Sealmatic Mechanical Seals

Pulp & Paper Industry

Content

- Requirements for mechanical seals
- Design features
- Materials
- The Process with Sealmatic Mechanical Seals
- Typical Applications








Requirements for Mechanical Seals

- → chemical resistance
- → high consistency of abrasive pulp fibres
- → contaminations, solids
- → bad lubrication
- → partly harmful media for environment
- → high temperatures up to 300 °C
- → high sliding velocities up to 30 m/s
- → low to high pressures up to 25 bar








Design features of Sealmatic seals

- ➔ stationary springs/rotating seat
- ➔ encapsulated springs
- ➔ big single spring
- ➔ rotating metall bellows
- ➔ straight outer contour of product wetted seal parts
- ➔ seal gap as near as possible to impeller
- ➔ reversed pressure design
- ➔ big space between seal and pump housing

Materials for Mechanical Seals

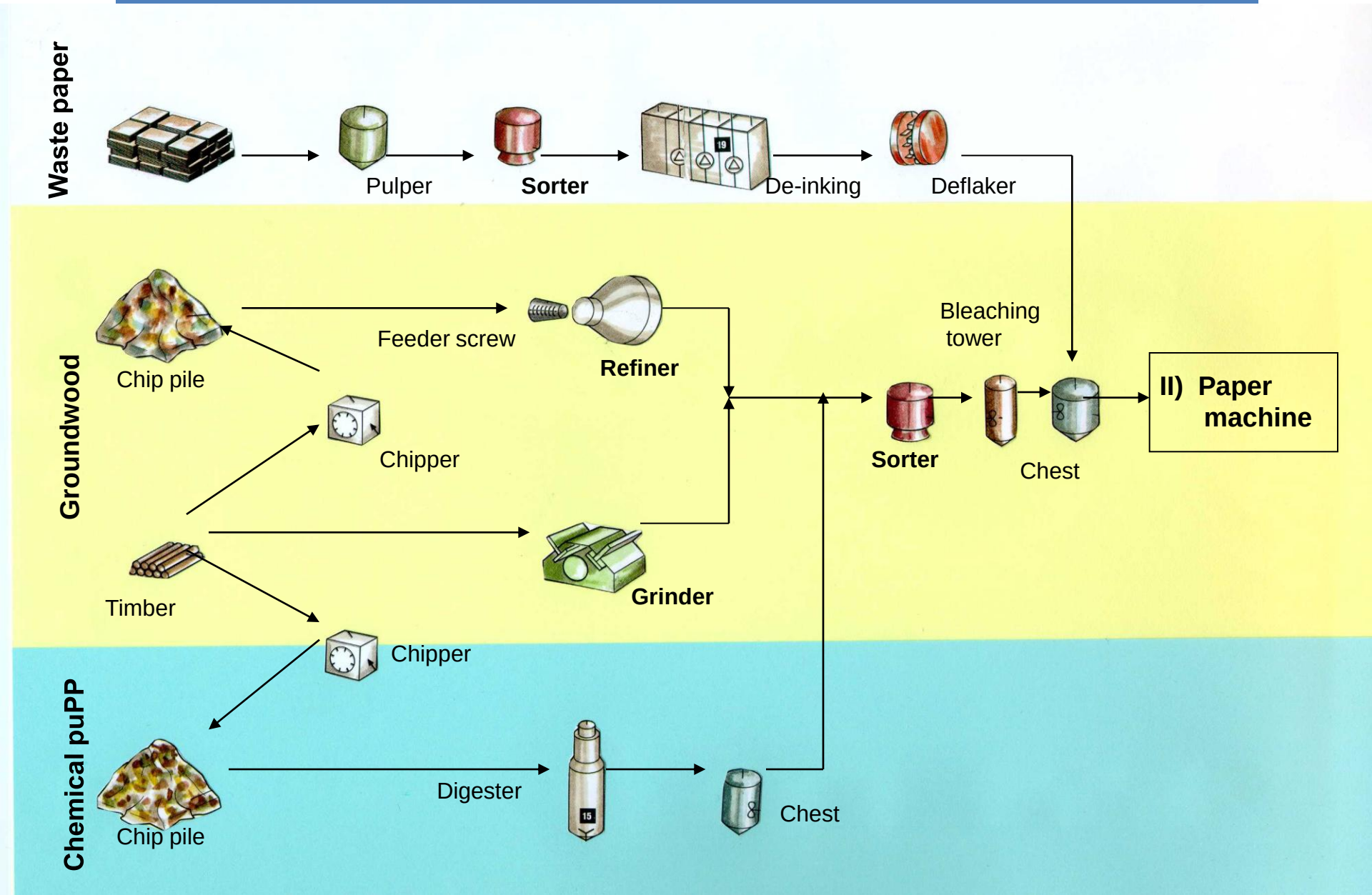
Seal Faces	Standard Hard/Hard	SIC/SIC pressureless sintered
	Special Soft/Hard	Carbon/SIC for high speed applications (refiner)
Springs and construction material	stainless steel	1.4571/1.4462 CrNiMo-steel 2.4610 Hastelloy C-4 2.4856 Inconel 625 (bellows material)
Elastomers / secondary seal elements	→ EPDM (E) ethylen-propylen-rubber → Viton (V) fluor rubber → TTV (M1) FPM double PTFE wrapped → TTE (M2) EPDM double PTFE wrapped →T72 (special) PTFE carbon reinforced (U-cup seals)	 



