

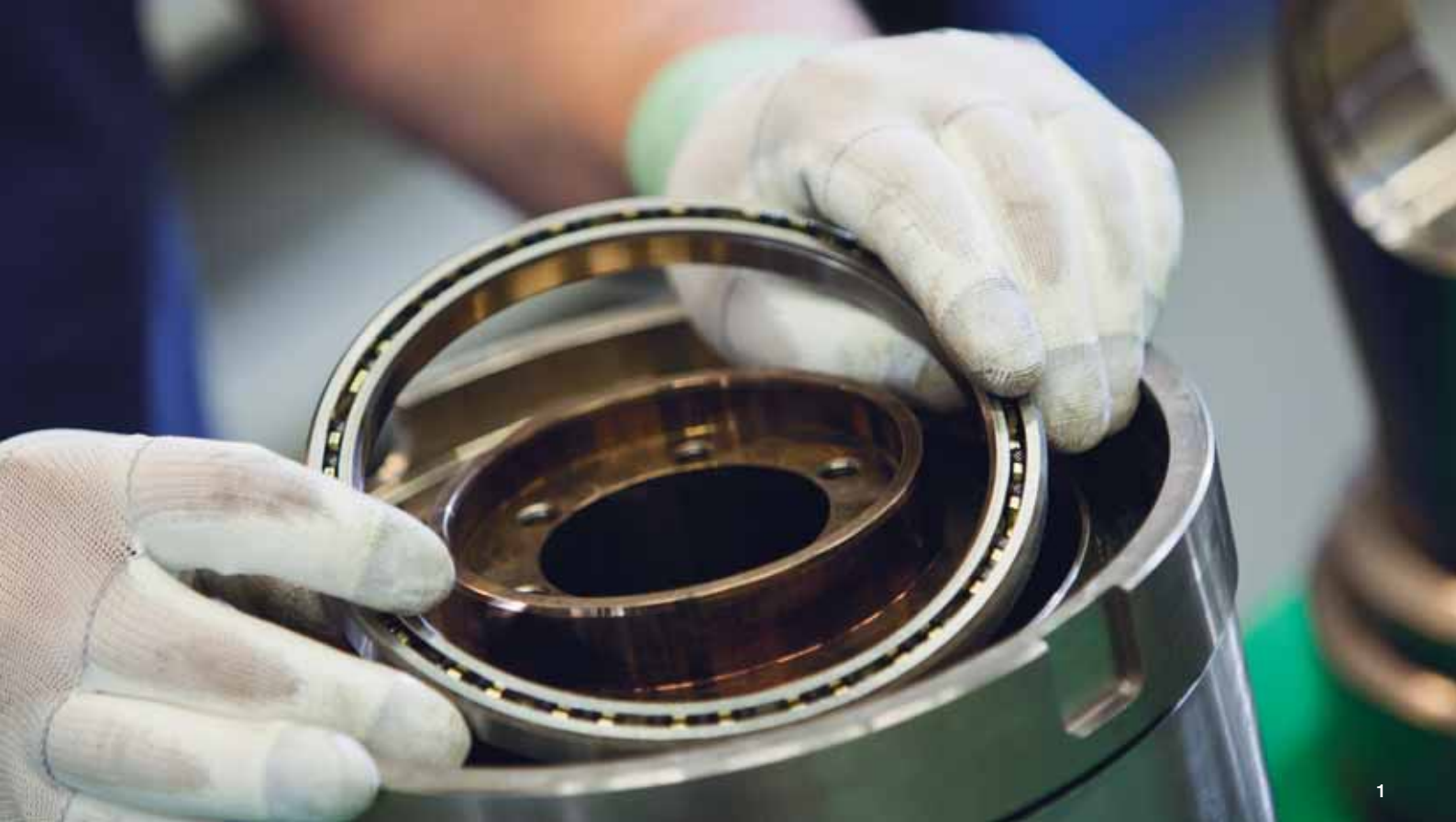


VOITH

Voith Turbo Safeset at Your Service.

Installation, Service and
Performance Optimization.





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Voith Turbo Safeset Services For Maximum Return on Your Investment

Professional installation, training of your maintenance personnel and high quality service, make sure your torque-limiting and connection couplings meet their full design potential.

Whenever you need support we provide it instantly. Our service personnel use the latest technology and all their knowledge and experience to provide the service needed.

