SCHAEFFLER

Take off to the future

Schaeffler Aerospace

Schaeffler Aerospace develop and manufacture special bearings, integrated bearing systems and high-precision components for the aviation and space industries. In addition, we offer specially designed bearings for use in related fields, incorporating our technology and know-how to provide additional benefits to our customers' applications.

Bearing Systems for the Aerospace Industry

100 years of motorized aviation: for the Schaeffler Aerospace brand this means nearly 100 years of experience in the manufacture of aerospace bearings. Aircraft with Schaeffler Aerospace bearings have always been record-breaking; be that in high speed, operating temperature or advanced cooling systems and materials for the highest efficiency and reliability.

Concurrent engineering and joint development together with our customers made Schaeffler Aerospace a preferred partner in all fields of flying applications. Many achievements have been reached, such as weight and component optimisation, cost savings through system integration – integrated bearings and components improve performance and reliability as well.

Even the smallest
detail contributes
to highest safety

Main shaft and Engine Gearbox bearing systems

High speeds, temperatures and the need for low mass components are combined with demanding operating environments including corrosive exhaust products, contamination and high cyclic and vibratory stresses. Today´s requirements in these application fields call for: higher power density, increased life and improved reliability with the ultimate goal of a “design for life”. All known aero engine manufacturers worldwide rely on Schaeffler Aerospace to meet these requirements.

By using advanced material technologies which allow expansion of the operating conditions, e.g. high-speed tool steels with low pressure carburizing and nitriding or ceramic rolling elements, Schaeffler Aerospace can achieve things such as the increase of mechanical efficiency, improvement in material fatigue strength, highest reliability by reducing mass, engine fuel consumption and emissions at the same time and last but not least a reduction of total system cost.

Helicopter

For the world´s civil and military helicopters, Schaeffler Aerospace develops and delivers a large variety of helicopter bearings. Examples include swash plate bearings for the rotor head which are made of highly corrosion and wear resistant materials. Schaeffler Aerospace supply the planetary bearings in all (multiple) design configurations and other specially engineered bearings including cages produced from lightweight and temperature resistant polyamide materials.

Besides the design and manufacturing capabilities for all bearing configurations and sizes, Schaeffler Aerospace is using high temperature, corrosion and wear resistant materials for extreme operating conditions. Our broad experience with coatings and our in-house plating capacities help our customers to rely on our products.

