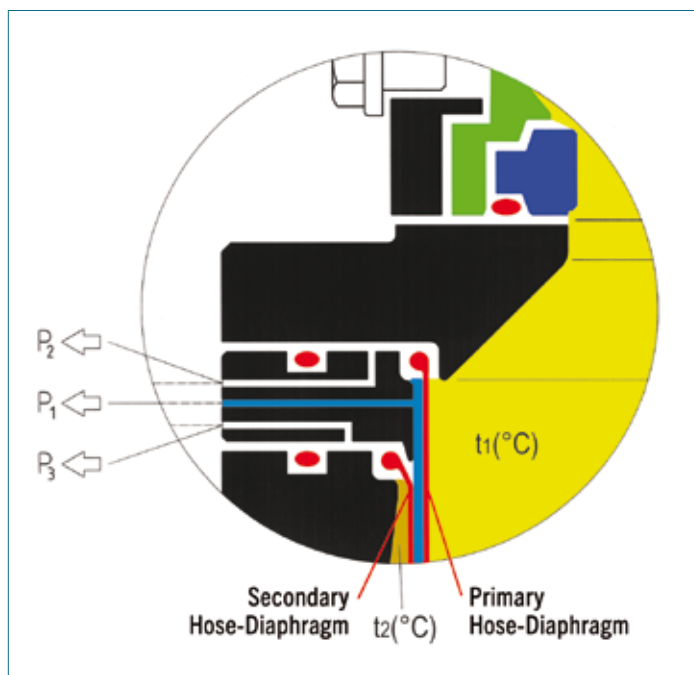


Elastic distortion of hose-diaphragms is path-controlled and effected in a concentric manner due to their inherent construction. The space between both hose-diaphragms is unpressurised and ends in a central exchange point. In the event that one of the diaphragms leaks or fails, either product or actuation fluid will penetrate into the intermediate space. The resulting build-up of pressure is automatically led to the condition monitoring system (point of measurement P1) and activates the relating pressure sensor.



Condition monitoring of hose-diaphragms and hose-diaphragm clamping

- Point of measurement P1 : supervises the condition of both hose-diaphragms.
- Point of measurement P2 : provides for the control of the sealing towards the product side and clamping of the primary (inner) hose-diaphragm.
- Point of measurement P3 : is assigned to the sealing towards the hydraulic end and clamping of the secondary (outer) hose-diaphragm.

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Supply of the world's largest canned motor pump

New motor series enables a power output up to 670 kW: Canned motor pumps are almost maintenance free due to the lack of wear parts. The seal less hermetic design features with secondary containment shell ensure optimal safety for pumping toxic media. Therefore, this technology is increasingly being used in the chemical and petrochemical industry. The latest trend in the plant engineering for these industries is



focused more and more on world scale plants. These Mega-Scale fabrications allow efficient and cost-optimized production under consideration of optimized plant operation in order to avoid additional transportation.

Based on these facts canned motor pumps are facing more and more requirements in respect of the larger pumping flow rates and consequently larger drive power. HERMETIC supplied the world's largest canned motor pumps with a power output of 670 kW at the beginning of February 2012. The vertical multistage pumps in Tandem design are equipped with the latest motor generation of the HERMETIC series NO90. Provided with a height of 4,3 m and a total weight of 7,3 tons these vertical pumps in high pressure design are pumping cryogenic liquids at a total differential head up to 2300 m. This new motor generation NO90 is available in explosion-proof design and was certified by the PTB.

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Efficient chemical pump for extreme requirements

Whether in China or in Germany – the MPCH_{DryRun} centrifugal pump proves its worth in chemical media and in pumping liquids containing solid or gaseous particles. It has already been subjected to extreme challenges during the test phase: water-sand-mixtures had as little effects as dry operation for several days. In practical use, it handles acids, bases, toxic, corrosive solutions containing solid particles or gas – all of which are substances that present specific challenges.

Besides procedural aspects and high safety standards, the pump can score with energy efficiency. Technical regulations for the pumping of media with medium to high risk for the environment only allow sealing systems such as double mechanical seals, magnet coupling or canned motor. Usually, the latter is used in hermetically sealed pumps if emission safety is required. The poor overall efficiency is a disadvantage: with the canned motor, more than 30% of the drive energy gets lost due to heat development. With conventional magnet couplings, the loss amounts to approx. 10–15%.

