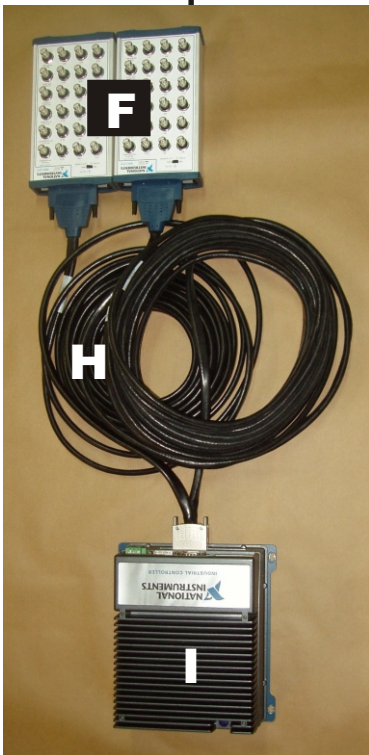
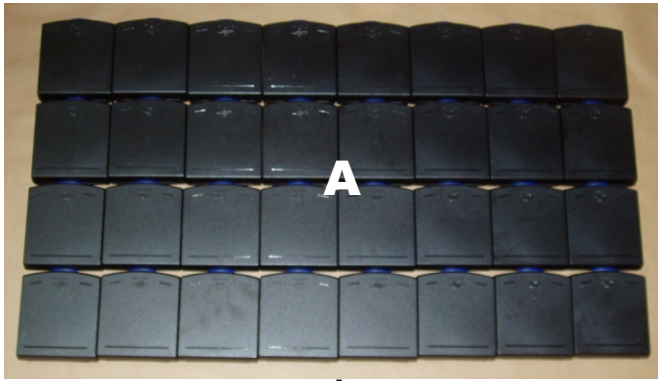


# Multidimensional Diagnostic Cavitation Tests on Turbines ... How do we do them?



The **technique** is non-destructive. We glue or fix with magnets the basic cavitation sensors **A** on the shaft or lever of each guide vane. These sensors cover the frequency range from the turbine revolution frequency up to 0.3 MHz. We also use several other types of cavitation sensors **B** installed in other locations and covering higher frequencies. By means of the key phasor **C**, we synchronize the signal acquisition and processing with the turbine rotation. We acquire operation parameters by means of **D** (head and tail water level, distributor opening, runner opening for Kaplan turbines, flow through the turbine, and the turbine power setting). Through **E/F/G/H**, we feed the signals to the cavitation processor **I**. The processed data and, where necessary, the raw data, are saved in the high-capacity disks **J**. The test is controlled through the supervisory computer **K**, and the computers **L** which are used to communicate with the plant operators.

The **preparation** of the test at the plant lasts 1-3 days. A still stand lasting half an hour or one night is needed, depending on the machinery details. The rest of the preparation is done under normal operation.

The **turbine is tested** on 20-30 power settings; local control is recommended. For one water-level combination, the measurement lasts 2-3 hours.

The **data analysis**, based on software implementing Korto's multidimensional algorithm, is often recursive and takes 2-6 weeks. The result is a report with detailed turbine cavitation characteristics.

## APPLICATION

- # **Operation optimisation** for minimal erosion
- # **Improvement of turbine** cavitation performance
- # **Predictive maintenance** (in the case of stable water levels, the test is sufficient; otherwise, permanent monitoring is necessary)

Application examples: [www.korto.com](http://www.korto.com)  
 More information: [info@korto.com](mailto:info@korto.com)

