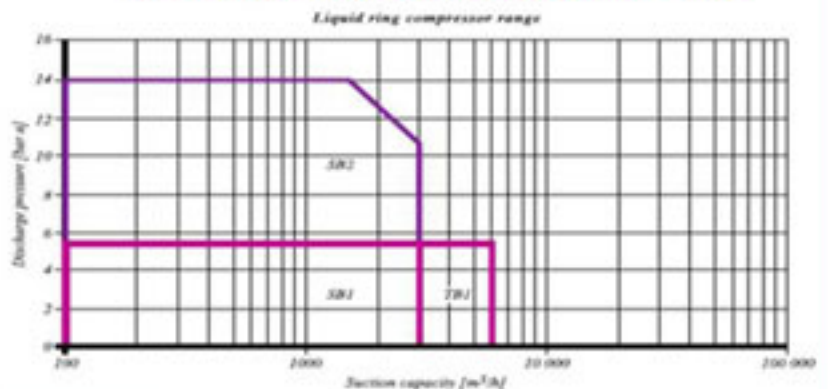
LIQUID RING COMPRESSOR



Comply to API 681
Pompetravaini + nsb (Switzerland)



WORKING RANGE OF NSB GAS PROCESSING LIQUID RING COMPRESSORS



POSITIVE DISPLACEMENT BLOWERS



Bare Shaft BORA 353 blower



Bare 233 blower with accessories



BORA Model	Nominal flow at 2850 RPM	Recommended Power
73 HV	210 m³/h	2,2 kW
103 HV	310 m³/h	2,2 kW
163 HV	500 m³/h	2,2 kW
233 HV	700 m³/h	3 kW
293 HV	900 m³/h	3 kW
353 HV	1100 m³/h	4 kW
463 HV	1450 m³/h	4 kW
673 HV	2000 m³/h	5,5 kW
883 HV	2500 m³/h	7,5 kW
1083 HV	3250 m³/h	7,5 kW



- Solenoid - driven diaphragm dosing pumps
Capacity range 0,1 bis 115 l/h, at up to 16 bar



- Motor- driven diaphragm dosing pumps
Capacity range 3 to 4000 l/h, at up to 10 bar



- Piston dosing pumps
Capacity range 0,1 bis 4200 l/h at up to 200 bar



- Pump MEMDOS E is conform with ATEX 94/9/EC. It can be operated in hazardous areas.



- MEMDOS SMART LP
The compact stepper-motor pump, coupled with its intelligent drive concept, combines the big advantages of a solenoid-driven diaphragm dosing pump with the precision of a motor-driven diaphragm dosing pump.



Chemical Feeding Systems and Skids

- Municipal Chemical Feed System
- Caustic Chemical Feed System
- Ferric Sulfate Skid System
- Sodium Hypochlorite Injection

Accessories



Chemical feed system
Chemical feed systems are especially suitable for dosing :
sodium hypochlorite, flocculants, softeners, cleaning agents, acids, caustics, etc.



VALVE ASSEMBLY

- Prevent an excessive pressure increase in the dosing pump system on the discharge side
- Max. flow rate up to 500 l/h



Pulsation Dampener PDS

- Reduces pressure fluctuation to a harmless level
- Installed directly below the suction valve
- Stroke volume up to 1200 ml/stroke

API Metering Pumps

Metering pumps

reciprocating plunger and diaphragm process pumps, designed to solve with the highest reliability and precision any problem associated with metering applications single acting for all models, double acting for piston type pumping heads only.



