New screw pump for API applications

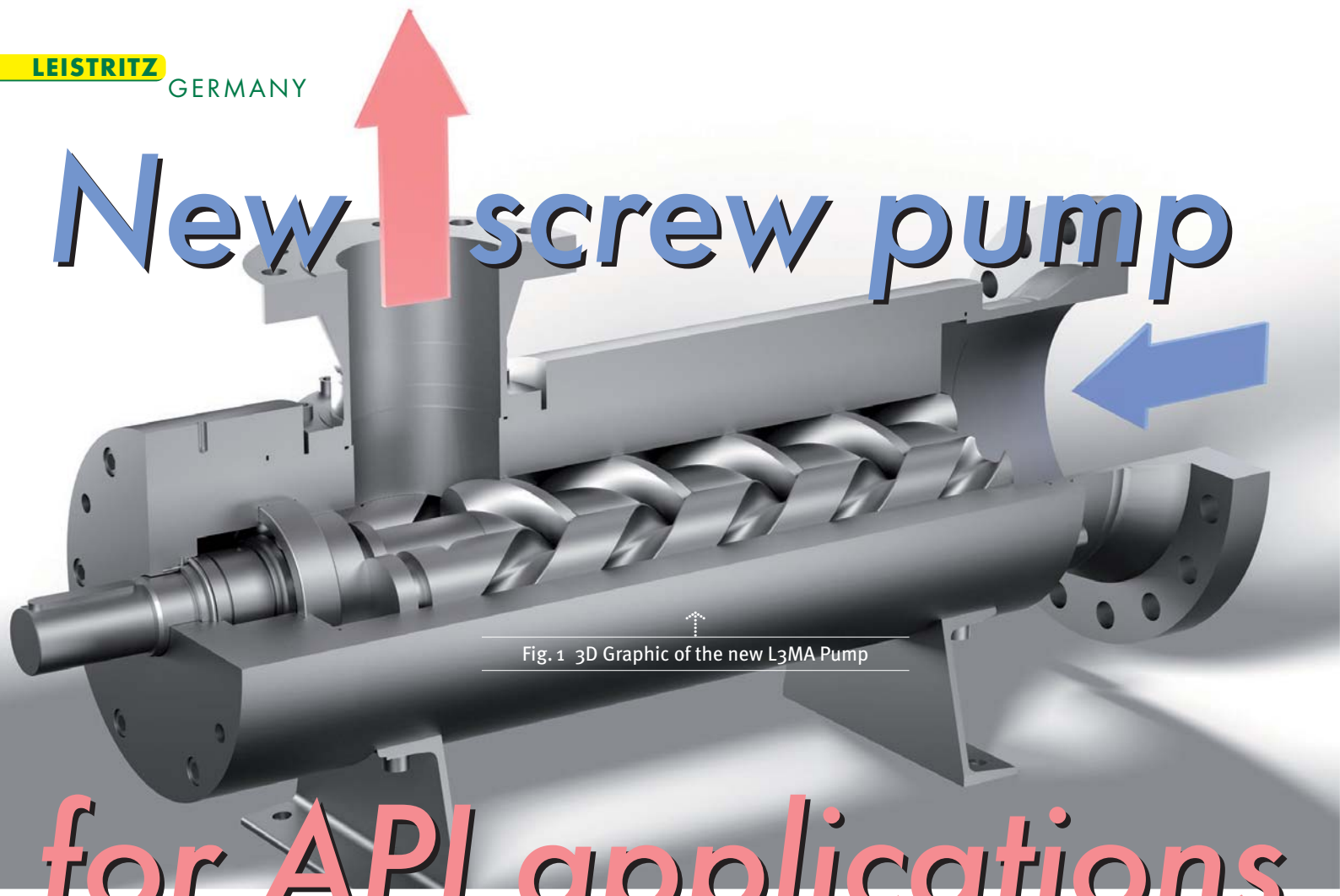

Fig. 1 3D Graphic of the new L3MA Pump

Peter Bader

With the recently released L3MA series of triple screw pumps German Leistritz Pumpen GmbH presents a new series of pumps designed to comply with API 676 3rd Edition. API 676 – Positive Displacement Pumps – Rotary, 3rd Edition, Nov. 2009, is a standard put forth by the American Petroleum Institute. It covers the minimum requirements for rotary positive displacement pumps for use in the oil & gas, petrochemical, and chemical industries.

Triple screw pumps are self-priming rotating positive displacement pumps suited to handle various oil types and other liquids with a minimum lubricating quality. The design simplicity makes these screw pumps intrinsically reliable and efficient. Only three moving parts – a driving spindle and two idler spindles—rotate inside a casing with close tolerances, so forming sealed chambers and provoking the axial displacement of the fluid. The idler spindles rotate without contact with the driving spindle because of the fluid itself. The accurate hydraulic balance and the special profile of the screw thread guarantee a continuous flow with

Fig. 2 The L3MA built in a lube oil skid.

minimum pulsations and turbulence, resulting in extremely low noise levels even at high rotational speed.

The L3MA Features

The new pump has no separate steel casing with an internal liner for the screw spindles to run in. A new spindle material makes it possible to have the spindles run directly in a steel casing and avoids an expensive construction with a coating in a separate liner.

Only three static seals, executed as O-ring seals instead of flat gaskets, are used. This eliminates the risk of leakage due to insufficient compressed flat gaskets. A single balanced acting mechanical seal has been chosen as shaft seal which proved itself in thousands of applications. A cartridge seal can be provided as an option.

Suction and discharge flanges are according to ANSI B 16.5 class 300 lbs. The L3MA pump series is available in 12 different frame sizes with defined rotor pitch angles. The maximum operating conditions of the pump are defined with a max. flow rate of 276 m^3/h, a differential pressure of 20 barg and max. speed of 3600 rpm. A minimum viscosity of the pumping fluid should be around 10 cSt to secure always the required lubrication.

- *www.leistritz.com*
- *Achema: Hall 8.0, F93*

Further technical highlights are

- *No special internal coatings required*
- *Axial inlet for ease of piping*
- *Single bearing*
- *Single mechanical seal subjected only to suction pressure, API 682 cartridge*
- *Seal optional*
- *Hydro-dynamically balanced rotors — no thrust bearing required*
- *Quiet operation — no pulsations*
- *Low fluid shear*
- *High reliability/long service life/ low maintenance*
- *Low NPSH requirement*
- *Handles entrained gases (advantage vs. centrifugal)*
- *High volumetric efficiency*