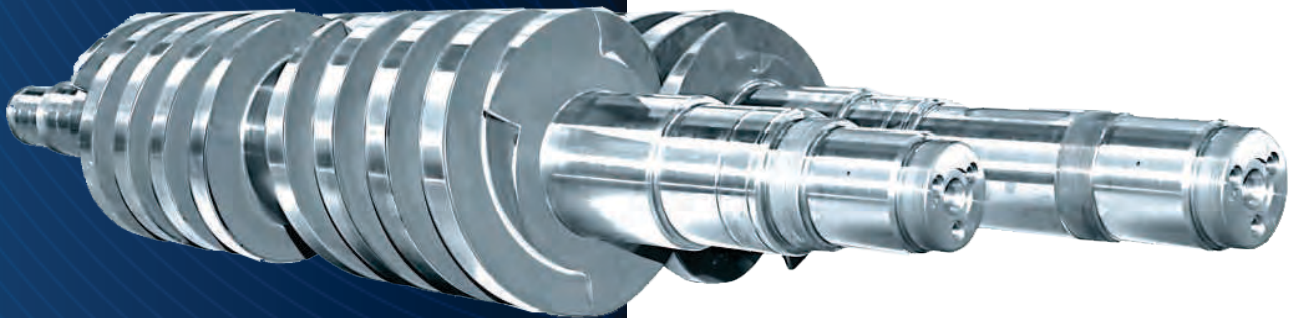


# **Dynapumps<sup>®</sup>**

DYNAMIC PUMP SOLUTIONS

## **Leistritz Screw Pumps for the Oil and Gas Industry**



# Company Profile

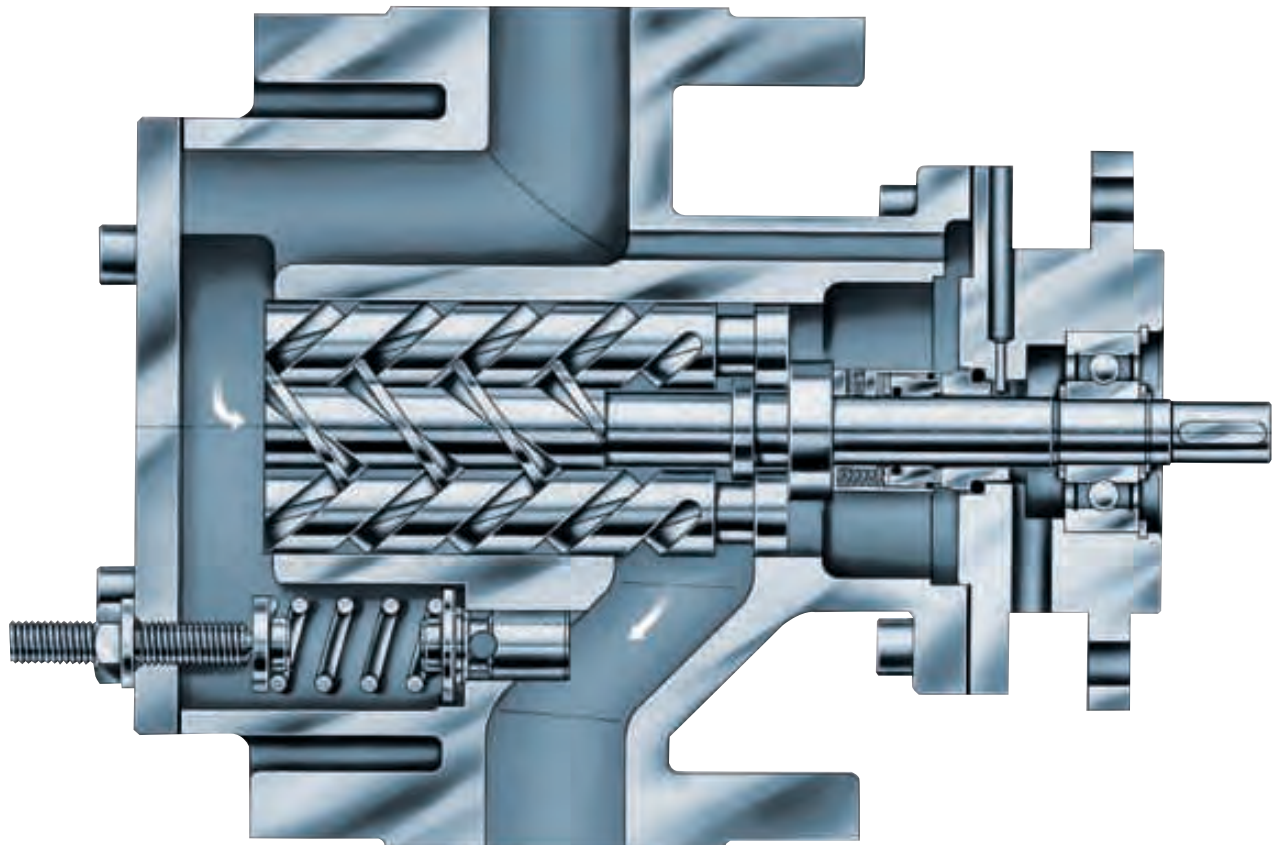
Pressure & Vacuum Pumps Specialist

## Vision

*To supply on time, high quality and recognised products to our clients as packaged equipment to their specifications with excellent after sales service and spares*

## Dynapumps Core Values

- Consulting with our clients to achieve satisfaction and improvement
- Training our staff to ensure high levels of competency
- Following the guidelines set down in our Quality, OHS and Environmental policies
- Providing high quality products at competitive prices
- Supplying service support to our clients for spare parts, programmed maintenance and repairs



# Australia Wide

With offices in WA, NSW, VIC and QLD, Dynapumps are equipped to supply nationally and internationally

## Dynapumps History

Dynapumps commenced operations in December 1981 selling pumps and pump systems to mining companies and manufacturers in Western Australia. The company was started by two directors and has grown from a staff of four to fifty with a substantial increase in assets.

Dynapumps now represents a wide range of internationally recognised pump companies and specialises in the supply of complete project packages for mining, oil & gas and water supply & water treatment markets.

### WESTERN AUSTRALIA

WA is the Head Office and has the largest turnover. It supports our central design and engineering office and has an integrated manufacturing and assembly plant. WA office is accredited to ISO9001:2008.

It processes all the other states accounting and has a main server with remote Citrix connection for the other offices and an offsite computer back-up system

