V1Bstand2

Research-educational test bench
for rotating machinery diagnostics

www.ec-systems.pl

ABOUT THE SYSTEM

VIBstand2 is a complete research-educational test bench for rotating machinery diagnostics. It consists of the mechanical part and the vibration based condition monitoring and diagnostics system. The mechanical part, placed on a stiff support, includes two three-phase asynchronous motors with frequency inverters (one of them acting as propulsion, the other one as load), a gearbox, a shaft supported on three rolling element bearings (one of which is mounted on an adjustable screw, and can be used to apply vertical force to the shaft, thus loading the bearings supporting it). The shaft has got a disc with holes designed for imbalance simulation. The diagnostic part is comprised of a full featured condition monitoring system VIBstudio, which consists of:

⚤ **VIBmonitor:** module for acquisition, conditioning and real-time data processing

⚤ **VIBnavigator:** software for visualization and diagnostics with advanced signal processing algorithms

The system may include up to eight vibration input channels and two phase marker inputs. In the default configuration the test bench comes with four piezoelectric accelerometers and one rotational speed sensor. The sensors can be mounted in one of the prepared holes or with a magnet, in order to measure vibrations in a selected plane in selected construction nodes. The VIBstand2 test bench allows full data acquisition and condition diagnostics with numerous charts (time view, frequency spectrum, frequency order spectrum, envelope analysis, trend diagram, XY plot, cascade plot, synoptic view, and alarm list). The signals can be also easily connected to third party acquisition hardware through prepared BNC outputs. VIBstand2 gives the opportunity to conduct academic research studies, and carry out a professional rotating machinery condition monitoring and diagnostics training.

VIBstand2 enables:

→ analysis of real machine-induced vibration signals

→ study of diagnostic system design and configuration

→ programmable rotational speed and load

→ introduction of bearing load and faults

→ introduction of imbalance

→ introduction of misalignment

→ introduction of gear faults

→ study of structural vibrations (supporting base and bearing casings)

The set includes:

// MECHANICAL PART

→ steel frame

→ 2 three-phase asynchronous motors

→ one stage parallel gearbox (i=2.91)

→ 2 frequency inverters

→ 3 couplings

→ 3 bearings with casings (1 mounted on adjustable screw)

→ RCD breaker

→ safety switch

→ steel shaft

→ disc with threaded holes

→ set of threaded weights for imbalance simulation

→ housing made of organic glass

// SYSTEM PART

→ 4 vibration sensors with connectors and cabling

→ 1 rotational speed sensor

→ VIBmonitor signal conditioning and data acquisition modules

→ VIBstudio license (educational version)