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Temperature monitoring system using fiber Bragg grating (FBG) approach

Absract

In this paper, a temperature monitoring system is proposed by using fiber Bragg Grating (FBG) approach. This system can be done by using OptiSystem simulation and hardware implementation. FBG was employed as it allows a reflected wavelength of light that shifts in response to variations in temperature and/or strain. Generally, FBG sensors offer ease of installation, higher accuracy, longer stability, smaller size, immunity to electromagnetic interference (EMI) and the ability to measure ultra-high and speed events. The results indicated that wavelength shifting is depended on thermal expansion coefficient of materials, which are 0.55e-6 for default and 24e-6 for aluminium. Aluminum has a better sense rather than the default one in this study. For hardware implementation, it is shown that the power level is increased from one value to another progressively.