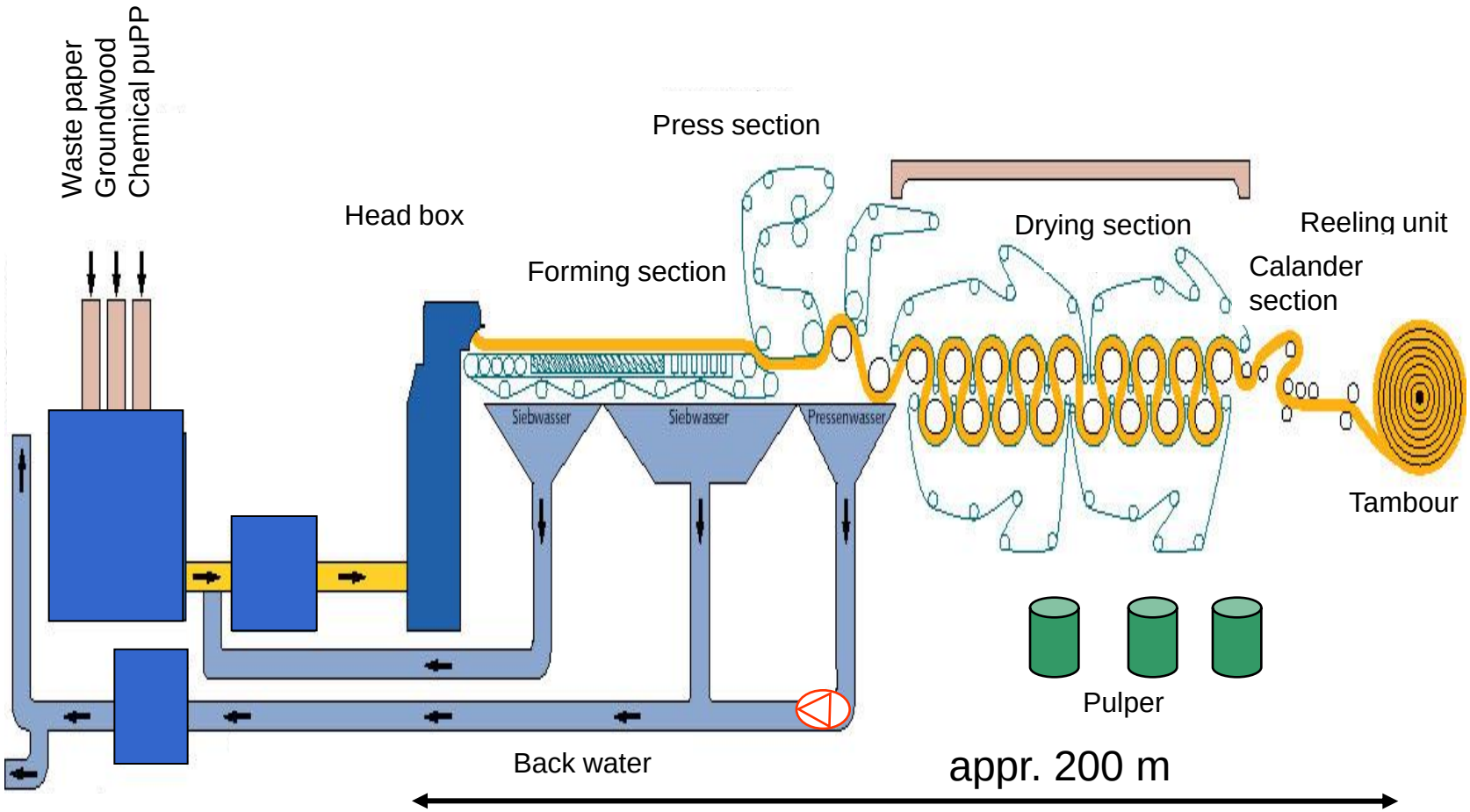





The Process - Pulp Production



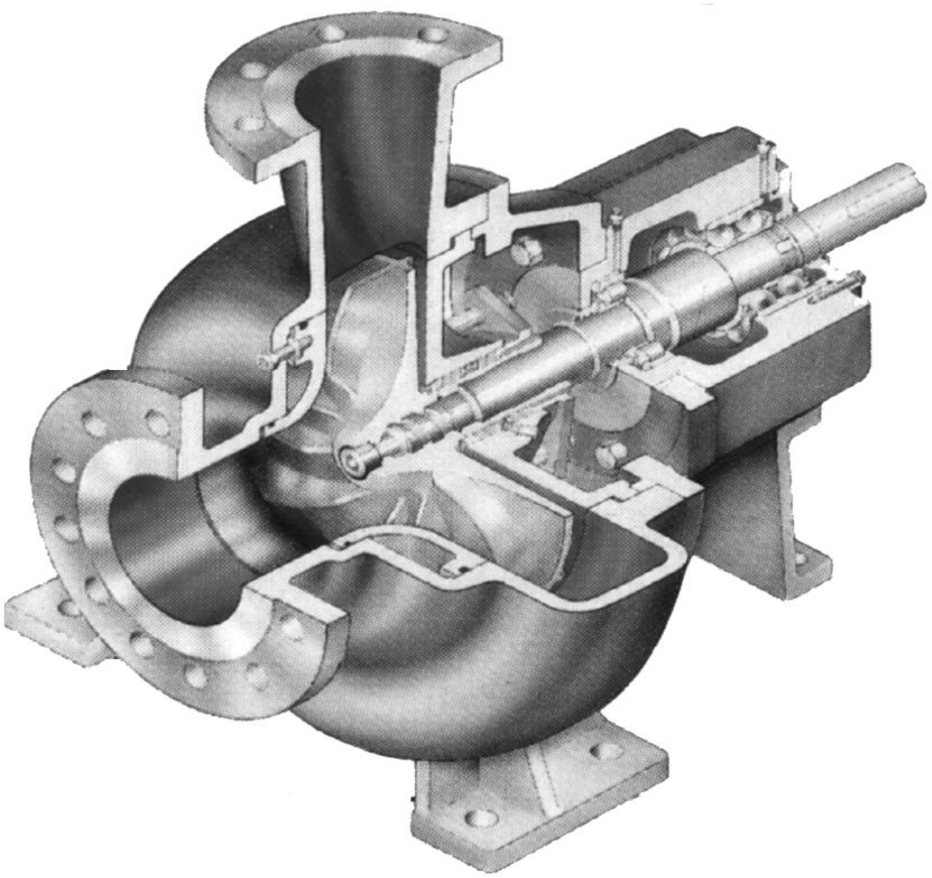
The Process - Paper machine



Mechanical Seals for P&P Equipment - Stock Pumps

Types:

- ➔ **CTX**
- ➔ **PP**
- ➔ **UFL**
- ➔ **UG**

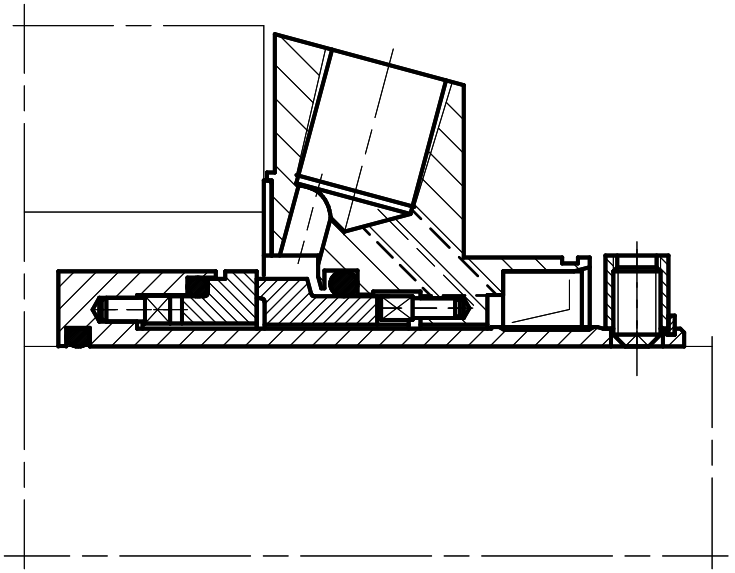


Mechanical Seals for P&P Equipment - Stock Pumps

Types:

➔ **CTX-SNO/SN/QN/DN**

- cartridge design
- stationary encapsulated springs
- rotating seat
- seal gap near to the impeller
- reversed pressure design
- no wear on pump shaft
- quick assembly to save costs
- available ex stock



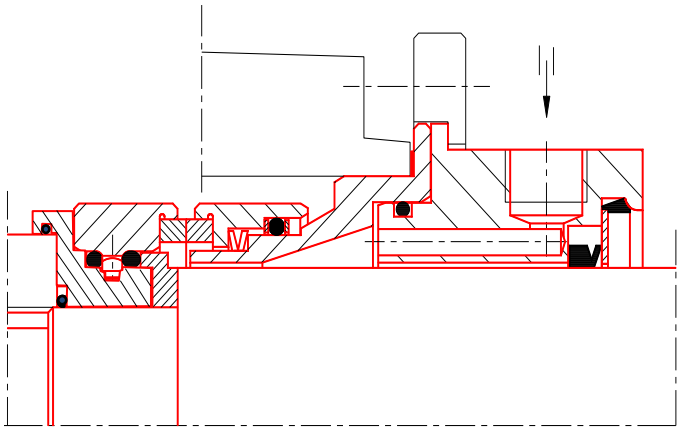
sealmatic

Mechanical Seals for P&P Equipment - Stock Pumps

Types:

➔ PP-S/-Q/-D

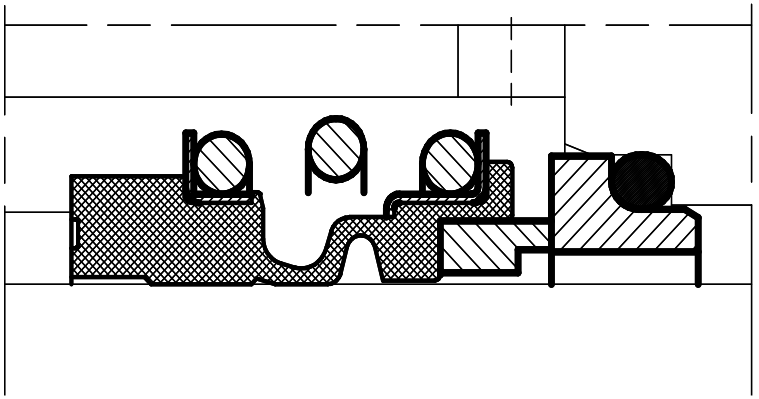
- special semi-cartridge design for pulp & paper applications
- straight outer contour of product wetted seal parts
- stationary encapsulated spring
- rotating seat
- seal gap near to the impeller
- reversed pressure design
- quick assembly to save costs
- special fit into special centrifugal stock pump



