

ABRASIVE MEDIA? TAKE IT EASY!

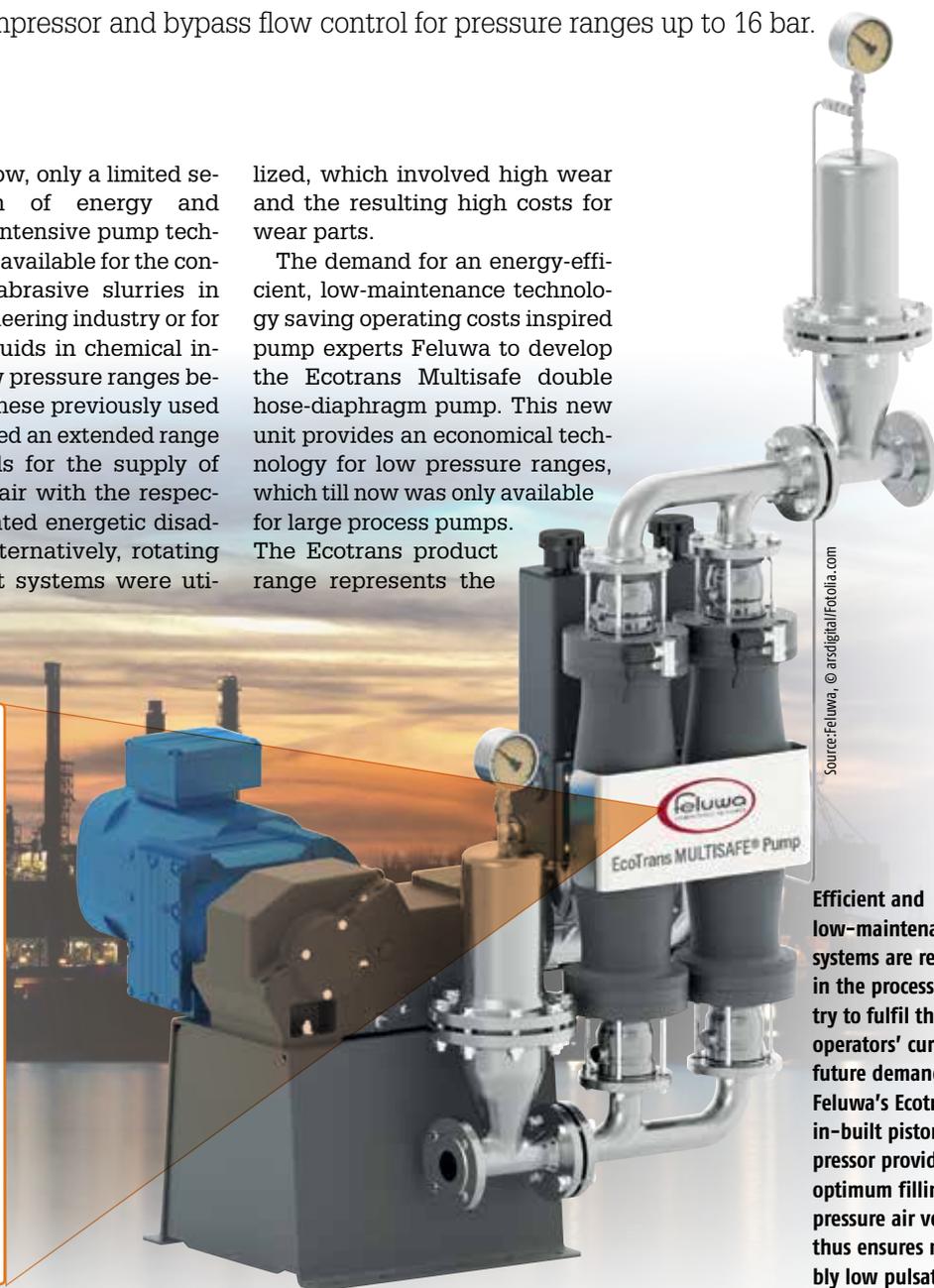
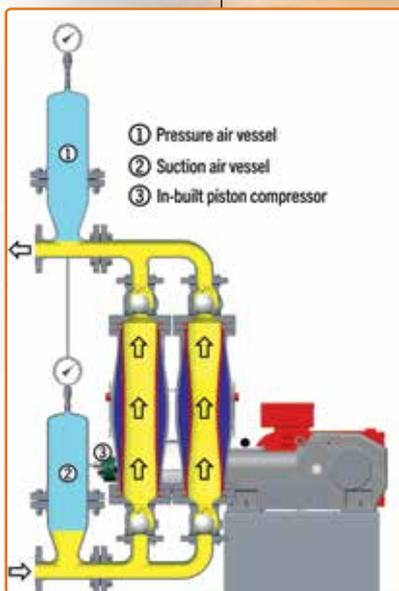
Handling demanding media just got easier: A new pump technology expands the range of applications — A technology that till now was only

available for the continuous operation with expensive process pumps makes its debut on the mass market: A new double hose-diaphragm pump provides in-built compressor and bypass flow control for pressure ranges up to 16 bar.

Up to now, only a limited selection of energy and wear-intensive pump technologies was available for the conveyance of abrasive slurries in process engineering industry or for aggressive fluids in chemical industry for low pressure ranges below 16 bar. These previously used pumps required an extended range of peripherals for the supply of compressed air with the respectively associated energetic disadvantages. Alternatively, rotating displacement systems were uti-

lized, which involved high wear and the resulting high costs for wear parts.

