

Fiber Bragg grating sensor for detecting ageing transformer oil

ABSTRACT

In this paper, we report the investigation of monitoring the degradation of transformer oil in power transformer using fiber Bragg grating sensor (FBG). The findings show that aging transformer oil has a higher refractive index (RI) compared to fresh transformer oil. This is detected by a wavelength shift in the FBG sensor's spectral response. The outcome complies with the breakdown voltage test which is the standard test for testing transformer oil ageing. Finally, we show that the sensor is temperature independent.

Keyword: FBG sensor; Transformer oil; Insulation oil; Breakdown voltage; Refractive index