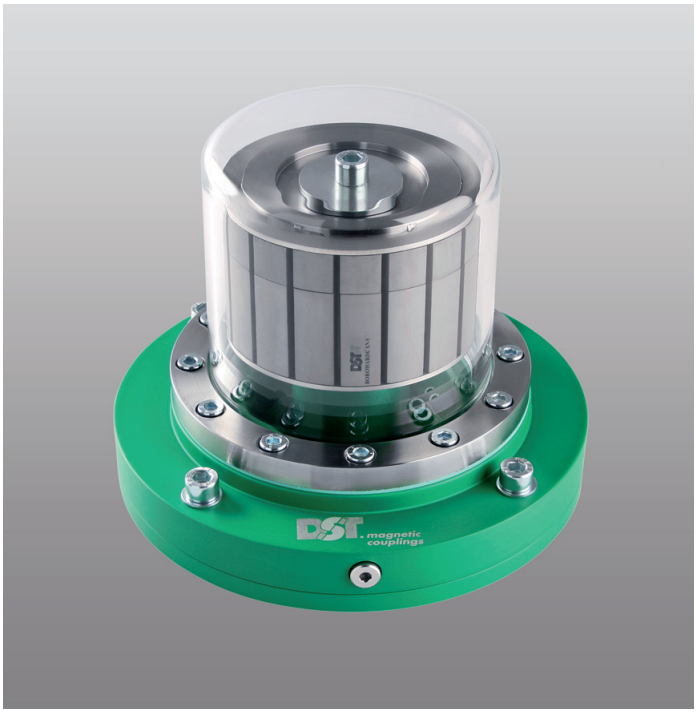


The BOROHARDCAN® does not produce any eddy currents and therefore no heat development. That is why engineers can make the dimensions of the individual components smaller than ever (smaller coupling and smaller drive motor), compared to other canister solutions.

Depending on the model, power savings of up to 30 % can be achieved by using this patented technology in comparison to a stainless steel canister (Hastelloy). This not only reduces the general investment costs, but also energy costs in later operation. Furthermore, the BOROHARDCAN® in the NeoMag® pump enables a maintenance-free operating life of 45,000 operating hours and more. This means that customers save on maintenance work, as it is no longer necessary to inspect and replace the seal. The NeoMag® comes standard with soft start. This prevents the machine from overloading, hence also protecting the device.

The NeoMag® is designed for medium temperatures of up to 180 °C. Because it is ATEX-certified and it fulfils the Technical Instructions on Air Quality Control, it can also be used in areas with an explosion hazard. This aggregate is available in the pressure ranges PN10 and PN16 for a flow rate from 3 to 100 m³/h and for a flow height of up to 60 m.

The NeoMag®'s pump impeller and the housing components have been developed and designed in a 3D CAD process based on the latest findings in fluid and hydraulic technology.

The range of uses for this pump include applications in the chemical and pharmaceutical industry, in general process engineering, in general industrial uses, in biotechnology, in the petrochemical industry and in water management.

**Beinlich Pumpen GmbH**
**Gewerbestr. 29**
**D-58285 Gevelsberg**
**Phone +49 (2332) 5586-0**
**Fax +49 (2332) 5586-31**
**info@beinlich-pumps.com**
**www.neomag-pump.com**

# They just keep on running

## Screw pumps in use for highly viscous fluids

The hydraulic characteristics over an entire viscosity range in chemical processes make screw pumps the positive-displacement pump of choice. The high suction ability and gentle handling of the pumped fluids are the outstanding features of this type of pump.

Based on Leistritz's many years of experience, different operation modes and pump designs were investigated and analysed together with the plant engineering division of a global chemicals company. They ultimately decided for the L2 pump to be the right model for the demanding applications. This type of pump has been in use in chemical plants since the 1960ies. To this very day, you will still find these Leistritz pumps in operation with close to 300,000 running hours.

Extensive development work, using flow tests with plexiglas models, proved the use of screw pumps in areas with viscous, abrasive, aggressive and poorly lubricating fluids.

