

DICTIONARY

Below we present a set of basic concepts, expressions and definitions within the scope of face mechanical seal engineering. You can search the dictionary using the list of entries in the Bookmarks side panel, e.g. in Acrobat Reader.

ANTI-ROTATION RETAINERS

Device, such as, a wedge or a pin, used to protect one element against turning vs. another, co-acting with it in the seal unit.

BALANCED SEAL

Design solution of a mechanical seal where the hydraulic pressure effect in the seal chamber, in relation to the forces closing (pressing) the seal sliding ring faces, is modified through the seal construction. The seal balancing factor "k" is less than one.

BARRIER LIQUID

Fluid which enters the interior of the gland box into the space between double face mechanical seals to fully separate the pumped liquid from the environment. Barrier liquid pressure is higher than the pressure of the sealed medium (normally by $\sim 0.1\text{MPa}$).

BUFFER LIQUID

Fluid used as a lubricating or buffer liquid between double face mechanical seals. In this case the liquid is always under pressure lower than the pressure of the pumped liquid.

CARTRIDGE (COMPACT) SEAL

This is a factory assembled unit with pre-set working lengths, delivered as a single unit consisting of the seal, sleeve, co-acting elements and covers. This design provides a simple assembly and disassembly at the workplace, compact installation, proper connection of a flushing – cooling and/or barrier installation and easy operation for a user.

DOUBLE SEAL

Sealing system in which more than one seal exists (or a construction replacing minimum 2 single seals) in the same gland box in every setting direction, which can use either pressurized barrier liquid or unpressurized buffer liquid.

FLUSHING

Small amount of fluid introduced to the seal chamber at the side of the liquid being forced-through, as near to the sealing faces as possible, normally used to cool and lubricate the seal faces and to remove deposits, carbon deposits, crystals and other impurities.

GLAND BOX COVER (STUFFING BOX COVER)

End plate (cover) connecting the stationary part of a mechanical seal (most often the stationary ring) with the gland box (seal chamber).

MECHANICAL SEAL

This is a device used in fluid-flow machines to separate spaces with two media of different pressures, temperatures or physical and chemical properties. Operation of a seal consists in throttling the flow of forced-through media with a pair of two working rings, one of which (a stationary ring) is permanently seated in the immobile casing and the second (rotating part) is fixed onto the rotating shaft of the equipment, and they are pressed against each other with suitable spring elements.

PROTECTIVE SHAFT SLEEVE

Cylindrical sleeve placed on the shaft to protect it against wear and corrosion.

PUMPING RING

A device placed inside the seal chamber, its task is to move the liquid in the seal chamber through a cooler and replace it with a colder one or barrier-buffer liquid from an external tank.

QUENCHING

Neutral liquid (normally water or steam) introduced from the atmospheric side of the seal in order to cool and inhibit the forming and accumulation of solid particles, which could hinder seal functioning.

ROTATING COUNTER-RING (ROTATING SLIDING RING)

An element of the axially flexible (rotational) part of the seal, the face of which directly contacts the stationary ring. It is flexibly mounted in the housing of the axially flexible (rotational) seal part, with pressure exerted by spring or bellows.

SEAL BALANCING FACTOR

Factor defined (sometimes in per cent) as the ratio of the seal ring face subjected to the closing force exerted by hydraulic pressure in the seal chamber to the entire face-sealed surface.

SEAL CHAMBER (GLAND BOX, STUFFING BOX)

This is a separated space between the rotating shaft and the immobile pump casing, to which the seal is installed.

SEAL OPERATING CONDITIONS

It is the maximum/ minimum temperatures and pressures under static or dynamic operating conditions, rotational speed, kind of medium forced-through, its physical and chemical properties, existing mechanical impurities and the type of occurring limitations and hazards.

SEAL TYPE

This is a clear configuration of seal components which ensure optimum operating parameters under accepted operating conditions and classify a given solution to a type defined with regard to the method of solution. Every type has a separate designation.

SECONDARY SEAL

Such an element as O-ring or bellows, which enables the axial movement of the seal face without undesired leakage. This term sometimes is used for other gaskets which prevent leakage within elements of the mechanical seal.

SPECIAL SEAL

This is a seal designed individually for working conditions and/or installation, mount, operating conditions, which differs considerably from general application seals.

STAGED SHAFT SLEEVE

Cylindrical sleeve ended with an internal stage, placed on the shaft to protect it against wear and corrosion. The stage is normally adjacent to the impeller hub (to ensure its proper position) and contains sealing between the shaft and sleeve stage.

STATIONARY SLIDING RING

An immobile element in the form of a disk or ring, mounted on the shaft sleeve or in the gland box cover, which is the basic part in axial contact with the remaining part of the seal (rotating unit).

THROTTLING UNIT

An auxiliary element, forming a suitably small clearance around the shaft protection sleeve, placed in the gland box between the mechanical seal and the pump impeller.

UNBALANCED SEAL

A mechanical seal, in which the balancing factor "k" is equal to or higher than one.

VENTING

Action of removing accumulated gas or vapour from the seal chamber. Normally it is performed by suitable connection to the seal chamber, e.g., with flushing.