### NEW SOUTH WALES

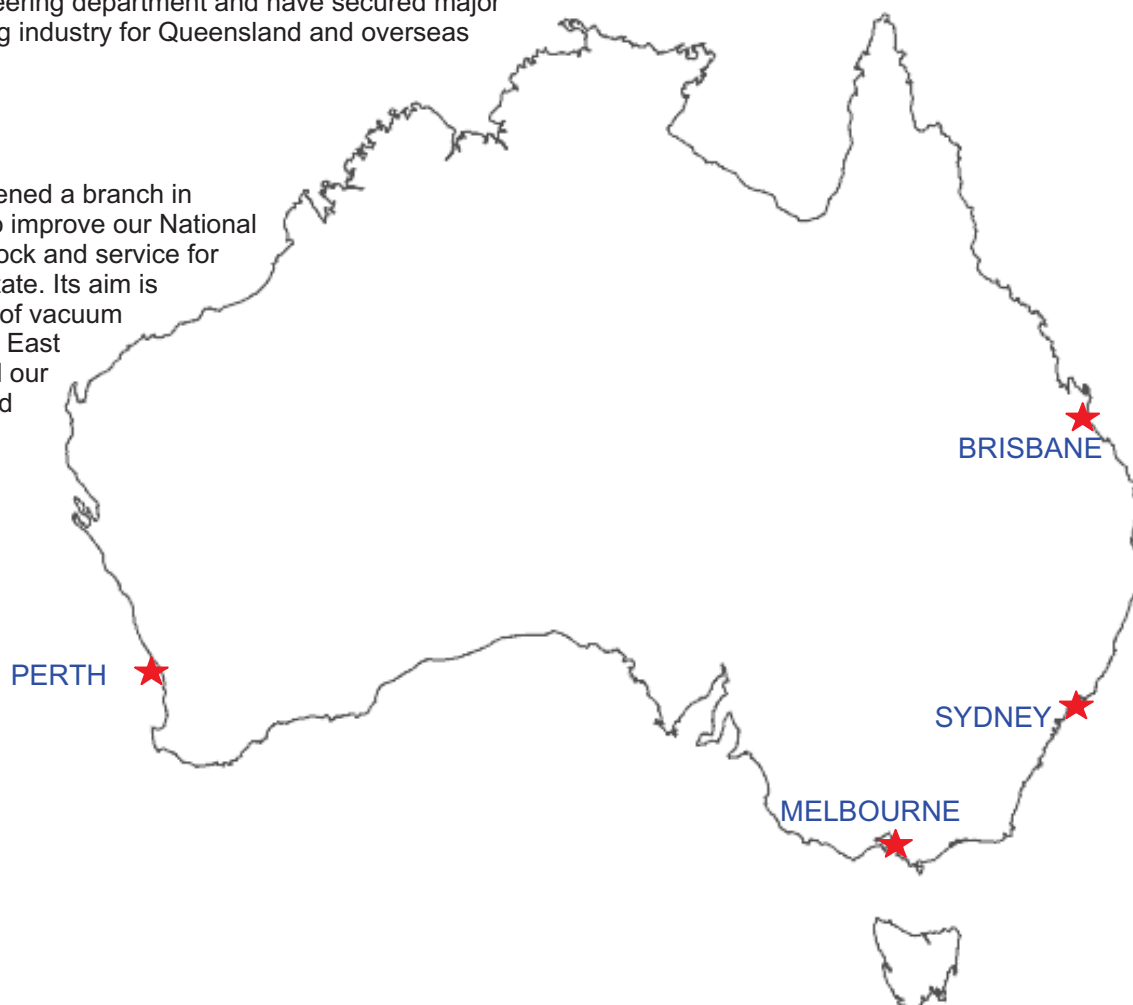
May 1995 we opened our NSW office on the East Coast of Australia. In July 2001 we commenced manufacturing our own brand of "Flo-Max" turbine, propeller and submersible borehole pumps. In 2010 the Flo-Max range was extended to cover submersible sewage pumps. Flo-Max pumps are sold for use in mining, oil & gas and water supply & water treatment markets as well as farm irrigation through their country distributors.

### QUEENSLAND

In November 2003 we opened a branch in Queensland to market our range of general pumps but in particular the range of metering pumps for the East coast of Australia. In 2005 we purchased our own premises in Yatala. They have their own engineering department and have secured major contracts in the mining industry for Queensland and overseas projects

### VICTORIA

In March 2006 we opened a branch in Melbourne, Victoria to improve our National coverage and offer stock and service for our products in that state. Its aim is to promote the range of vacuum pumps in particular to East Coast companies and our products in mining and oil & gas markets. In 2011 we purchased modern, larger premises in Thomastown.



# Company Information

Providing clients with complete engineered solutions for all their pressure and vacuum requirements

## Quality

Dynapumps is accredited to AS/NZS ISO 9001: 2008 and are audited annually by Bureau Veritas. We provide training for all our staff to ensure that they are aware of and capable of implementing our Quality System



## OHS

Dynapumps has implemented an Occupational Health and Safety program to comply with Worksafe requirements. We will revise our system to comply with the new Safe Work Australia legislation as of 1<sup>st</sup> January 2012.



## Environmental

Dynapumps is committed to ensure that we follow Government legislation for the protection of our environment and this is conveyed to all staff for their implementation.

## Associations

Dynapumps has joined a number of organisations to better understand our clients and their needs. These memberships also provide further learning opportunities for our staff.



Australian Petroleum Production and Exploration Association



Australian Drilling Industry Association



Water Industry Operators Association of Australia



Chamber of Commerce and Industry Western Australia



Vacuum Society of Australia



Pump Industry Australia



## SolidWorks3D™

Dynapumps have invested in the latest in 3D technology to support our customers who are dealing regularly with multi-million dollar projects. Efficiency, cost containment and time are more crucial than ever, engaging with suppliers with SolidWorks3D™ capabilities can offer businesses a distinct advantage. Listing BP, Chevron, Woodside and many well known Oil & Gas consultants amongst our clientele, our drawings

integrate seamlessly into their systems in any number of drawing formats. Our clients have benefited from the notable reduction in fabrication costs, which has resulted from the ability to more thoroughly check the systems in 3-dimensional format.



