Abstracts

Fiber Optic Measuring System for Electric Current by Using a Magnetooptic Sensor

K. Kyuma, S. Tai, M. Nunoshita, T. Takioka and Y. Ida. "Fiber Optic Measuring System for Electric Current by Using a Magnetooptic Sensor." 1982 Transactions on Microwave Theory and Techniques 30.10 (Oct. 1982 [T-MTT] (Special Issue on Optical Guided Wave Technology)): 1607-1611.

A practical fiber optic measuring system for heavy electric current was developed by using the magnetooptic (Faraday) material. In order to obtain better SNR and smaller temperature dependence, the most suitable combination of the light source and Faraday material was experimentally and theoretically determined. Consequently, it was emphasized that an LED and magnetic SF-6 flint glass gave the superiority of overall system capability over LD's and para- or ferro-magnetic. A novel type of fiber optic current sensor was constructed of the Faraday rotator of SF-6 flint glass with two thin-film polarizers. By using this sensor and a high radiance LED, high accuracy within ±0.5 percent was obtained for magnetic field between 20 and 500 Oe, and at temperatures from -25°C up to 80°C.

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