We carry out scheduled servicing and repairs on all Voith torque-limiting and connection couplings. This reduces life cycle costs, and guarantees their continuous operating performance.

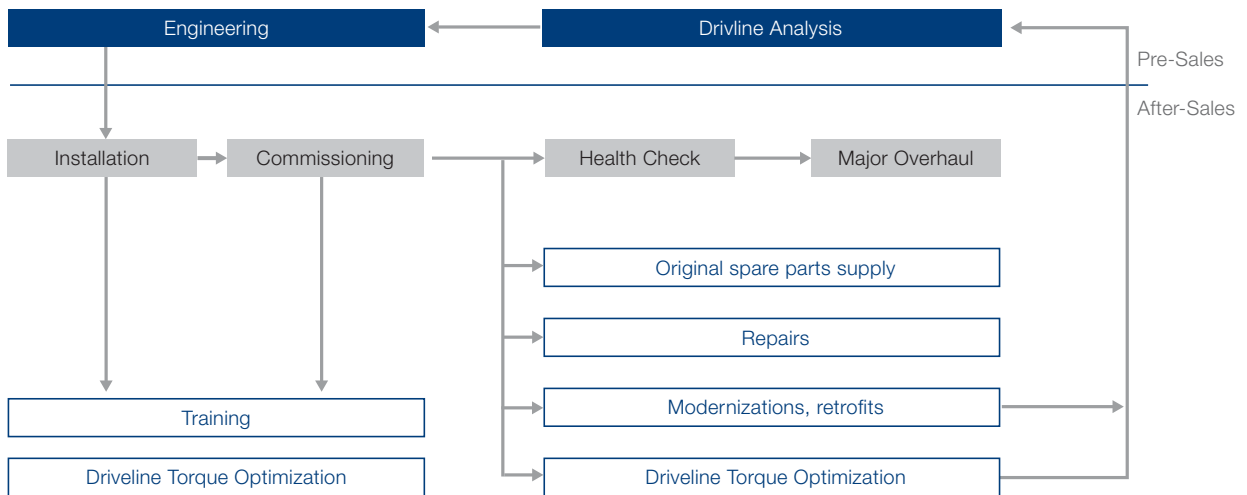
Furthermore, we propose possible improvements and upgrades. Our expert engineers perform advanced driveline analysis services to increase performance and optimize protection for your driveline.

Voith has regional service centers worldwide to ensure availability for all types of service. We perform technical support, field service, calibration and testing as well as installation and repair. Voith service solutions are tailored to your specific needs.



- 1 Change of original parts
- 2 Customer training
- 3 Pressure testing

Voith Turbo Safeset Services





Driveline Analysis

When designing a driveline it is important to consider its own unique torque dynamics. Voith driveline analysis gives you the opportunity to evaluate design alternatives to find the best solution for your application.

Driveline analysis carried out during the design stage of your driveline clarifies the dynamic torque response your driveline is likely to experience in an overload situation.

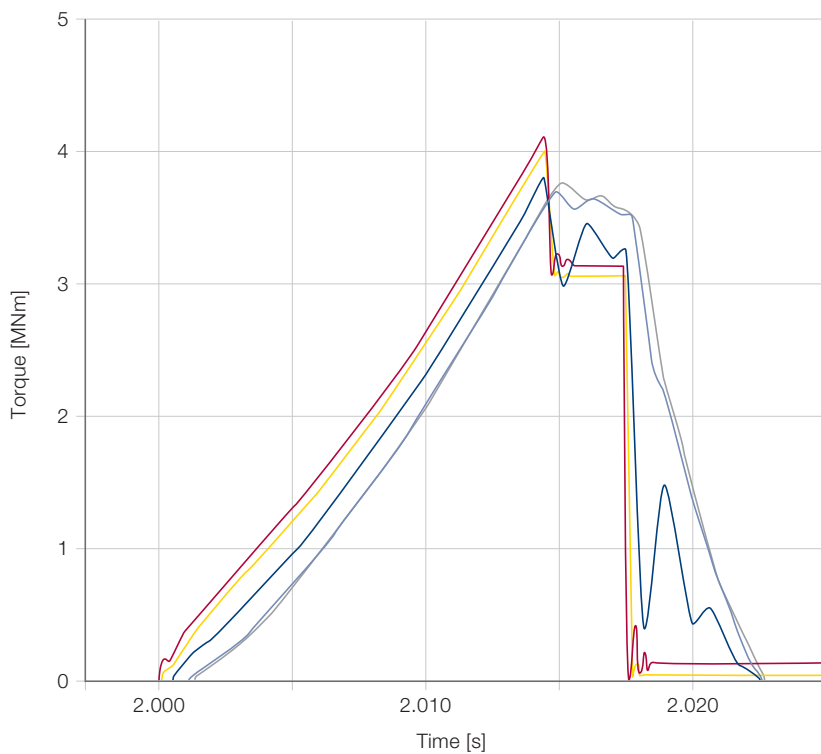
Our driveline simulation technology lets you compare different design proposals, in order to find the right design that gives maximum performance within your operation limits.

