



Accudyne Industries, LLC

Accudyne INDUSTRIES



Rotary Screw Air Compressors
Stationary
Portable
Air Dryers
Vacuum Fans



Metering Pumps
Centrifugal Pumps
Pneumatic Pumps
Hydraulic Actuated Pumps
Solenoid Driven Pumps



Centrifugal Pumps
Sealless Magnetic Drive Pumps
Centrifugal Compressors
Diaphragm compressors



API-610 OH6
API-617 Chap3

API-685

API-610

Arvada & Dijon



Eastbourne, UK



Illecas, Spain





Sundyne—Global Facilities to Meet Your Needs



● *Arvada, Colorado USA*

● *Dijon, France*
Eastbourne, England UK
Illescas, Toledo Spain



Sundyne History



- > 1905—The Rockford Milling Machine Company begins operations
- > 1926—The Sundstrand Machine Tool Company is formed
- > 1933—Sundstrand sells the first oil burner pump
- > 1946—HMD debuts the first magnetic drive sealless pump
- > 1957—Sundstrand develops the first water injection pump for the Boeing 707 aircraft
- > 1962—The first Sundyne high-speed centrifugal pump is developed for Shell Chemical
- > 1965—The first Sundyne high-speed centrifugal gas compressors is developed for Union Carbide
- > 1970—Sundstrand Fluid Handling established in Denver, Colorado USA. Dijon, France manufacturing plant developed. Nikkiso-Sundstrand Joint Venture started in Tokyo, Japan
- > 1971—Sunflo pumps developed for medium duty operations
- > 1972—First Ansimag pumps are developed
- > 1985—First API-610 sealless pumps developed at Sundyne
- > 1992—First Sundyne API-610 and API-685 sealless pumps
- > 2008—Marelli Bombas is acquired
- > 2010—Sundyne purchases 100% the joint venture from Nikkiso
- > 2012—Accudyne Industries is formed as Sundyne parent corporation



A legacy of innovation is enabling a customer centric future



Products

Applications Include:

- ▶ Feed, Overhead, Reflux, for Refining Process
- ▶ Desulfurization
- ▶ Loading Feedstock
- ▶ Chemical Production
- ▶ Feedstock for Polypropylene Manufacturing
- ▶ Washwater, Condensate, Waxy Oil for Refining
- ▶ Feedstock for Fertilizer Production

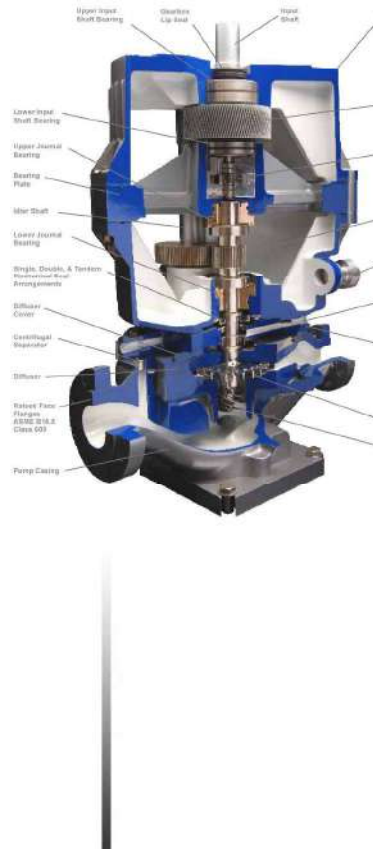
- Centrifugal Integrally Geared, Multi & Single Stage Pumps