On balance, SolidWorks3D™ has presented the opportunity for the engineering team at Dynapumps to fully harness their technical expertise and skills and as a result, the designs being received by our clients are more innovative, accurate and cost efficient.



# Leistritz Screw Pumps

## Screw Pumps for the Oil and Gas Industry

### LEISTRITZ Screw Pumps and Systems

Leistritz Pumpen GmbH, with its headquarters in Nuremberg/Germany, has been producing Screw Pumps since 1924. The first Leistritz Screw Pump was developed by Paul Leistritz as Main Lube Oil Pump for bearings of steam turbine generator sets.

With the widest product range of Screw Pumps, Leistritz offers today complete pump packages, being a perfect partner for the Oil & Gas sector. Latest technology in combination with strictly controlled quality is the basis for the globally recognized efficiency and reliability of Leistritz Screw Pumps.

#### L2-Series:

for light corrosive and abrasive, low and high viscous fluids with poor lubricity, for low pressure ranges.



#### Operating Data:

Flow rate	max. 390 m <sup>3</sup> /h
Pressure	max. 16 bar/232 psi
Viscosity	max. 100,000 mm <sup>2</sup> /s
Temperature	max. 280°C

#### L3N-Series:

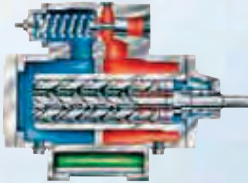
for low viscous fluids with good lubricity, for low pressure ranges.



Flow rate	max. 720 m <sup>3</sup> /h
Pressure	max. 16 bar/232 psi
Viscosity	max. 15,000 mm <sup>2</sup> /s
Temperature	max. 180°C

#### L3M/H-Series:

for low or high viscous fluids with good lubricity, for medium or high pressure ranges.



Flow rate	max. 240 m <sup>3</sup> /h
Pressure	max. 160 bar/2320 psi
Viscosity	max. 10,000 mm <sup>2</sup> /s
Temperature	max. 180°C

#### L3V/U-Series:

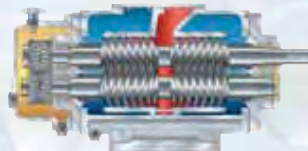
for low viscous fluids with good and poor lubricity, for very high pressure ranges.



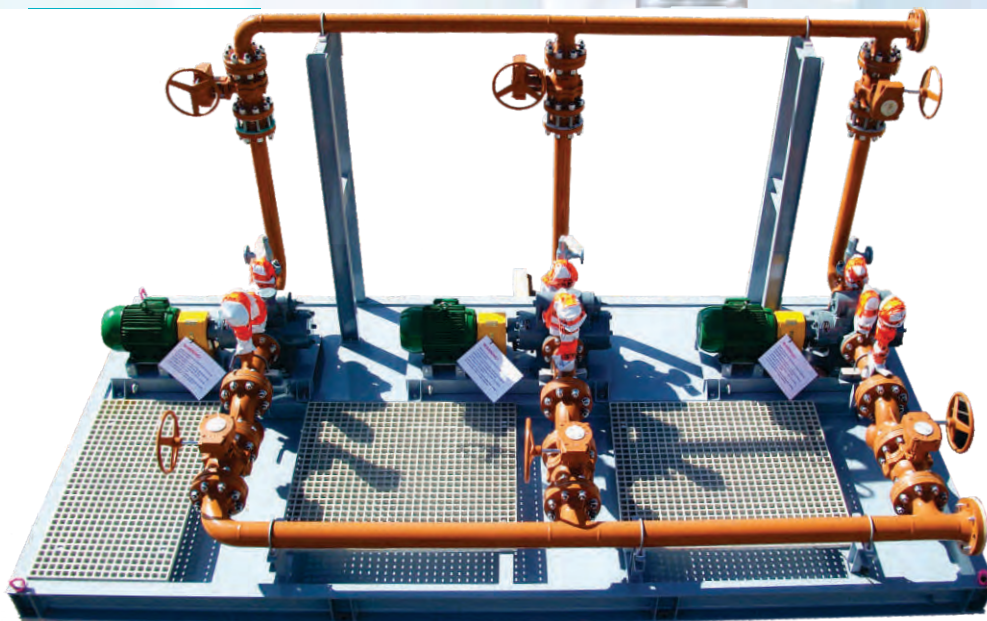
Flow rate	max. 180 m <sup>3</sup> /h
Pressure	max. 260 bar/3770 psi
Viscosity	max. 1,000 mm <sup>2</sup> /s
Temperature	max. 180°C

#### L4-Series:

for corrosive, abrasive and low viscous fluids with poor lubricity, for high pressure ranges.