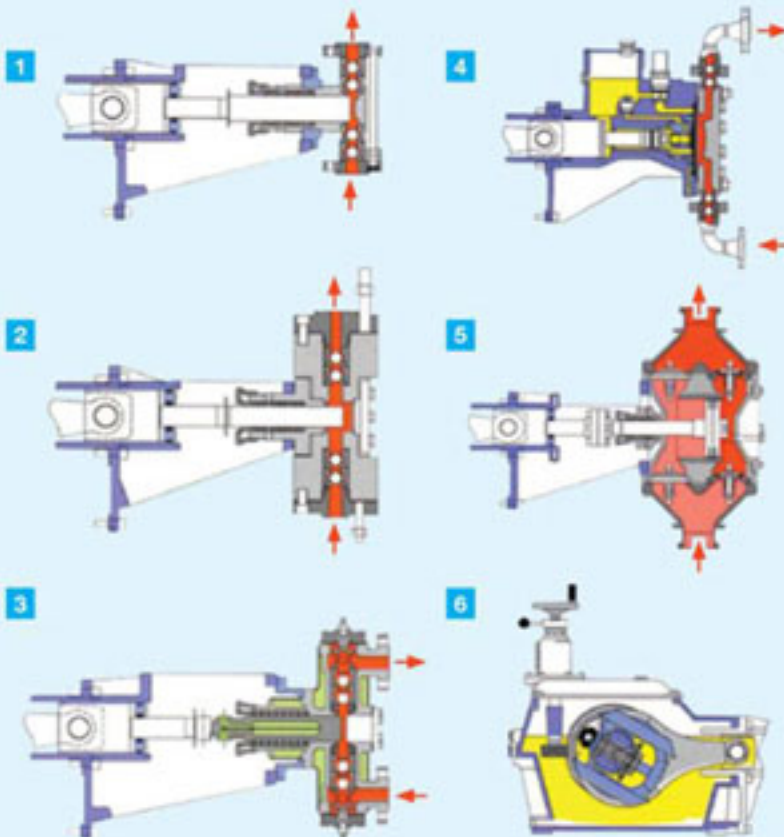
multi-heads plunger pumps



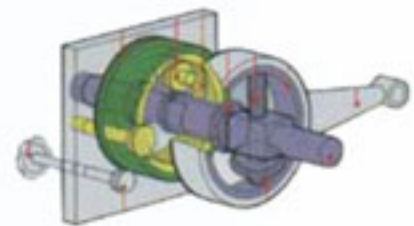
triplex group



Piston Pump
with heating jacket



1. single acting, standard plunger pumping head
2. single acting plunger, pumping head for high pressure applications
3. single acting plunger, pumping head with jacket for high accuracy heating
4. double diaphragm pumping head
5. pumping head of double acting pump
6. crank mechanism of DOXE-M metering pumps



Structural Arrangement
of the Crank Mechanism



Double Diaphragm Pumping Head



IMO US THREE-SCREW PUMPS



Performance Data

Capacity	Q	Up to 795 m ³ /h
Viscosity range	V	1 – 5,400 cSt
Temperature of pumped liquid	t	Up to 260 °C
Outlet pressure	Pd	Up to 345 bar
Max Speed	n	Up to 3,600 rpm
Flanges	According to ANSI / DIN	



WARREN TWIN-SCREW PUMPS



Specifications

- Heavy-duty cast body designed for pipeline service
- Integral shaft and screw design
- Double helical timing gears
- Special High efficiency screw profile
- 6 bearings design
- Hard coatings for wear resistance

Performance Data

Capacity	Q	Up to 5,000 m ³ /h
Viscosity range	V	0.2 – 200,000 cSt
Temperature of pumped liquid	t	Up to 400 °C
Outlet pressure	Pd	Up to 100 bar



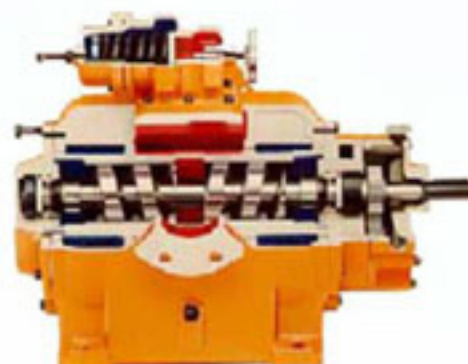
HOUTTUIN TWIN-SCREW PUMPS



The Houttuin double entry twin screw pumps are horizontal rotating self priming positive displacement pumps. Two inter-meshing screws rotating in a pump casing ensure high pumping efficiency with constant axial flow and unequalled suction power.

