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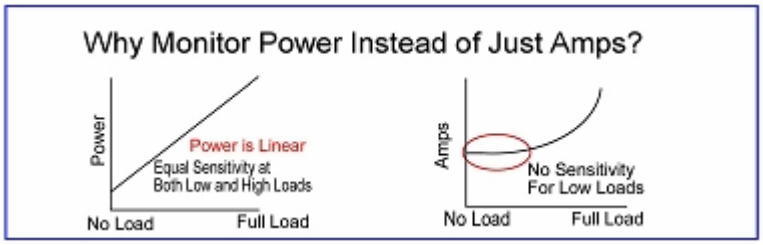
Monitoring - Protect Your Equipment

To ensure years of trouble-free service and to protect your Klaus Union magnetic drive pump from damage related to possible system upsets, off-design operating conditions and operating errors, we recommend monitoring your pump.

Your Klaus Union mag drive pump can be equipped with one or more of the following devices.

Monitoring Horsepower
Monitoring horsepower consumption of your Klaus Union magnet drive pump is one of the most efficient ways to protect your equipment. The PMP-25 Power Monitor operates maintenance-free and can be easily installed on the front of the control panel.

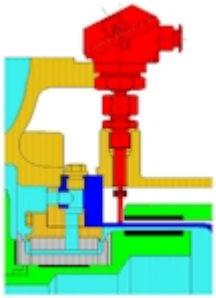
Monitoring horsepower provides up to ten times more sensitivity than conventional amp monitoring, since the horsepower-load curve is linear (see chart below).

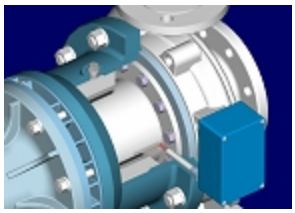


Monitoring Isolation Shell Temperature
Eddy Current Losses heat up the isolation shell between the rotating magnets. The internal flush flow absorbs the heat and introduces it back to the system.

Monitoring the isolation shell temperature allows detecting critical modes of operation quickly. Klaus Union offers two different temperature probes.

Our **PT-100** temperature probe can be connected to your Klaus Union mag drive pump using the existing port, located on the lantern flange. No further changes to the pump are necessary.



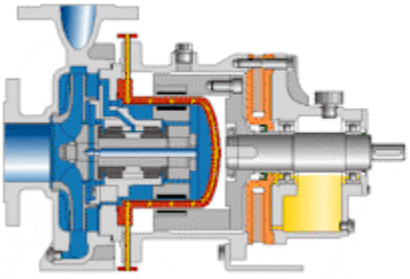


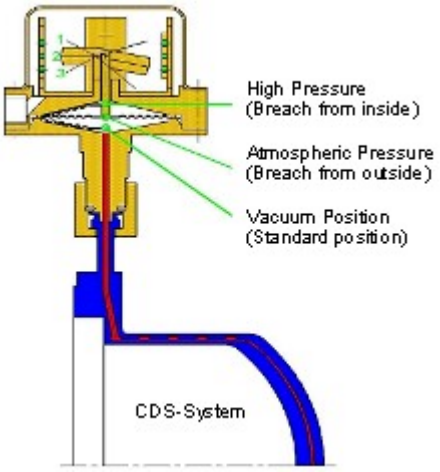
Our **TPS System** measures the skin temperature of the isolation shell in between the rotating magnets. Especially when heat sensitive liquids are to be handled, the very precise and sensitive

When combined, monitoring temperature and horsepower provide most comprehensive protection. The table below contains critical modes of operation and how they can be detected.

Critical Modes of Operation	HP Trip		Temp Trip	
	Low	High	Low	High
Operating blow minimum flow or at zero	X			X
Operating above maximum flow		X		
Flow interruption or dry run	X			X
Magnetic coupling decoupled	X			X
Worn or damaged anti friction bearings		X		
Worn or damaged journal bearings		X		
Plugged internal ports				X
Cavitation or entrained gas	X			X

Double Wall Isolation Shell
Klaus Union's double wall isolation shell provides true dual containment for extremely critical applications. Monitoring the vacuum between both Hastelloy®-C4 shells allows detecting a breach of one shell to safely shut down the pump avoiding further damage and leakage to the atmosphere.





Liquid Sensor & Pressure Switch
In combination with our **secondary sealing system** the pump lantern can be equipped with a liquid sensor and/or a pressure switch. In the unlikely event of an isolation shell breach, the presence of liquid and/or pressure in the lantern cavity will be detected and the pump can be shut down and isolated to prevent further damage and leakage to the atmosphere.