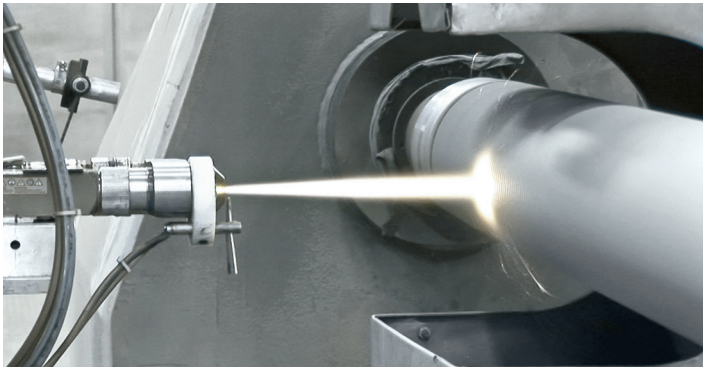


Enduroq: The art of the perfect surface



Experience can be replaced by only one thing: even more experience. More than 35 years ago we pioneered the way. We were the first to apply corrosion- and wear-protective surface technologies to piston rods for large hydraulic cylinders in industrial applications. Since then, Rexroth has installed more than ten thousand large hydraulic cylinders worldwide in a wide variety of applications and in the most extreme ambient conditions.

We continuously evaluate the operating data of thousands of cylinders for you. These measurements ensure the development of even better surface technologies and processes. The result: Enduroq surface technology. Technology you can rely on for years and decades without any issues.

We link the measured data from a wide variety of applications to deep tribological expertise and a comprehensive approach. For every application and environment, we tailor a customised surface treatment solution and a perfectly matched sealing system to suit your needs.

The product portfolio of Enduroq surface technology includes various coating systems with exactly defined chief applications. We carry these out ourselves on our own special systems, and we take on the responsibility. You can rely on the experience of our professionals to coat your piston rod perfectly.

Thermal spraying using HVOF technology forms the basis for the Enduroq 2000 series for large cylinders:

► **Enduroq 2000**

Single-layer surface technology, applied with thermal spraying

► **Enduroq 2200**

Double-layer surface technology, applied with thermal spraying

ENDUROQ 2000 AND 2200

Economical protection in a mild maritime atmosphere: Enduroq 2000

Do your large hydraulic cylinders operate in neutral to mild maritime environments? Are you looking for excellent corrosion protection with minimum seal wear? Then Enduroq 2000 is exactly the right solution for you. We apply the single-layer surface for you using the proven HVOF method. Enduroq 2000 consists of an extremely dense material.

High quality protection under seawater conditions: Enduroq 2200

Is your application continuously subjected to seawater? The Enduroq 2200 double-layer large hydraulic cylinders are designed specifically to meet those needs, and have been withstanding tests for decades under the most extreme conditions. It meets the toughest international standards and is allowed for use on a global scale for steel hydraulics engineering and in coastal waters.

Data, facts and

figures



Enduroq combines the physical advantages of carbon steel with exceptional corrosion protection, low friction and high wear resistance.

Application areas for surface technologies

Surface technologies	Non-corrosive environment	Mild maritime environment, open area	Maritime environment, protected area	Immersed in seawater, splashwater zone
Chromium	•			
Nickel/chromium	•	•		
Enduroq 2000	•	•	•	
Enduroq 2200	•	•	•	•

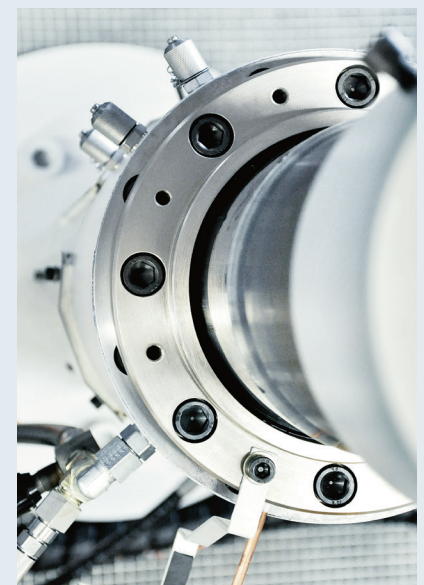
Successfully put to the test

Enduroq surface technologies have successfully passed many external and internal tests and certifications.

Here are just a few:

- ▶ ISO 6507
- ▶ ISO 4287
- ▶ ISO 4536 (58)
- ▶ ASTM G 95
- ▶ ASTM D 1141
- ▶ ASTM D 2794
- ▶ DNV - C1
- ▶ DNV - C2

- ◀ **Rexroth's seal matrix takes into account the seal configuration, wipers, sliding rails, and piston seal**
- ▼ **Seal testing**



TECHNICAL DATA

Enduroq	Surface technology system	Surface technology
2000/2200	single/ multilayer	thermal spraying
Impact resistance	Layer thickness*	Layer hardness*
8J	2000: 250 µm 2200: 450 µm	650 HV5
SDCT**	Roughness	
20.000 hours 40.000 hours (test ongoing)	Ra < 0.20 µm	

*) Typical value

***) Salt Droplet Corrosion Test

Partners over the entire lifecycle

When we deliver your finished large hydraulic cylinder, we do not mark the end of a business relationship. Rather, this is often the beginning of a long time partnership. Our service organisations can always be found near you, in more than 80 countries. We ensure fast spare part service as well as preventive maintenance or repair of damaged components and surfaces.

Benefit from our experience in your applications and with our large hydraulic cylinder configuring, manufacturing and surface technology. Time to reduce your lifecycle costs with Enduroq. For more information, go to: www.enduroq.com

EXTENDED LIFE SPAN WITH OUR SERVICE SYSTEM

If viewed over the entire life span of large hydraulic cylinders, typical maintenance costs quickly surpass the purchase costs. It doesn't have to be that way. We perfectly tailor cylinders, piston rod surface technologies, seals and fluids to your application. The result: Higher availability and lower maintenance costs.

Our database with its thousands of applications plays a crucial role. In an extensive research project together with leading seal manufacturers, we have developed a seal matrix for a wide variety of applications. Your purpose determines the configuration. Whether it's a completely closed extrusion gap at speeds up to 15 m/s, or variants that are adjustable and insensitive to dirt. Our seals have one thing in common: they combine minimum friction with excellent wear protection. Our experience with a wide variety of fluids rounds out the system. We know firsthand how different hydraulic media react in various environments, and how they impact the chemical resistance of seals.

Bosch Rexroth BV

Kruisbroeksestraat 1
5281 RV Boxtel, The Netherlands
www.boschrexroth.com/enduroq

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