Mechanical Seals for P&P Equipment - Stock Pumps

Types:

➔ UG120S14

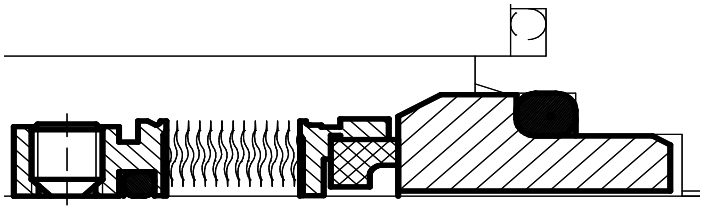


- **elastomer bellow**
- **no dynamic O-ring**
- **quick assembly to save costs**
- **available ex stock**
- **strong spring with unrestricted all-round flushing**

Mechanical Seals for P&P Equipment - Stock Pumps

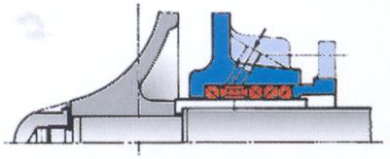
Types:

➔ UFL850N

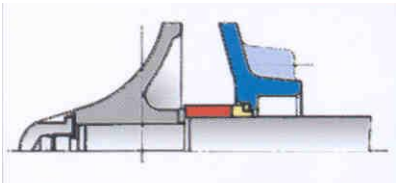


- **self cleaning metall bellow**
- **no dynamic O-ring**
- **connecting dimensions according to DIN 24960**
- **reversed pressure design**

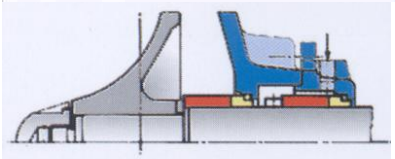
Mechanical Seals for P&P Equipment - Stock Pumps



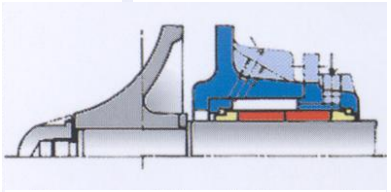
Stuffing Box
Packing



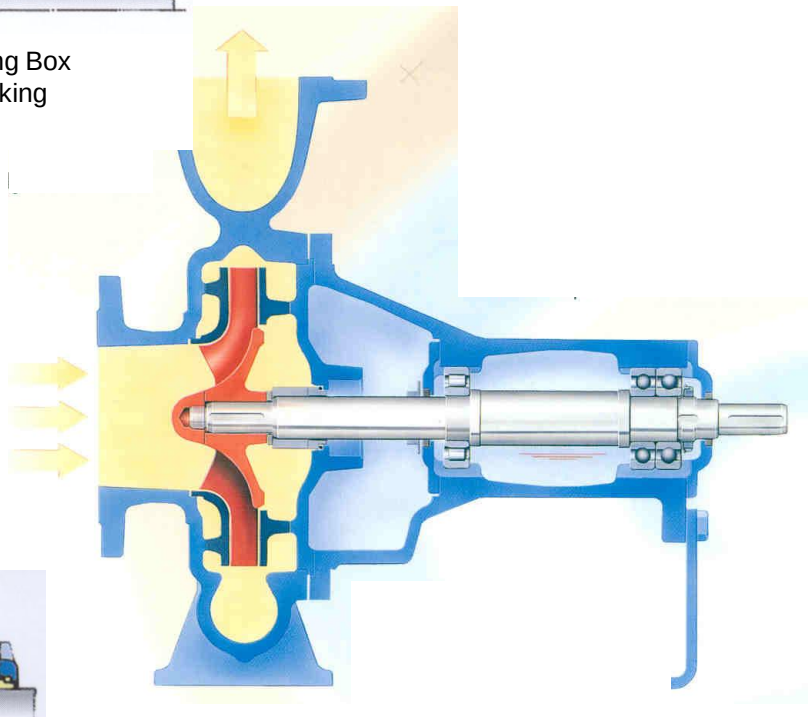
Single acting Seal



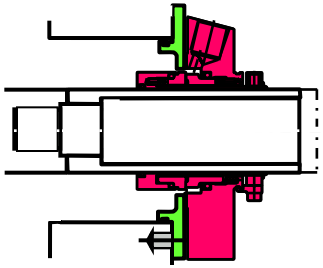
Tandem Arangement



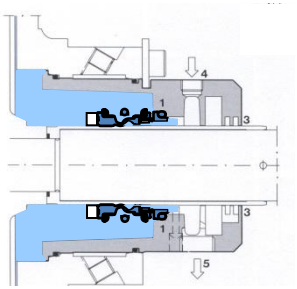
Double acting Seal-
back to back



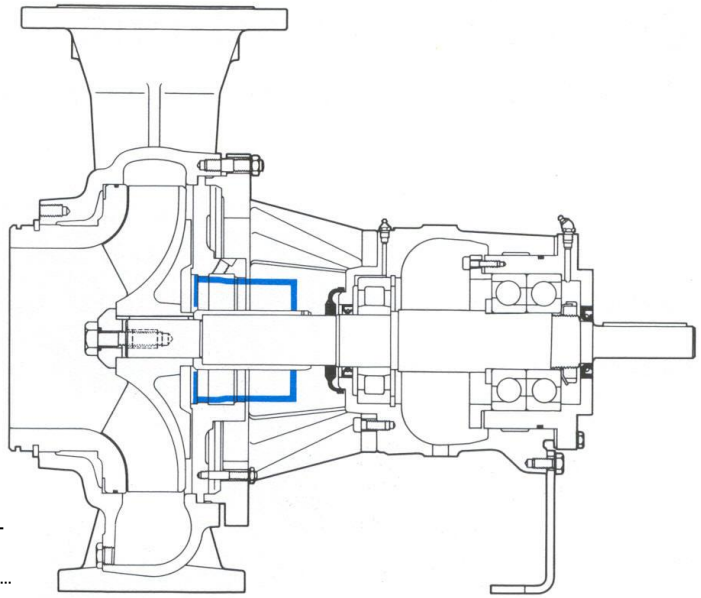
Mechanical Seals for P&P Equipment - Stock Pumps

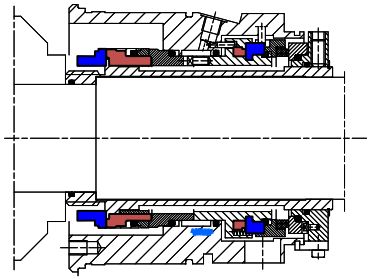


Standard Cartridge
with Adapter

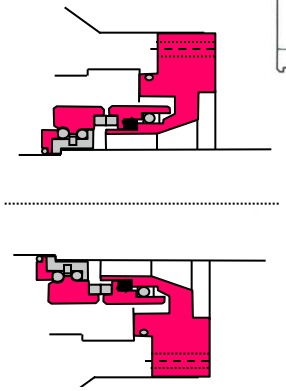


Component Seal
with PSI



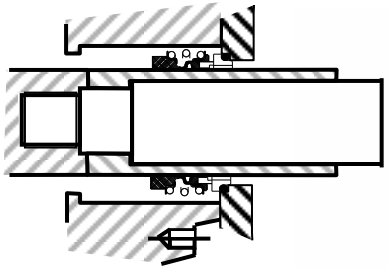


Full-Cartridge for ABS

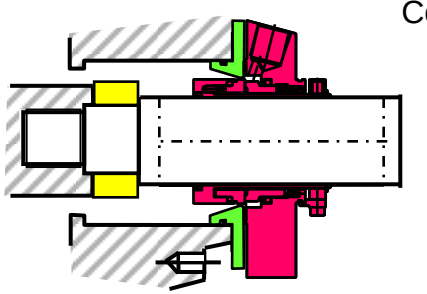


Semi-Cartridge Seal
adapted to ABS

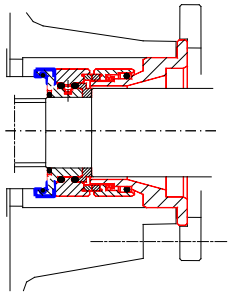
Mechanical Seals for P&P Equipment - Stock Pumps