Performance Data

Capacity	Q	Up to 2,500 m ³ /h
Viscosity range	V	0.6 – 5,000 cSt
Temperature of pumped liquid	t	Up to 140 °C
Outlet pressure	Pd	Up to 16 bar



ALLWEILER PC PUMPS

- Specifications
- Lower starting and operating torque
- Higher efficiency
- Stable performance curves
- Smooth and unproblematic start-up after longer non-operation periods
- 100% higher flow with same speed
- 20% lower sliding velocity and with lower power consumption and longer lifetime of rotor and stator
- Shaft diameters are approx. 30% smaller and with approx 50% lower friction losses and long lifetime of shaft sealing



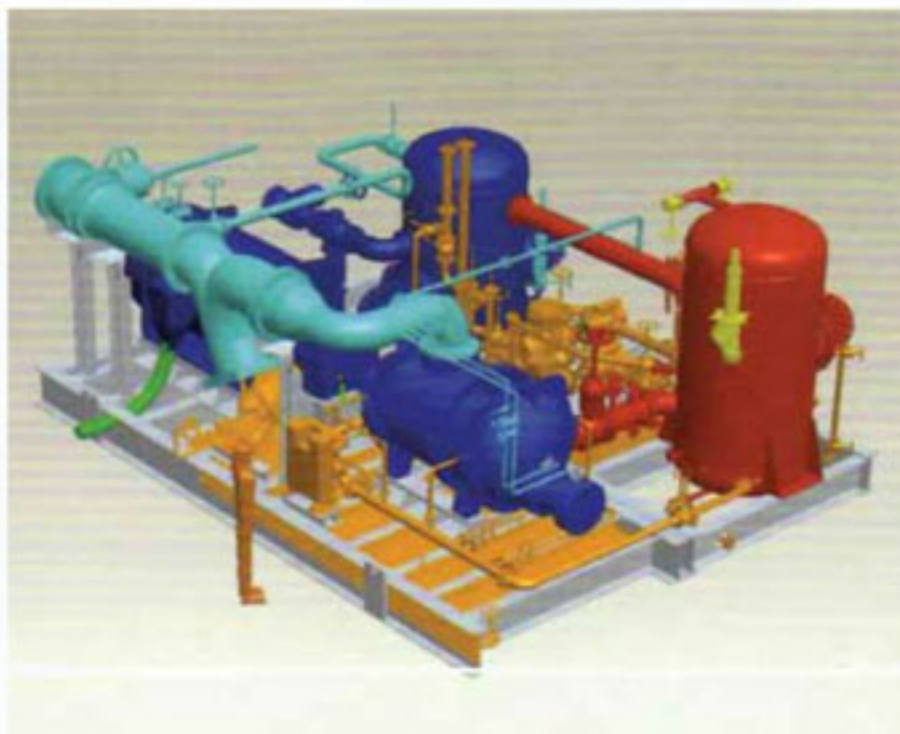
Allweiler

Performance Data

Capacity	Q	Up to 450 m ³ /h
Viscosity range	V	Up to 300,000 cSt
Temperature of pumped liquid	t	Up to 150 °C
Outlet pressure	Pd	Up to 24 bar



ROSSOR MULTIPHASE SYSTEMS



Twin Screw Multiphase Pumps for Liquid application with High Gas content Specifications

- Ranges : Self-priming, double entry, horizontal type pumps
- Fluids : crude oil well product with high gas content
- Application : oil field

Design specifications for heavy duty multiphase service :

- Pump flow rates 30 - 1530 m³/h
- Pump system capacities theoretical unlimited due to parallel operation
- Casing pressure 52/100 bar
- Differential pressure ratio 1- 25



