

CASE STUDY

INDUSTRY: CHEMICAL TANK STORAGE
PRODUCT: NITRIC ACID
APPLICATION: TRUCK UNLOADING
SOLUTION: SINGLE STAGE CENTRIFUGAL PUMP WITH MAGNET DRIVE IN RTZ-DESIGN
LOCATION: FRANCE

The Job:

For stripping applications, time is of the essence and thus it is vital to provide a reliably working pump system. Furthermore, if aggressive, explosive or toxic fluids are involved, leakages of the pumped fluid must be avoided in order to protect both people and the environment.

In this particular case, the customer requires pumps for emptying cargo trucks loaded with nitric acid, which makes mechanically sealed pumps unsuitable. The ideal solution, instead, is a hermetically sealed, magnet drive centrifugal pump. Still, another constant risk of such applications must be considered: pumps are often not switched off in time and consequently run dry. While commonly available magnet drive pumps are unable to cope with dry running, Klaus Union offers the RTZ design, which allows pumps to withstand a flow interruption on suction side without damage.

Operating Data:

▶ Fluid:	Nitric Acid
▶ Flow Rate:	19 m ³ /h (84 gpm)
▶ Temperature:	Ambient
▶ Delivery Head:	28 m (92 ft)
▶ Dynamic Viscosity:	1 cP
▶ Kinematic Viscosity:	0,66 mm ² /s
▶ Specific Gravity:	1,51 g/cm ³
▶ NPSH(A):	3 m (9,8 ft)

The Solution:

SLM NVB 050-032-160-09E03 RTZ

- ▶ SLM: Sealless magnet drive
- ▶ NVB: Single stage centrifugal pump (close-coupled design)
- ▶ 050: Suction flange diameter; 50 mm (approx 2")
- ▶ 032: Discharge flange diameter; 32 mm (approx. 1 1/4")
- ▶ 160: Nominal impeller diameter; 160 mm (approx. 6")
- ▶ 09: Magnetic coupling size
- ▶ E: High powered magnets
- ▶ 03: Magnet length
- ▶ RT: Journal bearing design for dry run operation with reduced partial flow
- ▶ Z: Non-metallic containment shell (zirkonium oxide)

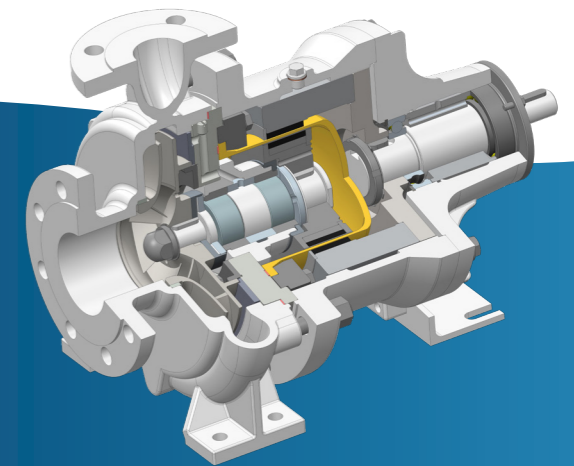
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The Result:

Dry run capable close-coupled magnet drive centrifugal pumps were selected. This RTZ pump execution combines a non-metallic containment shell with a special journal bearing design to offer dry run capability for a limited amount of time (depending on application).

The solution proofed its reliability, when the pumps were still running 90 minutes after the last truck had left the unloading station. In the next unloading cycle, the pumps operated without any degradation in performance - until today.



Klaus Union Dry Running Design (RTZ):

For the case of a flow interruption on suction side, Klaus Union has developed the RTZ design for magnet drive pumps. Pumps according to this special design conveying water-like media are approved for a flow interruption for up to 10 minutes.

The RTZ design provides the following further benefits for customers in comparison to standard design:

- ▶ By using a non-metallic containment shell, the pump efficiency increases since eddy current losses do not occur in the containment shell.
- ▶ Since eddy-current losses do not occur, a separate flush flow to cool the containment shell can be eliminated.
- ▶ In addition, this design allows the pump to handle liquids containing solids of up to 10% by weight.

INFO-FLYER
 Dry Running Design



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 Handling Liquids
 Containing Solids