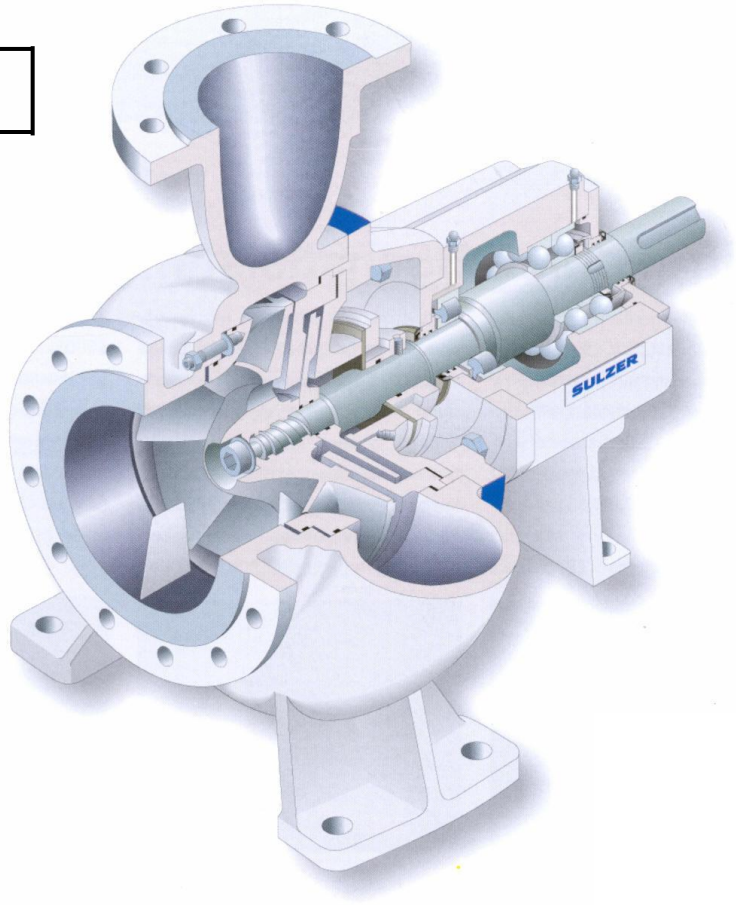
Component Seal



Standard Cartridge
with Adapter



Semi-Cartridge Seal
adapted to Sulzer



METSO Pressure Grinder T1810/12/15P

Operating conditions:

∅ = 450 mm

n = 375 rpm

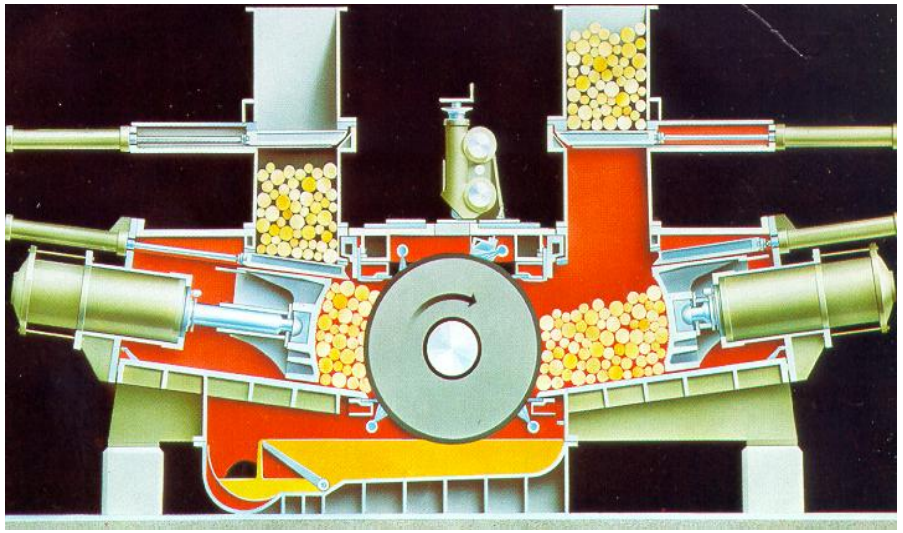
p = max. 5 bar

(73 psi)

t = appr. 150°C

(302°F)

