

ABSTRACT

The field of telecommunications, particularly for transmitting data, has seen significant progress. One example of this advancement is fiber optics. Fiber optics can transmit large amounts of data over long distances. In addition to telecommunications, optical fiber can also be used as a sensor, such as a sensor for ground movement. Optical fiber has several advantages, including resistance to electrical or magnetic induction, no need for an electrical power source, high measurement accuracy, the ability to be monitored from a distance, and a small size. In this study, an initial study was conducted on the development of a ground movement monitoring system by detecting optical loss and variations in the curvature or diameter of optical fibers when rolled up to a certain diameter. The test results indicate that optical loss can be detected under certain conditions. Measurement differences occur due to some power loss in the optical fiber during transmission. Based on the tests conducted, the results of the optical loss measurements when the optical fiber is rolled with a diameter of 6 cm are 35.21 dBm, for tests with a roll diameter of 8 cm are 38.59 dBm, and for tests with a roll diameter of 10 cm are 41.06 dBm. The magnitude of the change in optical loss is influenced by the size of the bends or coils formed, which cause part of the light transmitted through the optical fiber not to undergo perfect reflection.

Keywords: Optical Fiber, Monitoring, Optical Loss, Landslide