

Press release

SKF presents a novel bearing steel designed to enable the next generation of aeroengine technology

Gothenburg, Sweden, 6 November 2025: SKF continues to re-imagine intelligent and clean rotation with the development of an innovative temperature-resistant, corrosion-tolerant steel for aeroengine bearings called ARCTIC15.

With the Aerospace industry striving to reach net zero emissions by 2050, next generation jet engine designs are evolving toward groundbreaking architectures which require rolling bearings capable of higher power density and speeds beyond the current design rules.

SKF's customers are designing new engines that aim to cut fuel use by 20 to 25%*, which also reduces emissions. To support these new designs, SKF's new steel will enable bearing solutions that can support the development of new architectures of engines for aviation.

"As aviation moves toward designing engines that aim to cut fuel consumption by up to 25%, reducing emissions significantly, SKF is innovating to match that ambition. Our new steel alloy ARCTIC15 is engineered as a breakthrough material to allow for smaller, more compact bearing solutions that handle higher loads, unlocking new engine architectures and driving efficiency across the entire lifecycle, with repairability as a key driver. This novel steel enables faster development cycles and supports industry sustainability goals for the future", says **Gregory A Zimmerman**, Director of Aerospace Business Unit at SKF.

For such performance increase, the first step is made by replacing steel rolling elements with ceramic rolling elements. The second step comes by pairing ceramic rolling elements with an advanced aeroengine bearing steel with higher load and temperature capacity than existing steels. These distinctive properties open the door to new engine architectures with enhanced efficiency.

"With cross-functional collaboration and sustainability-driven programs aligned with global megatrends and industry needs, we are actively driving the climate transition. As both a supplier and customer, we transform deep insights into smart, practical solutions that reduce friction, cut emissions, and extend equipment life—helping industries move toward

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more sustainable operations”, says **Hans Landin**, President, Specialized Industrial Solutions.

The new patented steel technology will be commercially available and shared by SKF at [the Patent Bay](#). A new platform open to companies that aim to accelerate technologies with the potential to advance sustainability, by making selected patents freely available to others.

The following sparked the development of ARCTIC15

- SKF's Aerospace team has been developing and successfully testing an innovative case-carburized stainless steel for aero-engine bearings for nearly a decade, ever since SKF's customers began designing next-generation engines focused on reducing fuel consumption — driven by the EU-funded Clean Sky initiative [HEAVEN | Clean Aviation](#)
- Extensive material and tribological testing, ranging from elemental analysis to full-scale trials, has validated the performance capabilities of the developed bearing material technologies
- SKF Aerospace factories have manufactured demonstrator and full-scale bearing prototypes combining this advanced steel with ceramic balls, validating their endurance and resistance to severe operating conditions — including scenarios where oil supply is discontinued.
- An actual ground test demonstration will be performed early 2026 as part of the Technology Readiness Levels process with one of the industry's leading aeroengine original equipment manufacturers (OEM).

Disclaimer

Up to 25% emission reduction

The improved fuel efficiency is enabled by a range of innovations and collaborations—one of which is Arctic15's contribution to a more optimized engine architecture.

Read more: [UltraFan - The Ultimate Turbofan Collaboration](#) and [Innovation for the Future of Flight](#)

The stated emission reduction refers exclusively to the engine's fuel efficiency improvements. It does not reflect a full lifecycle assessment of a future aircraft.

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Aktiebolaget SKF

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Since 1907, SKF has been making some of the world's most innovative bearings, seals, lubrication systems, condition monitoring solutions, and services to reduce friction. Less friction means more energy saved and by reducing it, we make industry smarter, more competitive, and more energy efficient, building a more sustainable future where we can all do more with less. SKF is represented in approximately 130 countries and has around 17,000 distributor locations worldwide. Annual sales in 2024 were SEK 98,722 million and the number of employees was 38,743. www.skf.com

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