

SKF

MEETING ELECTRIFICATION CHALLENGES HEAD ON

and more with SKF Hybrid ceramic bearings







Maximize the potential of your equipment





In a world undergoing rapid transformation, both in industry and domestic life, the evolution of technology presents unique challenges. Times of change, marked by advancements in electrification, automation, and renewable energy, demand more from mechanical components than ever before. Bearings, as a critical element in various applications, face new stresses and performance expectations. SKF Hybrid ceramic bearings do more than provide solution to a challenge. They are performance enablers. Integrating steel rings with silicon nitride (engineered ceramic) rolling elements, they not only address industry-specific challenges but also unlock new possibilities in performance and innovation. In the era of electrification, SKF Hybrid ceramic bearings are a sustainable solution, offering OEM's and machine owners a gateway to enhanced operational capabilities.



What can you expect from SKF Hybrid ceramic bearings?

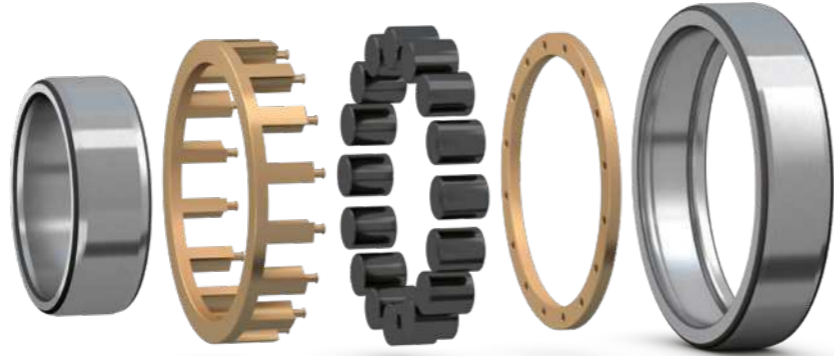
- 
Electrical insulation
 Silicon nitride insulates against electrical currents, helping prevent electrical erosion.
- 
High speed and low weight
 Silicon nitride's low density reduces weight and inertial forces, enabling higher speeds and power density.
- 
Improved machine accuracy
 Silicon nitride's high rigidity boosts bearing stiffness and helps maintain operational precision.
- 
Extended service life
 Superior performance even with harsher lubrication conditions, can extend bearing service life and maintenance intervals.

- 
Wear resistance
 Silicon nitride's hardness mitigates the impact of external contamination, supporting reliability.
- 
Easily interchangeable
 SKF Hybrid ceramic bearings are dimensionally interchangeable with similarly sized all-steel bearings.
- 
A sustainable option
 Longer life, lower energy, and lubricant consumption lead to a more responsible operation.

Streamlining bearing selection

Discover your operational advantages with SKF's unique Generalized Bearing Life Model (GBLM), a life calculation model that includes specific properties of SKF Hybrid ceramic bearings for life rating calculations.

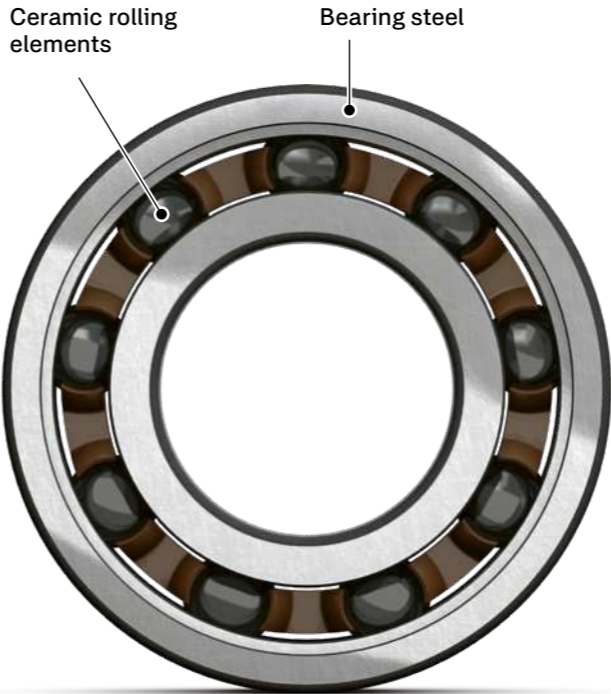
SKF SimPro is our powerful simulation software, which includes SKF GBLM. This tool provides a comprehensive understanding of how SKF Hybrid ceramic bearings outperform their all-steel counterparts in challenging applications. Learn more about [SKF SimPro](#) and [SKF GBLM](#) at [skf.com](#).



Sustainability: A core commitment

SKF Hybrid ceramic bearings contribute to more than just higher performance levels. Their longer service life and reduced maintenance requirements can lead to reduced energy use and fewer resources, supporting SKF's dedication to a more sustainable world.

Therefore, opting for SKF Hybrid ceramic bearings is a more efficient and environmentally-friendly choice.



Why SKF Hybrid ceramic bearings?

SKF Hybrid ceramic bearings are much more than standard bearings in which steel rolling elements have been replaced by ceramic ones. They are the result of SKF's extensive research and development around ceramic materials and their specific characteristics in rolling bearing applications.

