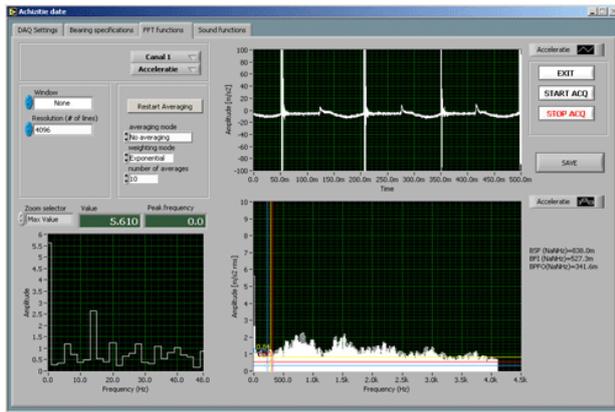


## Computerized stand used in railway equipment



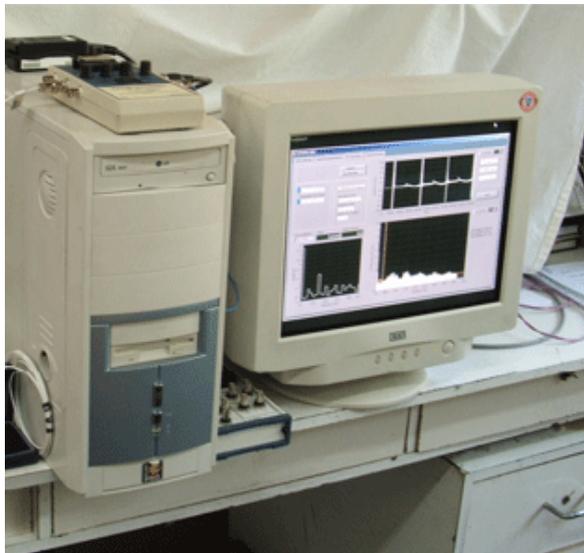
### DESCRIPTION:

Vibration and acoustic measurement stand for bearings is made from:

- mechanical system for catching and fixing of bearings;
- driving equipment of bearings;
- piezoelectric transducer which convert the mechanical vibrations in measurable electrical measures;
- noise transducer which convert the acoustic vibrations in measurable electrical measures;

- unit for processing of mechanical vibrations from transducer, which has the role to filter the useful information to increase the input level as is necessary, to incorporate values and to process the information at output;
- unit for processing of useful noise made by bearing when is rotating;
- board of data acquisition and processing;
- central processing unit having the role to process and to analyze the date and software (U.C.);
- monitor to display the measurements, as graphics or alphanumeric character;
- keyboard, mouse, etc;

These components process the date from different sensors and transmit as serial type to acquisition board. Central processing unit is a basic configuration. On monitor can be display all data from transducers (inclusively graphics) according to norms.



By the proposed system it can be distinguish the analyze capacities of inter-correlative methods with vibration, noise, acoustic inter-symmetry in octave in a large spectrum. The vibration-acoustic analyze of bearings permits to determine the real state of functioning (monitoring) and to locate (diagnosis) and to eliminate the main sources of noise and vibrations.

The acoustic inter-symmetry measurements permit the measurement of acoustic power made by a bearing in the presence of a high

background noise and can produce the noise supply of a inquiry component; in our case, can be made a difference between the balls noise and internal rings of bearings, can give a information on radial play, etc.

### TECHNICAL CHARACTERISTICS

- Supply voltage: 230 V : 50 Hz;
- absorbed power: max. 0.5 kW;
- environment temperature: 0 - 40°C;
- measure range (vibration) 0...2 g;

- measure range (useful noise) 20....140 dB;
- frequency range (acoustic vibration) 10....30000 Hz;
- frequency range (mechanical vibration) 10...10000 Hz;
- non-linearity in the measure range +/- 0.5 dB;
- attenuation out of measure band 40 dB/dec;
- analogical filter numerical controlled with autotune;
- tuning range of band-pass filter 100 ... 10000 Hz;
- quality factor of band-pass filter min. 25;
- resolution of band-pass filter 0.1 Hz in range 10... 1000 Hz;  
1 Hz in range 1000...10000 Hz;
- range of sensitivity on three ranges 0.01...0.1 mV/(m/s<sup>2</sup>); 0.1...0.5mV/(m/s<sup>2</sup>); 1...2 mV/(m/s<sup>2</sup>);
- number / types of bearings according to catchments (unlimited);
- range of operating temperatures: 0...40°C;
- protection level: IP20;
- possibility to inter-connection with other computer of IBM PC type;
- displaying of measured data (acceleration in mm/s<sup>2</sup>, speed in mm/s, noise power in dB, etc) will be made by displaying on color monitor with alphanumeric characters and graphics.
- weight of computerized stand: max. 20 kg.

#### **APPLICATIONS:**

- measuring of vibration-acoustic indicators of bearings used in railway equipment industry.