

Mechanical Seals



Fields

Food industry

The Food industry

Food industry safety

The recent livestock epidemics have given rise to an increase in inspections by the veterinary services. The food industry quality departments ensure there is strict compliance with foodstuff safety standards.



This industry also uses agitator apparatus in tanks to which simple or encased mechanical seals are fitted, such as on the Lactalis Goavec and Guérin milk tanks.

LATTY® food quality mechanical seals use FDA approved materials.

The materials used in the composition of the seals must comply with food quality requirements.

Double-seal designs are authorised on condition that the buffer fluid is food quality.

The LATTY® technical sales force educate the users in risk avoidance.

From pumps to agitators

A very large number of pumps in the food industry, conventional or specific eccentric propeller types, also called pig-tail or lobe pumps, are equipped with LATTY® mechanical seals.

What is the EHEDG?

In addition to official standards, there are works published which may be considered as the practical standards for the hygienic design of equipment.

Official body publications stand by them as a reference and the basis for standardisation work.

The EHEDG (European Hygienic Equipment Design Group) is an independent group formed to develop guides and test methods for food process hygiene.

The group includes representatives from research institutes and technical bodies (INRA, CCFRA, ASEPT), the food industry (UNILEVER, NESTLE...), equipment manufacturers (LAVAL, APV BAKER, TETRA PAK...).

It publishes design and hygiene recommendations as well as test methods.

The hygiene of the design is aimed at:

- Limiting contamination by micro-organisms.
- Improving cleaning and washing.
- Facilitating maintenance and servicing.

The design rules under the EHEDG for a mechanical seal are:

- Easy to remove and clean.
- Springs positioned away from the product to be sealed in.

Food industry

Reference case

RU 6810 + 810

DELIFRUIT

In the case of equipment for agitators, the seal must comply with very numerous constraints and requirements, in order to comply with the legislations in force.

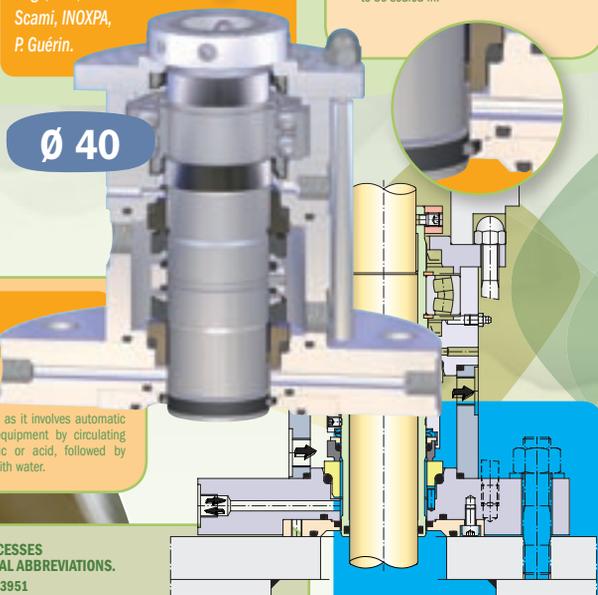
Assemblies which are sterilisable without disassembly (CIP/SIP), materials compliant with the food quality directives (FDA...), electro-polished surfaces in contact with the process are very often imposed on the designers of mechanical seals.

The cartridge module installed in fruit juice tanks, fully uses this method of construction.

A steam barrier and an intermediate seal between the mechanical seal and the process prevent any pollution in case of mechanical seal breakage.



The seals are very often designed jointly with pump manufacturers: Hilge, APV, Scami, INOXPA, P. Guérin.



SIP

"Steaming In Place"

WHY CLEANING IN PLACE?

This is a necessity as it involves automatic cleaning of the equipment by circulating a solution, caustic or acid, followed by washing through with water.

CLEANING PROCESSES AND THEIR USUAL ABBREVIATIONS. Standard NF EN 13951

Cleanability. The manufacturer must specify if the pump is suitable for manual cleaning (COP, NHP) or in-place cleaning (CIP, NEP).

Pumps designed for mechanical cleaning (CIP, NEP)
Pumps designed for manual cleaning (CIP, NHP)

Cleaning in place or manual cleaning (CIP, NEP)

CIP or NEP means the removal of contamination by contact, circulation or blowing through with chemical detergents solutions and washing through with water on the inside and on the surfaces requiring cleaning, without disassembly.