This SKF knowledge extends across the full value chain, from silicon nitride powder specifications to bearing performance prediction, all of which is supported by advanced tribology, bearing design and manufacturing processes.

Tackle the most pressing industrial challenges

Put an end to electrical erosion

Electrical erosion is a silent threat that undermines the reliability of e-motors driven by a variable frequency drive (VFD). Whenever electrical currents pass through rolling bearings, there is a potential threat to the reliability of your machines. Electrical erosion can damage and degrade bearings in traction motors, electric motors and generators, leading to costly downtime and unplanned maintenance. SKF Hybrid ceramic bearings provide a solution here. The electrical insulation properties of silicon nitride rolling elements prevent electrical erosion, enhancing machine longevity and reliability. This results in fewer failures and a more consistent performance of vital equipment.



Speed things up

Thanks to lower density and friction coefficient of silicon nitride rolling elements, SKF Hybrid ceramic bearings unlock speed potential, running up to 25 percent faster than standard steel counterparts, offering not just speed but also paving the way for more compact equipment designs. Looking to push boundaries further? Explore the potential of advanced SKF cage technology for even greater speed capacity, promising an efficient and high-performance workspace.



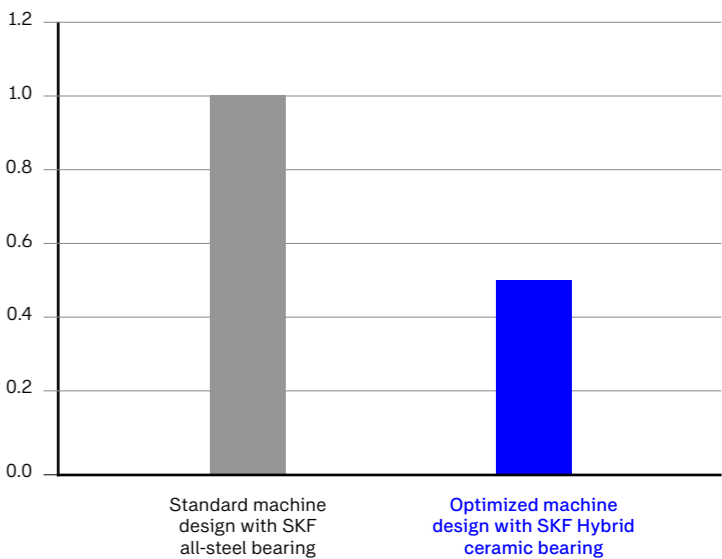
Up to **25%** faster than SKF standard steel counterparts

Reduced friction with silicon nitrid

The transition to SKF Hybrid ceramic bearings marks a significant advancement towards energy-conscious operations. By capitalizing on the tribological characteristics of silicon nitride, these bearings can cut down friction by a substantial 50 percent through optimizing machine design. It's more than an operational upgrade; it's an alignment with global sustainability goals, helping create an industry standard that prioritizes energy efficiency and environmental responsibility.

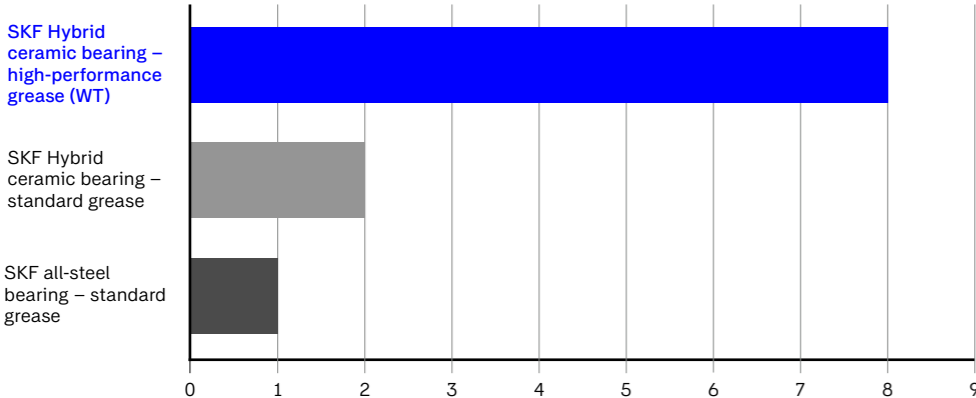
Up to **50%** friction saving with optimized machine design

Relative friction performance



Longer grease life for more machine uptime

Relative grease life performance



Up to **8X** longer grease life

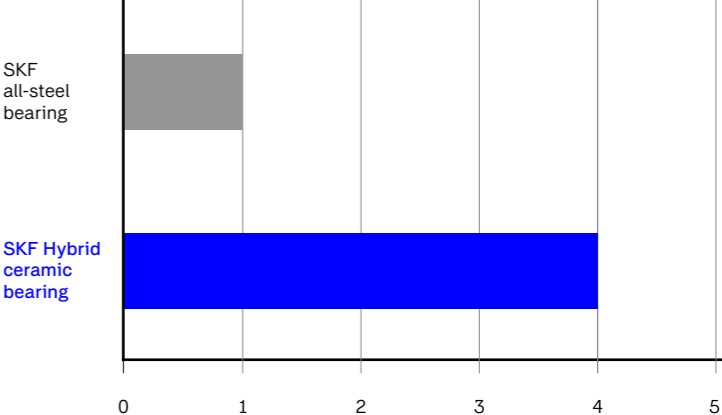
SKF Hybrid ceramic bearings' design minimizes friction and wear, facilitating smoother operations and extending grease life by up to eight times with certain high-performing lubricants. This improvement can then lead to fewer maintenance interruptions (either to relubricate or to change greased-for-life bearings), reduced lubricant expenditure, and more environmentally responsible operations.

