

Séminaire LVA

***Application of cyclostationary analysis for diagnostics
of machinery operating under variable operational
conditions***

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Analysis of vibration signals generated by machinery has proven its usefulness in industrial condition monitoring. In recent years, the use of vibrodiagnostics has expanded to many branches of industry and has found application in a number of types of machinery. This fact raises the demand for application of vibrodiagnostic tools to more complex objects, frequently operating under non-stationary conditions and in harsh environments.

This presentation will include introduction of cyclostationarity based signal processing methods dedicated for vibro-diagnostics of rotating machinery. The main purpose of the presented methods is to extract diagnostic features from vibrations either strongly affected by the noise or generated by the machinery operating under non-stationary regime.

Additionally, the following presentation will present studies on various methods of estimation of the rotational speed based only on vibration signal itself. For the majority of rotor machinery, variations of rotational speed carries significant amount of information related to the character of generated vibrations. For proper evaluation of operational conditions of observed machinery, it is crucial to have detailed information about rotational speed. However, in many practical situations it is uneconomical or even impossible to perform direct measurement of it. Therefore, there is a growing demand for alternative methods of instantaneous speed estimation.