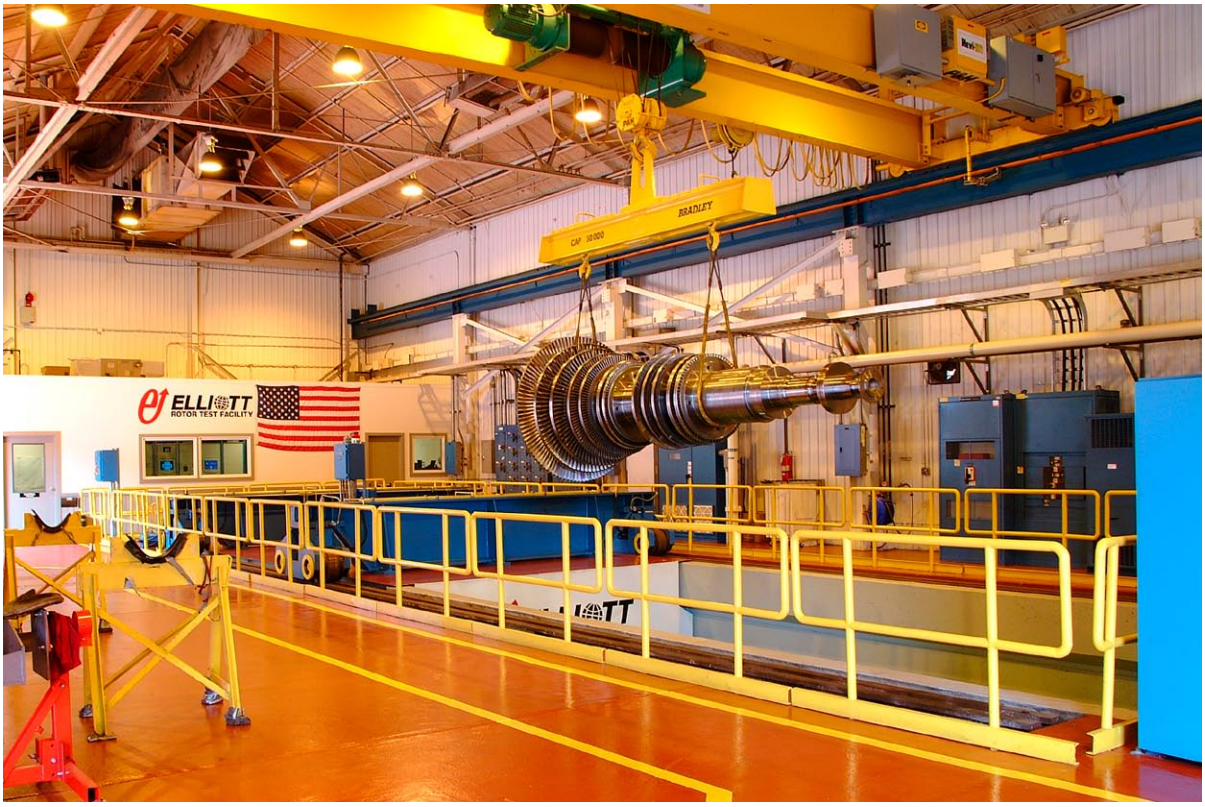
High Speed Rotor Balance

Elliott has been in the high speed balance business since 1980. We have balanced thousands of Elliott compressor and turbine rotors and hundreds of non-Elliott rotors, as well. In 1999, Elliott upgraded its high speed balancing capabilities by building a state-of-the-art facility that features the latest computer-aided balancing software and a larger balance chamber. Elliott has an experienced staff of high speed balancing test engineers and technicians supported by our on-site design engineers.

High speed rotor balancing is done at actual operating speeds, where rotor vibrations are excited by its residual unbalance. Early during the high speed balance procedure, the rotor is run to overspeed. This important step eliminates residual stresses and the effects of shrink fitting, blade seating, and temporary static bows while the rotor is in the balance chamber and before final balance corrections are made. These changes would otherwise occur in the rotor during the mechanical test or on-site, possibly delaying the project schedule, increasing costs and reducing profits. The overspeed run-up and subsequent at-speed balance results in a balanced rotor that will run smoothly in operation.