Circumferential Piston Pumps



TRA10 & TRA20

- Max Capacity 102 m³/h
- Max Diff-Pressure 34 Bar
- Non Galling Alloy 808 Rotor
- Stainless 316L Body / 17-4 Stainless Shaft
- CIP/SIP
- Interchange with 'Waukesha U1/U2'



MultiPumps



Classic Lobe Pump

- Max Capacity 200 m³/h
- Max Diff-Pressure 12 Bar
- All Stainless 316L Wet part
- 17-4 Stainless Shaft
- CIP/SIP



Since 1983



Lobe Technology



Internal Gear Hygienic Pumps

- Max 10 Bar Pressure
- Max 73 m³/hr Capacity
- Fast Clean In Place (CIP), fast Clean Out of Place (COP)



Hybrid Lobe/Circumferential Pumps



REVOLUTION

- Max Capacity 190 m³/h
- Max Diff-Pressure 31 Bar
- 808 Non Galling Alloy Rotors
- Maintenance Free Gearbox
- Front Loading Seal
- Common Spare Parts
- Certify CIP/SIP



Sanitary Centrifugal Pumps



TRA500

- Max Capacity 210 m³/h
- Max Diff-Pressure 13 Bar
- 316L Material
- 316L Flange Adaptor
- Internal & External Surface Finishing
- Interchange With 'Fristam FPX'



Preventive Maintenance Kits



Elastomer Kit



Seal Face Kit

Centrifugal Turbocompressors

SIEMENS TURBO

Pre-Designed Turbocompressors

Design features:

- High efficiency over the entire turndown range means lower
- operating costs
- High Speed bearing
- Compact design delivered as one package easy to install
- Low noise level with no pressure pulsation
- Long life with a minimum of maintenance
- Guaranteed oil free air supply
- Variable flow by mean of variable vane diffusers, pre-rotation inlet guide vanes or a combination of both system, The Dual-Point-Control

Petrochemicals and Refineries

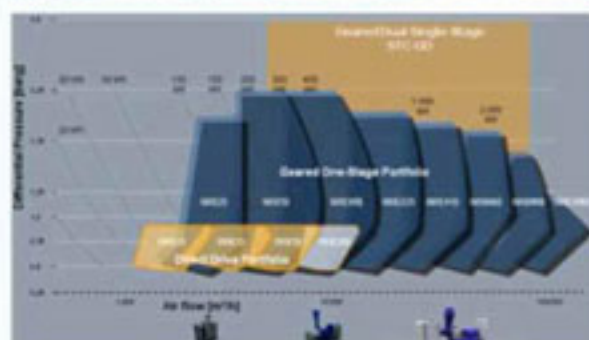
- SRU (Sulfur recovery units)
- Evaporation (e.g. Oil Sands-SAGD /Effluent treatment)

Metallurgy

- Coke Oven Gas
- Sulfuric Acid
- Converter Blower
- Ore Roasting & Processing

Chemicals

- Fertilizer (Sulfuric Acid)
- Evaporation
- MA/PA
- MMA
- Formaldehyde
- Chlorine gas (wet)
- Various chemical processes



- Waste Water Plant
- Waste Water Aeration
- Fermentation process



Inlet guide vane



Impeller with leaning blades



GL-gear type series

The bearings are hydrodynamic multi-pad bearings with forced oil lubrication. The designed bearing lifetime is 100,000 operational hours.



Ball bearing unit with helical gear and diffuser vanes for optimal efficiency





eSV
Vertical Multi Stage
Centrifugal Pump

Technical data

Flow, Q : max. 160 m³/h
Head, H : max. 330 m
Liquid temp. : -30°C to + 120°C
Operat. pressure : max. 25 bar
Motor : 0.37 kW to 55 kW



GSHE - GSHEF - GSHO
End Suction Pump
Stainless Steel Version

Technical data

Flow, Q : max. 240 m³/h
Head, H : max. 110 m
Liquid temp. : -10°C to + 120°C
Operat. pressure : max. 12 bar
Motor : 0.25 kW to 75 kW



