ABSTRACT

In their development, fiber optic has also being used as a sensor in a measurement system beside the general use of fiber optic as a telecommunication medium. The utilization of fiber optic as a sensor in a weight measurement system is exploiting bending loss characteristic. The bending which occur on fiber optic are intended caused by measured weight, hence the heavier the measured weight, the longer the curve arc of the bending, the higher bending loss occur. Bending loss on fiber optic is influenced by two parameter which are: mandrel’s radius (r) as the bending former on fiber optic, and the length of curve arc of the bending (S) which is caused by mandrel’s motion due to measured weight.

This weight measurement design result gives: The sensor has nonlinearity and hysteresis characteristic. The accuracy: 81,31 % for measured weight adding, dan 90,64 % for measured weight withdrawing. Measurement span: For measured weight adding zone 1: 17,88 gram with resolution: 0,9 gram; zone 2: 36,24 gram with resolution 1,8 gram. For measured weight withdrawing zone 1: 14,18 gram with resolution: 0,6 gram; zone 2: 17,14 gram with resolution: 2,2 gram; zone 3: 24,33 gram with resolution 13,6 gram.

Key Word: Fiber optic, Sensor, Weight, Bending Loss