### Modular system

The L2 pumps have a modular design and allow for different executions by combining various individual components. This means that they can handle any practical process environment. As example an

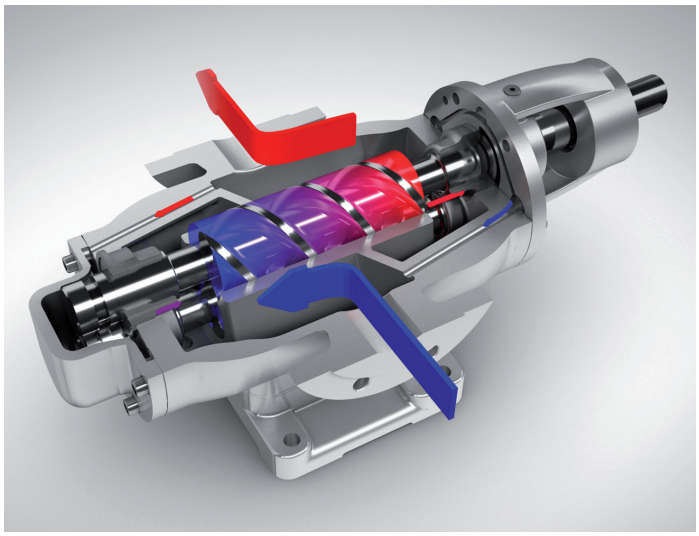

*Fig. 1: Screw pump type L2*

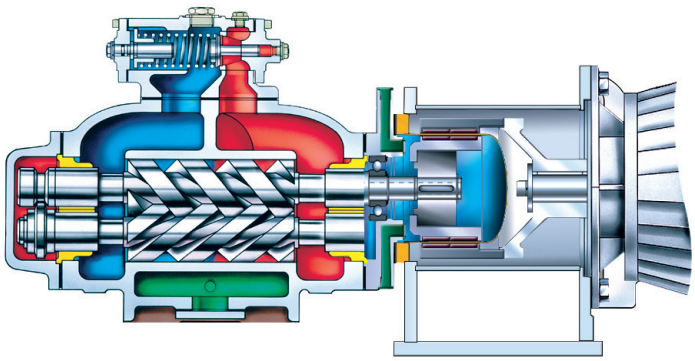

*Fig. 2: Cross-sectional drawing of screw pump type L2NG with magnetic coupling*

L2 type pump was designed and manufactured with special materials for a polyether project in a West German chemical plant. The stainless steel bearing bushings were manufactured with a special ceramic coating. The pump was made suitable for a broad viscosity ranging from 1 mPas to 30,000 mPas. That allowed for easy flushing, as well as transporting the highly viscous media. The spindles were made in chromium steel with a ceramic coating on the bearing journals. This combination allows the pump to operate in extreme conditions and extend its service life substantially.

A further advantage with this type of pump is to operate with reversed flow direction providing the possibility of completely draining the suction line with the same pump.

**Compliance with TA-Luft (German Technical Guidelines on Air Quality Control)**

By selecting special arrangements and materials, the pumps comply with the latest regulations of TA-Luft (requirements on sealing systems for environmentally-harmful media to keep the air clean). The gasket material is usually PTFE in chemical applications. Double-acting mechanical seals with complete barrier system as well as the hermetically sealed design with a magnetic coupling are the most common shaft sealing systems. Illustrated sectional drawing of an L2NG with magnetic coupling. When designing the pump Leistritz cooperated closely with the plant engineers as well as with the operator's quality and material departments. As example, at the foundry the pump casing was tested ultrasonically to identify any porosity or inclusions. Up to now only a chemical analysis (spectrometer) and mechanical tensile tests was done at the foundry. As a result the foundry received an approval test certificate 3.1 pursuant to DIN EN 10204. The ultrasonic test guaranteed that no porosity would be detected during machining of the casing.

**Extensive testing**

A joint acceptance test with the plant engineers and operators was carried out in Nuremberg on the pump test bench. The complete test arrangement was set up separately and the pump was tested with the real fluids provided by the operator. The pump was once again put through various test cycles with different operating and test parameters. Following the successful test run, the pump was subject to a special acceptance procedure:

– completely dismantled, cleaned (free from oil and grease), dried and immediately reassembled,
– sealed with blind flanges,
– filled with nitrogen (incl. recording pressure tests acc. to customer specifications) and thus guaranteed to be 100 % leak-proof and compliant with TA-Luft.

