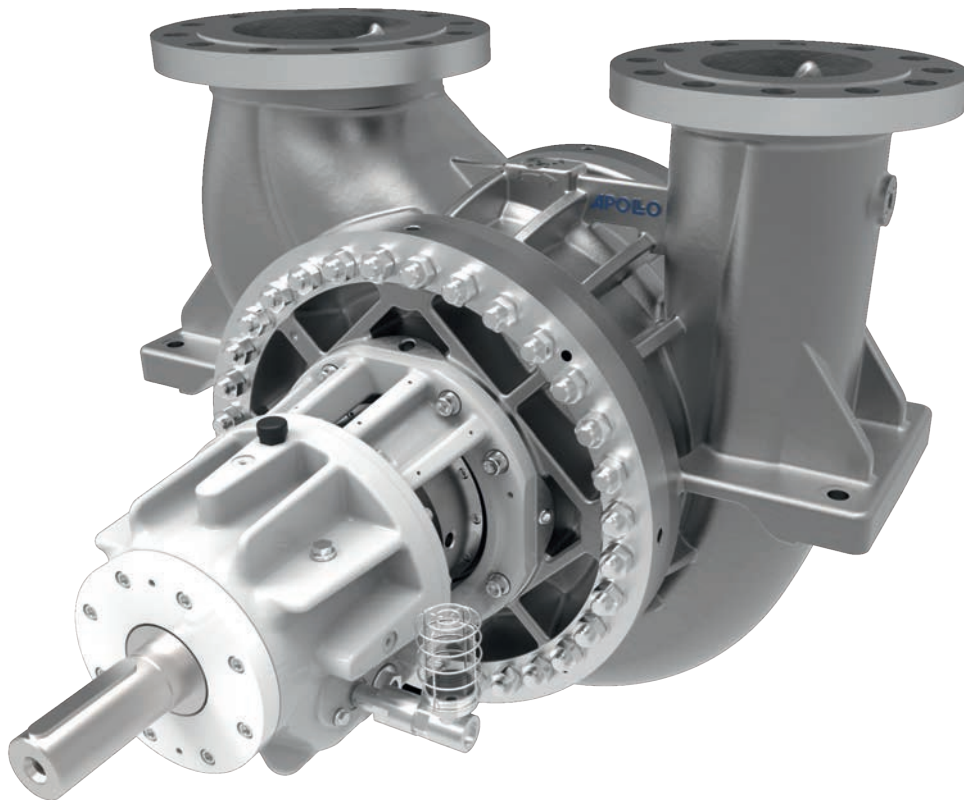


SINGLE STAGE, DOUBLE SUCTION PROCESS PUMPS

ZPR
ZPRA

BETWEEN BEARINGS VERSION
API 610 / TYPE BB2



- Heavy duty design according to API 610
- Suitable for high pressures and high temperatures
- Optimum rotor dynamics for safe operation
- Double suction impellers with best NPSH values
- Variable casing design according to customer needs

Range of Applications

Based on solid design, between-bearings version, low NPSH values and the suitability for high pressure and temperature this pump series has various applications:

- applications in refineries
- offshore applications
- applications in the oil and gas industry
- applications in power plants

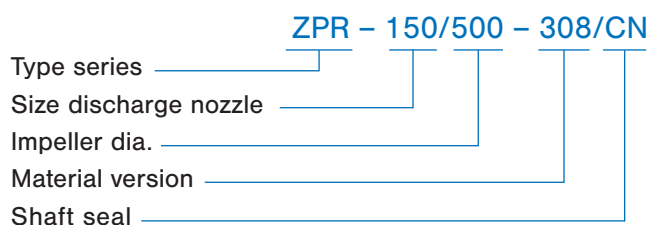
Design

- Horizontal, single stage, radially split process pump with double suction impeller, between bearings type
- Volute casing with suction and discharge nozzles in „top-top“ position
- Modified casing for higher pressure ranges and variable nozzle position
- Bearing types: antifriction bearings with ring oil lubrication, Mixed bearings: radial slide bearings, axial antifriction bearings with ring oil lubrication, radial and axial slide bearings with pressure oil lubrication
- Thrust compensation by double suction impeller design
- Short downtime during maintenance, since pump casing can remain in the pipeline on disassembly.
- Flanges according to ASME or DIN EN

Shaft seal

Separate seal chamber suitable for a variety of mechanical seals – from single and double mechanical seals up to cartridge mechanical seals and gland packing – all variants are available. Pumps of this version have a standard design with cartridge mechanical seal. Assembly space according to API 610/682.

