# INDUSTRIAL BALANCING & DYNAMIC BALANCING TECH TALK

Industry Standards are specific with the grade of balance for each type of component whether it is a high pressure pump rotor or an agricultural PTO shaft. This Standard is known as ISO1940/1-2003[E]. Indrotech, staffed by experienced professional engineers, have taken the liberty of exceeding these standards by further reducing the residual imbalance in all the components they correct. This guarantees a better result for the customer and also prevents unnecessary failure to connected components.

TYPES OF BALANCING

There is often confusion between static (coplanar) and dynamic balancing (non-coplanar). Some industries use the term complete balancing which refers to dynamic balancing. To simplify this confusion, Static Balance is when the centrifugal forces but not the moments in a system are in equilibrium. This can be verified experimentally when the system is at rest and remains in the one position when placed on low friction bearings about its axis. Dynamic Balance on the other hand is when; both centrifugal forces and moments are in equilibrium. This can also be assessed experimentally but the system needs to be rotating. See attached diagrams that indicate both types.
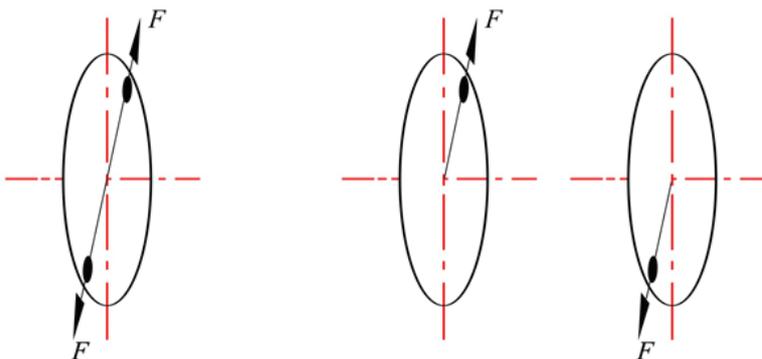
Coplanar
(Static Balance)

Non-Coplanar
(Dynamic Balance)

Indrotech assesses each job and determines the best solution to correct a component whether it needs a static, dynamic or both procedures to bring it to an equilibrium state.

EQUIPMENT USED

Indrotech have one Industrial Balancing Machine and two Industrial Driveshaft Balancing Machines.

THE INDUSTRIAL BALANCING MACHINE

This piece of equipment has been specifically developed to balance a variety of industrial rotating equipment such as:
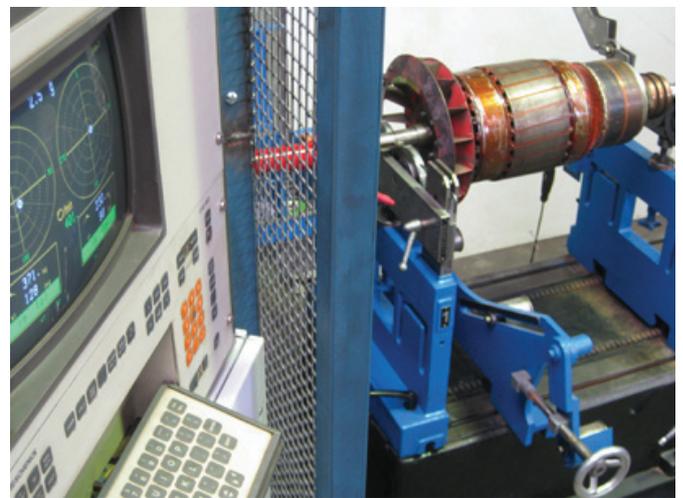
- Industrial fan impellers (mild steel, stainless steel, aluminium, incoloy etc)
- Electric motor armatures and rotors
- Pump impellers
- Printing and process rollers
- High pressure pump rotors (brass and stainless)
- Industrial drums
- Heavy Industrial and trucking components (brake drums, clutches cooling fans)

Industrial Balancing of an Armature The hardware consists of an end drive Schenck H5 Hard Bearing 5.5 tonne capacity machine complemented with a Schenck CAB690 digital display unit. Legible laser print-outs are generated through this setup which are presented to the customer. Indrotech also retain a copy for their records.

This machine has been validated and calibrated in 3 speed ranges by Schenck's team of technicians. These Validation and Calibration certificates are available upon request that guarantee precision results in each balancing job. Ring our team of engineers to discuss our weight, length and diameter capabilities.

INDUSTRIAL DRIVE SHAFT BALANCING

With every driveshaft, tailshaft, PTO shaft, cardan shaft whether industrial, automotive or in a truck, Indrotech balance it again to the ISO Standard. There are two machines in the workshop that can achieve this:

THE H4 BALANCING MACHINE

The H4 Balancing Machine The unique features of this machine is that it can balance shafts up to 6 meters in total length, one and a half tonnes capacity and in
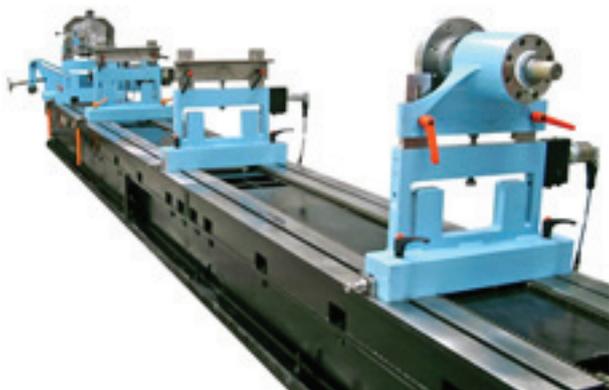
4 planes simultaneously plus generate that important balancing certificate from its CAB840 which guarantees the job has been done correctly. Indrotech can safely claim it is the most advanced machine of its kind in the industry. Schenck's team of technicians overlooks this machines' calibration regularly to ensure accurate results for the customer. The hard bearing feature allows the operator to balance industrial shafts as low as 300rpm without jeopardising the balancing accuracy and truck shafts up to 1000rpm for similar results.

THE HOFMANN SOFT BEARING MACHINE

The Hofmann Soft Bearing Machine The Hofmann is used for smaller jobs such as single, two and three piece tailshafts.

The sensitivity of this machine allows the operator to achieve accurate readouts and correct the shaft for perfect results. The four speed range helps identify the problem frequency points and correct them accordingly.