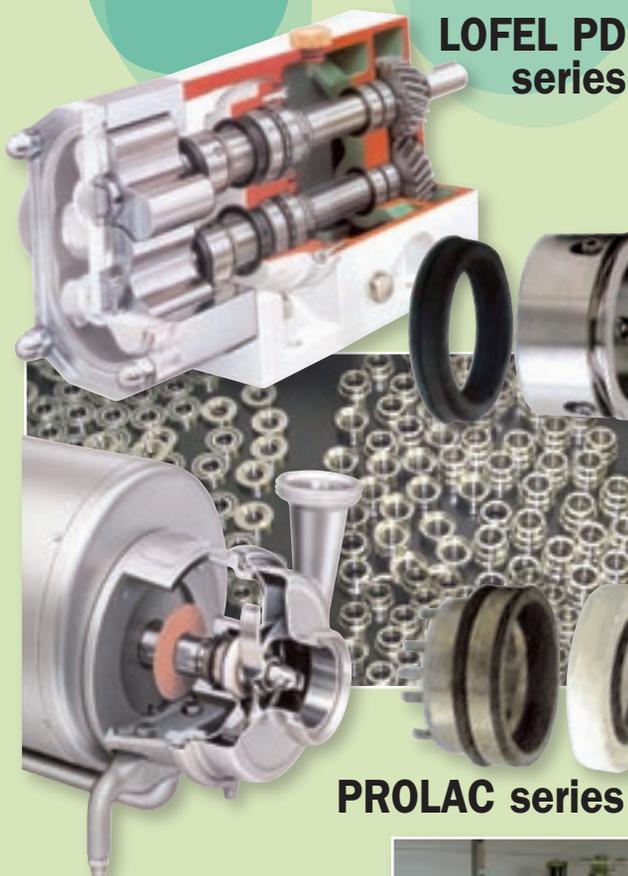
Note: CIP is the English abbreviation for "Cleaned In Place".
In French, the equivalent term NEP is the abbreviation for "Nettoyage En Place".
In German, the term CIP is used.

Cleaning out of place or manual cleaning (COP, NHP)

COP or NHP means the removal of contamination when the equipment is partially or fully disassembled.

Note: COP is the abbreviation for the English expression "Cleaned Out of Place".
In French, the term NHP is the abbreviation for the term "Nettoyage Hors Place" (Cleaning Out of Place).
In German, the term COP is used.

| | |
|-----------------|---------------------------|
| Fluid sealed | Fruit juice +3 to 5% pulp |
| Temperature | Ambient |
| Pressure | 0.45 MPa (4.5 bar) |
| Speed | 370 rpm |
| Barrier fluid | Steam at 140°C |
| Fluid pressure | 0.6 MPa (6 bar) |
| Quench barrier | Steam at 140°C |
| Quench pressure | 0.1 MPa (1 bar) |



LOFEL PD series

Reference case

INOXPA pumps

Pump manufacturer customers sell their equipment in compliance with the "reference rules" covering hygiene of design as published by the EHEDG.

Consequently, the mechanical seal manufacturers must also be approved.

B 15 000 series

B 10 000 series

PROLAC series

Technical environment

Ø 90

U 10610 U2U2Y/E + BU2E

Ø 120

There is a wide range of food industry applications, the case described cumulates "cleanability" requirements as well as major mechanical restrictions.

This is a horizontal mixer composed of a propeller and paddles, capable of handling a load of several tonnes.

Major flexing of the shaft and axial adjustments are parameters which need to be built-in at the design stage.



| | |
|---------------|---|
| Fluid sealed | Flour and water |
| Temperature | Ambient |
| Pressure | None |
| Speed | 750 rpm |
| Barrier fluid | Water and cleaning periodically with soda |

Food industry



Application

Ø 80

B 10610 RIC U2 U2 V

Exchanger CAVDA

Very many machines fitted with lip seals or packing seals, are designed by LAITY® for retrofitting mechanical seals with the aim of making the equipment more reliable and cleaning more efficient.

Our technicians provide our customers with support for the first fittings, check the operating constraints and draw up the maintenance procedures in order to ensure proper functioning of the equipment.



| | |
|--------------|--------------------------|
| Fluid sealed | Meat and crushed bones |
| Temperature | Between -5 °C and +80 °C |
| Pressure | 0.8 MPa (8 bar) |
| Speed | 48 rpm |

Our other documents



Food industry



Boiler systems



Chemical industry



Automobile industry



Energy



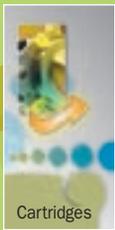
Marine



The water industry



Paper mills



Cartridges



Modules



Standard series and derivatives



Selection of types of seals
LATTY®
Designations

Standardised Mechanical Seals



Rotating couplings



Custom



Sealing technique



Selection of types of seals

Sealing technique



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