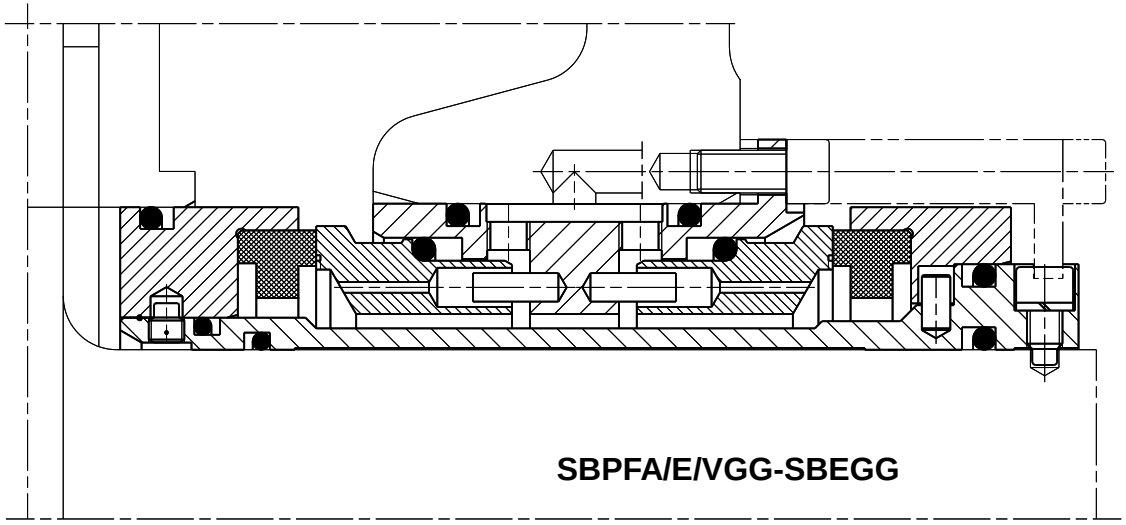
steam + fibres



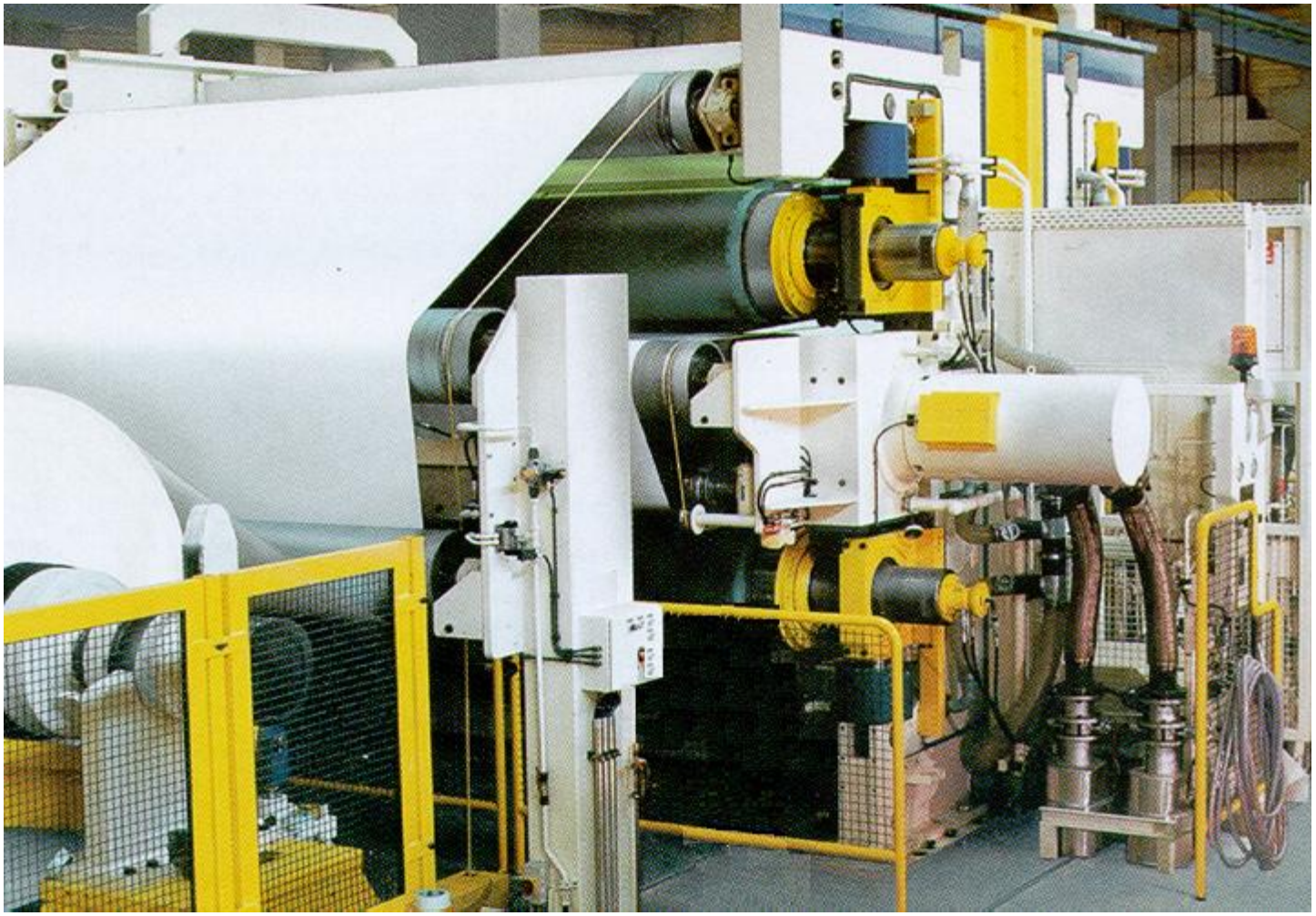
shaft displacement appr. ± 2 mm because of alternating piston pressure

METSO Pressure Grinder Seal

BSSBRS8-D2



VOITH-PAPER soft-calender



Sealmatic Calender Roller Seal

Operating conditions:

∅ = 450 mm (and bigger)

n = 600 rpm

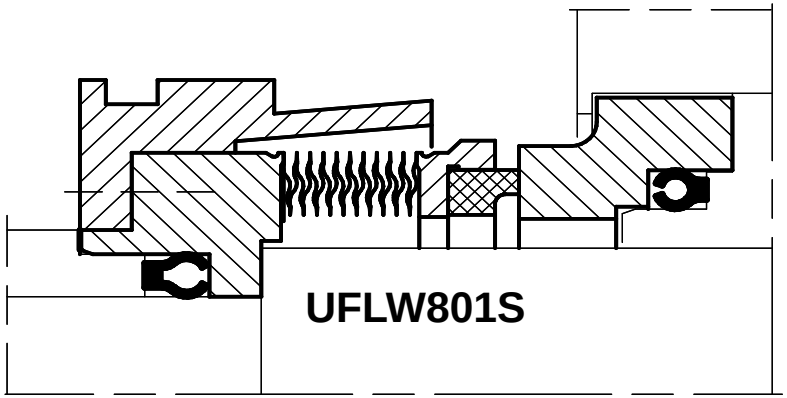
p = appr. 5 bar (73 psi)

t = 200 ÷ 300°C (473 ÷ 572°F)

heat carrier oil

Voith-Paper

Metso

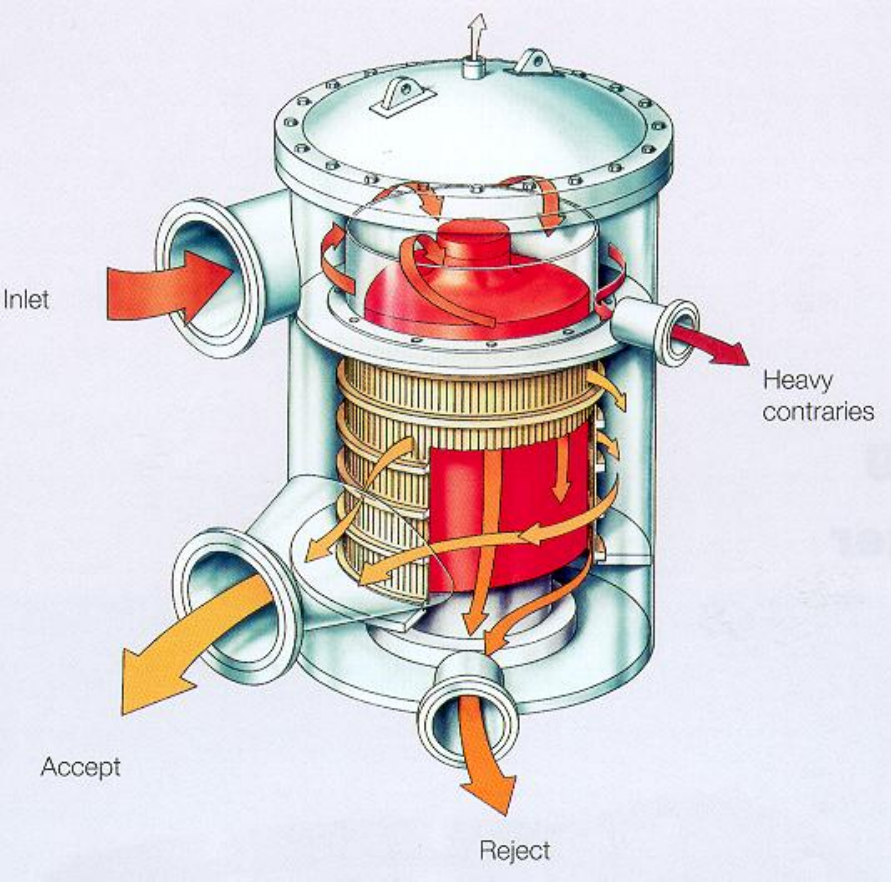


AST3GG

<u>exceptional feature:</u>

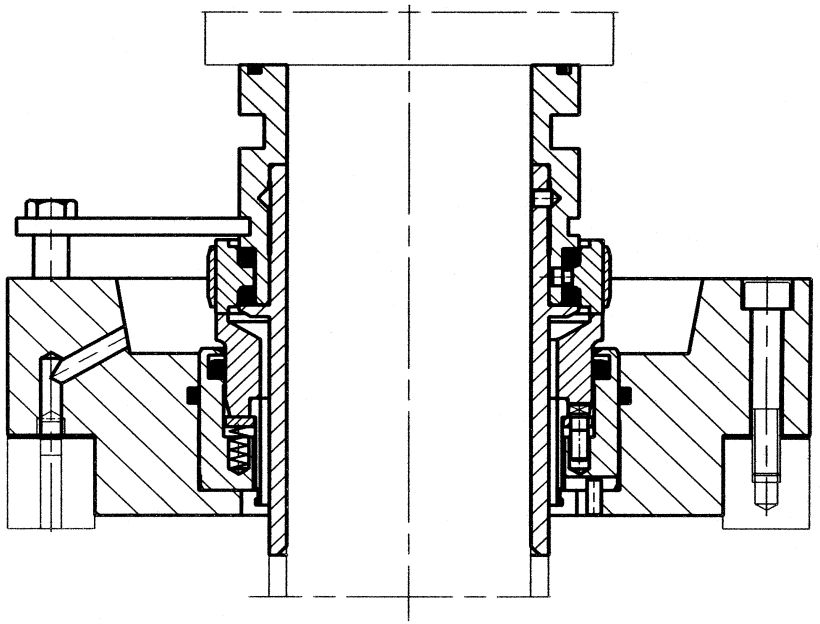
heat expansion of long (10m) roller

VOITH-PAPER Omnisorter OS-LR



Sealmatic Screen/Filter Seals

For Pressure Screens:



UFL850

BJ977GSx

BR10S4

BRS9-D

BRN-S20

PP-Seals (e. g. Andritz Sorter)

