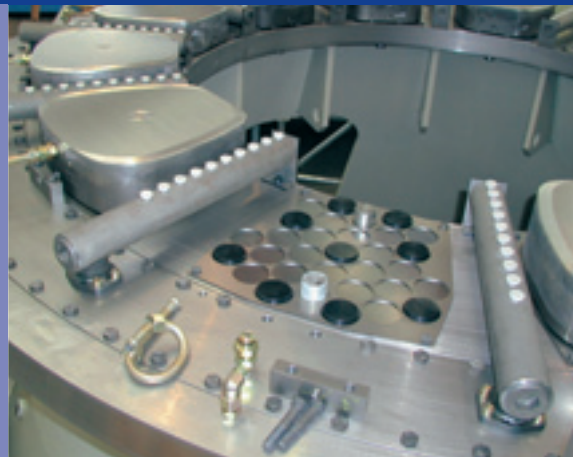
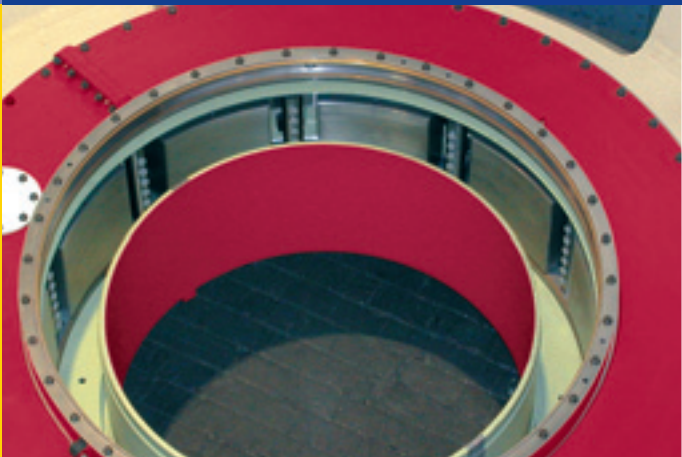


Bearings for hydro power machines



General

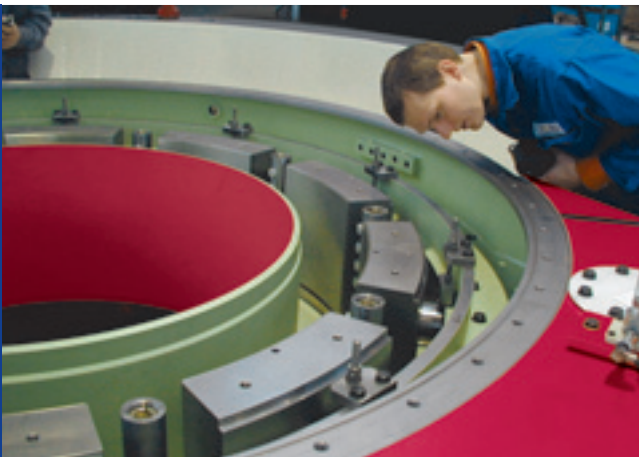
In hydro power machines, bearings are among the most sophisticated components. They are responsible for smooth operation and high availability of the unit.

With more than 140 years of experience, Voith Hydro offers highly reliable new or replacement bearings for any application. The company's extensive bearing modernization expertise is unique.

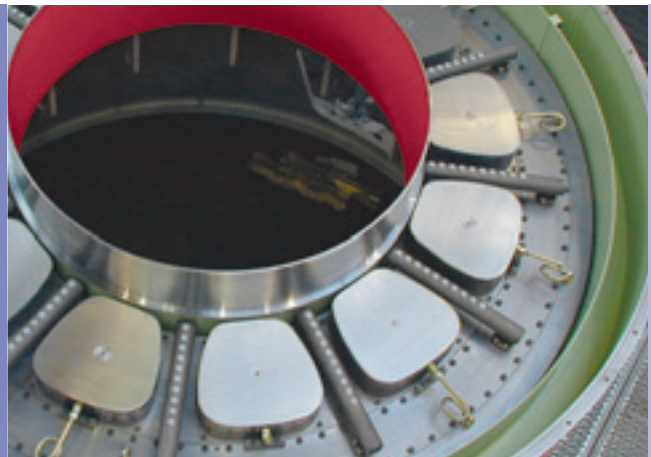
Voith Hydro is ISO 9001-certified and equipped with state-of-the-art engineering facilities. Stringent quality control and continuous research and development ensure optimum technical solutions and products of the highest quality for your project.

Products and expertise

Hydrodynamic bearings ensure wear-free operation.



Pump-turbine workshop assembly of segmented guide bearing



Thrust bearing during assembly

Bearing applications

Hydrodynamic bearings are installed in generators and turbines with vertical and horizontal shafts. Voith Hydro's bearings are designed for very high reliability and availability. Individual needs of each application are considered to ensure wear-free operation over decades with only minimum service requirements.