Designation



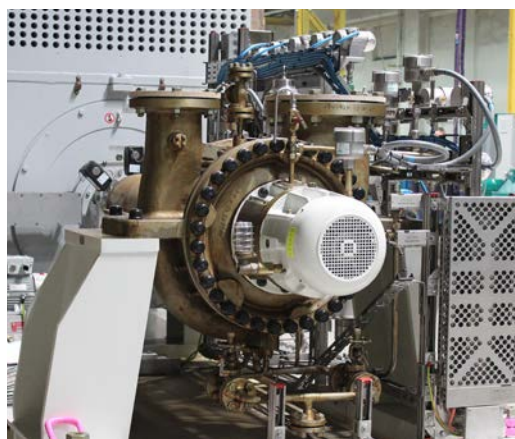
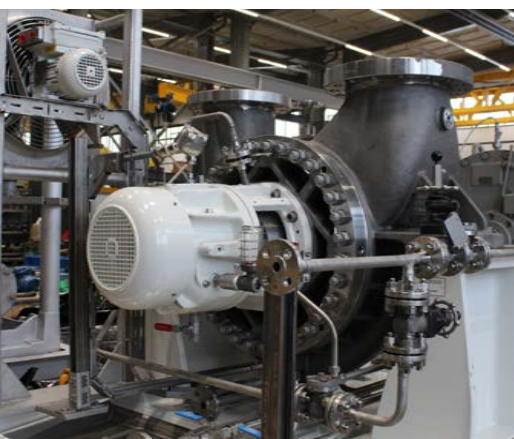
Operating data

	ZPR	ZPRA
Nozzle size (mm)	from 100 to 250	from 200 to 400
Capacity	up to 1500 m ³ /h	up to 4000 m ³ /h
Head	up to 450 m	up to 300 m
Design pressure	up to 160 bar	up to 55 bar
Temperature limits	up to 450 °C	up to 450 °C

Materials

	S-5	S-6	C-6	A-8	D-1	D-2
Casing	Carbon steel	Carbon steel	12 % Chromium steel	316AUS	Duplex	Super duplex
Casing cover	Carbon steel	12 % Chromium steel	12 % Chromium steel	316AUS	Duplex	Super duplex
Shaft	12 % Chromium steel	12 % Chromium steel	12 % Chromium steel	Duplex	Duplex	Super duplex
Bearing housing	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
Impeller	12 % Chromium steel	12 % Chromium steel	12 % Chromium steel	316AUS	Duplex	Super duplex

Materials according to API, NORSOK, NACE and special alloys are available.



Flanges

- ASME or DIN EN
- Class 600 standard for ZPR
- Class 300 standard for ZPRA

Rigid rotor design

- optimized rotor-dynamic behavior
- controlled shaft bending
- good vibration behavior

Bearing housing

- 360 ° mounting
- antifriction bearings: standard / optional plain bearings
- oil ring lubrication
- sump or fan cooling is possible
- high-grade metallic bearing isolators
- connections for various instruments available

Seal chamber

- mechanical seals according to API 610 / 682; all the API piping schemes are possible