This allows you to understand the dynamic behavior of your driveline, to locate the torque-limiting coupling at its best position and set the release torque level for maximum productivity and protection.

Driveline analysis

- Precise design technique for best possible use of your driveline
- Analysis for all types of drivelines, including heavy duty and high speed
- Analysis in combination with all coupling types
- Analysis of all types of load cases, including overload and start-up
- Expert advice on the positioning and setting of your coupling

Torque response simulation, example of one design during a load case

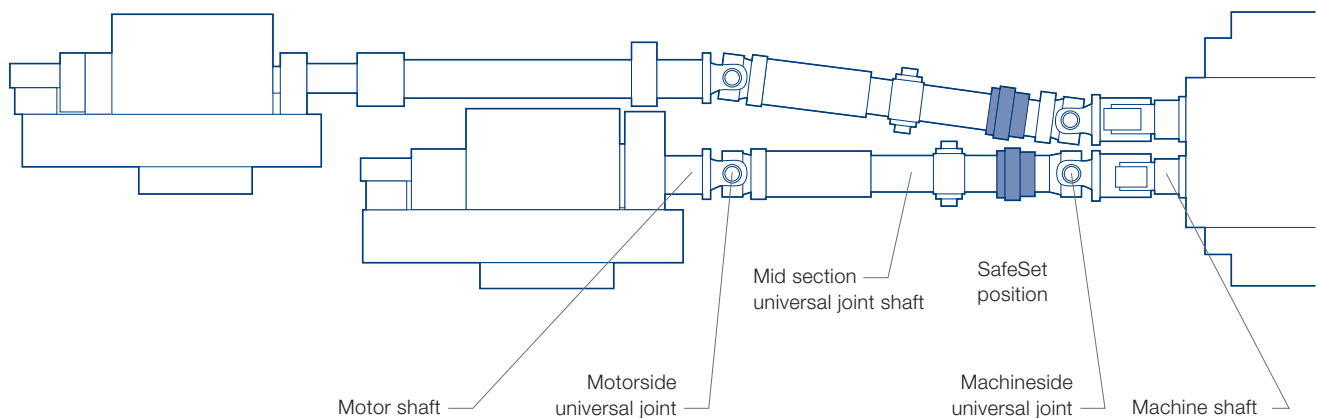


Benefits with torque response simulation

- + Max torque for different positions in driveline can be identified
- + Different load case can be studied and evaluated
- + Different designs can be compared in advance before final design is determined

- Machine shaft
- Machineside universal joint
- Mid section universal joint shaft
- Motor shaft
- Motorside universal joint

Example of driveline setup





Installation

Correct installation and training of maintenance personnel is important to ensure optimum reliability, for use in every application and industry.

Voith assist during installation, initial start-up and final commissioning. Our assembling of your coupling gives you the peace of mind that it has been correctly built in and also comes with a warranty.

We train your personnel how to operate the coupling and to optimize performance to maintain constant reliability. This enables your workforce to manage the driveline more efficiently, improves personal safety and gives a broader perspective of driveline dynamics for your application.

Our training provides your personnel with the knowledge and skills to resume production as soon as possible after overload situation.

Your maintenance staff can also attend a Voith training session at one of our sites. The training gives a deeper product understanding and in-depth maintenance knowledge.



