Benefits of the IRD Balancing "Soft Bearing" Balancing Machine Solution

The combination of IRD Balancing's unique mechanical design features and precise instrumentation ensure that our systems offer the highest accuracy and sensitivity at low balancing speeds. This design also provides a linear response through its entire balancing speed range.
IRD Balancing soft-bearing balancing provides the following benefits over that of hard-bearing systems:

1. IRD Balancing's unique system can achieve the most exact balance tolerances at lower and safer balancing speeds.
2. The design of IRD's soft bearing balancing machines offers true portability whether for balancing rotors on site or moving to a new location in a workshop. There is no need for special bases, foundations, or recalibration procedures.
3. IRD's soft bearing balancing machines can easily be adapted to accept rotor configurations outside of the standard machine specifications. Increasing rotor swing diameter and base length are just two examples of possible modifications.
4. IRD's soft bearing balancing machines will readily accept rotors mounted in their own bearings or plummer block bearing assemblies.
5. IRD's soft bearing balancing machines can be used with both dedicated and portable instrumentation such as IRD Models 290, 236, 246 and 258.

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- Safety
    - Tests have shown that IRD machines can achieve specified balance tolerances at speeds below 250 rpm, whereas rotors in hard bearing machines may need to be spun up to at least 800 rpm to meet the same quality standards.
    - The inertia of the unbalanced rotor is absorbed by the unique pendulum action of the IRD suspensions. This significantly reduces the likelihood of rotors coming off the rollers during testing.

- "One Run" balancing
    - One Run Balancing can normally be achieved by selecting rotors from the instrument memory or using IRD's unique Calibrators that impart a known vibration into the rotors before the first run up. The required balance tolerance is then normally achieved after the first balance correction, thereby achieving a true "One Run Balance". Hard bearing balancing machines commonly achieve one run readout but not one run balancing.

- Truly portable machines – no large, permanent foundation required
    - IRD Balancing's machines do not require any special beds or foundations to achieve and maintain system sensitivity and balancing accuracy. Our machines can be set up on any standard floor that will support the weight of the machine and rotor. This makes IRD Balancing systems ideal for transporting to any site for quick set up and balancing of all types of rotors.
    - IRD Balancing's range of transportable machines can be used successfully when mounted on nearly any surface that will support its weight and that of the rotor being

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balanced. A power company in the Mediterranean region uses a 200,000 kg capacity Model B140 installed on the upper, turbine floor of their power stations for both grinding and machining operations.

- Easy set up for new rotors
  - The self-aligning properties of the standard IRD roller bearing work supports removes the need for prolonged and precise alignment and leveling procedures.
  - No special purpose, pressure lubricated hydrostatic or shell bearings are required for heavier rotors.

- Less damage to rotor journals
  - IRD's unique "Flat Roller" design reduces point loading stresses to eliminate damage being caused to rotor journals during balancing operations whereas, the "Crowned" rollers of some hard bearing machines can cause damage to the surfaces of rotor journals due to the reduced area of contact between rollers and journals, and the consequent lack of lubricating oil retention.

- Only balancing system that provides vibration quality check
  - Like most other balancing machines, the IRD system gives unbalance readings in grams and gram millimetres or ounces and ounce inches, but is unique in that it also provides pure vibration displacement readouts that are directly proportional to the displacement of the residual unbalance. This continuous means of checking the system is commonly referred to as an "Electronic Clock-gauge" which is measuring the true effect of residual "Mass Eccentricity" as against geometric eccentricity.

- Easiest to upgrade and update
  - The rotor weight handling capacity of IRD Balancing machines can be easily upgraded by doubling up pedestals and/or suspension modules with no changes to the base or foundation. This is not possible with hard bearing machines because uprating the capacity also requires uprating the entire balancing machine system, including the bed and foundations.
  - IRD components can also be used for updating and uprating existing competitor soft and hard bearing machines, or as kits to facilitate customers manufacturing their own machines.

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