

Relationship between engine oil viscosity with age and temperature

[Hubungan kelikatan minyak enjin terhadap usia guna serta suhu]

Abstract

Single grade engine oil viscosity experience changes influenced by temperature and pressure. In reality however, the viscosity of the engine oil is also affected by age. A relationship between oil's viscosity with temperature and age is proposed in this paper. This relationship is based on an empirical mathematical equation which involves Newtonian and non-Newtonian lubricant theory. Based on the model proposed, the engine oil viscosity was influenced by two factors namely temperature (k_s) and time (k_m). Both of these factors depend on the engine oil additive formula. As such, by applying rheology viscometer analysis, the value of these factors can be determined. This research showed that the engine oil viscosity was inversely proportional with the use age, established via mathematical viscosity model (η_{math}) and also rheology viscometer analysis.