

PRODUCT RANGE.

Horizontal pumps

with hydrodynamic shaft seal

Vertical pumps

- for dry installations, short design
- for wet installations, without bearing in the liquid
- for wet installations, with slide bearing
- with feeder propeller for space-saving installation

Tank pumps

with in-feed from above

Horizontal and vertical pumps

- with half-open impellers
- with closed impellers
- with torque flow impellers

Downstream seals

for pumps with hydrodynamic relief of the shaft gap

- packed gland
- mechanical seal
- magnetic drive
- particular solution for problem cases

Comprehensive information about each type of pumps is featured in individual product brochures.

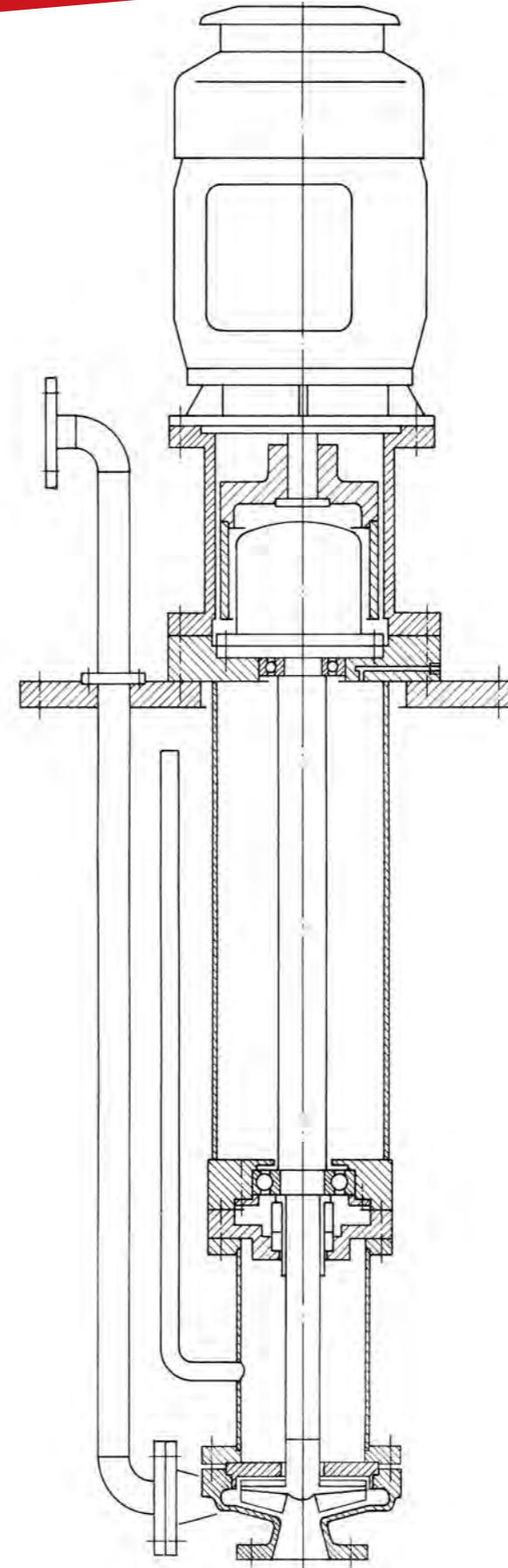
MATERIALS.

- all castable and weldable stainless steel qualities
- castable and weldable special alloys
- grey cast iron, rubber lined
- special materials such as titanium, zirconium, etc.

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NOW AVAILABLE
FOR ZONE 0



BUNGARTZ
CENTRIFUGAL PUMPS
MPATAN

**ON THE SAFE SIDE.
DRY RUNNING SUB-
MERGED PUMP WITH
MAGNETIC DRIVE.**

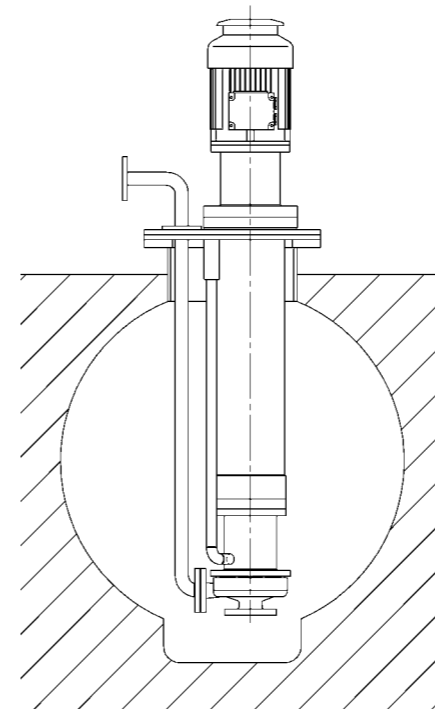
Submerged pumps have a very special property. Their pump hydraulics – specifically pump casing and impeller – submerge in the pumping liquid at startup. In contrast to submersible pumps, the drive motor is located above the vessel dome.