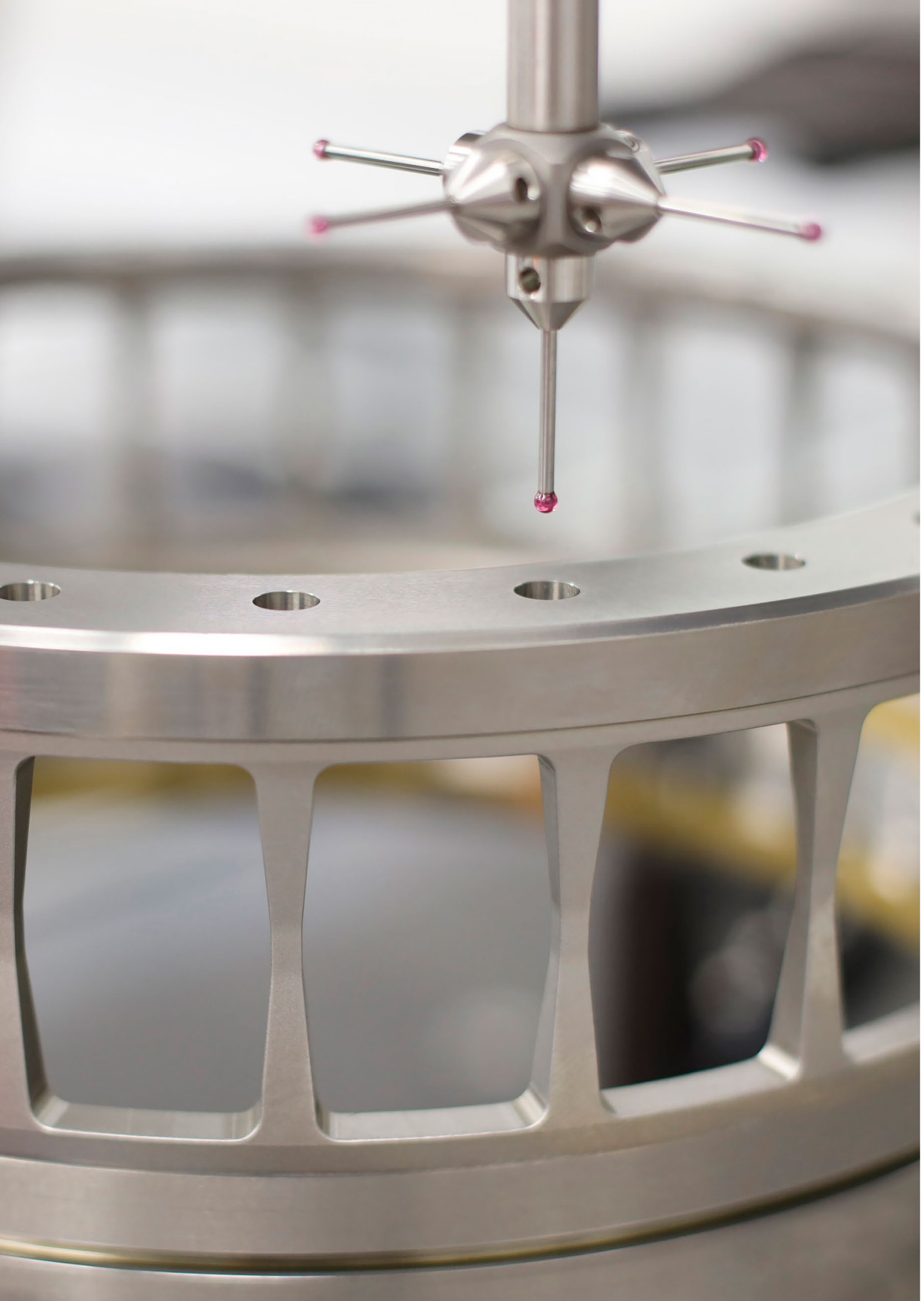
Accessories

Schaeffler Aerospace bearings stand for longer service life through the use of improved sealing, reduced component mass and the use of wear and corrosion resistant materials.

Schaeffler Aerospace develop and manufacture bearings with carefully produced tolerances of less than a micrometre (micron). High precision, accuracy, surface processing and cleanliness as well as an oil-lubricated cage create numerous advantages such as reduced vibration levels, a reduction in wear-related mass displacement and consistent performance among all units.

This performance of our products can be measured by low friction and minimum stick-slip effect and high efficeincy due to low erosion.

Quality thinking –
the basis
for every trust



Research & Development

Requirements for future jet engines are mainly defined by the ACARE (Advisory Council for Aeronautics Research in Europe) goals 2050: 75% reduction in CO_2 emissions per passenger kilometre, a 90% reduction in NOx emissions and the reduction of perceived noise emission of flying aircraft by 65% when compared to the capabilities of a typical new aircraft in 2000. These goals can be only achieved by new innovative engine designs which also lead to demanding requirements for the engine bearings – e.g. higher speed indexes, extended service life, weight reduction, increased power density and cost-effective designs.

These are the technology requirements of the future, especially in the aerospace industry. The current demands on aerospace applications challenge us to develop new materials, surface and heat treatments, production processes (e.g. additive manufacturinf & automatization), bearing designs and systems (e.g. prognostic health monitoring) in addition to perfecting the existing technologies.

With success: Our research and development work has, and continues, to contribute significantly to improving the service life of aerospace bearings and the attainment of significant advances regarding reliability, efficiency and cost reduction. This provides a benefit to our customers, business partners and the global aerospace industry.

“Design for life” is the utmost priority of our research and development activities.
This includes material engineering, heat treatment and surface technology. The use of sensor technology (smart bearings) enables prognostic health monitoring such as remaining life prognostic.

Testing Services

Safety, reliability and cost effectiveness are indispensable characteristics of modern aviation and aerospace technology. Using innovative analysis tools and simulation techniques, as well as advanced component and bearing rig testing methods, we help to ensure the optimum bearing designs, materials and processes for each application. By rig testing of our aerospace bearings under real-life conditions, potential risks can be identified at an early stage and mitigated prior to introduction into application. This helps minimise development time and costs for our customers and to achieve the goal of a “right first time” design going into an application.

Schaeffler Aerospace offer full material and element testing capabilities, comprehensive small-scale and full-scale bearing test facilities to substantiate a reliable bearing design as well as unique design and analysis tools. Our professional, experienced and committed employees will support you to save development time and cost.

Bearing Refurbishment and Remanufacturing Services

During engine overhaul, bearings are frequently replaced as a precautionary measure. In many cases, rather than being replaced, bearings can be re-entered into service with renewed performance expectations after completion of our comprehensive diagnosis and refurbishment procedures. This substantially reduces maintenance costs without sacrificing reliability.

By applying our engine manufacturer approved repairs, cost savings of 50 to 70% compared to bearing replacement cost are achievable. All repairs are carried out using the same equipment and testing configuration as used for OEM production, and require no scheduling from your side. All repair procedures are carried out under highest quality standards, and are performed within a very short Turn Around Time.

Before

After

Professional, experienced
and committed employees

Synergistic Applications

A substantial number of non-aerospace customers take advantage of our design, engineering and manufacturing capabilities for the development of specialty bearings for their demanding applications.

Just like in the aerospace industry, specially engineered bearings meeting the highest precision and reliability standards come into their own in these demanding and sensitive environments. The special bearings developed and produced by Schaeffler Aerospace set themselves apart due to their long service life, corrosion resistance, special surface hardness, smooth and quiet operation as well as an exceptional rotational speed capacity.

“Design for life” The utmost goal of our research and development activities

Urban Mobility

E-Mobility – Energy Efficiency, environmental concerns and the strong growth in the number of drones and electronic driven airplane solutions – the aerospace industry is about to step into a new era. And Schaeffler Aerospace is a pioneer as well.

In the light of this trend, the company is in the process of building up capacities in the field of eMobility. The increasing number of drones used as industrial cargo application or visual observation option has opened up a new market with high demands of safety and liability.

By 2020 Schaeffler will have invested more than 500 million Euro in research, development and production of electrical driven units. This makes Schaeffler Aerospace an innovative and experienced development partner or supplier for your flying E-solution. Let the sky be the limit!

Let the sky be the limit!

Schaeffler Aerospace Germany GmbH & Co. KG

Georg-Schäfer-Straße 30
97421 Schweinfurt
Germany
www.schaeffler.de/en/aerospace
astrid.hofmann@schaeffler.com

In Germany:
Phone 09721 91-3372
From other countries:
Phone +49 9721 91-3372

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