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AIM: To study the characteristics of strain gauage

APPARATUS: strain gauage kit, weights, connecting wires.

THEORY: A strain gauage is used to measure strain on diverse structures. By applying external force there would be a change in resistance of strain gauage. The basic construction of gauge has an insulating flexible backing to support a metallic foil structure This metallic coil is glued to a thin backing called a carrier, and the entire setup is fixed to an object using a suitable adhesive. As the object is deformed due to force, pressure, weight, tension, etc. the electrical resistance of foil changes. A wheatstone bridge measures the changes in resistivity which is related to strain through a quantity known as gauge factor

$$\text{Gauge factor (G)} = \frac{\Delta R / R}{\Delta L / L}$$

PROCEDURE:

1) Assemble strain gauges on the specimen.
2) connect the digital gauge with the switches (considering the colour guides), with the strain gauges on the specimen.
3) calibrate the digital gauge, this is achieved with no load
4) The digital will read some arbitrary reading for

Weights	Loading (V)	Unloading
60	0·6	0·3
100	1·2	0·7
150	1·5	1
200	1·9	1·2
250	4·2	4
300	6·7	6
350	7·7	9
400	8·5	11·7
450	10·6	12
500	13·7	23·2
600	15·7	25
700	18·0	27·4
800	19·0	29·1
900	30·5	29·7
1000	41·3	41·3

each strain guage, so set the reading to zero for each one using the finer on the switches, in order to eliminate the constant error caused from constant deviation

5.) Load the specimen with mass of a 50g and measure the strain on each strain gauge.

6.) Repeat the ~~pe~~ previous step, increasing load, in order to study the graph.

Conclusion: Experiment on strain gauge was performed and characteristics were studied. The output voltage for unloading was greater than output voltage for loading.

23/1/24

Scale
x-axis
1 cm = 100 g
y-axis
1 cm = 2 V
○ - loading
△ - unloading