

UNIVERSITI TEKNOLOGI MARA

**EFFECT OF MOISTURE
CONTAMINATION IN ENGINE OIL
LUBRICANT ON YAMAHA
OUTBOARD ENGINE
PERFORMANCE**

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ABSTRACT

Water can exist in several states in lubrication oils and can do quite a bit of damage to valuable assets if left unchecked. The boat lubricants are risky to the increasing of the moisture content because of the environment involving water. Water led to corrosion and increase oxidation since water affects the viscosity and lubricity of lubricants. Premature aging will occur and the lubricants need to be serviced after some time of 100 hours or six months, whichever comes first. This project compares the Fourier Transformed Infrared (FTIR) analysis of the new and used sample of lubricant which Yamalube engine oil 10W-40 from the serviced Yamaha four-stroke outboard engine 115hp. This project aims to determine the moisture content of the Yamalube engine oil 10W-40 in Yamaha four-stroke outboard engine 115Hp and compare the moisture content between new and used ones. The method used in this project is Fourier transformed infrared (FTIR) spectroscopy. The amount of free, dissolved, and emulsified water in a lubricating oil sample may be determined with great accuracy and precision using this method. The finding shows that the moisture content was detected in new and used oil samples. With the presence of water in these oil samples, it is suggested that it may lead to the failure, decrease the oil film strength, rapid flash-vaporization and causing erosive wear. The new oil not always clean, its maybe already be contaminant with water. Water might be present in fresh oil as a result of refining, manufacturing, or blending operations, or it can infiltrate during transit, handling, or storage procedures used by the provider. To improve existing data, the recommendations are investigate others factors that can lead to corrosion such as oxidation and come out with others methods that can determine moisture content more precise such as moisture analyzer.

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