API 610 ISO 13709

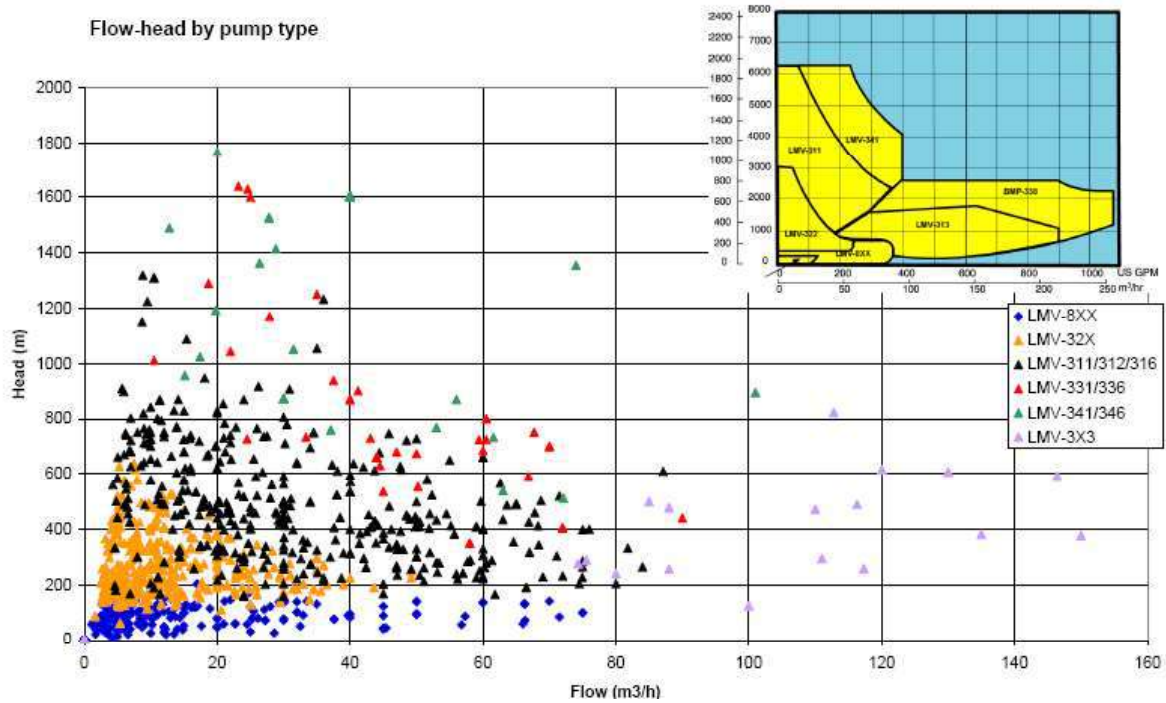




Sundyne Single Stage API610-OH6 Hydraulic Envelopes



Flow-head by pump type





SUNDYNE LMV PUMP SKID



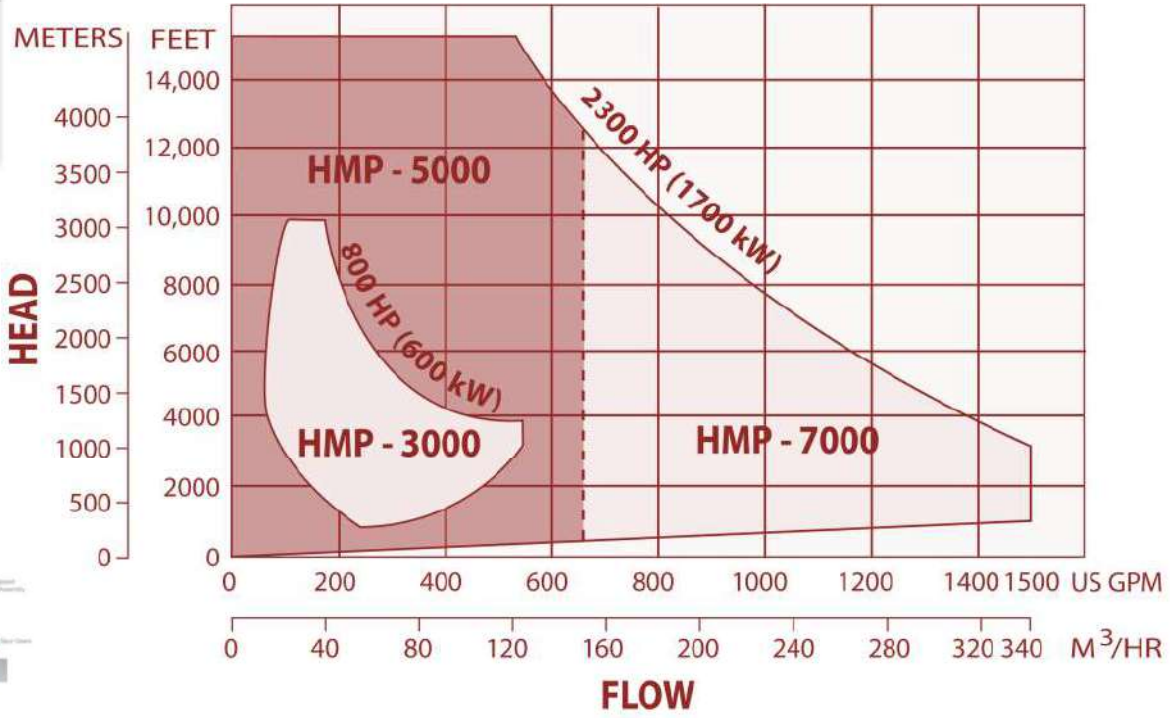
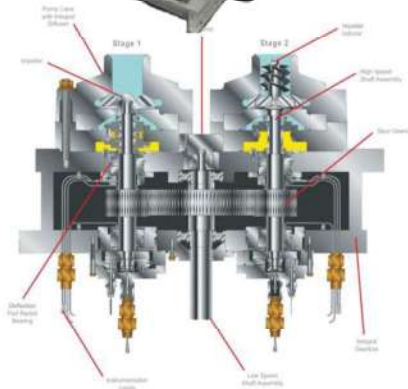


