

## **ABSTRACT**

One way to monitor the voltage of a device is through a voltage sensor. This sensor serves to find out how many voltages are applied to the device. Voltage quantity is expected to be always stable, so that the device can work optimally, if not according to input voltage then the components of the device is not working properly that eventually lead to damage.

The method used in simulating voltage sensors is by integrating optical fiber cable and piezoelectric. Its optical fiber type is singlemode from several manufacturers. Optical fiber is positioned in the form of a half or a circle located between two piezo. The piezo characteristic used is changeable in length when a voltage is applied, so that when the voltage is applied to the piezo, the half or one optical fiber circle will change shape in to ellipse. As a result of this form change, there will be changes macrobending loss of optical fiber.

There are several parameters analyzed in this simulation. These parameters affect the amount of macrobending loss that occurs. The influence is based on a mathematical formula used as a representation of the material used. Factors affecting the magnitude of loss in this simulation include the operating wavelength and cut-off wavelength of the fiber, the applied voltage on the piezo, the distance between the two piezo, and the number of turns fiber. The results show that, any voltage changes in piezoelectric, will cause a change in optical fiber loss.

**Keywords :** Voltage Sensor, Macrobending, Piezoelectric, Ellipse