Turbine
Lineshaft Turbine
Pump

Technical data

Flow, Q : max. 240 m³/h
Head, H : max. 110 m
Liquid temp. : -10°C to + 120°C
Operat. pressure : max. 12 bar
Motor : 0.25 kW to 75 kW



GISO
Horizontal End Suction
Centrifugal Pump

Technical data

Flow, Q : max. 1800 m³/h
Head, H : max. 160 m
Liquid temp. : -15°C to 120°C
Operat. Pressure : max. 16 bar
Motor : 0.75 kW to 160 kW



GLC
Vertical In Line
Centrifugal Pump

Technical data

Flow, Q : max. 1900 m³/h
Head, H : max. 45 m
Liquid temp. : -10°C to + 130°C
Operat. Pressure : max. 25 bar
Motor : 2.2 kW to 132 kW



1300 SERIES
Drainage & Sewage
Submersible Pump

Technical data

Flow, Q : max. 400 m³/h
Head, H : max. 60 m
Liquid temp. : -10°C to + 40°C
Motor : 2.4 kW to 45 kW



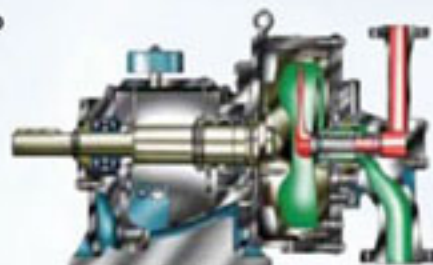
High Pressure Pitot Tube Pumps



RO-API 610 oil-lubricated

High pressure single stage centrifugal pump with advanced pitot tube technology.

- Flows to 450 GPM (109 m³/h)
- Heads to 5200 Feet (1585 m)
- Speeds to 6,321 rpm
- Designed to API 610
- Single & Double seal
- Flanged Connections
- Oil Lubrication
- Materials of construction: Ductile Iron, Carbon Steel, 316 Stainless Steel, CA6NM, and CD4MCu
- Flexible - performance can be adjusted by changing the pitot tube.



Magnetic Drive Pumps

Process pump
ISO 2858 (JIS B 8313, 16bar) compliant



MET

Motor output 0.75kW to 110kW

ISO2858 international standard compliant (JIS B 8313, 16bar) Stainless steel magnet drive pump. Cover a wide range performance 200x150mm, up to a maximum 110kw.

Close-coupled process pump
ISO 2858 (JIS B 8313, 16bar) compliant



MTFO

Motor output 2.2kW to 22kW

Stainless steel magnet drive pump that can be directly connected to the international standard ISO2858 (JISB8313, 16bar) compliant piping. An open impeller is adopted as a standard.

Pump for high concentration slurry
ISO 2858 (JIS B 8313, 16bar) compliant



MDS

Motor output 1.5kW to 22kW

Capable of handling high concentration slurry. Neither external flushing nor bearing monitoring are necessary. Excellent in durability. Cover a wide range from 2.2 to 22 kw. The standard discharge repurator makes the pumps even easier to use.

Process pump
ANSI B 73.1 compliant



MAXP

Motor output 0.75kW to 130kW

Conforms to ANSI standard B73.1 Flexibly of situations, they have high functionality and lots of options. Pumps that conform to the API standard are also available on request.

Corrosion Resistant Chemical Pumps

For transferring FPD Processing waste water
For Sodium Hypochlorite & Hydrogen Peroxide
foaming solution For earthquake-countermeasure
piping

Magnetic Drive Pump,

CHEMIFREE

YD-GS Series

YD-GSF Series

Magnet pump, which has high temperature resistance and strong construction against dry running, yet changing of consumable parts is possible.