Hydraulics

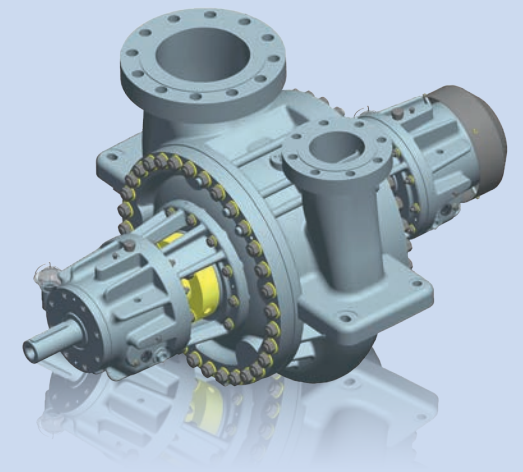
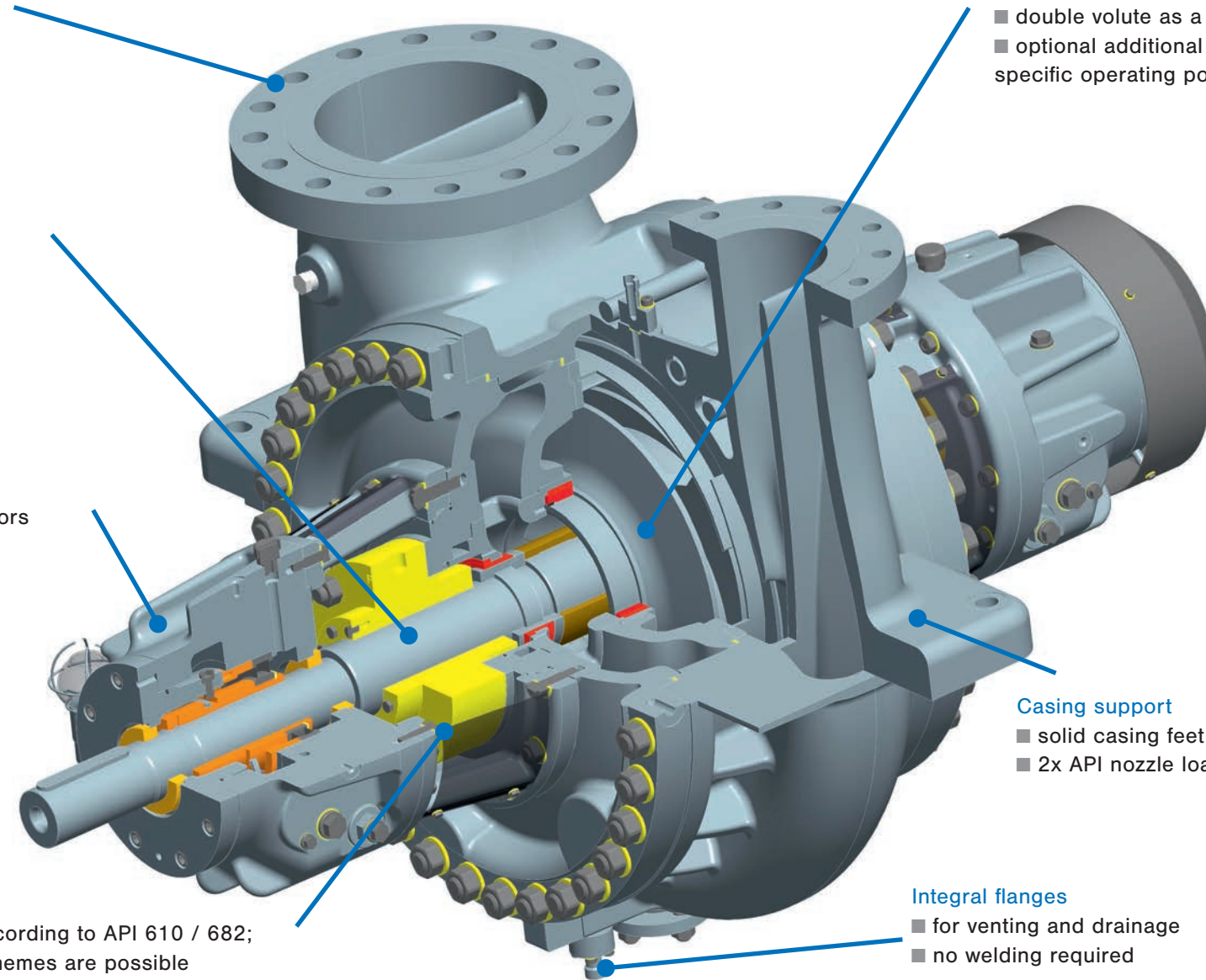
- double suction impeller
- optimized suction chambers for low NPSH values
- double volute as a standard
- optional additional diffuser for specific operating points

Casing support

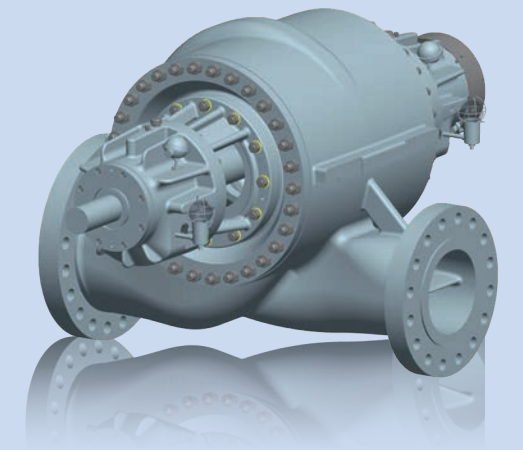
- solid casing feet placed in centerline position
- 2x API nozzle loads capacity

