

# Cavitation Detection of a Centrifugal Pump Using Noise Spectrum

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## Abstract

Cavitation is a common fault in centrifugal pumps. The detection and diagnosis of the onset and severity of the cavitation provide the means for preventing harmful effects such as deterioration of the hydraulic performance, damage to pump components and the vibration and noise pollution.

This paper presents a new approach for monitoring cavitation based on the noise measurement spectrum and analysis. Noise is measured using a microphone and a P.C. equipped with soundcard and Matlab6.1 uses Fast Fourier Transform to change the domain from time to frequency. It has been found that the sound pressure level at some

frequencies can be used as a primary monitoring feature to detect the onset of the cavitation and to quantify the severity of the cavitation. One of these frequencies is related to number of blades. Other detection features are defined in other frequencies, as well. Flow rate increase was used to have stronger cavitation effect.

**Keyword:** Cavitation detection, condition monitoring, centrifugal pump, noise spectrum.