Submerged pumps from BUNGARTZ are safe to run dry - in any construction.

Popular pumps have an intrinsic disadvantage: They are not safe to run dry. This is due to their slide bearings, which are bathed by the pumping medium itself or by external water. Caution is therefore advised with explosive fluids or those with solids.

The solution is called MPATAN. Thanks to the dry running magnetic drive and high safety standards, it is especially suited for difficult applications.

What slide bearings do not accomplish is possible here with rolling bearings. These are situated in an area rendered inert and protected by a fluid. The dry running magnetic drive has no contact with the pumping liquid or its gasses. Thus the pump is hermetically sealed.



SLOP PUMP

In fact, the MPATAN has still further advantages; the frictionless gas barrier for instance. It lies on the product side and runs likewise completely in the dry, inert area. It is part of the shaft gap concept, which is convincing for several reasons.

SHAFT GAP CONCEPT.

- complete hydrodynamic shaft seal by impeller back vanes
- gas barrier for protecting the bearing unit from product vapour penetration
- bearing and sealing unit permanently dry running
- hermetic sealing by permanently dry running, eddy-current-free magnetic drive

Vapours or fluids never escape through the threefold seal - not even when malfunctions occur in the bearing or in individual seal components.

Bungartz has already had experience with this pump concept since 1998. The two things our customers value most are: the low maintenance construction and the suitability for boiling fluids.

Extreme applications, such as immersion up to a depth of five meters and product temperatures of up to 200° C, are also possible.

APPLICATION AREAS.

- ATEX zone 0/1 or 2 in the storage container
- boiling and/or gas containing media
- toxic media
- media containing solids
- critical applications like explosive media
- self-regulating delivery of, for instance, chemical waste water

EX ZONE FOR GASSES	EQUIPMENT CATEGORY	IGNITION SOURCES EVALUATION OF THE MANUFACTURER	EG-DESIGN CHECK	APPEARANCE OF IGNITION SOURCES		
				during normal operation	during foreseeable faults	during rare faults
0 frequent or permanent occurrence of an explosive mix	1	YES deposited at a "labelled place"	YES by "labelled place"	NOT PERMISSIBLE	NOT PERMISSIBLE	NOT PERMISSIBLE*
1 occasional occurrence of an explosive mix	2	YES deposited at a "labelled place"	NO	NOT PERMISSIBLE	NOT PERMISSIBLE	PERMISSIBLE
2 rare or brief occurrence of an explosive mix	3	YES not deposited at a "labelled place"	NO	NOT PERMISSIBLE	PERMISSIBLE	PERMISSIBLE

* If it cannot be avoided that an ignition source occurs an additional protective measure must be taken.

PREPARED FOR EVERYTHING.

PUMP CATEGORIES FOR EX ZONES.

There is an explosion directive in the EU: the so-called ATEX directive. It defines exactly which protection categories centrifugal pumps must feature in ex-areas.

A standard pump is mostly sufficient for dry-mounted pumps. This is because the internal pump area and the ex-atmosphere in the vessel's interior never enter into contact. The appropriate level cutoff takes care of that. The outlook is different when the pump is used for complete container discharge. (See Bungartz type VK-AN for zone 0 applications.)

Normally, a pump has no ex-zone in the exterior area – and only in exceptional cases a zone 1 or zone 2 atmosphere. The table above shows which pump categories should then be used.

REQUIREMENTS. Pumps, which are immersed directly in a vessel with a zone 0 atmosphere, must conform to category 1.

In a zone 0 gas atmosphere, even just a hot surface can cause an explosion. Thus, for instance, a hot running bearing or a confined and uncontrollably heated fluid suffice.

Submerged pump employed in zone 0 may not produce ignition sources, not even in infrequent cases of malfunction like a damaged bearing. Other possibilities: They must be so constructed that ignition sources are rendered ineffective.

Commercially available submerged pumps for zone 0 applications leave much to be desired. They are equipped with product lubricated slide bearings and ordinarily with a double mechanical seal. They thereby exhibit no hermetic seal concept.

Elevated bearing temperatures occur not infrequently. This is true particularly during the starting phase and then when level control fails. Monitoring such pumps is quite complex. Besides, as a result of activation or failure of temperature, level, or oscillation monitoring, it is possible that such pumps must be shut down of safety reasons. Even clogging of the required filter can lead to this.

EVERYTHING UNDER CONTROL.

THE MPATAN CONCEPT.

Bungartz sets a new standard with the magnetic drive, dry-run safe MPATAN pump. The safe construction alone guarantees explosion protection. Level and temperature monitoring are thereby just as indispensable as dry running protection. Even during infrequent malfunctions, no ignition sources appear in the ex-area.

