

## Study of Cavitation Erosion of Pump-Storage Hydro Power Plant Prototype

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**Abstract :** An experimental investigation has been made to detect cavitation in pump-storage hydro power plant prototype suffering from cavitation in pump mode. Vibrations and acoustic emission on the housing of turbine bearing and pressure fluctuations in the draft tube were measured and the corresponding signals have been recorded and analyzed. The analysis was based on the analysis of high-frequency content of measured variables. The pump-storage hydro power plant prototype has been operated at various input loads and Thoma numbers. Several estimators of cavitation were evaluated according to coefficient of determination between Thoma number and cavitation estimators. The best results were achieved with a compound discharge coefficient cavitation estimator. Cavitation estimators were evaluated in several intervals of frequencies. Also, a prediction of cavitation erosion was made in order to choose the appropriate maintenance and repair periods.

**Keywords :** cavitation erosion, turbine, cavitation measurement, fluid dynamics

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