After installation in the plant the pump was commissioned together with the local Leistritz engineer as well as the operators and the maintenance team. Commissioning work at a chemical plant is subject to strict safety regulations and was performed according to the agreed upon schedule and installation plan. Thanks to good preparation and groundwork, the commissioning of the pump and its subsequent transfer to the production process went without issues. Based on experience of the low failure ratio of the quality products from Nuremberg, only a minimum number of spare parts was stocked. When pumps are run in the specified normal operation, no outage is scheduled until the regular plant inspection every

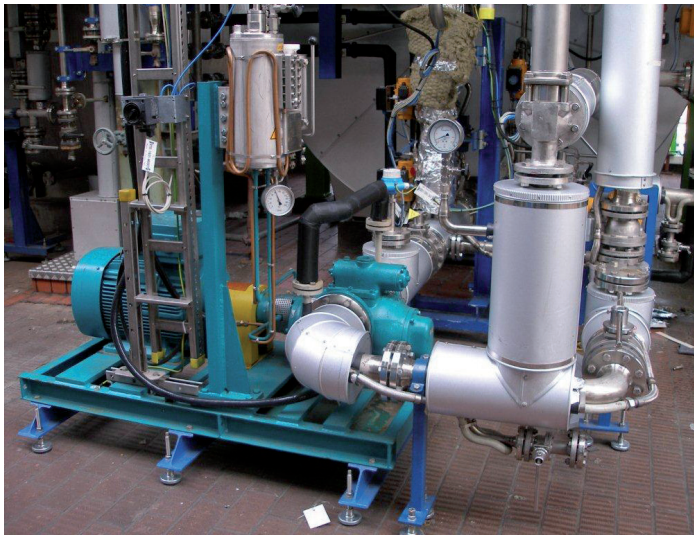

*Fig. 3: The pump is thus suitable for a broad viscosity range from 1 to 30,000 mPas*

two years. With the good cooperation and experience of the end-user, a further large project is expected with the Dutch subsidiary for totally 26 pumps of the same model.

**LEISTRITZ PUMPEN GMBH**
**Markgrafenstr. 29-39**
**D-90459 Nuremberg**
**Phone +49 (911) 4306-0**
**Fax +49 (911) 4306-490**
**pumpen@leistritz.de**
**www.leistritz.com**

## LEWA intellilab: New diaphragm pump for micro-metering in laboratories

Metering tasks in high-pressure laboratories demand highest precision, especially, when hazardous fluids are conveyed. Although plunger pumps used for this purpose withstand the high pressure, leakage occurs at the piston seal and the liquid can escape. To address this problem, LEWA has designed the intellilab, a hermetically sealed high pressure micro-metering pump with the mechatronic drive technology.


*Fig. 1: LEWA intellilab is particularly designed for applications in high pressure laboratories in which new process technologies are developed and verified at small scales.*

As further development of the micro-metering pumps K3 and K5, intellilab couples proven pump technology with the latest drive and control technology of the LEWA intellidrive. This permits dynamic regulation of the drive side's angular velocity so that, combined with different control structures, the fluid kinematics can be targeted to the needs of the process.

A pump generates individual volume flows through special operation of the servo motor. For example, the conveying chamber can be filled with a quick suction stroke. During the discharge stroke the stroke volume is metered slowly and continuously.

The impermeable, hydraulically coupled metal diaphragm prevents leakage to the outside and contact of the metered fluid with air. Since the displacement system is based on wear-free, maintenance-free hydraulic oil, stuffing box problems are eliminated. The rigid hydraulic linkage keeps the influence of the pressure on the metering flow to a minimum.


*Fig. 2: The high pressure micro-metering pump can provide significantly more precise results under realistic conditions than would be possible with plunger pumps, and is therefore used among other applications for exact, reproducible metering in the processes of high pressure synthesis and high pressure hydration.*

The intellilab is primarily employed for exact, reproducible metering in the processes of high pressure synthesis and high pressure hydration up to 500 bar as well as mini-plants. The use of the smallest possible experimental structures with correspondingly small metering quantities, particularly in research, also significantly reduces the consumption of materials deposited.