EXPLOSION PROTECTION.

- elevated sealing gas consumption indicates cases of malfunction
- bearing and sealing areas operate in an inert atmosphere
- bearing and magnetic drive always dry running
- heat barriers prevent elevated subassembly temperature during infrequent cases of malfunction in the explosion protected area
- half-open impeller with large axial and radial gaps to the casing
- bearings lubricated for service life work independently of the pumping medium
- constantly open pressure balance to the vessel through which the pump hydraulics are degassed
- pumping liquid is never confined even when the suction line is blocked and the pressure slide is closed

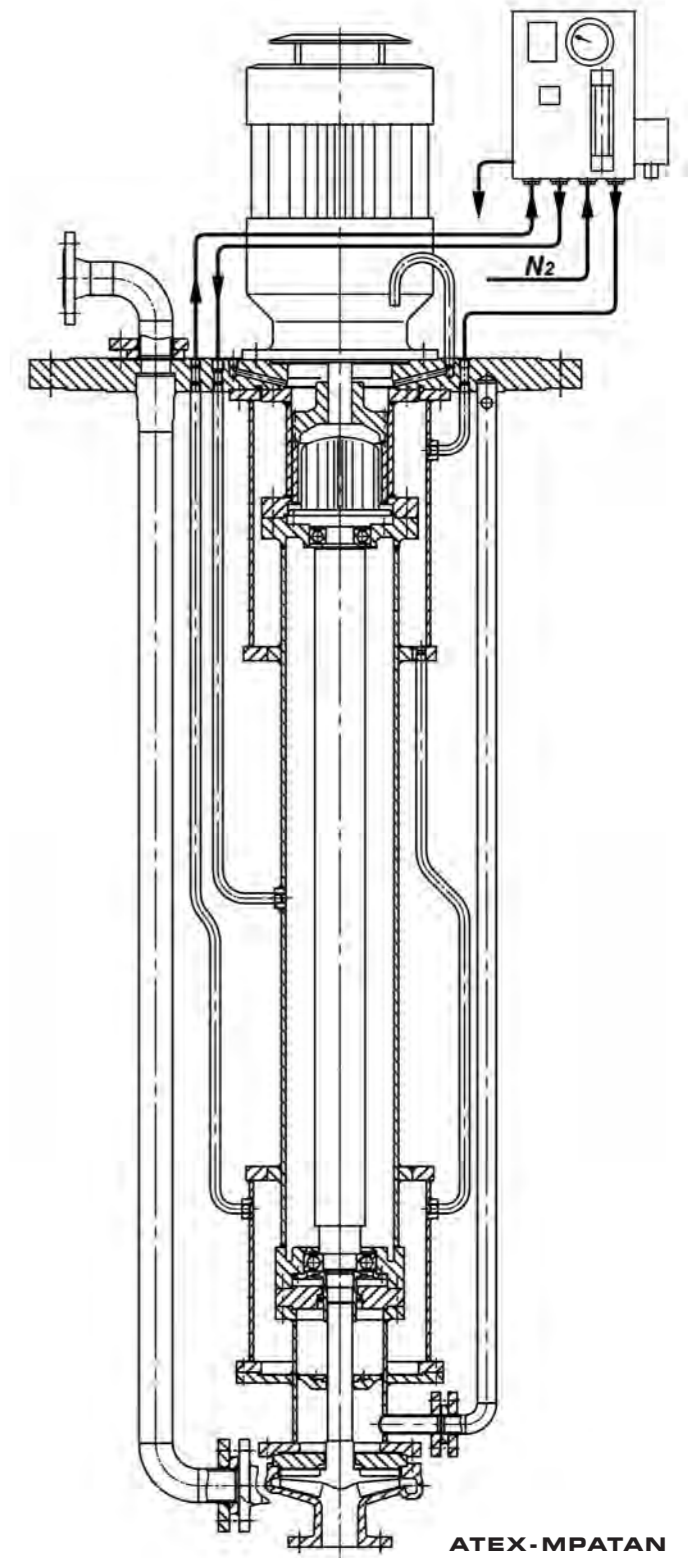
The MPATAN submerged pump is ideal for application in zone 0 vessels. This is due solely to their safe construction.

Infrequent malfunctions like bearing and seal damage do not develop into ignition sources.

If a malfunction in fact occurs, the sealing gas flow rate shows it immediately. (The pump itself shuts off when tolerance is exceeded.)

MONITORING.

- no monitoring device in the vessel
- elevated sealing gas consumption signals elevated, still non-critical shaft deflection (e. g. by bearing damage)
- elevated bearing or seal temperatures indirectly cause increased sealing gas consumption, thanks to heat barriers, no elevated component temperatures in the ex-area
- increase in sealing gas flow caused by separating can break or seal damage
- specified monitoring of sealing gas quantity



ATEX-MPATAN