Material Code: QQVGG

Running Conditions (1)

Shaft Speed
(1500 - 1800 rpm)

+

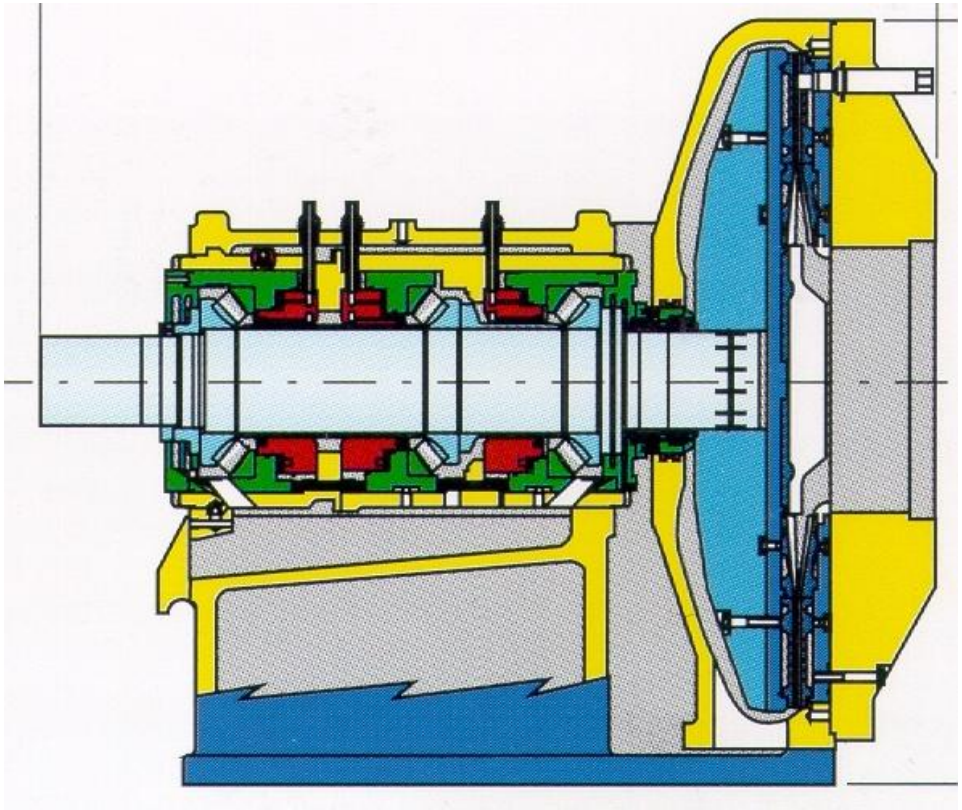
Shaft Diameter
(> 300mm)

=

High sliding velocity
(> 30 m/s)

⇓

Seal Face
Combination
A <> SiC



Running Conditions (2)

Temperature
(> 200°C)

+

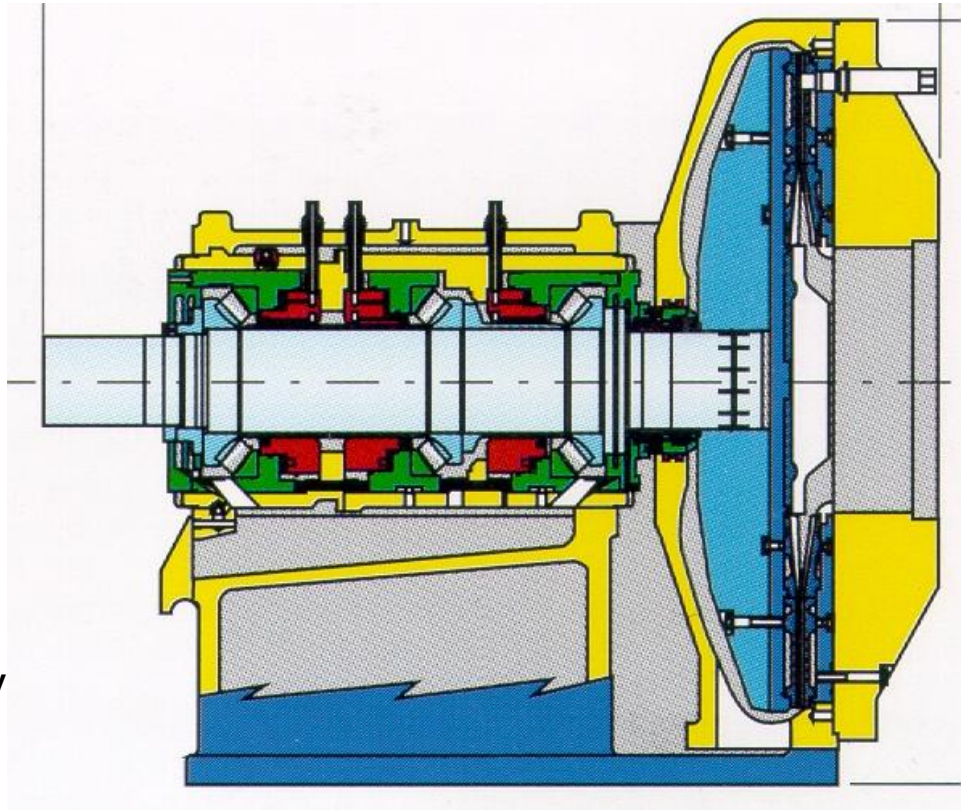
Medium
(wood chips, lignine, turpentine, steam)

+

Flush
(steam or water)

⇓

Selection of secondary seal elements, design



Running Conditions (3)

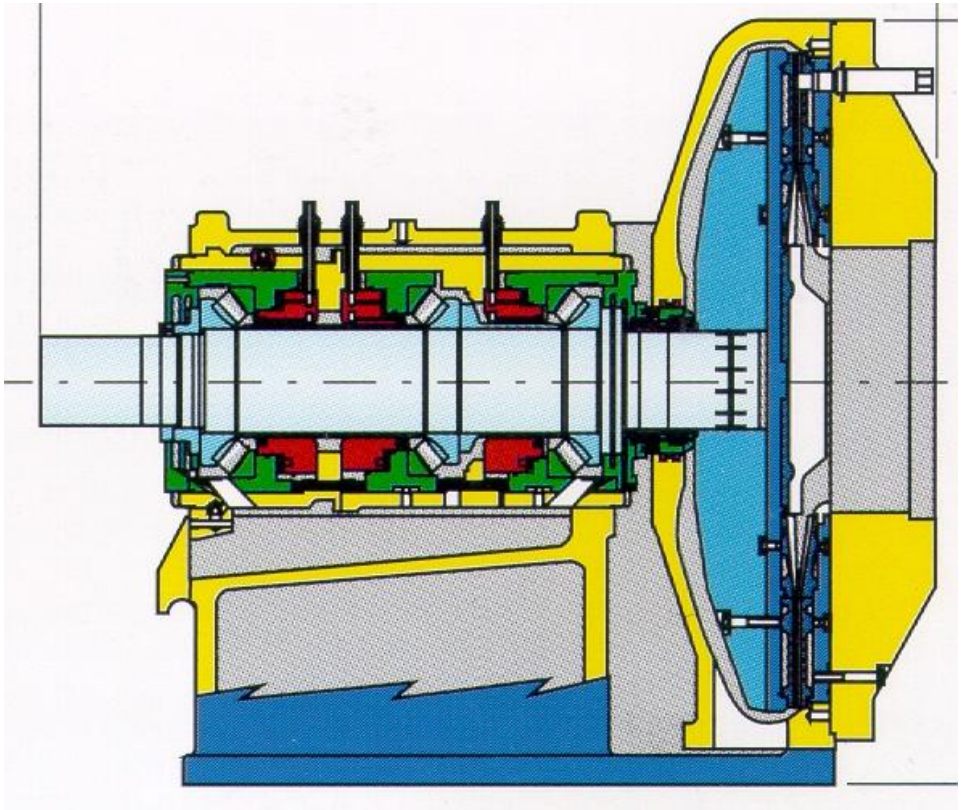
Axial Movement of Refiner main shaft
(0,2 - 100 mm)

