

Abstract

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Experimental study for leakage detection in subsea pipeline by applying acoustic emission technique

Due to the increase in economy and population worldwide, the demand for oil and gas increased, most of which are transmitted through pipelines. One of the most challenging pipelines system operations is early detect any abnormal behavior that may lead to catastrophic accidents. Acoustic emission (AE) technology is a sensitive passive listening technique, which can detect small crack growth events. It has been used in many applications, to obtain additional information on the different damage types. In order to study the capability of the AE to monitor oil leakage, an experiment has been designed to simulate oil leakage in subsea pipeline for different defects sizes at different flow-rate speeds. Different AE parameters such as energy, amplitude and number of counts have been used to distinguish between different conditions. Results show that AE is capable to identify different defects sizes at different flow-rate speed. In addition, the average frequency indicates the presence of the leak.