SUNDYNE LMV PUMP SKID





Sundyne Multi Stage API610-OH6 Hydraulic Envelopes





HMP-3512 skids



- HP Solvent Pump
 - 77 m³/hr@1635m
 - 388 kw
 - 7.9 m NPSHr
 - 55.6% Eff
 - 12300 rpm
 - 266 °C

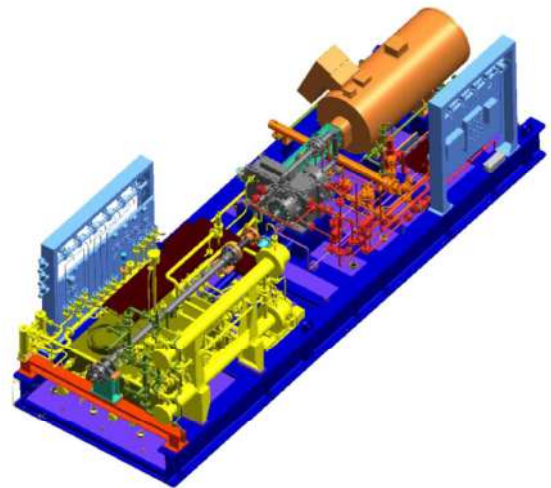




HMP-5212 Skids



- Wash Water
 - 72.6 m³/hr@1662m
 - 624 kw
 - 7m NPSHr
 - 52% Eff
 - 11626 rpm





Products



Centrifugal Integrally Geared Compressors

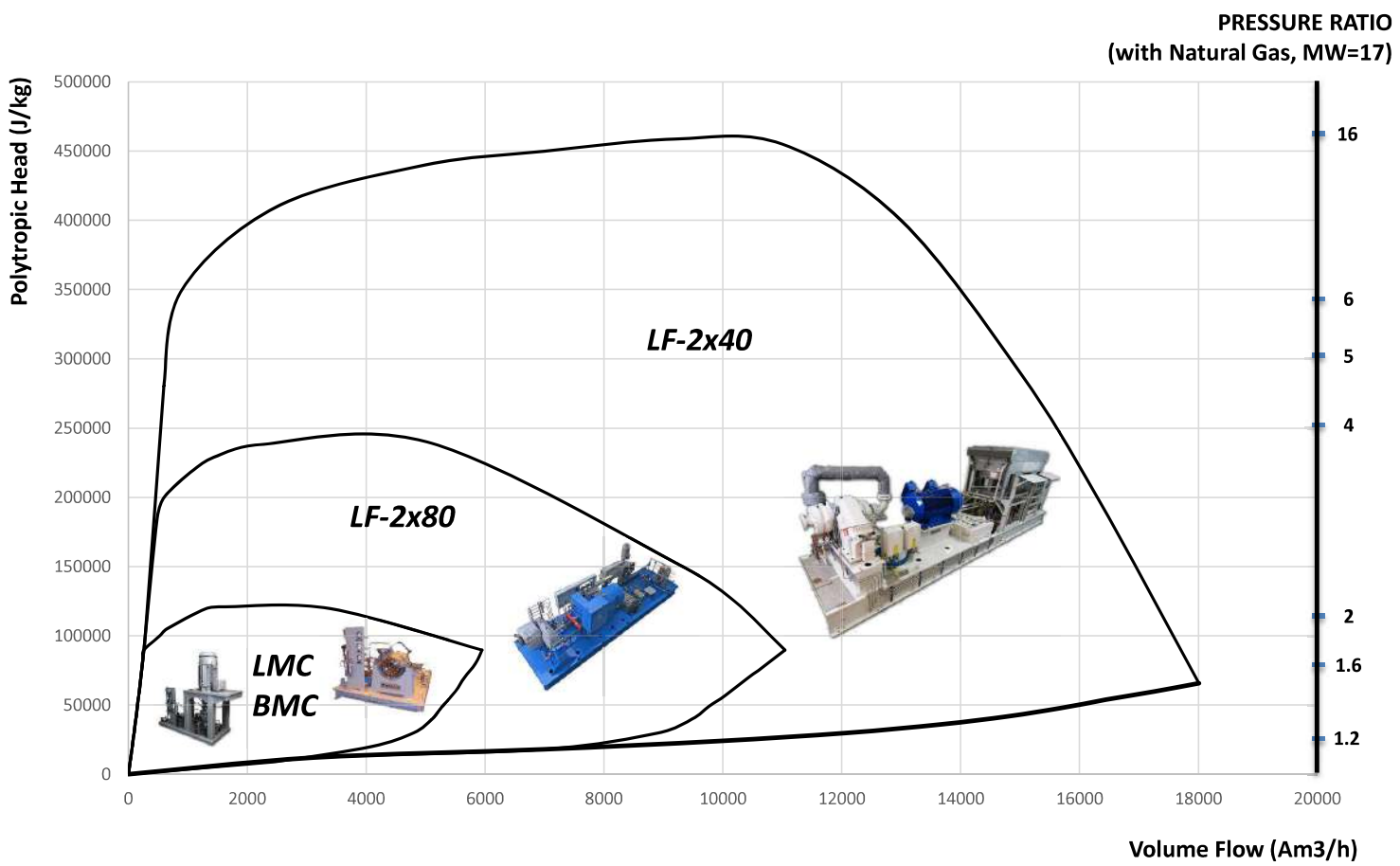
API 617, API 614



Applications Include:

- ▶ Hydrogen Feed for Refining
- ▶ Waste Gas Recycle
- ▶ Regeneration
- ▶ Natural Gas Production
- ▶ Hydrogen Recycle
- ▶ Lift Gas
- ▶ Polysilicon Production







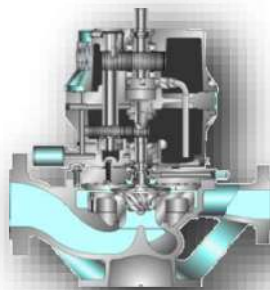
Sundyne Centrifugal Compressors



	LMC and BMC				Multi-Stage LF	
	3x1P	3x1F	3x3	3x7	LF-2x80	LF-2x40
Maximum Flow (Am ³ /h) (ACFM)	750 450	1,450 850	3,500 2,100	6,000 3,500	11,000 6,500	17,000 10,000
Speed (RPM)	6,000 to 34,000				5,000 to 32,000	5,000 to 50,000
MAWP (barg) (psig)	100 1,400				100 1,400	350 5,000
Maximum Power (kW) (HP)	410 550				600 800	7500 10,000
Temperature Range (°C) (°F)	-160 to 260 -260 to 500					