- Special bearing tolerates heat radiation as well as heat insulation, in case of dry running
- As lock free construction
- Adopting rare earth magnet makes it compact
- It can adjust to the specific gravity of chemical solutions used
- It can adjust to small flow and high head of pump
- The terminal box placed on the top part makes wiring easy



For FPD, printed-circuit board, plating processing

Self-priming Magnetic Drive Pump,

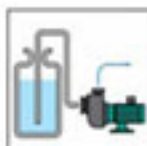
SUPER MAG

YD-GV Series

YD-GVF Series

Valveless pump with world's highest self priming capacity (-15 meters)

- Double usage as end suction and self priming
- It can pump the liquid through piping that has bends going up and down
- Most compact, open-swing type in this class
- It can be adjusted to the specific gravity of chemical solutions used



WorldChemical Co., Ltd.

For Chemical Plants

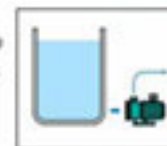
Magnetic Drive Pump,

CHEMIFREE

YD-GR Series

Advanced pump which satisfies all the conditions required for chemical pump.

- High durability with special consideration for safety
- Adopting rare earth magnet
- Most compact and space saving type in this class
- Simple structure which aims for high durability and easy maintenance



Positive Displacement Flow Meter

Since 1956



- 0.02% or better in Repeatability
- Sizes: 1 1/2" through 6"
- 5 GPM through 1,000 GPM
- Low maintenance, no metal - to metal contact in measuring chamber

LIQUID CONTROLS & CORKEN

A Unit of IDEX Corporation



NEW: Optical Air Eliminator

NEW: PZ Series Pump



NEW: E7, Two-Stage Preset Valve



LC Mag Meter



Mass Meter



Batch Controller



Preset Valve



Turbine Meter



Vane Pump

"Technology First" orientation and environmental protection



PaDDLE



FLOaT

FLOaT



MICROWAVE

Measuring for Life

LEVEL METER



capacitance

LEVEL INDICATOR



VIBRATION



SOUNDING



ULTRASONIC

NEW PRODUCT

KWS100 SERIES

ULTRASONIC SLUDGE BLANKET LEVEL METER



KWS200

ULTRASONIC SLUDGE DENSITY METER



Centralized Vacuum Systems



LINDEN BUCKS has developed its own range of residential, commercial and industrial central vacuum system and dust collection system under its own brandname, EL-BVAC.



Petrochemical



Filter and Separator Housing



Electronic & Semiconductor



Feed mill & Food



EL-BVAC Residential CVS

EL-BVAC Industrial Dust Collection System

EL-BVAC Dust Collection System installed at KCE Technology Co Ltd, Thailand

Pumps for Dust Collection System

CANNED MOTOR PUMPS



Basic Type (HV type)

Zero leakage service for a broad range of clean, nonvolatile fluids with moderate temperature



Self-priming Pump (HZ type)

Suitable for handling fluid from underground tank



High Temperature Type (HT type)

Designed for hot oils, hot water and any other high temperature chemical fluids



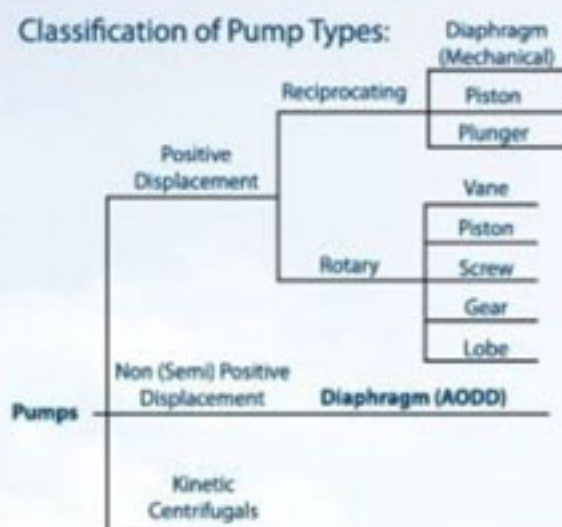
Ammonia Pump

Designed for ammonia service, zero leakage, vertical in-Line type makes piping of suction and discharge works easy and minimizes installation space