1 Installation of a SR-F 1050

2 On-site overhaul training of maintenance staff

Installation and training

- Ensures correct build in situation
- Assembly includes warranty
- Training of your personnel for correct handling
- Increased personal safety



Service and Maintenance

Scheduled servicing is the key to maintaining the highest continuous operating performance and prolonged life-span of all driveline components.

Proactive maintenance ensures the accuracy and reliability of your coupling. This allows the coupling to continue to operate with the same accuracy as when it was first installed. Service and maintenance also guarantees continuous operating performance and reduces life cycle costs.

Planned checks and repairs can be carried out on-site or in our service centers. During on-site service we train your personnel on how to operate the couplings and settings, which enables correct handling and optimization of the driveline.

Health Check

Recommended after 2–3 years of operation. Several checks are carried out to make sure that the coupling is functioning as it should. We also pass on our driveline knowledge and expertise to your personnel, as we train them during a Health Check. An internal oil flush is performed to clean the friction surfaces, which are vital for torque limitation.

Major Overhaul

Recommended after 5–7 years of operation. The coupling is disassembled and a more thorough check and calibration of the friction surfaces is carried out. This includes inspection, cleaning, replacements if needed and function control checks.



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- 1 Dimensional check
- 2 Lubrication oil refill
- 3 Inspection of shear tube seat

Service check up points	Description	Health Check	Major Overhaul
External inspection	Visual control of coupling and damage check	•	•
Status check	Function control	•	•
Internal oil flush	Exchange of oil/oil wash to ensure friction and protection	•	•
Inspection of shear tube seat and pumps	Prevention of leakages	•	•
Tool calibration check	Calibration of pumps and torque wrench	•	•
Pressure proof test	Leakage test	•	•
Training of customer personnel	For correct handling and maintenance	•	•
Disassembly	Disassembly and interior cleaning of coupling		•
Friction surface calibration	Interior inspection and surface overhaul		•
Wear check	Replacement of spare parts		•
Reassembly and function control	Reassembly and rotational test of coupling in driveline		•
Driveline torque optimization	Maximize the settings to increase production		Optional





Torque measuring in a steel mill driveline.

Driveline Torque Optimization

Every driveline is unique with its own torque dynamics. Voith driveline torque optimization makes sure your equipment work at a maximum level with a minimum risk.

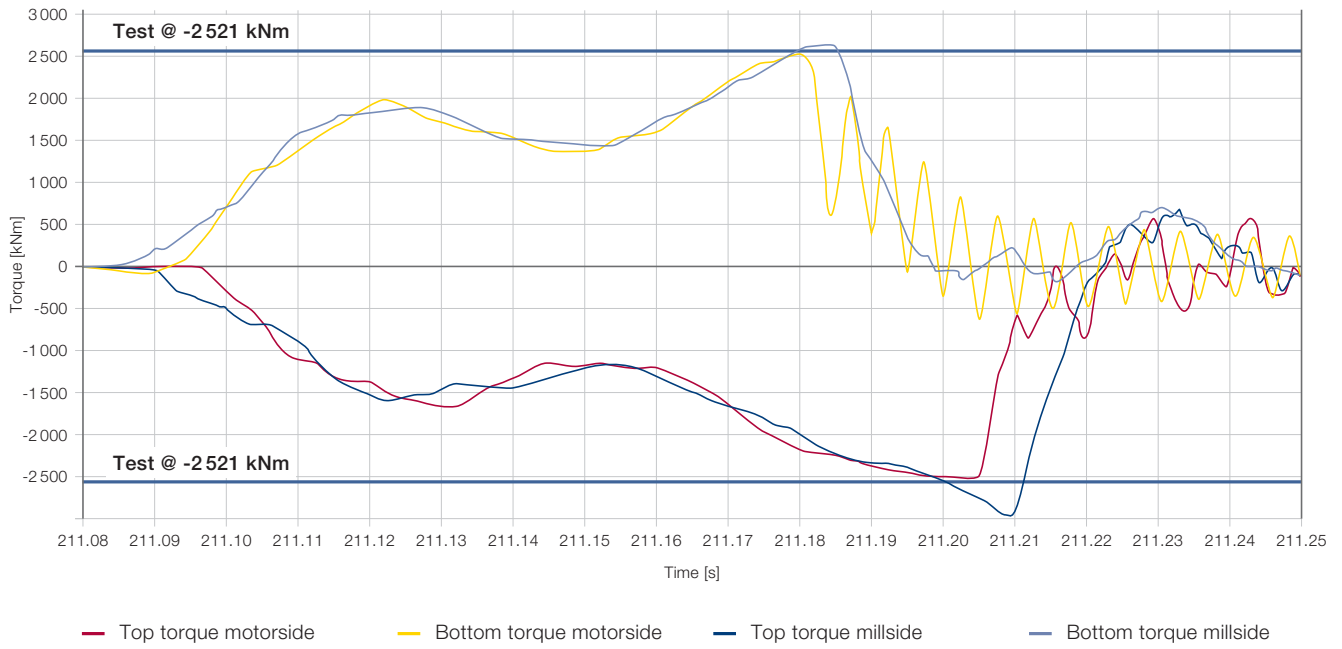
Driveline torque optimization takes torque limitation to a more exact level, for ultimate driveline protection. When the performance demands are high, the optimized setting of the torque limiter is very important.