COMPRESSOR RANGE



LMC

BMC API

PINNACLE

Compliance to API-617

★

★★★★

★★★★★

Uninterrupted Operation

12 months
with Synthetic Oil

5+ years

5+ years

Max Number of stages

1

4

Maximum Speed

34000 RPM

50000 RPM

Typical Footprint

3,00 x 1,50 m

7,00 x 2,50 m

11,00 x 3,00 m

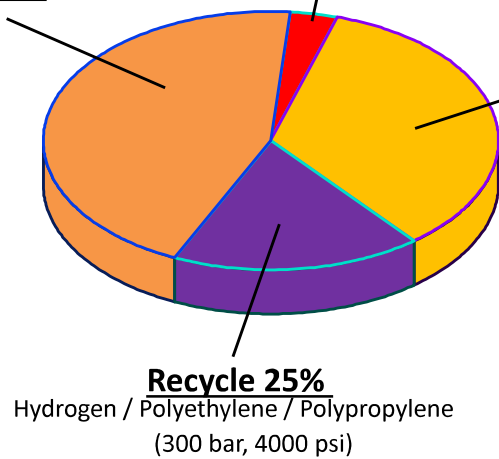


COMPRESSOR RANGE (On & Off shore) Experience by application



Regeneration 41%
(80 bar, 1200 psi)

Vapor Recovery 6%
(Atmospheric)



Other 28%

- Chlorine
- Ammonia
- HCl
- Natural Gas
- Lift Gas
- Fuel Gas
- Boil Off Gas
- Nitrogen
- CO₂

Recycle 25%
Hydrogen / Polyethylene / Polypropylene
(300 bar, 4000 psi)



*PROCESS EQUIPMENT INTEGRATION
2*LF2440 with Interstage Coolers & Scrubbers*





100 % H₂S Compressors—Sundyne Single Stage Vertical Integrally Geared Centrifugal LMC



Yamal LNG, 16.5 mmt/y



- 3 x LF-2230, Regeneration compressors
- 65000 kg/hr (1492 Am 3/hr) Methane
- 2 stages, MW= 17.4
- 56->68 bar(a)@46°C, 582kW, 13303 rpm
- -55°C ambient temperature
- CUTR compliance, 5 years operation



HOBATЭК



TOTAL



FLNG – 4-stage LF-2440 Package



- Off Gas Compressor
- 4-stage Pinnacle, LF-2440
- 26 253 rpm
- 23 t/hr
- MW= 38-48
- Suction: 6,45 Bar(a)
- Discharge: 65,35 Bar(a)
- Power requirement: 1,4MW
- 3-points AVM mounted,
- API-614 LO System,
- API-614 Seal System





FLNG - 4-stage LF-2440 Package





Products



Centrifugal Sealless Non-metallic & Metallic Magnetic Drive Pumps

API 685



ANSI



- ▶ Caustic Chemical Production
- ▶ Sour Water
- ▶ Hydrofluoric Acid
- ▶ Benzene
- ▶ Unrefined Gasoline
- ▶ Sour Water
- ▶ Sulfuric Acid in Refining Process
- ▶ Municipal Water Delivery