Integral flanges

- for venting and drainage
- no welding required

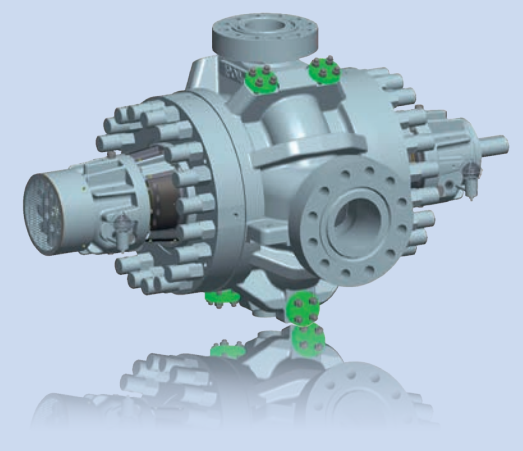
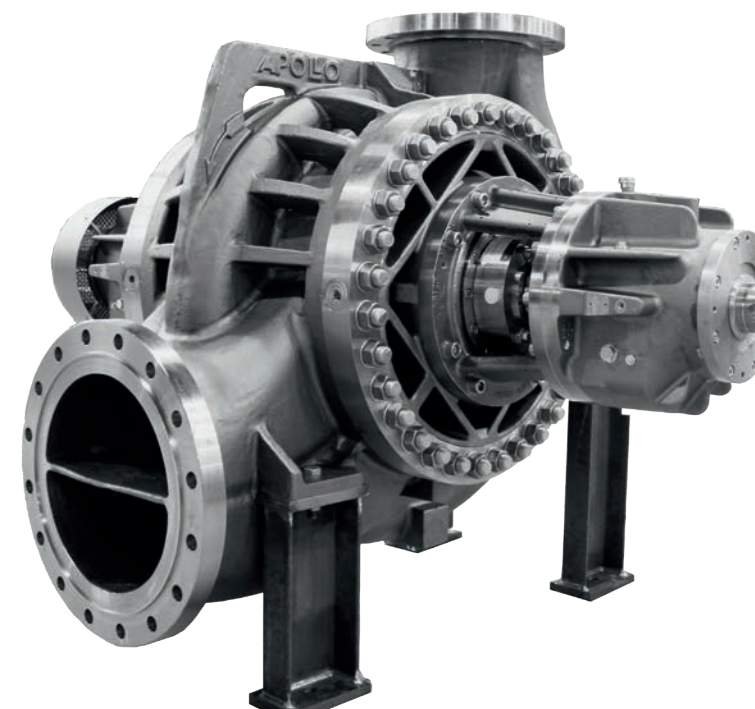
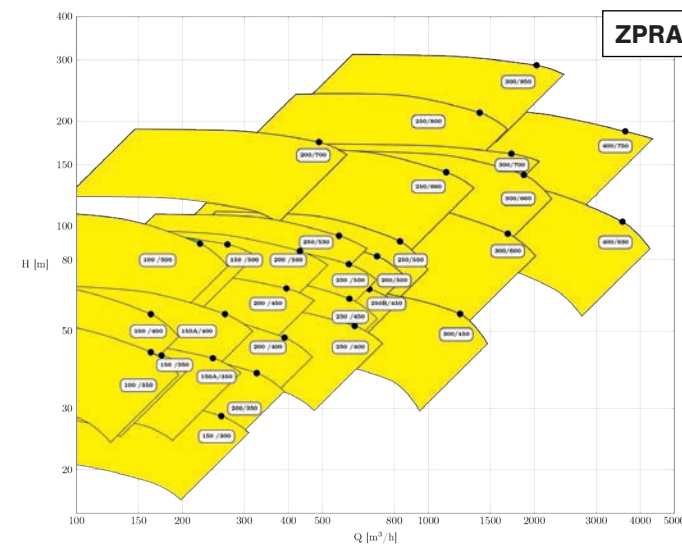
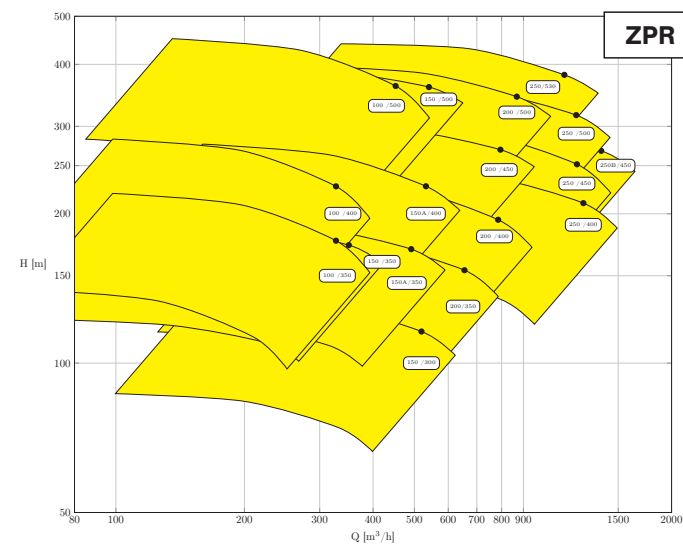