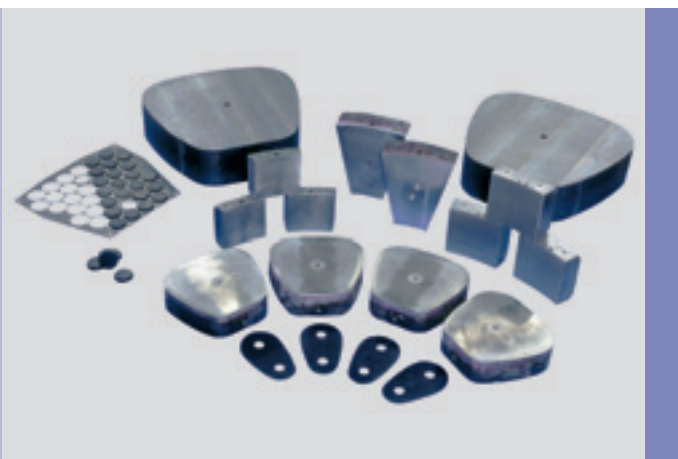
Bearing types

Our services and supplies include bearings for any type or size of hydro power machines:

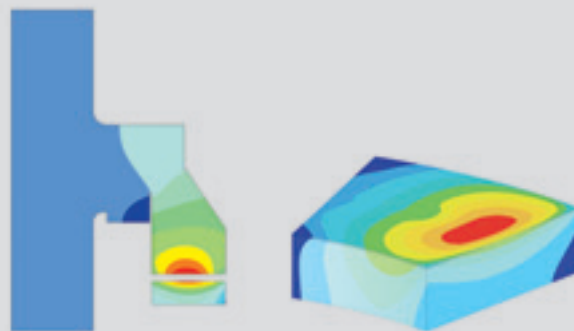
- Tilting segment thrust and guide bearings; oil lubricated
- Journal guide bearings; either oil or water lubricated
- Magnetic thrust bearings; special applications

Cooling system

Oil circulation is achieved either by centrifugal forces of the rotating shaft or by external pumps. Heat exchangers are normally placed outside the bearing housing. Internal coolers as an option are also available. Effective instrumentation rounds out the cooling system to guarantee the bearing's function.



Bearing segments and support components



Temperature distribution analysis by FEA

Bearing housing seals

Voith Hydro also specializes in seals. Depending on the application, individually designed splash protection or pressurized air seals are available, complete with oil dust extraction systems.

Rehabilitation and service

As a worldwide supplier of complete hydro power machines, Voith Hydro is the ideal choice when it comes to replacing or servicing your equipment. Special boundary conditions and applications, for example bi-directional units, are considered at an early stage. Voith Hydro can optimize your new or replacement bearing for maximum efficiency.

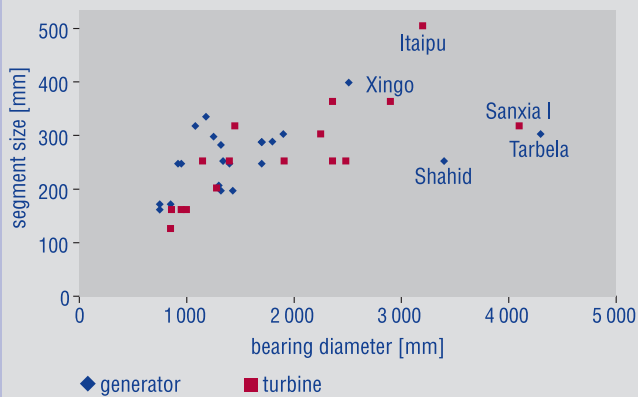
Bearing performance

Voith Hydro uses numerical tools such as CFD (Computational Fluid Dynamics) and FEA (Finite Element Analysis) to predict the bearing's behavior during operation. Proper monitoring assures that the condition of the bearing is always known.

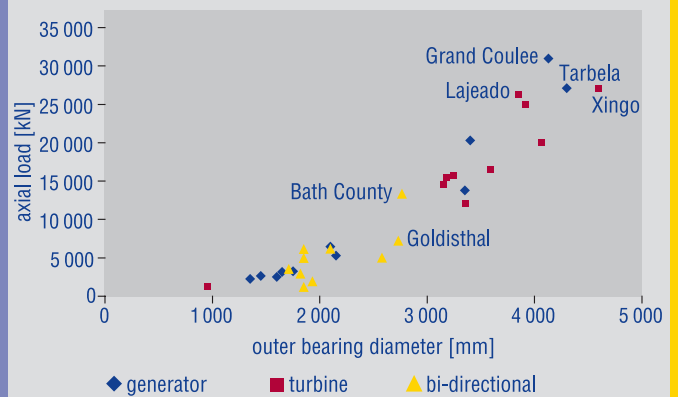
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A Voith and Siemens Company

References Voith Hydro guide bearings



References Voith Hydro thrust bearings



Range of experience

Journal guide bearings

Bearing diameter \leq 1 000 mm
 Oil film thickness $>$ 50 μ m

Guide bearings with tilting segments

Bearing diameter \leq 4 300 mm
 Segment size \leq 500 mm
 Oil film thickness \geq 50 μ m

Thrust bearings with tilting segments

Outer bearing diameter \leq 4 600 mm
 Segment size \leq 900 mm
 Bearing loads \leq 31 000 kN
 Oil film thickness \geq 25 μ m

VOITH
Engineered reliability.