Withstand harsh running conditions

Silicon nitride rolling elements of SKF Hybrid ceramic bearings can mitigate the impact of external particle contamination, by limiting both the amount of indentations and their effect on the raceways. Moreover, SKF Hybrid ceramic bearings can withstand poor lubrication conditions, such as very thin oil films or non-standard lubricants, like refrigerant in chillers.

SKF testing shows bearing relative life could be up to four times longer with artificial indents on raceways. This benefit could be even bigger in combination with low lubrication conditions.

Relative life with artificial indents on raceways



Elevate performance in your application

SKF Hybrid ceramic bearings stand as a key enabler for advancing performance and reliability across various demanding applications.



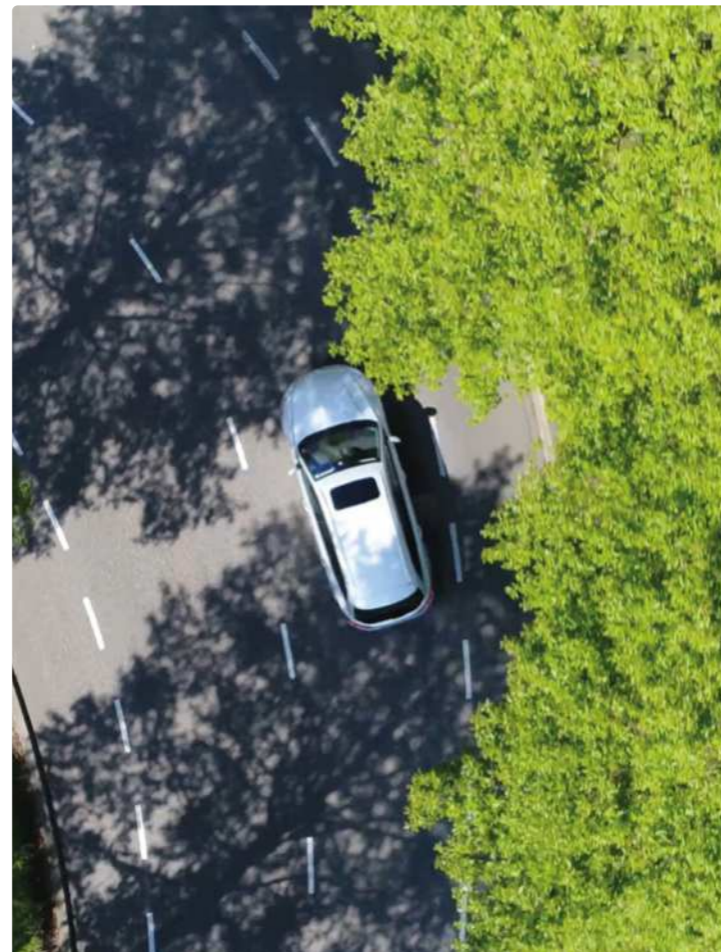
Industrial electric motors and traction motors for railway
Focusing on extended grease life, electrical erosion prevention, and high-speed operation, critical for industrial electric motors, trains, and metros.

Electric vehicles and racing
Addressing electrical erosion, high-speed capability, and long-life lubrication.

Fluid machinery
Tackling electrical erosion, withstanding boundary lubrication conditions, and pollution, vital for vacuum pumps, air/hydrogen compression, chillers and heat pumps.

Machine tools
Enabling high-speed operation and prolonged grease service life, crucial for precision and durability in machining tasks.

Wind turbine generators
Preventing electrical erosion and extending grease life, essential for sustainable energy.



Looking for more product specifications?



Scan the QR code or go to skf.com/hybrid-ceramic-bearings to reveal product tables – and more! All our SKF Hybrid ceramic bearings can be found under the designation suffix “HC5”.



Beyond our standard assortment of deep groove ball bearings, angular contact ball bearings and cylindrical roller bearings, SKF Hybrid ceramic bearings are available in other variants like super-precision bearings, double row angular contact ball bearings and application specific designs. You can also benefit from a large choice of cages, lubricants and sealing options. Contact your local SKF representative for more information.

Always at your side

Unlock the full potential of your operations with SKF Hybrid ceramic bearings. SKF has a vast global network of customer service professionals and engineering specialists, dedicated to providing support tailored to your needs.

Our team stands ready to answer your questions, offering recommendations and expert advice. With SKF, you have the right solutions at your fingertips.

Get in touch

Any questions? If so, we invite you to get in touch with one of our experts skf.com/group/support/contact





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