Flow rate	max. 4,000 m <sup>3</sup> /h
Pressure	max. 100 bar/ 1450 psi
Viscosity	max. 100,000 mm <sup>2</sup> /s
Temperature	max. 300°C



# Leistritz Screw Pumps

## Production



Leistritz Multiphase Pumps and Systems are globally used for handling untreated well flow with gas volume fractions (GVF) between 0 and 100 %, flow rates up to 4000 m<sup>3</sup>/h and differential pressures up to 100 bar.

With the multiphase pump as the heart of the system, the scope of supply includes skid type baseframes, drivers, instrumentation, on-skid piping with valves, auxiliary systems and control equipment.

The pumps can be driven by electric motors, diesel engines, gas engines or turbines. Leistritz Multiphase Pump Systems are designed to operate under severe ambient conditions in remote locations onshore, on offshore platforms and subsea.

### 1 Leistritz Multiphase Booster Pump L4

The untreated well flow is boosted by Leistritz Multiphase Pumps, series L4, to a central treatment facility. With their ability to work at low suction pressure along with a high differential pressure capability, Leistritz Multiphase Pumps are ideal for applications on marginal and declining oil fields. External liquid management systems guarantee trouble-free operation in case of extended slug flow periods.



1 Multiphase Booster Pump L4MK

### 1 Leistritz Multiphase Pump L4 with Thermal Insulation

Leistritz Multiphase Pumps with insulation are used for applications where the systems are installed outside under severe ambient conditions. The insulation of the pumps, the piping and the instrumentation along with heat tracing ensures trouble-free operation in case of sudden frost or low temperature periods during the winter months.



1 Multiphase Pump L4HK with Thermal Insulation

### 1 Leistritz Multiphase Pump L4 on Offshore Platforms

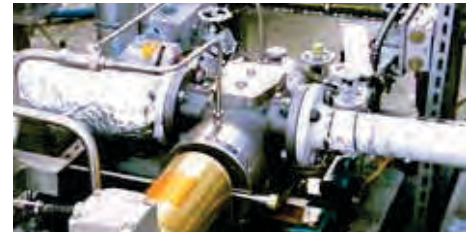
Based on their small footprint and low weight, Leistritz Multiphase Pump Systems are particularly suitable for the installation on offshore platforms. The skid design and the arrangement of the accessories can be adapted to the available space on large production platforms or small wellhead platforms.



1 Multiphase Pump L4HK on an Offshore Platform

### 2 Leistritz Chemicals Handling Pump L4

During the separation, the MEG/TEG is taken out of the gas and re-injected into the well. Leistritz Screw Pumps, series L4, are used in the separation process and for returning the anti-freezers to the injection tank.



2 Chemicals Handling Pump L4NG

### 3 Leistritz Produced Water Pump L4

Formation water or injected water are usually produced along with oil and gas from a well or well cluster. The so called produced water is separated and treated to minimize the final oil and solids content. Leistritz L4 Pumps are used to re-inject the produced water into the reservoirs to force the oil to the surface.



3 Produced Water Pump L4NG

### 4 Leistritz Slops & Drains Pump L4

Slop and drain systems are used to collect leakages and drainages from stationary or rotating equipment in upstream production facilities. The systems can be open or closed. Horizontal or vertical Leistritz L4 Pumps are used to transfer these mixtures of water, hydrocarbons and solids to separators or to re-inject into the trunk line.



4 Vertical Slops & Drains Pump L4NT

# Leistritz Screw Pumps

## Crude Transfer



The separated crude is stored on production site before transport. From storage, the crude oil will be either pumped through a pipeline to the refinery or transferred onto ships, railcars or trucks. In order to operate crude storage facilities safe and reliable, Leistritz Screw Pumps are used for crude transport and cleaning.

### 1 Leistritz Crude Circulation Pumps L3 and L4

Settlement of wax and other substances on the inside surface is reducing the nominal diameter of crude oil pipelines on production side. Leistritz Screw Pumps are employed to flush the pipework with crude oil from the storage tanks on a regular base. Beside Leistritz L4-series Pumps, L3-series with screws and liners of special design are used in many applications.



