DESIGN OF SMOKE SENSOR 
USING PLASTIC OPTICAL FIBER

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Abstract

Fire is an event which is very detrimental. It is considerably hard to find a point source of heat in tracking the problem. Therefore the existence of fire sensor to detect the presence of fire smoke as the source of the flame through the principle of light absorption by using plastic optical fiber, LED as the light source, and photodetector is necessary. The detection of smoke is known from the value of output power using variations of the distance of the coupling in a condition of both without and with smoke. The method of measurement done is by measuring the output power value luminous intensity transmitted with variations of coupling distance and amount of smoke sources. The coupling distances used are 0,01 mm; 0,02 mm; dan 0,03 mm while the amount of smoke sources are 1, 2, and 3 source. After that, the comparison between output power value luminous intensity transmitted is done according to calculation and measurement. With the result that it could be concluded that a photonics system consisting of LED, plastic optical fiber and photodetector are able to be used as smoke sensor based on light absorption principle. The highest value of sensitivity 0,00140 μW attained by 0,01 mm coupling distance.

Keywords : Smoke, Output Power Luminous Intensity Transmitted, Coupling Distance, Plastic Optical Fiber