Napoleon Engineering Services

It's What's Inside That Counts.

Custom Aerospace Bearing Manufacturing

Aerospace bearing manufacturing requires the use of superior quality raw materials and manufacturing processes; the incorporation of extensive design and project review processes; and support for required material and process traceability. To meet these needs, NES offers complete design, development and manufacturing of custom, high-precision aerospace ball and roller bearings. The manufacturing process includes close collaboration with an aerospace OEM's in-house engineering team, with full project management support from initial concept through final delivery of NES's US manufactured bearings.

Design characteristics of NES Aerospace Bearings include:

- High performance materials
- Cost effective solutions
- All major bearing types
- Size range ¾"- 14" OD
- Short lead times
- Small lot production
- High precision capabilities
- Advanced design capabilities

MADE IN THE USA

Aerospace Bearing Offerings

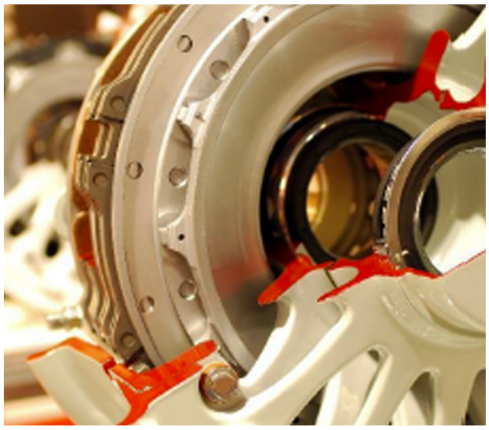
ISO9001:2008 and AS9100C certified Napoleon Engineering Services (NES) provides tailored bearing manufacturing and related services for the aerospace industry. Our knowledge and expertise allow us to analyze your application and develop an advanced solution that will meet or exceed your needs for:

- FAA-PMA support
- Reverse engineering
- First Article Inspection (FAI)
- Lightweight requirements
- Load extremes
- Corrosive environments
- Speed extremes
- Temperature extremes
- High fatigue life

Napoleon Engineering Services
1601 Johnson Street
Olean, NY 14760

(877) 870-3200
sales@nesbearings.com
www.nesbearings.com

Bearing Reverse Engineering Services for FAA-PMA Certification



One of the more comprehensive inspection programs offered by NES is the reverse engineering of Typed Certified aircraft ball and roller bearings for Parts Manufacturing Approval (PMA) certification. Bearing suppliers that were not integrated into the original design of an aircraft must obtain an independent PMA from the FAA. PMA bearing reverse engineering is a method for ensuring that commercial aircraft replacement bearings can meet or exceed the same rigorous quality, design, and performance standards as those originally specified. To support these requirements, a team of highly experienced NES engineers and technicians perform a thorough physical evaluation of aircraft bearings using highly specialized equipment and data analysis tools. The end product is an accurate and detailed analysis which provides aircraft bearing suppliers with all of the necessary FAA-PMA certification inspection data, as well as added assurances that the bearing design meets or exceeds supplier standards for form, fit and function.

First Article Inspection (FAI) per AS9102

NES offers FAI as an integral part of its aerospace bearing inspection offerings. FAI is used by aerospace manufacturers to verify that a delivered bearing conforms to all engineering requirements. A physical and functional inspection further verifies that prescribed production methods have produced a bearing that is acceptable with respect to engineering drawings and specifications, purchase orders, planning documents, and other relevant design documents. Using FAI, customers gain added confidence in the total conformance of first-run bearings to required end-use material, engineering, and quality standards. For companies requiring an FAI per AS9102, NES can provide a complete, independent, and documented FAI, including material and special process accountability.

Ceramic Hybrid Bearings

NES offers a large range of ceramic hybrid bearings to fit the needs of mainshaft jet engines to gearbox applications. NES' ceramic hybrid bearings, which include cylindrical roller, angular contact, and deep groove ball bearings, are manufactured using the highest quality US manufactured ceramic balls, with proven performance in the most demanding applications. Bearings up to 14" outside diameter are available for manufacturing of specialty hybrid bearings.

Ceramic hybrid bearings offer many advantages:

- Superior frictional characteristics
- Lower heat generation
- Excellent corrosion resistance
- Electrical insulating properties
- Weight savings
- Increased stiffness
- High speed capability
- High temperature capability