AE-251A

Experiments in Aerospace Engineering

lab report

Displacement Measurement using Potentiometer type Displacement sensor

January 29, 2019

Group No- B4

ABHIJEET 170015

HARISH DECHIRAJU 170286

MATARIA PENCE J 170382

NAVEEN BALAJI 170420

1 Objective

To study the working of a displacement sensor by measuring displacement using a potentiometer type sensor.

2 Overview

The potentiometer outputs a variable voltage based on the length of the resistive wire. This feature can be used to accurately measure the displacement. By reading the voltage difference, the displacement can be known.

3 Apparatus

- Potentiometer Type Displacement Sensor
- Cantilevered Aluminum Beam
- Loads
- Height Gauge

4 Procedure

4.1 Calibration

1. Position the height gauge and Potentiometer type displacement sensor at one point.
2. Apply tip loads and measure the displacement from the height gauge.
3. Measure the corresponding voltage from the displacement sensor.

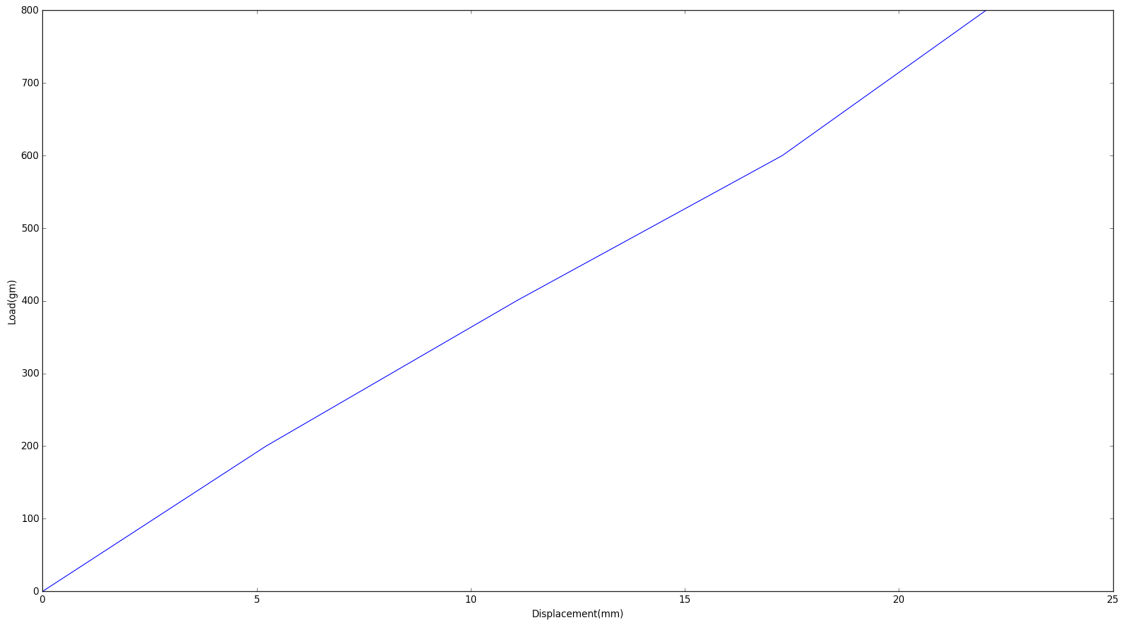
4. Calibrate the voltage against displacement by fitting it with the straight line.

4.2 Load Vs displacement

1. Place the sensor at a position other than the previous one.
2. Apply different loads at the tip.
3. Measure the displacement using the sensor at the given point.
4. Do the same for 2 other points along the beam.
5. Plot the loads vs displacement curve.

5 Results

Load	Displacement	Reading
0gm	0mm	0mm
200gm	6mm	5.22mm
400gm	12mm	11.07mm
600gm	17mm	17.28mm
800gm	22mm	22.04mm



mean slope=4.998999

6 Conclusion

We learned the basic principle behind the potentiometric displacement sensor and its uses. By using it we measured the displacement readings.