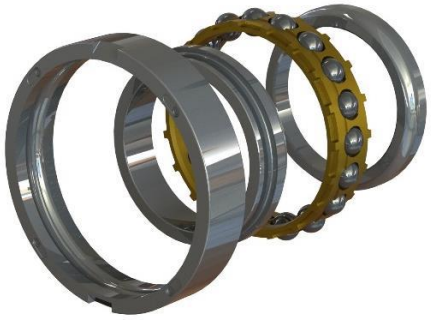
Turbomachinery Bearing Service

Bearing Manufacturing, Testing, Inspection

Napoleon Engineering Services (NES) provides tailored bearing products and services for the turbomachinery industry, including custom bearing manufacturing; application engineering support; failure analysis; bearing qualification inspection programs; and bearing testing services. NES is an industry leading ISO9001:2008 and AS9100C certified expert in custom bearing manufacturing, bearing inspection, bearing testing and bearing test rig manufacturing.

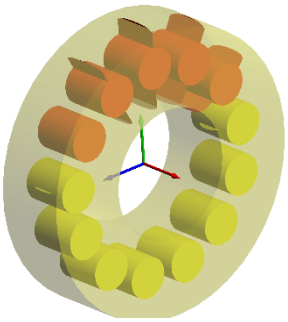
Custom Turbomachinery Bearing Manufacturing

Bearing manufacturing for turbomachinery 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 ball and roller bearings. The manufacturing process includes close collaboration with an OEM's in-house engineering team, with full project management support from initial concept through final delivery of NES's US manufactured bearings. Typical bearings utilize 440C, Cronidur® 30, XD15NW, BG42, 52100, M50, M50 NiL, Pyrowear® 675, and superelastic NiTiNOL 60 high-life materials and coatings. Supported applications include gas turbines, chemical pumps, AMB systems, steam turbines, valves, downhole drilling, high speed motors, and power generation.



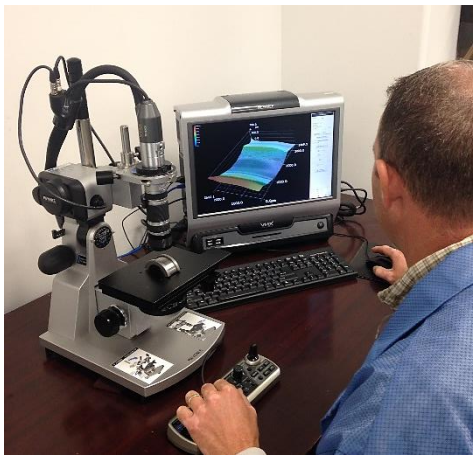
Application Engineering Support

With the ability to utilize in-house and industry software capabilities to develop and enhance specific bearing solutions for challenging applications, NES engineers provide unique application engineering support and experience that is essential to producing custom, high quality bearings for a customer's precise needs.



Bearing Failure and Condition Analysis

NES offers Failure and Condition Analysis that resolves bearing issues associated with system or bearing design through a complete physical, visual, and dimensional evaluation. The Failure Analysis and Metallurgical Testing programs at NES identify potential failure modes by determining the material composition and microstructure of a bearing, as well as identifying the wear characteristics that led to the failure. The main focus of Failure Analysis is to provide a solution to bearing problems thereby increasing mean times between overhauls. NES's Condition Analysis also aids in evaluating new product design after or during testing, enabling customers to make cost saving decisions. The data derived from these reports also provides information to eliminate future failure occurrence.



Bearing Qualification Inspection and Bearing Testing Services

NES is also home to North America's largest independent bearing inspection and bearing testing facility. Inspection services include contract bearing inspection, metallurgical analysis and the ever popular Source Qualification Inspection (SQI). NES's extensive SQI program provides valuable insight and information about bearing supplier quality to reduce risk in global sourcing situations. SQI is a bearing reverse engineering program that provides an inside look at a manufacturer's design intentions, manufacturing capability, and overall quality of workmanship. Through dimensional and visual inspection, noise testing, seal evaluation, material chemistry, microstructure, cleanliness, and hardness, NES's skilled bearing engineers provide a report describing potential barriers to success. With the uncertainty of today's global supply chain, SQI provides stability by providing knowledge control of the bearing design.

In addition to bearing inspection, NES's test lab includes over 50 active bearing test rigs. Laboratory capabilities include environmental testing, Rolling Contact Fatigue (RCF) tests, dynamic life cycle testing, and impact and static load testing. For critical applications, bearing testing provides empirical data to quantify bearing reliability. Additionally, NES can design and manufacture for sale a custom bearing test rig to suit virtually any testing requirement for use in the OEM's facility.