1 Crude Circulation Pump L3HG

### 2 Leistritz Pipeline Start-Up Pumps L3 and L4

High pressure Triple Screw Pumps, series L3, or high pressure Twin Screw Pumps, series L4, are installed as pipeline start-up pumps. These pumps are required when the main pipeline pumps cannot overcome the friction losses during start-up of a crude oil pipeline. Leistritz serves applications with up to 100 bar boost pressure.



2 Pipeline Start-Up Pump L4HK

### 3 Leistritz Crude Transfer Pumps L2, L3 and L4

For pumping crude oil through pipelines to a refinery or to ships, railcars or trucks, crude oil transfer pumps are required. Leistritz Screw Pumps are capable of handling wide viscosity and pressure ranges at flow rates up to 4000 m<sup>3</sup>/h. Screw Pumps, series L4, are typically used as crude oil transfer pumps. L3-series Triple Screw Pumps and L2-series Twin Screw Pumps are used for special transfer applications.



3 Crude Transfer Pump L2NG

### 4 Leistritz Crude Stripping Pump L4

Large crude oil transfer pumps with big port sizes are not particularly suited to empty storage tanks completely. Smaller Leistritz Screw Pumps, series L4, either in submerged design or dry mounted, must be used. With their excellent suction capability they remove heavy products with high viscosity and high solids content from the bottoms of the storage tanks. A special screw design along with a wide range speed control reduce the NPSH<sub>R</sub> values of these pumps to a minimum.



4 Crude Stripping Pump L4NG

### 5 Leistritz Tank Cleaning Pump L4

Crude oil storage tanks must be cleaned on a regular base. Leistritz Screw Pumps, series L4, handle these often high viscous residues consisting of heavy oil sludge and solids. Special Tungsten Carbide coating of the screws and Stellite coating on the liners protect the pumps against excessive wear and increase the service life considerably.



5 Tank Cleaning Pump L4NG

# Leistritz Screw Pumps

## Transport and Storage

The crude oil must be transported from the production site to the final destination or refinery. This is usually done by pipelines using booster pumps and pump stations. Alternatively the crude can be transported by ship, truck or railcar if no direct connection to the refinery is available. In those cases the crude oil is stored for a short time before being finally shipped/transported.

### 1 Leistritz On-Board Crude Cargo Pumps L4

Different unrefined crude oils are handled by Leistritz Screw Pumps. Leistritz L4- and L5-series Pumps are typically used. They are available in submersible design or as deck mounted units. They can also operate as stripping pumps.



1 Crude Cargo Pump L4NG

### 2 Leistritz Crude Loading/Unloading Pumps L2 and L4

Loading and unloading of crude oil from trucks, railcars or ships are typical applications for Leistritz Screw Pumps, series L2 and L4. These pumps have the ability to run dry (L2 and L5 with time limitation). They are self-priming and can handle a certain amount of solids.



2 Crude Unloading Pump L2NG

### 3 Leistritz Crude Booster Pump L3

Leistritz high pressure Triple Screw Pumps, series L3, are well suited for pipeline booster applications in pumping stations. Due to their design, the pumps can handle crude oil with a wide range of viscosities and generate high differential pressures even when pumping very light crudes.



3 Crude Booster Pump L3HG

### 4 Leistritz Onshore Crude Transfer Pumps L3 and L4

Leistritz Screw Pumps, series L3, are used to transfer both light and heavy crude oil to different storage facilities. L4 series Pumps are installed for higher flow rates up to 4000 m<sup>3</sup>/h.



4 Crude Transfer Pump L3MG

### 5 Leistritz Crude Stripping Pump L4

The product remaining on the bottom of the crude storage tanks is normally heavy, high viscous and contains solids. Low speed Leistritz Screw Pumps, series L4, with excellent suction capabilities and the ability to run dry are preferred for tank stripping. Variable speed operation along with a special screw design guarantee excellent NPSH<sub>R</sub> values.



5 Crude Stripping Pump L4NG

### 6 Leistritz Crude Circulation Pumps L2, L3 and L4

The crude oil stored in the tanks must be circulated to avoid separation and to maintain the temperature. Additionally, the system pipework must be regularly flushed to prevent the adhesion of wax or other substances reducing the nominal diameter. Leistritz Screw Pumps, series L2, L3 and L4, are used to circulate the product through the system pipework and/or heaters.