A full scale torque test shows the actual measured facts of the driveline to find the optimal setting for each application. That enables you to work as close as possible to the maximum output of your operation, without exposing the driveline to a torque that is higher than the design limit. Driveline torque optimization can be performed at installation or during a scheduled service stop.

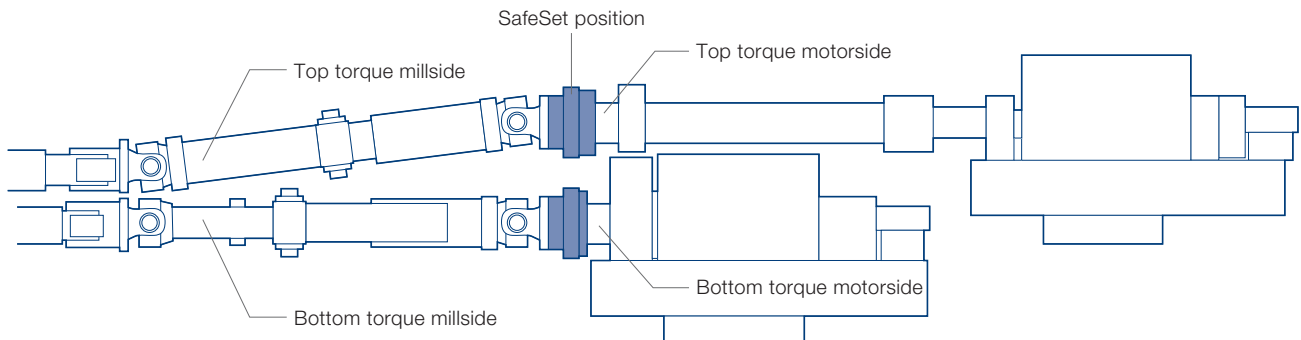
Driveline torque optimization

- Available for all types of existing drivelines in combination with all our coupling types
- Torque level setting for optimal performance
- Ensures driveline protection for maximum safety

Torque measurement test, example



Position of the measure points for above torque measurement





Service Case Study

Columbus Stainless (Pty) Ltd.

This case study at Columbus Stainless (Pty) Ltd in South Africa shows how a SafeSet coupling can be restored to its original operating performance, by performing a major overhaul.

On this specific mill two SafeSet Torque-limiting couplings were installed in 1994. Strain gauge measurements showed that the set torque had been exceeded without the SafeSets releasing. The couplings had not been overhauled since installation and no releases had been recorded in the last 6 years.

A Major Overhaul was carried out to make sure that the couplings released when they should and function correctly in the future.

The full scale driveline torque optimization test was carried out. The test data allowed us to find the optimal setting for the SafeSet, so that the mill could use the maximum torque without jeopardizing the components in the driveline. After the Major Overhaul, the SafeSets were operating with the same accuracy as when they were first installed.

"The entire exercise was very well planned and executed by Voith, professionally and with precision. We are grateful for their effort and commitment in successfully resolving what we considered to be a major concern."

Willie De Beer, Senior Projects Engineer, Columbus Stainless [Pty] Ltd



- 1 Disassembly
- 2 Dirt on the bearing race
- 3 Friction surface calibration

Smooth surfaces for friction based torque limiting.

The SafeSets were disassembled from the driveline, stripped and inspected. The friction surfaces were found to be contaminated and were then cleaned and calibrated to regain their original state.

