

WHEN TO LOW SPEED BALANCE

By Andy Ruehs

Unbalance of rotating machinery can cause unacceptable vibrations during operation. These vibrations lead to excessive wear and possible damage to the machine depending on the amount of unbalance and duration of operation. Unbalance is caused by an uneven mass distribution of the rotor in relation to its rotating centerline. This unbalance can be caused by normal deviations from the manufacturing process. For in-service rotors, unbalance can be caused by loss or change of mass due to damage, wear or deposits.

WHEN SHOULD YOU PERFORM A LOW-SPEED BALANCE?

In general, balancing should be performed on any in-service rotor in which a significant amount of work has been performed. Changes made during the course of servicing a machine often create changes in its mass distribution. Also, rotors that have higher vibrations from wear will benefit from a low-speed balance.

Low-speed balancing is only appropriate for rigid rotors. The technical definition of a rigid rotor is a rotor that operates 30% or more below its resonant speed. Practically, rotors that operate above their first critical, but below their second critical, can be successfully low-speed balanced provided that it has low run out.

Turbine spindles are the most likely candidates for a low speed balance depending on their flexibility. Due to their larger relative stiffness and large diameters, low pressure (LP) spindles are especially well-suited for low-speed balances.



BE ASSURED THAT YOUR ROTOR IS WELL BALANCED.

There are numerous standards that cover balancing requirements. By specifying and applying an appropriate balancing standard, you can be assured that your rotor will be properly balanced to help ensure many years of reliable service. The most common low-speed balancing standard that applies to turbines is ISO 1940, but there are other balancing standards from API and the military.

REGENCO'S LOW SPEED BALANCING CAPABILITIES.

REGENCO can perform a low speed balance on your rotors in-house or on-site (portable equipment). Our balancing capabilities cover a wide range of rotors from 3 to 100 tons. We have extensive experience that includes balancing over 400 rotors at both low and high speeds.