+

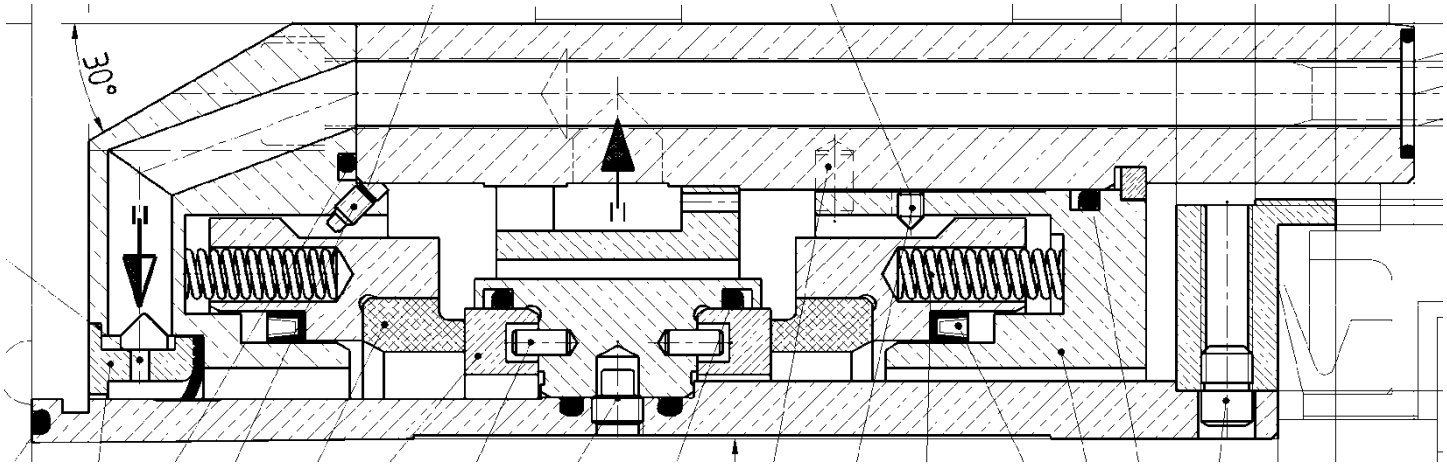
Pressure in Refiner Chamber
(- 16 bar)