Once the couplings were reinstalled into the driveline, they were tested under normal production conditions and an over torque peak was purposely generated.

Since the maintenance and the surface calibration had restored the accuracy of the couplings, they instantly released when the set level was exceeded.



The friction surface before calibration



The friction surface after calibration

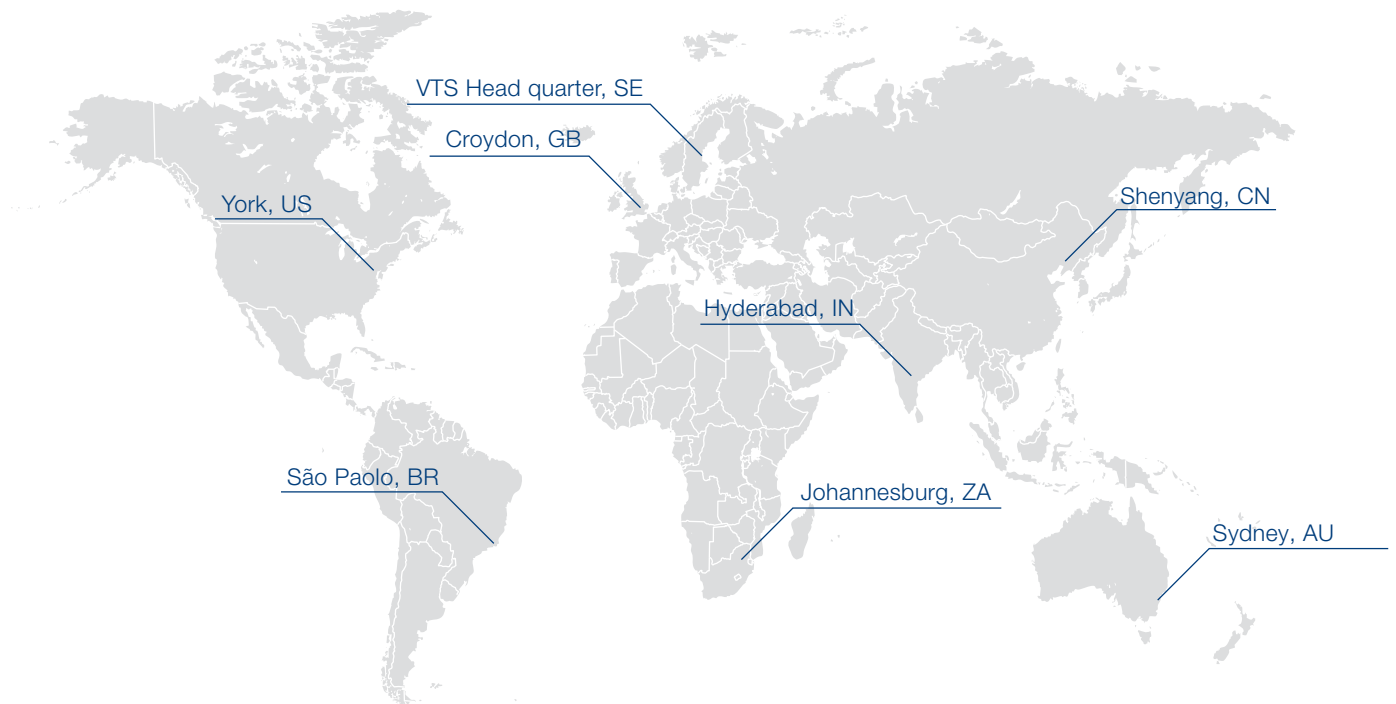


Voith – Engineered Reliability

Voith is a globally active engineering company. With its broad portfolio covering plants, products and industrial services, Voith supplies essential markets: energy, oil & gas, paper, raw materials and transport & automotive.

Founded in 1867, Voith employs more than 42 000 people, generates 5.7 billion Euros in sales, operates in about 50 countries around the world and is today one of the biggest family-owned companies in Europe. The holding company, Voith GmbH, is based in Heidenheim/Brenz, Germany.

Voith Turbo Safeset are the experts in development and manufacture of torque-limiting and connection couplings within Voith. For over 30 years the company has supplied the market with the most reliable systems available. By combining engineering skills, innovative strength and solid base Voith Turbo Safeset is a partner to rely on for generations to come.



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