- Commissioning
- Training at Site
- Preventive Maintenance
- Pumps and Systems Analysis
- Service Contact



Classification of Pump Types:

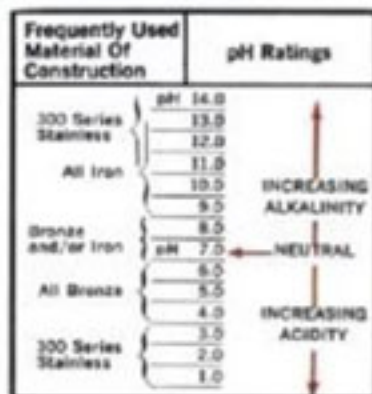


$$NPSHa = H_a \pm H_z - H_f - H_{vp}$$

Where

- H_a = absolute pressure on the surface of the liquid in the supply tank expressed in feet of liquid pumped.
 H_z = vertical distance in feet from the surface of the centerline of the pump suction port. If liquid is below centerline, H_z is negative.
 H_f = friction losses in suction piping expressed in feet of liquid pumped.
 H_{vp} = absolute vapor pressure of liquid at pumping temperature expressed in feet of liquid pumped.

Elastomer	Temperature Limit
Buna-N (Nitrile)	-20°F to +225°F
Ethylene Propylene (EPR, EPDM, EPM)	-40°F to +300°F
Neoprene (Chloroprene)	-40°F to +225°F
Viton® (Fluorocarbon)	0°F to +350°F
Aflas®	-10°F to +400°F
Kalrez® 3018 (Perfluoroelastomer)	0°F to +400°F
Kalrez® 1050LF (Perfluoroelastomer)	0°F to +550°F
Kalrez® 4079 (Perfluoroelastomer)	0°F to +600°F
Teflon	0°F to +450°F



pH Values vs. Materials of Construction

Unit Converter

Area

$$1 \text{ m}^2 = 1550 \text{ in}^2 = 10.764 \text{ ft}^2 = 1.1968 \text{ yd}^2 = 3.861 \times 10^{-7} \text{ mile}^2$$

Energy

$$1 \text{ J (Joule)} = 0.1020 \text{ kpm} = 2.778 \times 10^{-7} \text{ kWh} = 2.389 \times 10^{-4} \text{ kcal} = 0.7376$$

$$\text{ft lb}_f = 1 \text{ (kg m}^2\text{)/s}^2 = 1 \text{ watt.second} = 1 \text{ Nm} = 1 \text{ ft lb} = 9.478 \times 10^{-4} \text{ Btu}$$

Force

$$1 \text{ N (Newton)} = 0.1020 \text{ kp} = 7.233 \text{ pdl} = 7.233/32.174 \text{ lb}_f = 1 \text{ (kg m)/s}^2$$

$$= 10^5 \text{ dyn} = 1/9.80665 \text{ kgf}$$

Length

$$1 \text{ m (meter)} = 3.2808 \text{ ft} = 39.37 \text{ in} = 1.0936 \text{ yd} = 6.214 \times 10^{-4} \text{ mile}$$

$$1 \text{ km} = 0.6214 \text{ mile} = 3281 \text{ ft} = 1094 \text{ yds}$$

Mass, weight

$$1 \text{ kg} = 1,000 \text{ g} = 2.2046 \text{ lb} = 6.8521 \times 10^{-2} \text{ slug}$$

Power

$$1 \text{ W} = 1 \text{ kg m}^2\text{/s}^3 = 1 \text{ Nm/s} = 1 \text{ J/s}$$

$$1 \text{ hp} = 745.7 \text{ W} = 0.746 \text{ kW} = 550 \text{ ft lb/s} = 2,545 \text{ Btu/h} = 33,000 \text{ ft lb/m}$$

$$= 1.0139 \text{ metric horse power} \approx 1.0 \text{ KVA}$$

Pressure

$$1 \text{ bar} = 103 \text{ Pa (N/m}^2\text{)} = 0.1 \text{ N/mm}^2 = 10,197 \text{ kp/m}^2 = 10.20 \text{ m H}_2\text{O} =$$

$$0.9869 \text{ atm} = 14.50 \text{ psi (lb}_f\text{/in}^2\text{)} = 106 \text{ dyn/cm}^2 = 750 \text{ mmHg}$$