■ Standard version „top-top“

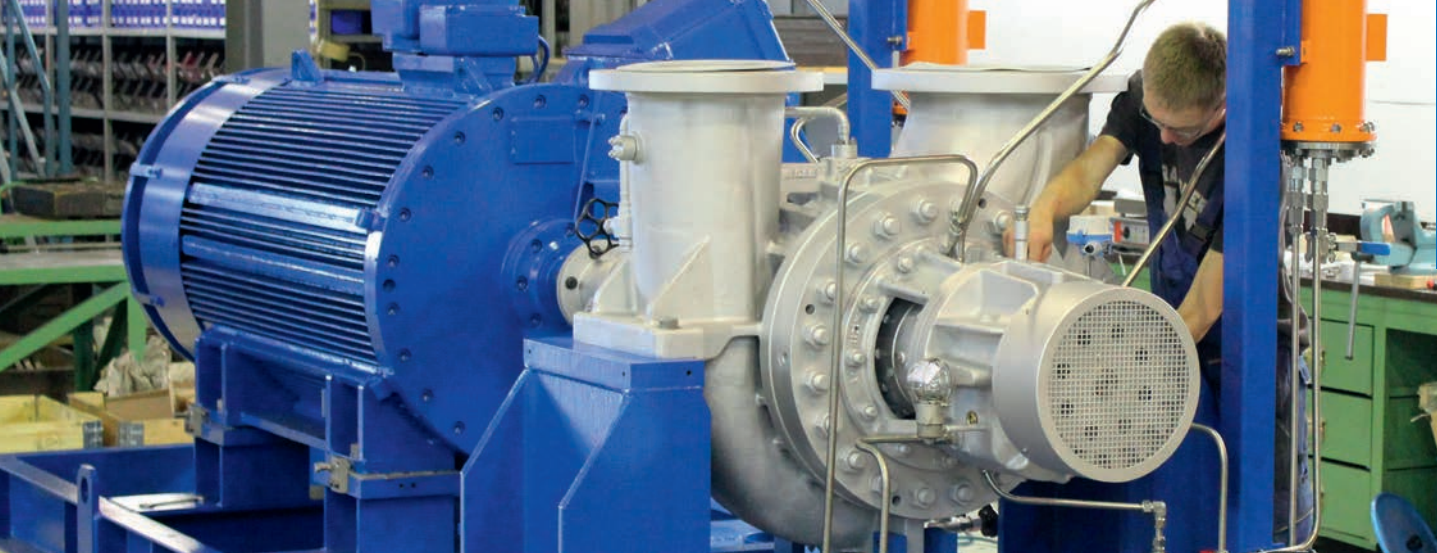


■ In-line design of suction and discharge nozzles

Performance range

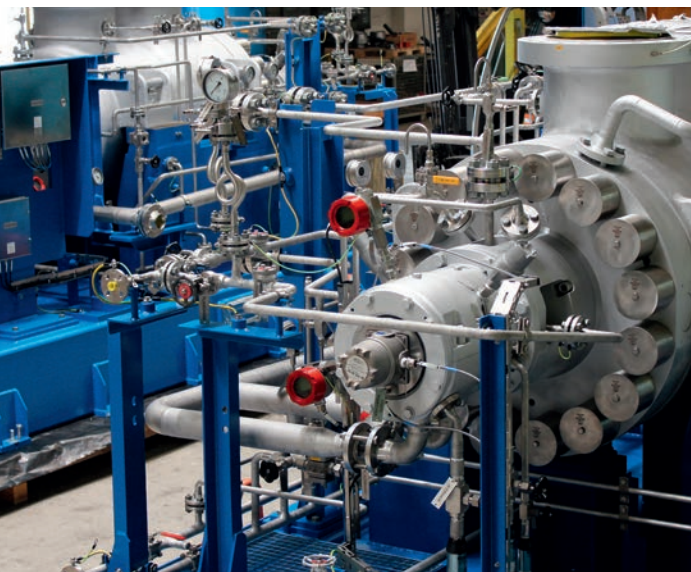


■ Heavy-duty design for high suction pressures



Since more than 100 years APOLLO in Goessnitz has been developing and producing pumps for different applications with most different operating principles.