⇓

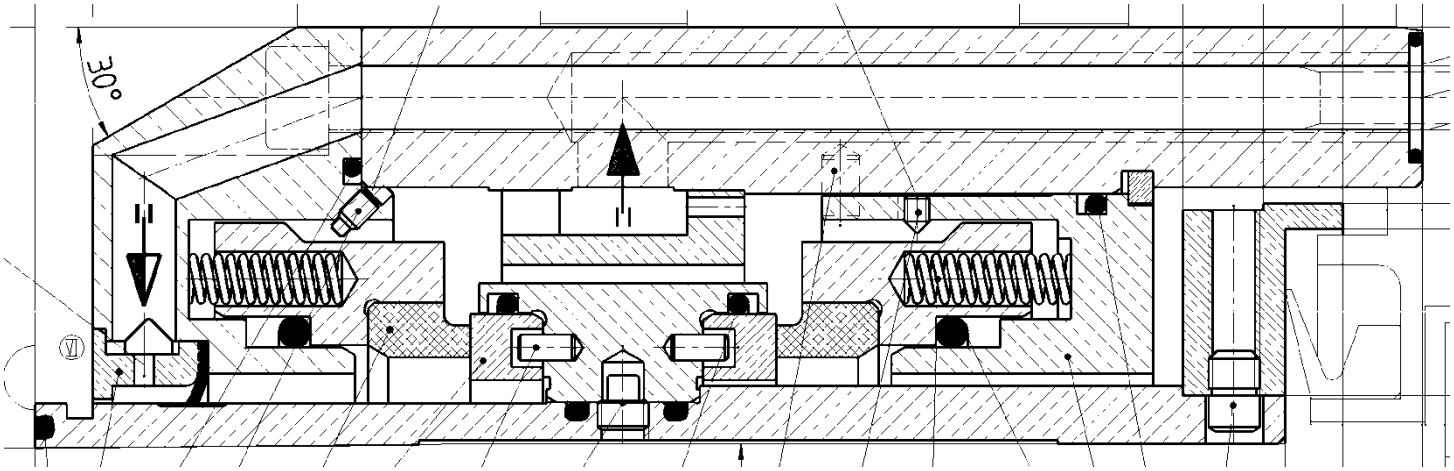
Special Design of Mechanical Seal



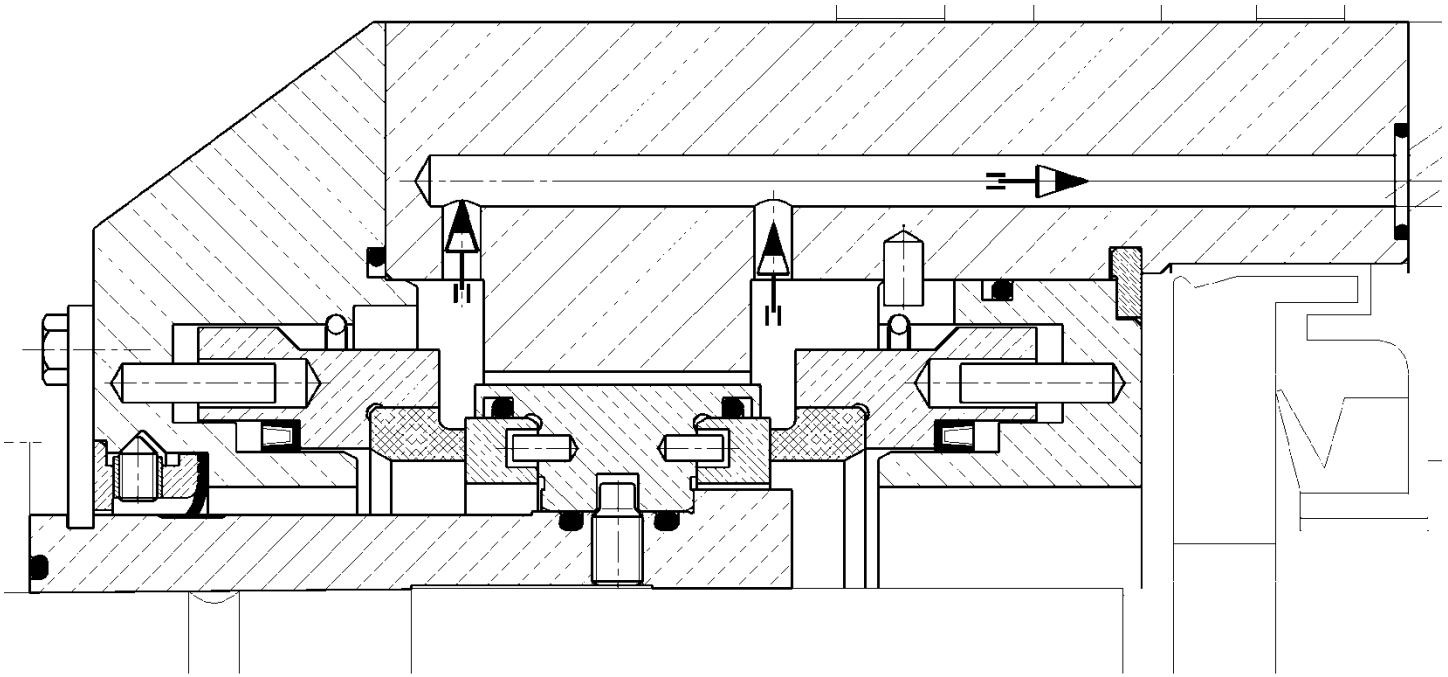
B-D10
RGPA/RGP65S/RGP76CD



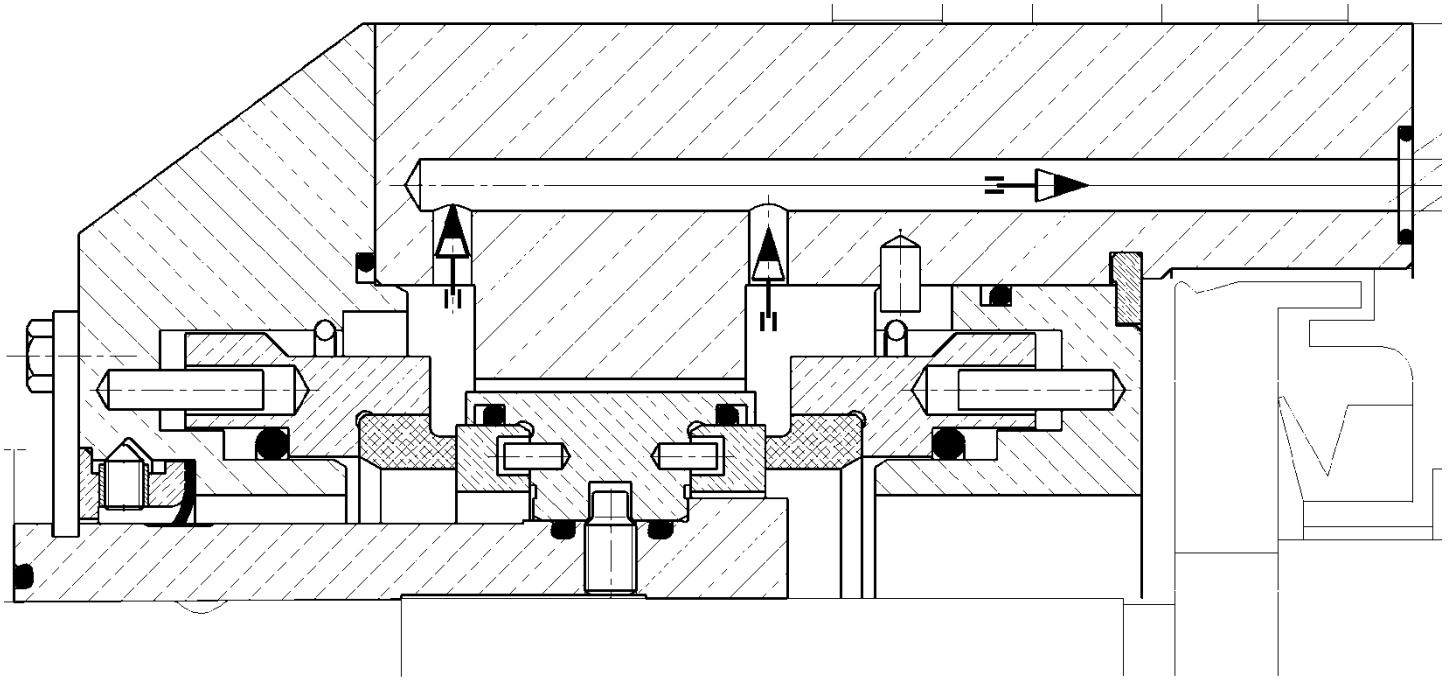
B-D1
RGPA/RGP65S/RGP76CD



B-D20 RGP 60



B-D2 RGP 60



Sealmatic Seal-Water-Quality

Recommendation for independant Circuits

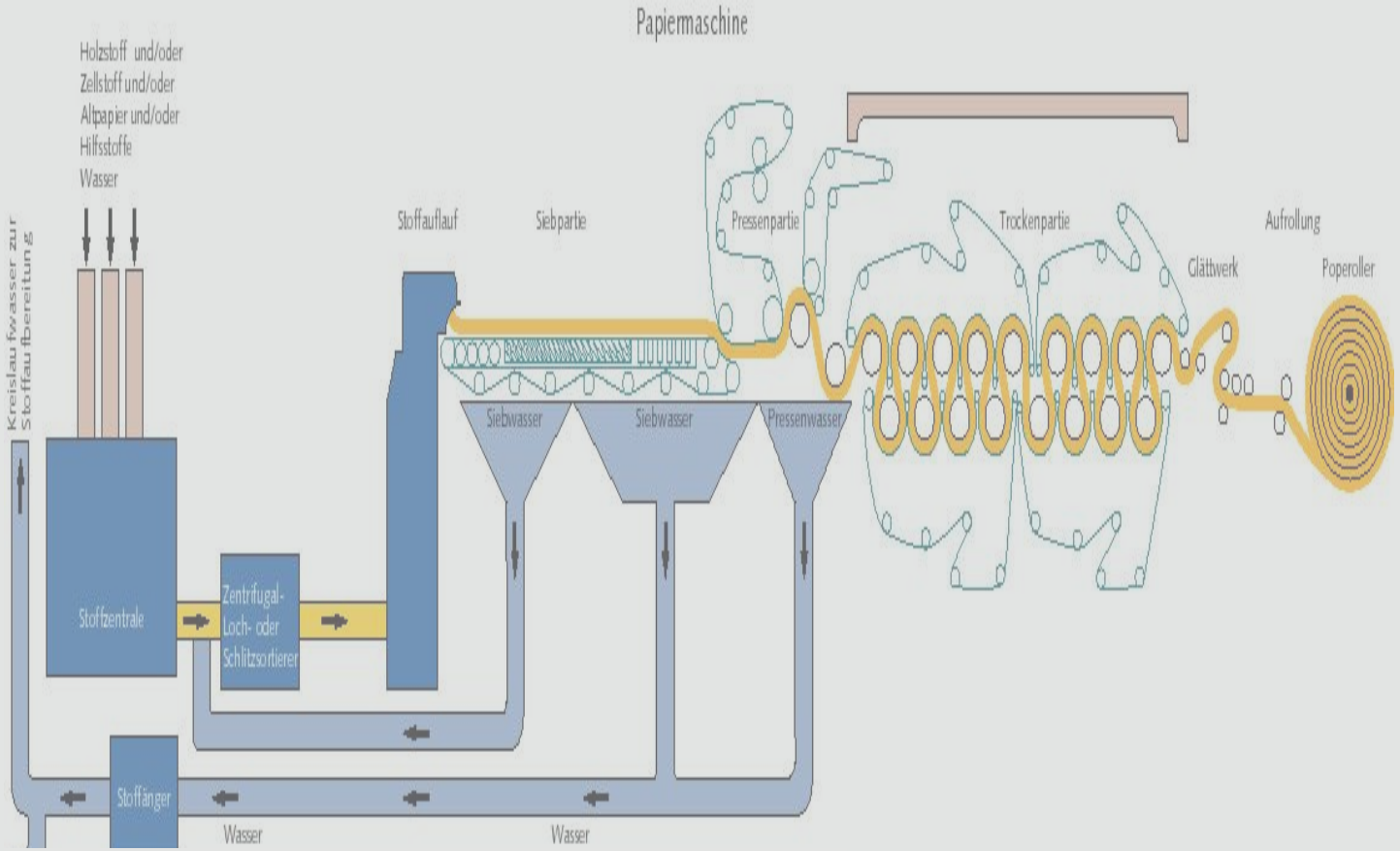
Operating conditions on the seal:

temperature:	up to 200°C (473°F)
pressure:	up to 20 bar (290 psi)
sliding velocity:	up to 30 m/s

<u>Commercial distilled water or water of:</u>

hardness:	max. 3,3°
	≈ 33,3 UG CaO/l ≈ 60 UG CaCO3
unsolved solids:	max. 10 UG/l
evapuration residue:	max. 100 UG/l
conductivity at 25°C:	10 - 140 µS/cm
free of fibres	
percentage of solved gases:	max. 0,2 Ncm³ gas/cm³ water
seal outlet temperature:	should not exceed 60°C

Sealmatic for ABS Scanpump



Application CTX-DE4:

Waste water

Waste water, Extractions- and Rejectpumps

Media: Water with pulp & paper

Typical OEMs

ABS
A company in the Cardo Group

ALLWEILER

VOITH PAPER

ANDRITZ

SULZER

kusters BELOIT

seepex

KLEINEWEFERS KTM

PALLMANN

metso

NETZSCH








Your Partner for Sealing Technology

Thank You