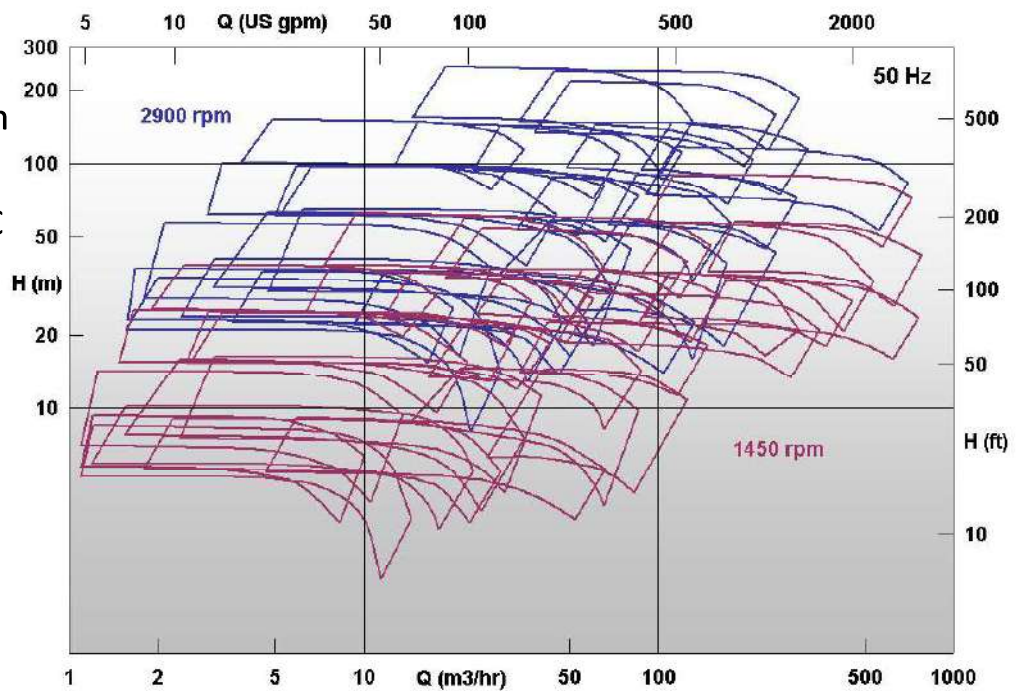
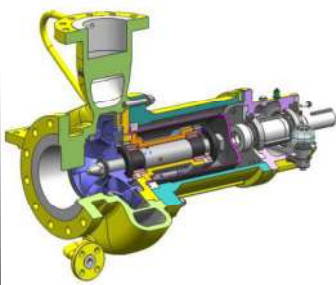








Sundyne Sealless API-685 GSP Hydraulic Range

50 Hz





- Flows to 700m³/hr
- Differential Heads to 250m
- Design Pressure 40 Bar
- Temperatures -40 to 315°C
- Solids 5% wt wt up to 150 microns
- Viscosity < 200 cps
- Materials: S5, A8, D1, Alloy C, Alloy 20.



50 Hz

	OH2:SMK	BB2:KSMK	BB1:LH	BB3:DVMX
PICTURE				
DESCRIPTION	<ul style="list-style-type: none"> • 1 stage • API 610 OH2 • Flow to 1800 m³/h • Head to 330 m 	<ul style="list-style-type: none"> • 1 to 2 stages • API 610 BB2 • Flow to 3000 m³/h • Head to 600 m 	<ul style="list-style-type: none"> • 1 stage • API 610 BB1 • Flow to 10000 m³/h • Head to 350 m 	<ul style="list-style-type: none"> • 4 to 14 stages • API 610 BB3 • Flow to 660 m³/h • Head to 1300 m
APPLICATIONS	<p>Refinery, chemical, petrochemical, floating production storage and offloading (FPSO) operations and floating liquefied natural gas (FLNG) facilities, Tank Farms, Pipeline booster stations</p>			

50 Hz

	VS4:VSMK	VS6: TKVB-FGB	VS2:FQ	VS1:FG
PICTURE				
DESCRIPTION	<ul style="list-style-type: none"> • API 610 VS4 • Vertical line shaft sump • Flow to 1800 m³/h • Head to 330 m • Length to 11 m 	<ul style="list-style-type: none"> • API 610 VS6 design • Vertical can pump • Flow to 3000 m³/h • Head to 1200 m • Length to 11 m 	<ul style="list-style-type: none"> • API 610 VS2 • Double suction impeller pump • Flow to 10000 m³/h • Head to 350 m • Length to 22 m 	<ul style="list-style-type: none"> • API 610 VS1 • Wet pit, multistage vertical suspended, casing diffuser pumps. • Flow to 3500 m³/h • Head to 350 m • Length to 15 m
APPLICATION	<p>Refinery, chemical, petrochemical, floating production storage and offloading (FPSO) operations and floating liquefied natural gas (FLNG) facilities, Tank Farms, Desalination plants</p>			