

AEROSPACE STRUCTURES AND COMPOSITES LABORATORY



General Outline

- The laboratory serves as a teaching tool for the students of Aerospace Engineering in the Material selection, Mechanical Testing and performance analysis of different structures used in aircrafts, rockets and spacecrafts.
- The laboratory has equipment's to estimate the structural properties data using Young's modulus, ultimate strength, Shear Modulus, Inter lamina shear and hardness which are relevant both UG, PG and research scholars.
- Stress strain Measurements- strain gauges
- Stress distribution and Stress concentrated factor of different cross section and load using 2D Photo elasticity equipment.
- Shear modulus and angle of twist of fuselage and wing sections using Digital torsional Equipment.

Real time applications

- The students will be able to characterization different aerospace materials.
- Composite Laminate can be hand made by Layup and Filament Winding equipment

Facilities available for research, consultancy and testing

- Photo elastic Polariscope – 2D
- Composite Laminate making (Hand Layup & Filament Winding) and testing
- UTM- 2 ton
- Hardness Testing- Vickers hardness testing, Rockwell cum Brinell hardness testing
- Torsion Testing – 1000 Nm
- Strain Measurement using Electrical resistant strain gauge

Lab Equipments

- Shear Centre Test
- Cantilever Beam
- Torsion Test
- Elastic Supported Beam
- Composite Beam
- Unsymmetrical Bending Test
- Polariscope
- Wagner Beam Setup
- Vibration Setup
- Hinged Bar Suspension
- Universal Testing Machine
- Column Test Setup
- Spring Test (Open Coil)

- Hardness test
- Digital Torsion Testing Machine
- Rockwell / Brinell Hardness Test
- Vickers Hardness Test