Temperature

$$T(^{\circ}\text{C}) = 5/9(T(^{\circ}\text{F}) - 32)$$

$$0^{\circ}\text{C corresponds to } 32^{\circ}\text{F}, 273.16 \text{ K and } 491.69 \text{ R}$$

Thermal conductivity

$$1 \text{ W/(m K)} = 0.85984 \text{ kcal/(h m}^2\text{)} = 0.5779 \text{ Btu/(ft h}^2\text{)}^{\circ}\text{C}$$

Viscosity dynamic

$$\text{cP (Centipoise)} = 10^{-3} \text{ Pa s} = 0.01 \text{ P} = 1.020 \times 10^{-4} \text{ kp s/m}^2 = 6.721 \times 10^{-4}$$

$$\text{lb}_f\text{/ft s} = 0.00100 \text{ (N s)/m}^2$$

Viscosity kinematic

$$1 \text{ St (Stokes)} = 1 \times 10^{-4} \text{ m}^2\text{/s} = 100 \text{ cSt} = 1.076 \times 10^{-3} \text{ ft}^2\text{/s}$$

Volume

$$1 \text{ ft}^3 = 0.002832 \text{ m}^3 = 28.32 \text{ dm}^3 = 0.03704 \text{ yd}^3 = 6.229 \text{ Imp. gal (UK)}$$

$$= 7.481 \text{ gal (US)} = 1,728 \text{ Cu.in.}$$

Volume flow

$$1 \text{ m}^3\text{/h} = 2.7778 \times 10^{-4} \text{ m}^3\text{/s} = 0.2778 \text{ dm}^3\text{(litre)/s} = 9.810 \times 10^{-3} \text{ ft}^3\text{/s} =$$

$$0.5886 \text{ ft}^3\text{/min (cfm)} = 3.667 \text{ Imp.gal (UK) min} = 4.403 \text{ gal (US)/min}$$

TABLE 3. Information on Bushing Materials Used for High Temperature Service						
Material	Coefficient of Thermal Expansion (in./in. x 10 ⁻⁶)	Residual Stress at 1000°F	Self-Lubricating Properties	Repair Methods Available	Maximum Permitted Temperature to use in Service (°F)	Comments
BEARING BRONZE B2-19-10 Code 454	10.1	65 BHN (500 KSI)	Good	Fair	452	Most commonly used bushing material at Wabco.
MED-40N TE [®] CAST IRON Code 100	6.5	160 BHN (600 KSI)	Poor	Fair	352	Requires Break-In Coating that has good carrying ability.
18-8/20-10N CARBON Code 150	6.0	91 BHN (45-4 KSI)	Fair	Very Good	402	Normally requires 30 min. 10 to high temperature service. Standard bushing material in extreme acid pumps.
GLASS Code 300	2.0	5 Moh Scale	Very Poor	Very Good	302	Low thermal stress resistance. Normally requires shock 10 for high temperature service.
CARBON GRAPH-ITE Code 880	4.0	70-100 Scleroscope	Excellent	Excellent	302	Standard bushing material in a few pumps. Most frequently used material in pumps handling heat transfer liquids.
CARBON GRAPH-ITE High Temperature Code 892	1.0	70-100 Scleroscope	Excellent	Excellent	302	Carbon graphite material used when a shock 10 bushing is required. (See 150-3)

Engineered Pumps And Systems Specialist

FAST & QUALITY SERVICE



บริษัท สยามราช จำกัด (มหาชน)
SIAMRAJ PUBLIC COMPANY LIMITED

บริษัท สยามราช จำกัด (มหาชน)

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CAT.NO.SRC-A04-2015



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