In continuation of this history Apollo has developed to a Manufacturer of high quality heavy-duty Process Pumps – especially according to API 610 Standard.



20 years ago, the business Division „System Engineering & System Technology“ was founded. With this division we can offer our Customers complete solutions from a single source. Apollo has high-killed Personnel for Pumps and Pumping Systems up to Specialists for Electrical and Control Engineering. By taking advantage of these synergies, of short lines of communication, of optimized process

chains and of high Flexibility of our company, we provide our Customers with best support in solving their problems and tasks worldwide.

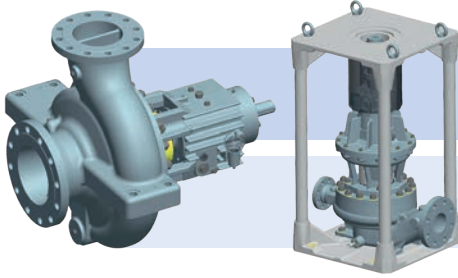
Our production methods and systems meet the highest level of quality and allow the implementation of orders according to different standards and regulations.

The Quality Assurance in all areas of the company, including suppliers and cooperation partners, is the top priority and is consistently implemented. The most up-to-date test fields provide realistic test conditions.

Today we develop and manufacture with the most modern methods – from the hydraulic design over to 3D CAD design and engineering, FEM calculation to the casting patterns and parts manufacture via CAD -CAM Interfaces.

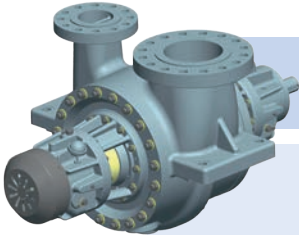


PROCESS PUMPS | API 610



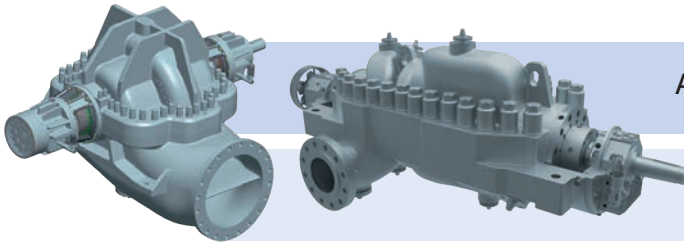
Single stage pumps: **OH1, OH2, OH3**

■ KRH ■ KRHA ■ KRHL / KRPO ■ KRP / KRPH ■ KRI / KRIL



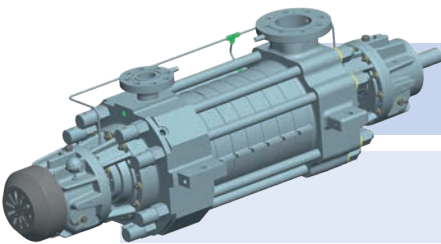
Single and two-stage between bearings pumps: **BB2**

■ ZPR ■ ZPRA ■ KGR / KGRD



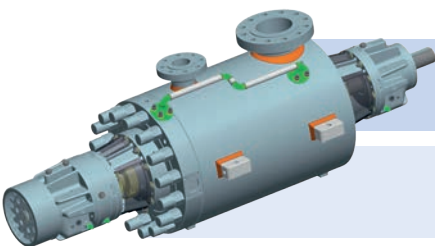
Axial split between bearings pumps: **BB1, BB3**

■ ZMK ■ ZMKV ■ AMG



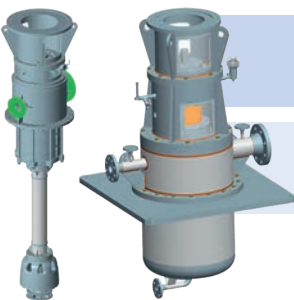
Multistage high-pressure pumps, ring sections type: **BB4**

■ HP ■ GP „back-to-back“ ■ GMHD



Multistage high-pressure barrel pumps: **BB5**

■ TL ■ TG „back-to-back“ ■ TGDX



Single and multistage, vertical pumps: **VS1, VS4, VS6**

■ HPTV ■ HPV ■ HPVX ■ GSTV