
DYNAMIC DIAGNOSIS OF UNITS IN HYDRO POWER PLANTS

Key words: hydraulic machines, hydro-sets, dynamic state tests, vibration measurements, spectral analysis

In the field of the dynamic state testing of hydrounits the Szewalski Institute of Fluid-Flow Machinery in Gdansk offers:

- measurements of active power fluctuations,
- measurements of the pressure course changes in the flow system of hydraulic machines during steady and transient state conditions,
- measurements of pressure in the auxiliary systems (oil-pressure system, compressed air system, cooling water systems, etc.)
- vibration measurements of rotating parts of hydrounit (vibrations of shaft in bearing nodes, etc.)
- absolute vibration measurements of non rotating parts of the hydrtounits (bearing housings, turbine cover, etc.)
- vibration measurements of guide vane pivots,
- noise level measurements in the vicinity of the hydrounit

All mentioned tests and measurements are carried out in accordance with current standards and norms applicable in this field. That gives the possibility to use them for commissioning tests of the new or upgraded machines. Measurements of all quantities mentioned above are performed using the latest technology and the results are subjected to analysis which allows to specify the dynamic state machine in details.

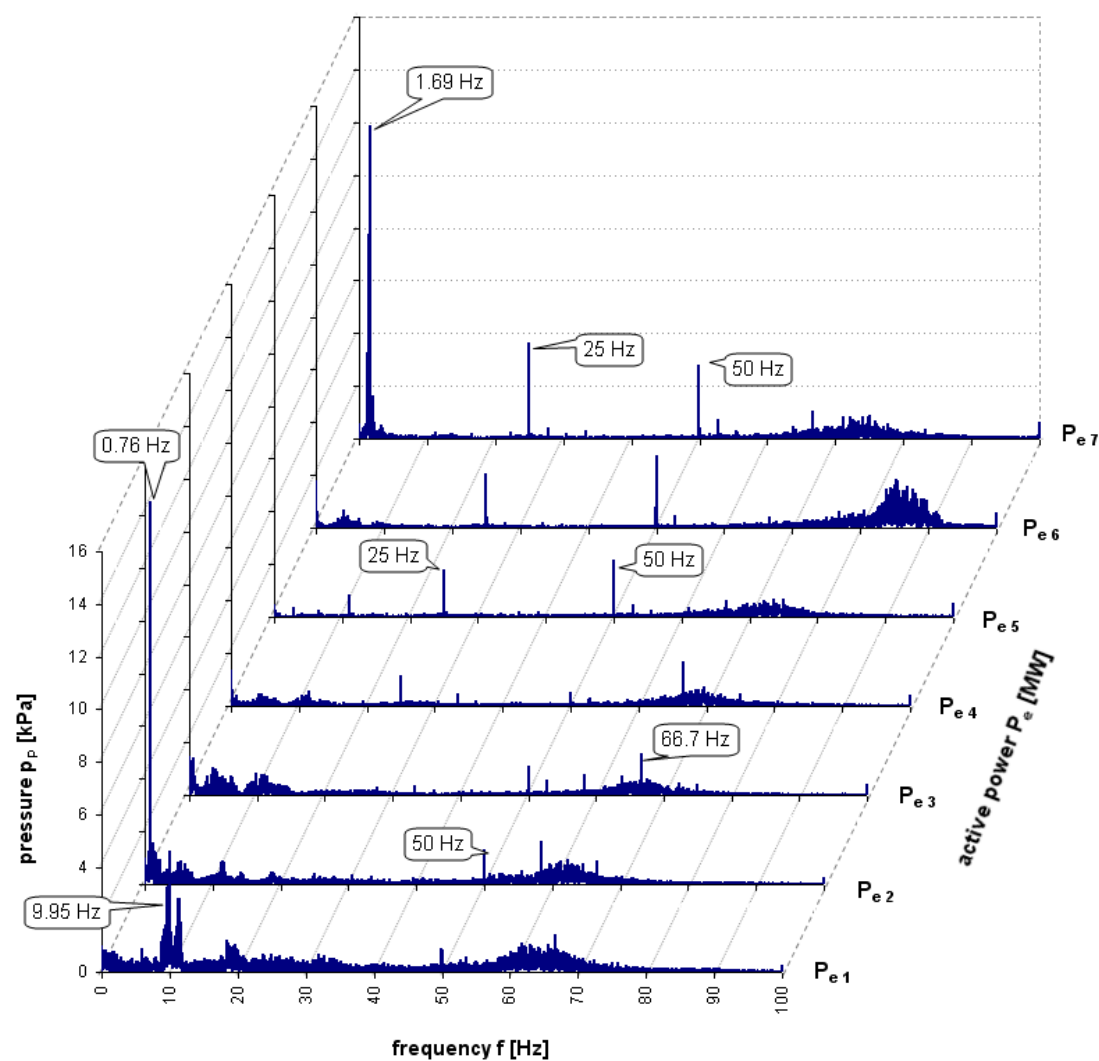