The demand for an energy-efficient, low-maintenance technology saving operating costs inspired pump experts Feluwa to develop the EcoTrans Multisafe double hose-diaphragm pump. This new unit provides an economical technology for low pressure ranges, which till now was only available for large process pumps. The EcoTrans product range represents the



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Efficient and low-maintenance systems are required in the process industry to fulfil the plant operators' current and future demands. With Feluwa's EcoTrans, the in-built piston compressor provides optimum filling of the pressure air vessel and thus ensures negligibly low pulsation.

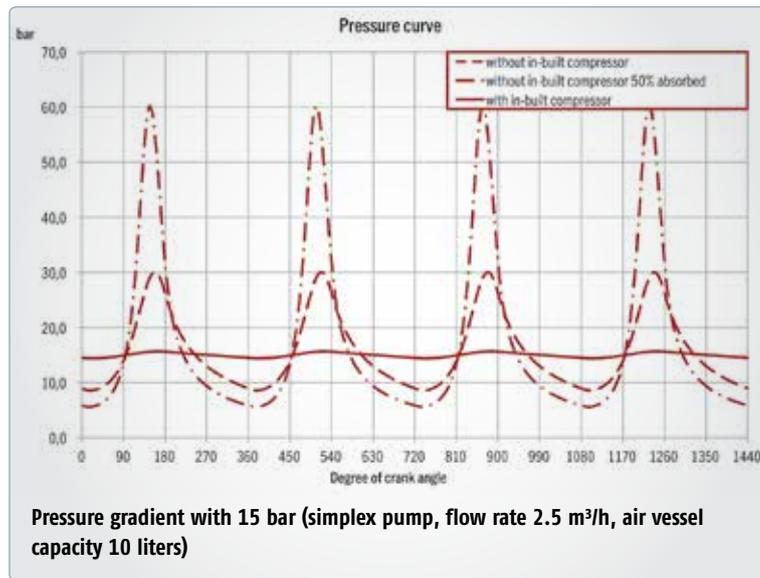
latest generation of hydraulically-activated double hose-diaphragm pumps, a type of pump that is particularly well suited for critical applications, mechanically abrasive and chemically aggressive liquids, as well as highly viscous media (even with particles) of different consistencies. Depending on the respective medium, the dry-matter content can be up to 80 %.

The pumps operate as a stand-alone system. The in-built piston compressor omits the need for any external media supply in the form of compressed air, water, etc., except the power supply for the electric drive. The high efficiency and long service life of the hose-diaphragms reduce the operating and maintenance costs to a minimum. The hose-diaphragms themselves, which are usually not considered a wear part when compared to conventional flat diaphragms, are designed for a service life of more than 20,000 operating hours. If utilized correctly, the costs for spare parts amount to 2 % of the acquisition costs (CAPEX) per year.

The Gravity Effect

The pump's mode of action is based on an oscillating piston, which periodically increases or decreases the inner pump or working space of the outward hermetically sealed hose-diaphragm by means of hydraulic fluid. Suction and discharge lines are alternately connected to the inlet and outlet valves. The displacement mechanism performs a simultaneous suction and discharge stroke during each stroke. During the suction stroke, a respective amount of liquid will pass through the suction pipe into the pump working chamber through the opened suction valve. During the discharge stroke, the conveyed liquid is displaced into the discharge pipe through the now open valve, while the suction valve seals the suction side.

The Ecotrans pump is safe against dry running, comes with a pressure relief valve in the hydrau-



Source: Feluwa

lic system and is already Industry 4.0 compatible. The cylindrical shape of the diaphragm facilitates the flow behavior, guarantees a material-friendly conveyance and is well suited for pumping of heterogeneous fluids with solid particles, without virtually any wear. For the handling of chemically aggressive fluids, a broad range of diaphragm materials is available, providing secure chemical resistance for almost all media.

Customized pump systems are available depending on the influence of the particle density, sedimentation or buoyancy speed: traditional pumping from the bottom to the top for fluids with buoyancy speed and DFT (Down Flow Technology) for media which tend to settle and blocking. With DFT, the traditional pumping principle is literally turned upside down, which means flow from the top to the bottom of the pump using the effect of gravity. Thus, sedimentation within the pump is reliably avoided. The consistent modular system allows for individual on-site adaption. Additional solutions are available which ensure SIP and CIP cleaning processes to enable "puddle-free" draining.

Open pulsation dampeners (so-called air vessels) help to reduce the pressure and flow fluctuations and to equalize the subsequently developing pressure spikes. The in-built compressor solves the

problems which are associated with the gas filling of the air vessel being drained with each stroke due to the gas-solubility of the conveyed media, as it ensures that during each return stroke a small amount of filtered air (or gas) is sucked through the compressor chamber and then pushed into the air vessel during the forward stroke. Thus, the existing volume of air in the air vessel is always perfectly supplemented, and residual pulsation is cut to a minimum.

The attained dampening does not only facilitate a significantly smoother conveyance, but also a greater degree of efficiency, because the pressure fluctuations are very low. The in-built compressor also enables the utilization of low-cost single-acting pumps with low "peak to peak" pressure pulsation, where till now only expensive double or triple-acting pumps could be used. The Ecotrans employs the same flow rate regulator as the high pressure pumps. It utilizes hydrodynamic principles to reliably regulate the position of the double hose-diaphragm as well as the highly efficient internal flow rate reduction in case of filter press feeding and similar applications, without the need for a costly and ineffective bypass regulation, proving an efficient, low-maintenance as well as effective alternative to more expensive solutions.

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PROCESS-Tip

• Meet the Feluwa experts at the **Korea Rotating Machinery Symposium**, 17.-18. November 2016, K-Hotel, Seoul/Korea.

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