# Leistritz Screw Pumps

## Refineries

The unprocessed crude oil has to be refined into consumable petroleum products. These refined products are usually grouped into three categories: Light distillates (LPG, gasoline, naphtha), medium distillates (kerosene, diesel) and heavy distillated/residues (fuel oil, lubricating oils, wax, tar). From unloading the unprocessed crude to loading of the final products, Leistritz Screw Pumps are operating in various services in oil refineries.

### 1 Leistritz Crude Unloading and 7 Final Product Loading Pumps L2 and L4

Various types of crude oil must be unloaded from railcars or pumped from the onshore production site to the refinery. The final products are loaded onto ships, railcars or trucks. For both services Leistritz Twin Screw Pumps, series L2 and L4, are the preferred choice because of their high flow rates and self-priming, dry-running and solids handling capabilities.



1 7 Unloading and Loading Pump L4NG

### 2 Leistritz Crude Charging Pumps L2 and L4

Leistritz Screw Pumps transfer and charge the crude oil to the various processes of the refinery. All Leistritz Screw Pump series can be used, however, Twin Screw Pumps of the L2- and L4-series are preferably used because of their ability to handle larger solids in the product, which offers an extended MTBF.



2 Crude Charging Pump L4NG

### 3 Leistritz Atmospheric Tank Bottoms / Vacuum Residue Pump L4

The tank bottoms from the atmospheric distillation vessel must be transported to the vacuum distillation vessel. After distillation the vacuum residues are transferred to the de-asphalting process for the production of asphalt, bitumen, wax and fuel oil. These hot bottoms and residues are usually pumped with Leistritz Screw Pumps series L4, which are designed to handle large solids at temperatures up to 320°C. The low NPSH<sub>R</sub> values of the Leistritz Twin Screw Pumps, series L4, allow a higher reactor vacuum and hence, an improved reactor efficiency.



3 Vacuum Residue Pump L4MG

### 4 Leistritz Slops & Drains Oil Pumps L2 and L4

Various drains and waste hydrocarbons must be pumped to the separator station of a refinery. All Leistritz Screw Pump series can be used. Twin Screw Pumps of the L2- and L4-series are primarily installed because of their solids handling abilities.



4 Slops & Drains Oil Pump L2NG

### 5 Leistritz Blending / Final Product Transfer Pumps L2 and L4

The clean or blended refined products are transferred to the export tanks. High viscous liquids as heavy fuel oil, paraffin, wax, asphalt, bitumen, base oil and molten sulphur as well as light products are handled by Leistritz Screw Pumps of all series. Twin Screw Pumps of the L2- and L4-series are mainly used because they tolerate large solids in the pumped product, which offers an extended MTBF.



5 HFO Blending Pump L2NG

### 6 Leistritz Circulation Pumps L2 and L4

Particularly high viscous products (e.g. asphalt/bitumen) have to be circulated in the storage tank to guarantee homogeneous product quality in all tank levels. The circulation of these hot, viscous hydrocarbons is usually done by Leistritz Twin Screw Pumps, series L2 and L4.



# Leistritz Screw Pumps

## Distribution and Storage



To link Upstream facilities, where mainly natural resources are explored and produced, with Downstream facilities like refineries or petrochemical plants and final distribution, Transport & Storage of a large variety of Oil & Gas products is required. Rising domestic energy consumptions versus only single resourcing spots make it necessary to have Distribution & Storage facilities which could serve worldwide demands. Oil trading centers and international petrochemical hubs are usually large oil storage capacities as a basis of global Oil & Gas logistics.

Leistritz Screw Pumps are used in various worldwide operating tank terminals. Special low pulsation and low NPSH profiles of the internal rotating parts combined with the typical character of positive displacement pumps like the proportional dependence of pump speed and capacity makes Leistritz Screw Pumps the ideal partner for terminal operations.

### 1 Leistritz On-Board Unloading Pump L4

Various types of oil products are unloaded from ships, railcars and trucks. The preferred pump for these applications is the Leistritz L4-series with the capability of handling large solid particles contained in the pumped products. The pumps are operating with nitrided screws manufactured from single piece bar stock, which offer an excellent service life. The pump liner is replaceable.