Permanently dry-running magnetic coupling

That is quite different with the magnetic coupling from Bungartz: it is dry-running and pressure-compensated. A ceramic separating can between the internal and external magnetic rotor enables the magnetic field transmission without eddy currents. This results in considerable energy savings. The bearing bracket provides another special feature. It consists of a shaft with grease-lubricated slide bearings. This further increases efficiency compared to conventional magnetic pumps with slide bearings. In general, slide bearings resist a short dry run, however heat up considerably. The consequence: the colder incoming pumping liquid makes the bearing seat burst.

Therefore Bungartz consistently relies on grease-lubricated anti-friction bearings which run in closed gas atmosphere. In this clean environment they reach long service lives. The required introduction of barrier gas (usually nitrogen or air) is so low that it is uniformly admixed to the medium. The usual gas amounts range between approx. 30–100 l/h. The condition of the anti-friction bearing can be verified through regular vibration measurements.

Also, the susceptibility to interferences of the common magnet coupling and canned motor pumps was overcome: the axial and radial forces arising in conventional pumps are absorbed by the ball bearing construction of the MPCH_{DryRun}. The separation of pumping media and bearings is an essential component. Between the back side of the impeller and the shaft bearing, there is a product-free labyrinth area flown through by the barrier gas. This sealing as well as the structural design result in a high temperature gradient and thus in low bearing temperature. The animated graphics in the internet illustrate the special features:

<http://bungartzdryrun.de/deutsch/animation.html>

Energy efficiency

The use of anti-friction bearings and a ceramic separating can turns the special centrifugal pump MPCH_{DryRun} into a profitable investment also in terms of energy efficiency. Recent calculations show that, on average, savings of one Euro per operating hour can be achieved: With 10 KW/h x 8,000 h/year = 80,00 KW/h x 0,1 €/KW/h = 8,000 Euro savings per year

Special fields of application: media like acrylic acid, caprolactam, TDI or melts like phthalic anhydride


Special features: temperatures up to 400 °C are feasible.

Application example


The medium: gaseous acid with amounts of nitric acid

Suction pressure: low, 30 mbar

The problem: the standard pump with closed impeller often struggles with frequent interferences and repeated dry running of the pump.




DIAPHRAGM PUMP TECHNOLOGY FROM THE EXPERTS...



- KNF Neuberger offers a wide range of pumps and systems for gases, vapors or fluids.
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- Customerspecific solutions are possible, please contact us.

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Horizontal centrifugal pump MPCH_{DryRun}

The consequence: considerable damages at the slide bearings, cost-intensive failures and material damages.

The problem solver: the horizontal centrifugal pump MPCH_{DryRun}

The advantage: dry-running magnetic coupling and, due to the gas content in the pumping medium, equipped with an open impeller.

Previously: failures of the standard pump at least once a quarter.

After the pump change: the special centrifugal pump has been running without any trouble for a period of more than three years, since its deployment until today - and that's what it does in many countries of the world.

Advantages of the MPCH_{DryRun} at a glance:

continuously dry running, free of wear and low vibrations, maintenance-free, reliable and durable, robust and cost-efficient

Technology

- dry-running and load-relieved magnetic coupling
- sealing and bearing technology are working independently from the pumping media and are thus completely wear-free.
- grease-lubricated anti-friction bearings with a minimum service life of 32,000 h do not require maintenance in this period.
- The labyrinth area between the back side of the impeller and the shaft bearing flown through by the barrier gas provides a heat barrier with high temperature gradients and thus low temperatures of the bearing.
- quick availability of all standard dimensions

Safety

- very high safety standards through 3-fold sealing, due to low pressure load of the separating can, which runs in gas atmosphere without product contact.
- a friction-free lip seal operating in barrier gas atmosphere – only intake pressure at the sealing labyrinth
- hydraulic relief
- separating can is pressure-compensated with no contact to the product
- high operating safety – even with flow interruption of the medium

Operating costs

- robust thus durable design
- decades of useful life
- low installation and maintenance costs
(e.g. maintenance interval of 3 years, useful life of bearings of over 32,000 h)
- efficient and low energy consumption

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The Oerlikon Leybold Vacuum helium leak detector PHOENIX L500i opens up new dimensions of productivity and reliability in short-cycle leak testing

The new PHOENIX L500i helium leak detector opens up new dimensions of productivity and reliability in testing all kinds of components and represents an innovative and up-to-date solution for leak detection. Apart from an attractive visual appearance, it excels through numerous “inner values”. High-speed leak detection, reproducibility, reliable operation and an absolutely new experience using iPad controls are only a few of the special advantages of the PHOENIX L500i.

The PHOENIX L500i is a mobile unit on lockable castors, allowing movements to different locations at any time. It improves the accuracy and reliability of your testing operations – during series testing of a large number of products as well as for single tests – thereby ensuring immediate cost savings.



New generation PHOENIX L500i helium leak detector