



AEROSPACE:
DESTINATION PRECISION

Take off for new generations

NTN® **SNR**®

www.ntn-snr.com



With You

NTN-SNR, A LEADING PLAYER

NTN Corporation is a designer, developer and manufacturer of bearings, linear modules, distribution pulleys, strut parts, CVJs and a supplier of services. The world no. 3, NTN Corporation is present in all industrial, automotive and aerospace markets. NTN-SNR Roulements manages and develops all the group's activities for Europe, South America, Africa and the Middle East. Among the three European leaders, the company offers its partners a unique combination of Japanese and European cultures, with the capabilities of a world player. Its two emblematic brands, SNR and NTN, are seen as references.

EXPERTS IN 3 MARKETS AND 5 CONTINENTS



AUTOMOTIVE

The main vehicle and equipment manufacturers witness to their confidence: 9 out of 10 of the most sold vehicles in Europe are NTN or SNR equipped! Present for OEM, NTN-SNR proposes unique know-how on brake disc equipped with bearings. The Spare Parts activity benefits from guaranteed original quality. The Leader in the wheel, suspension thrust bearing and clutch release bearing markets, NTN-SNR is also very present in transmission joints and gearboxes. Created by teams in Europe, the wheel bearing equipped with a seal having an ASB® magnetic coder has become a world standard. The exclusive electric wheel-motor technology has, for its part, obtained the 2012 Automechanika prize and European Mechatronic Award. NTN-SNR is asserting itself as a system supplier for the automotive world.



INDUSTRY

Positioned in very high quality products and specialist solutions, NTN-SNR gives a preponderant place to innovation. This is why the industry grants the company developer partner status for their most demanding applications. For rail, the world rail speed record is paired with recognised knowledge of Product Life Cycle Management. For mines and quarries it is the high resistance to extreme conditions that makes NTN the world No. 1. In wind energy expertise in large dimensions and high reliability makes the difference. The steel, robotic, agricultural machinery and construction industries also require advanced performance. Numerous services like assistance with the first assembly, approved training, monitoring and a complete range of lubricants optimise the use of products from the brand.



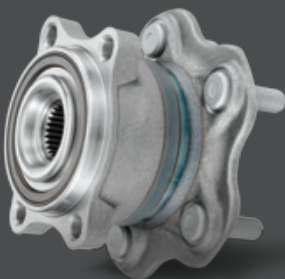
AEROSPACE

The air and space businesses collaborate actively with NTN-SNR. The company's bearings equip major programmes, among which are the European Ariane V launcher and the CFM 56 jet engine, the most widely used propulsion unit in the world. Present on all new single aisle aircraft, NTN-SNR takes part in the development of tomorrow's engines, such as the Leap X from CFM. The company is also a leader in helicopter transmission and rotor bearings. In a field where development, research and safety take on a superlative dimension, the continuous improvement of NTN-SNR signs the quality of the engineering and partnership.



MECHATRONIC SOLUTIONS THAT OPEN UP NEW WAYS

For over 20 years, NTN-SNR has operated a research center dedicated to the development of mechatronic bearing. Its purpose: to make the most of the possibilities offered by electronics and information technology so that bearing functionalities be more than just a mechanical promise. This general applied research approach becomes meaningful in the evolution towards the «X-by-Wire» in the aerospace, automotive and industry world.



The ACTIVE SENSOR BEARING® success story in the automotive market proves how relevant these new solutions are, by offering new measurement and checking capacities adapted to every complex mechanical environment.

AEROSPACE PLAYS A SPECIAL PART IN THE INDUSTRY. IT IS ALSO TRUE FOR NTN-SNR

A DIVISION EXCLUSIVELY DEDICATED TO AEROSPACE APPLICATIONS

NTN-SNR Aerospace is an autonomous division that is dedicated to manufacturing bearings for aviation applications. This site has a specific organisation for functions such as quality, sales & marketing, and lean manufacturing production lines. The aerospace division also benefits from the group's foundation (calculations, tests, logistics, developments of industrial means, material laboratory, etc.).



Experienced in flying from 0 to 36,000 km/h...



REFERENCES:

Agusta Westland - Airbus Helicopters
Air France KLM - All Nippon Airways
Avic - Avio - Bell Helicopter Textron
Dassault - Dowty Propellers
General Electric - Hispano Suiza
Honeywell - Labinal Power Systems
Lufthansa - Messier-Bugatti-Dowty
MTU - Pratt & Whitney - Rolls Royce
Snecma - SR Technics - Techspace Aero
Turbomeca - UTAS - etc

AIRCRAFT

Besides the CFM 56, the most widely used engine in the world, our solutions will equip all single aisle aircraft (Airbus A320neo, Boeing B737 MAX, Embraer E-Jet, Bombardier CSeries, Comac C919, Mitsubishi MRJ...)

HELICOPTER

Leading supplier in Europe for helicopter transmission systems on programs such as Colibri, Ecureuil, Dauphin, Super Puma, H175 - Z15, AW139 and AW189.