1 Unloading Pump L4MG

### 2 Leistritz Circulation Pump L4

It is particularly important to maintain a homogeneous product quality with constant viscosity over the entire tank volume. To reach this target, Leistritz Screw Pumps, series L4, are installed for the circulation of the stored tank products.



2 Circulation Pump L4MG

### 3 Leistritz Loading and Transfer Pump L4

A variety of oil based products are transferred from the storage tanks to ships, railcars and trucks for transportation to the end users. Leistritz Screw Pumps, series L4, with their excellent suction capability and low pulsation are used in these applications. The pumps handle viscosities up to more than 3000 mm<sup>2</sup>/s. A special screw design guarantees very low NPSH<sub>R</sub> values. Flow rates up to 4000 m<sup>3</sup>/h permit short loading periods resulting in low port fees for ocean going vessels.



3 Loading and Transfer Pump L4NG

### 4 Leistritz Stripping Pump L4

The product remaining on the bottom of the storage tanks is normally heavy, high viscous and contains solids. Low speed Leistritz Screw Pumps, series L4, with excellent suction capabilities and the ability to run dry are preferred for tank stripping. Variable speed operation along with a special screw design guarantee excellent NPSH<sub>R</sub> values.



4 Stripping Pump L4NG

# Leistritz Screw Pumps

## Special Applications



1 Compressor Lube and Seal Oil Pump L3

### 1 Leistritz Screw Pump L3 for Gas Compressors

Produced gas must be moved from the production site to the final consumer. Large compressors are used for this service. For their lubrication and sealing systems, Leistritz Screw Pumps, series L3, are the preferred choice.



2 Auxiliary Lube Oil Pump L3MF

### 2 Leistritz Main Lube Oil-, Auxiliary Lube Oil- and Emergency Lube Oil Pumps L2 and L3

All types of compressors need constantly sufficient lubrication. Leistritz Twin Screw Pumps, series L2 and Triple Screw Pumps, series L3, are installed as compressor lube oil pumps.

Semi-submersible pump designs or dry mounted versions on common lube oil consoles are available in API or non-API versions.



3 Reduction Gear Lube Oil Pump L3MG

### 3 Leistritz Reduction Gear Lube Oil Pumps L2 and L3

Reduction gears are installed to adapt the speed between compressors and their drives.

Leistritz Triple Screw Pumps, series L3N/M, and Leistritz Twin Screw Pumps, series L2, are used for lubrication of the reduction gears.



4 Seal Oil Pump L3HF

### 4 Leistritz Seal Oil Pump L3

All compressors have to be sealed against gas leakage. In case of oil lubricated mechanical seals Leistritz Triple Screw Pumps, series L3M/H, are used to transport seal oil.

# Leistritz Screw Pumps

## Quality Assurance - Customer Service

### Oil- and Water- Test Fields

- 5 Test Stands
- Power max. 3 MW
- Computer Controlled Recording of Measurement Reading
- Large volume tanks allow Long Testing Periods

### Quality Assurance

Leistritz Quality Assurance concentrates on compliance with highest quality standards.

- Use of latest CMM Technology
- Constant Monitoring of all Manufacturing Processes for Tight Tolerances
- Low Life Cycle Costs for Economical Pump Use

Leistritz Pumpen GmbH is certified according to:

- DIN EN ISO 9001:2000
- DIN EN ISO 14001:2005
- OHSAS 18001
- RS Supervisor
- ROSTECHNADZOR
- GOST-R
- GOST-K



Leistritz Multiphase Pump system on the Test Field



An Overview of current Leistritz Certificates



Monitoring of all Manufacturing Processes

## Dynapumps Customer Service - Quality Assurance

### Quality Assurance

- Quality Management System based on ISO 9001 : 2008
- Qualified welders and fitters
- Welding undertaken to Australian and International standards.
- Performance testing to Australian and International standards on our in house test facilities

### Customer Service

- Systems designed and manufactured in house
- Non destructive testing at certified labs by certified inspectors
- Load testing and stress relieving of skids provided
- In house test facilities
- Onsite service and commissioning



[www.dynapumps.com.au](http://www.dynapumps.com.au)

**Australia-Wide  
1300 788 579**