Fig. 1 Sample spectrum of pressure under turbine cover in hydro-unit

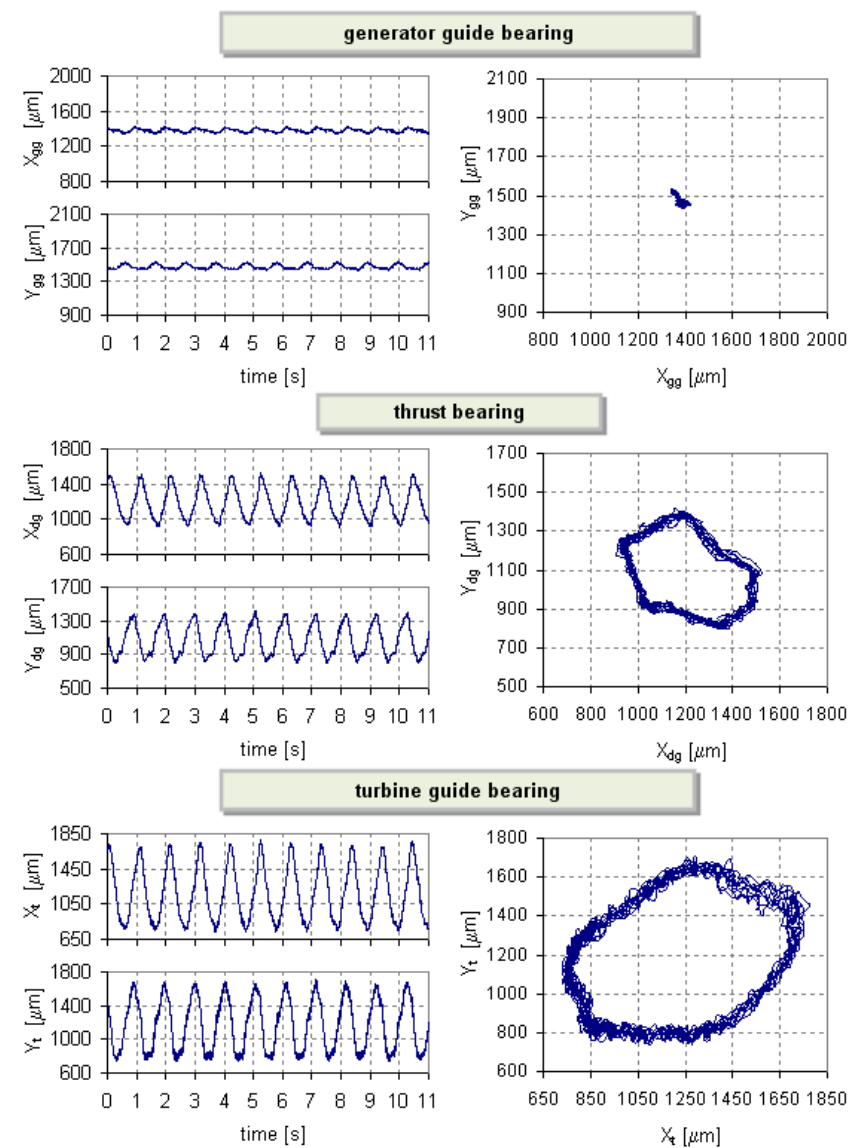


Fig. 2 Sample of shaft axis trajectory in bearing nodes of hydro-unit

turbine guide bearing housing vibration velocity

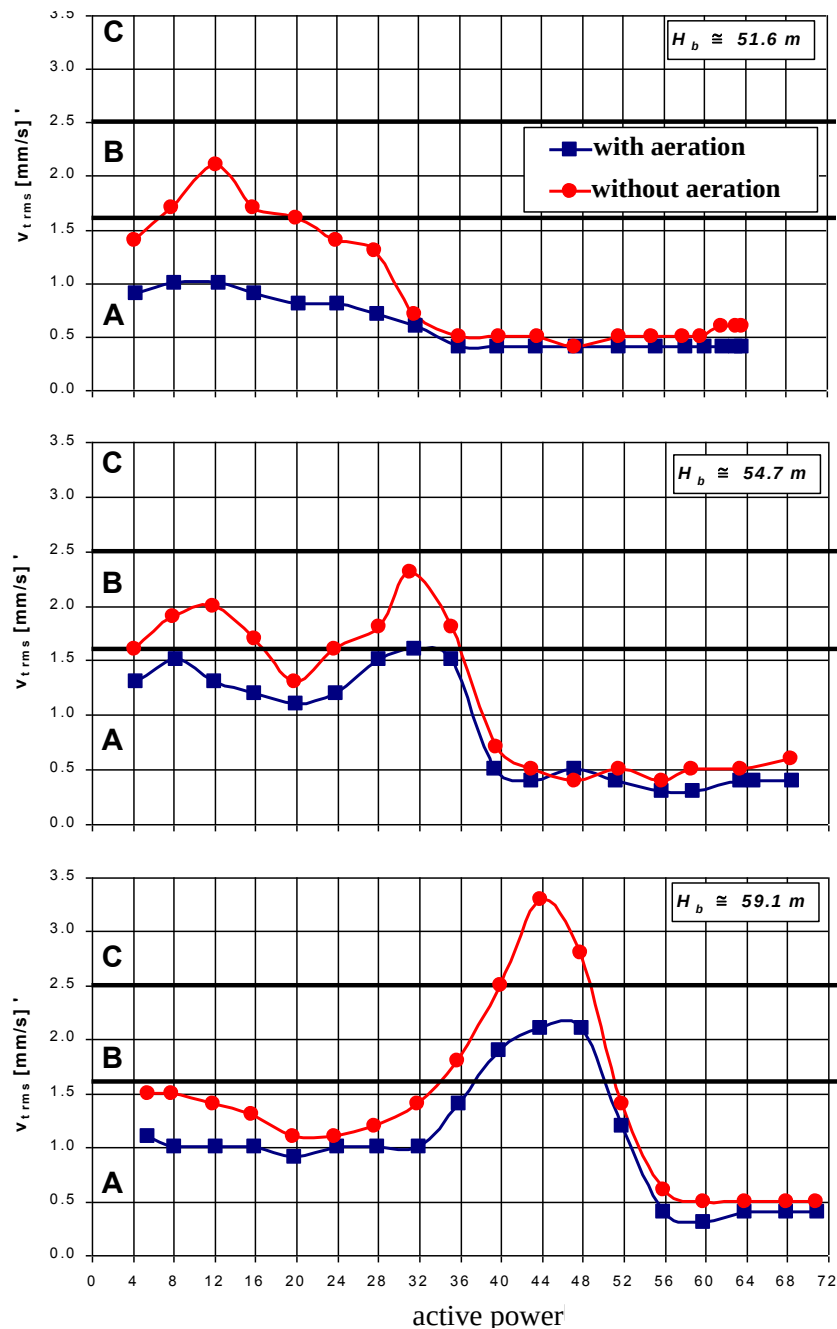


Fig. 3 Sample vibrations of guide bearing housing vs. active power of hydro-unit .

For more details please contact:

Adam Adamkowski, DSc., Ph.D.

The Szewalski Institute of Fluid-Flow Machinery, PAsci (IMP PAN)

Centre for Mechanics of Liquids, Department of Hydraulic Machinery

ul. Fiszera 14;

80-952 Gdańsk, Poland

Phone: +48 58 69 95 212

Fax: +48 58 341 61 44

Mobile: +48 606 571 642

E-mail: aadam@imp.gda.pl