SPACE

NTN-SNR bearings are fitted on the Ariane 5 rocket launcher on the turbopump application and cryogenic valves.

APPLICATIONS: 90 YEARS OF BEARING EXPERIENCE

Our engineers and technicians perfectly know how critical an aerospace bearing is. This is the basis for their development methods, analysis and simulation processes.



PRODUCTS: HEADING TOWARDS TOMORROW'S STANDARDS

In order to develop and engineer tomorrow's solutions, our teams focus on parameters that allow performance data optimisation, weight, compactness, temperature strength, function integration, very high speed, lubrication limits, etc.

Applications:

- Aircraft: engine, auxiliary power unit, auxiliary gear box, flight controls, wheel.
- Helicopter: transmission gearbox, rotor mast, blade root, flight controls, accessories.
- Space: turbopumps.

NTN-SNR AEROSPACE: A RELIABLE CO-PILOT FOR ACCOMPLISHED SOLUTIONS

PARTNERSHIP CULTURE

A SPECIALIST'S TECHNICAL EXPERTISE

NTN-SNR has developed powerful tools that model specific aerospace applications. Notably, the group's calculation means make it possible for us to simulate the service life of a bearing installed in a distorted housing. The engine test bench – 32,000 rpm – allows operation cycles to be reproduced in all types of conditions.

CONSTANTLY TESTED MATERIALS

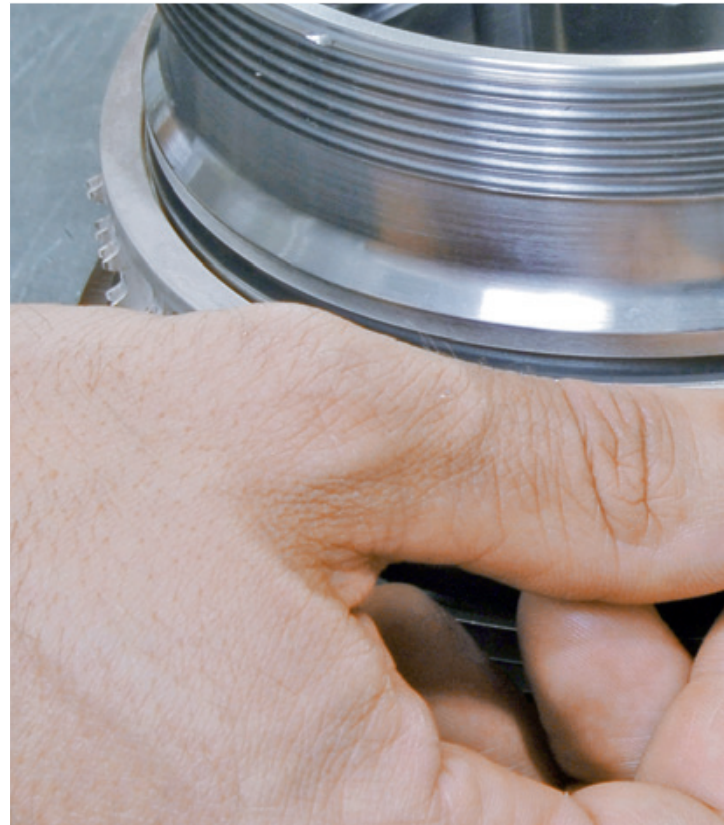
Material quality is a key element which NTN-SNR takes particular care of. Our test center continuously tests bearing rings to optimise the raw materials used in our products.

A STRONG PRESENCE

NTN-SNR is present with its clients through their developments, but also during the entire service life of their products: training, technical expert analyses, maintenance services, etc.

MAINTENANCE REPAIR & OVERHAUL

Through our Repair Station, we offer a life cycle cost reduction, by repairing bearings that have already been in service.





RESEARCHERS AND DEVELOPERS WORK HAND IN HAND

BASIC AND APPLIED RESEARCH

The NTN-SNR group takes part in European Research Programs in collaboration with the largest world steelmakers and the most prestigious European universities.

DEVELOPMENT OF NEW SOLUTIONS IN PARTNERSHIP WITH OUR SUPPLIERS AND OUR CLIENTS

NTN-SNR proposes high performance stainless steels such as XD15N, ceramic rolling elements, PEEK polymer cages, Condition Monitoring System, etc.

A WIDE RANGE OF SPECIFIC AEROSPACE PRODUCTS

All types of bearings: ball, tapered, spherical, cylindrical. Diameters ranging from 12 to 650 mm. All types of materials.



NTN-SNR AEROSPACE

BUILDS TOMORROW'S AEROSPACE SOLUTIONS WITH YOU

The criticality of aerospace applications and challenges to be met in this field require a long-term partnership between clients and suppliers.

NTN-SNR adopts such an approach as a developer, to optimise every solution and puts its international expertise at the service of your future successes.