



Cermadur hybrid bearings for the harshest environments

Rolling bearings usually have to be lubricated with oil or grease so that they deliver the nominal load carrying capacity and achieve the required operating life. In the case of the new, open, and completely unsealed Cermadur hybrid bearings, the medium surrounds the bearing and takes over the task of lubricating and cooling it.

The advantages for you at a glance:

- Direct exposure to ambient media (e. g. fresh water or process media)
- No conventional lubricants required
- No maintenance required for applications with poor accessibility
- Extremely robust in the presence of ambient media, temperatures or contaminations
- Extremely high wear resistance – minimal abrasion despite dry running
- High energy efficiency (no particle retention systems or seals required)

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Rolling bearings with a “fit and forget” effect

For the harshest environments

Characteristics:

- Bearing rings made from the new highly corrosion and wear-resistant Cermadur material
- Rolling elements made from high-performance ceramic
- Cages made from high-performance plastics, e. g. POM or PEEK with special fillers
- No seals
- No lubrication
- Optimized bearing design, adapted to the material combination
- Suitable for deep groove ball bearings, angular contact ball bearings, and cylindrical roller bearings with outside diameters of up to 200 mm.



Rolling bearing characteristics	High-performance	
	stainless steel	Cermadur
Hardness	700 HV	1.300 HV
Maximum permissible bearing load (seawater)	100%	> 300%
Suitability for constant speeds (seawater)	+	+
Suitability for speed/standstill cycles (seawater)	-	+
Corrosion resistance (seawater)	0	++
Robustness in the presence of hard particles (mud/sediments)	100%	200%
Bearing rigidity	100%	285%
Thermal stability	150°C	400°C
Product costs (depending on the bearing type and quantity)	100%	200–400%

Broad range of applications: new levels of freedom for designers

This new development opens up a whole new range of possibilities for machine and system manufacturers, who can now dispense with complex sealing systems and a separate supply of conventional lubricants to the rolling bearings.

Customer advantages: pumps, compressors, and turbines

- Increased energy efficiency
- Increased robustness
- Smaller design envelope through the omission of sealing systems
- Low total cost of ownership
- Sustainability: ecological solution due to the omission of lubricants

Challenging applications: marine and current turbines

- Underwater operation
- Aggressive seawater environments
- High particle content/contamination: mud, sand, and shell limestone
- Poor accessibility: maintenance is impossible
- High energy efficiency, sustainability, and operational reliability



Examples of potential applications are systems for generating electricity from ocean currents and wave motion, for agitators in water treatment plants, in air conditioning compressors, in the pharmaceutical and food industries, and in oil production.