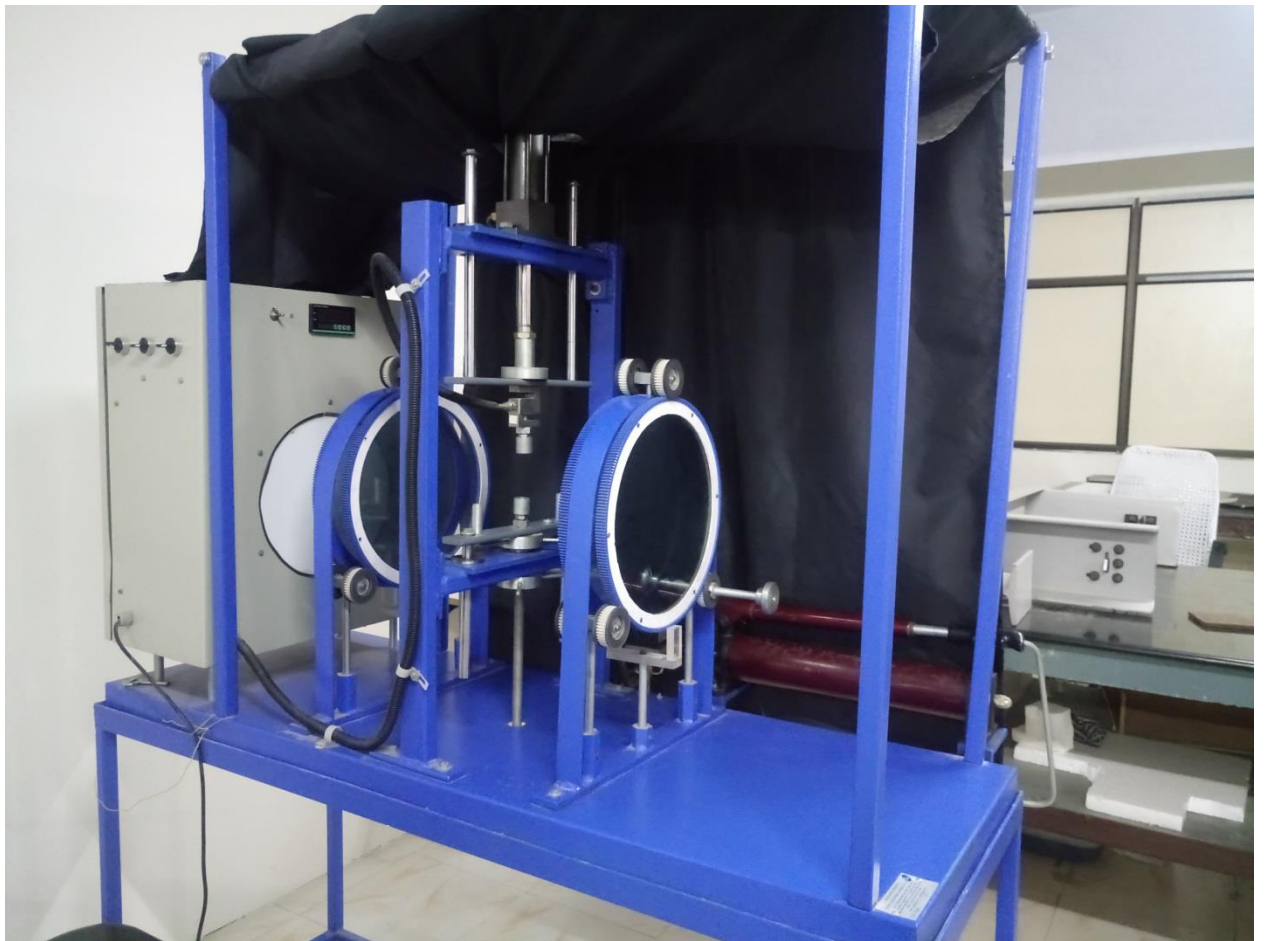


Fig.1: Poloriscope – 2D Photoelasticity



Fig.2 Wagner Beam (Aircraft wing Section hydraulically loaded with strain Gauge attached)



Fig.3 Rockwell and BrinellHardness testing Machine

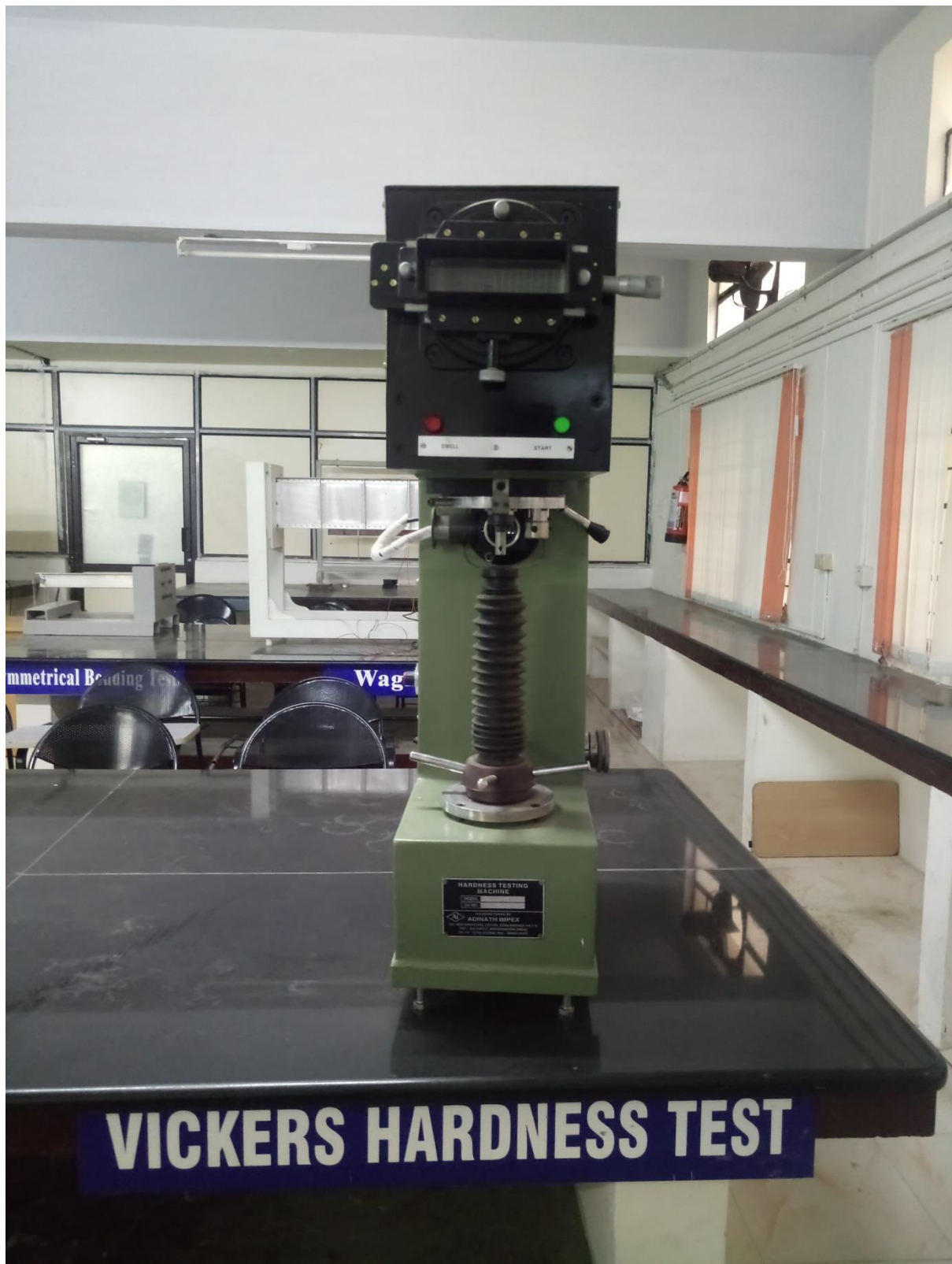


Fig.4 Vickers Hardness Testing Machine

For consultancy