

# Bearing INSPECTION & TESTING



ISO9001  
CERTIFIED



AS9100  
CERTIFIED



NADCAP  
CHEMICAL PROCESSING

Napoleon Engineering Services (877) 870-3200

## Test Rig Design & Manufacturing

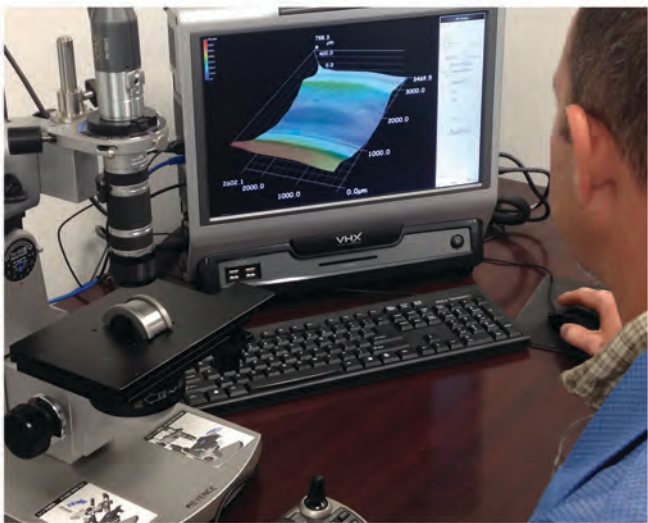
With the growing popularity of our bearing testing services, NES introduces bearing test rig manufacturing, allowing clients to add an NES bearing test rig to their lab. Rigs are designed based on standard bearing test conditions. From simple to complex bearing test rig designs, NES will manufacture a rig solution that is right for you.

Choose from a variety of test platforms and control options in support of classical, sudden death, or maximum likelihood test methodologies. Test for bearing or lubrication efficiency, rolling contact fatigue, environmental conditions, application reliability, or supplier comparison. Rigs can be designed with manual controls for constant operating parameters or full automation for step-stress duty cycle testing. Common monitoring and control features include: bearing vibration, temperature, torque, rotational speed, applied load (axial, radial, moment), lubricant flow rate, oil inlet temperature, and thermal operating conditions.

An NES Design Engineer can evaluate your intentions for testing and develop a 3-D model and control option proposal for review by your team. Test platforms can be designed with as many as eight test locations to maximize sampling rates and statistical accuracy while minimizing test time and overall budget. In-house testing capability allows for proprietary advancements in bearing and mechanical component technology thus increasing your competitive advantage.



North America's  
**Largest** Independent  
Bearing Testing and  
Inspection Facility.



**Napoleon Engineering Services**

## Comprehensive Bearing Testing

Napoleon Engineering Services offers a variety of testing programs designed to recreate the application and environment in which the bearing will function. Housing more than 50 unique test rigs that provide hundreds of bearing test locations, NES is your source for comprehensive bearing testing. NES's ability to design a test rig and program to fit a large number of applications makes bearing testing an ideal fit for many industries.

Performed to confirm the effectiveness of materials, product design, and manufacturing process, NES's dynamic testing program is run at accelerated conditions to match a client's time and budgetary constraints. By maintaining a fatigue failure mode consistent with that found in the application, NES is able to increase a client's knowledge about the design and manufacturing capability of the product, resulting in reduced risk of utilizing a new or alternate product. Dynamic testing provides clients with detailed reports that supply the information needed to make informed decisions.

## Source Qualification Inspection

NES's extensive Source Qualification Inspection (SQI) program provides valuable insight and information, making bearing qualification more efficient and cost effective. A unique industrial bearing reverse engineering program, SQI opens a door to provide an inside look at a manufacturer's design intentions. By opening the lines of communication between the bearing manufacturers, SQI can lead to enhancements of current technical drawings. Through a series of thorough inspections, highly skilled bearing engineers at NES provide a series of detailed reports to determine the quality of workmanship, geometrical characteristics, and the material integrity of a given bearing. These invaluable inspections include: a complete visual and dimensional inspection, noise testing, seal evaluation, material chemistry, and microstructure and hardness testing. SQI provides the necessary data to determine differences in performance between suppliers' products to ascertain why a baseline product is successful.

Combined with NES's endurance testing programs, SQI allows for a comprehensive understanding of bearing performance and expectations within a given application. This knowledge provides OEM's with the information needed to make informed decisions in an uncertain global supply chain.

## Bearing Failure Analysis

NES's failure analysis offers clients insight into why a bearing failed in an application. Through an extensive failure analysis inspection NES can determine if the problem is system related or specific to the bearing. With our microscopic capability and sophisticated dimensional inspection equipment our bearing engineers can accurately determine the condition of the product and its wear characteristics. The detailed reports provided by our failure analysis program have successfully helped many industries identify failure characteristics and alleviate failure re-occurrence.

## First Article Inspection

The importance of first article inspection has been overlooked by some bearing manufacturing plants in recent years. Because bearing plants have streamlined their services to customers they have limited their capacity to perform first article inspections necessary for certain critical order applications. Napoleon Engineering Services recognizes this need and is capable of performing first article inspections per customer requirements and/or AS9102 standards with or without material specification and special process accountability.

## Metallurgical Evaluation and Testing

In many of our standard inspection programs material evaluation and testing is an important aspect of ensuring a bearing performs to expectations. It is because of this importance that NES has developed specialty capabilities, which are vital to the quality of our inspection service offerings.

Typical evaluations include:

- Material Chemistry
- Microstructure
- Hardness
- SEM/EDS Analysis
- X-Ray Diffraction
- Magnetic Particle Inspection
- Surface Temper Inspection



# Contact Us



Napoleon Engineering Services  
1601 Johnson Street  
Olean, NY 14760  
Phone: (877) 870-3200  
Fax: (716) 372-1448  
sales@nesbearings.com  
www.nesbearings.com

Sole distributor for NES products and services in Europe



Carter Manufacturing Limited  
Phone: +44 (0) 1865 821720  
sales@carterbearings.co.uk  
www.carterbearings.co.uk