Advantages of High Speed Balance

- High speed balancing of flexible rotors is more effective than low speed balancing as low speed balancing does not reveal where unbalances exist at operating speed.
- Mechanical integrity of the rotor is verified throughout the entire speed range prior to installation.
- Sensitivity and balancing accuracy are increased due to the lower mass and greater flexibility of high speed balance pedestals compared to the more rigid supports typically used on low speed balance machines.
- After high speed balance, the calculated rotor response can be verified. This is useful when a mechanical test of the rotor in a casing is not practical, such as for spare rotors, re-built rotors and re-rated rotors.



The world turns to Elliott

GLOBAL SERVICE

Facility Accommodations

The Elliott high speed balance facility has two pairs of bearing pedestals that support rotors weighing from 130 lbs. to 27,500 lbs.* Both sets of bearing pedestals accommodate either tilt-pad or liner type bearings. Elliott maintains a wide range of standard size tilt-pad journal bearings. If our standard bearing does not fit your specific application, we can design and manufacture a suitable bearing. Below are the specifications for each set of pedestals:

DH4 Pedestal (Manufacturer: Schenck Trebel Corp.)

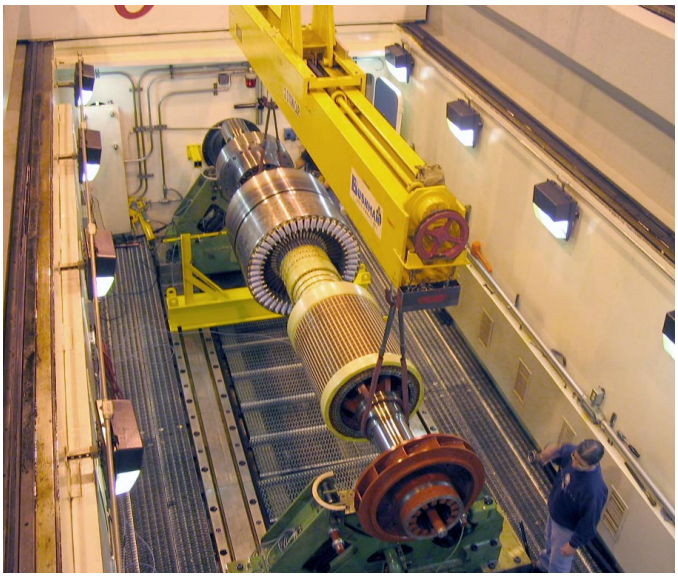
- Maximum rotor weight: (approx) 2,750 lbs.
- Maximum speed: 27,000 RPM
- Maximum rotor component diameter: 96 inches
- Maximum rotor length: (approx) 303 inches
- Journal Bearing Diameters: 2.0 to 5.0 in.

DH7 Pedestal (Manufacturer: Schenck Trebel Corp.)

- Maximum rotor weight: (approx) 27,500 lbs.*
- Maximum speed: 12,000 RPM
- Maximum rotor component diameter: 96 inches
- Maximum rotor length: (approx) 303 inches
- Journal Bearing Diameters: 5.0 to 11.0 in.

* Rotors weighing slightly more than 27,500 lbs. might also be accommodated in our facility, depending upon specific conditions. Our engineering staff will review these conditions upon request.

Elliott's state-of-the-art bunker system



Exciter rotor (19,000 lb) being lowered into bearing pedestals in preparation for high speed balance

ELLIOTT® GROUP
EBARA CORPORATION

www.elliott-turbo.com

Elliott Group
901 North Fourth Street
Jeannette, PA 15644-1473
Phone: 724-527-2811
Fax: 724-600-8442
Email: info@elliott-turbo.com