

# Bachelor's Thesis, Term Project, Master's Thesis

## Mechanical Characterization of Curved Laminates

The gradual incorporation of fibre-reinforced polymers in pressure vessels has led to substantial reductions in the weight of the tanks, which were originally made of 100% steel or aluminum. The pressure vessels have the particularity of having curved surfaces, since in them the tensions caused by the gas pressure are distributed in a better way. As new technologies for the manufacture of these curved laminates were born, so were characterization methods to validate the manufacturing processes.

This research aims to establish the foundation for developing a standardized characterization method for curved laminates. To achieve this, several tests will be compared, such as the Split Disk Tensile Test (ASTM D2290) and three-point bending for curved surfaces, in terms of strength and stiffness measurement. While the focus is on characterization, the research also requires the understanding of the manufacturing process of these curved laminates and the mechanics of laminates in order to fabricate representative test specimens. The practical and experimental aspects of material characterization will be emphasized, including literature review, fabrication, and preparation of test specimens, as well as report writing.



Figure: Split Disk Test & DIC



Figure: CFRP Pressure Vessel LCC

### Research focus of the thesis

- Literature research on the characterization of curved laminates
- Comparison and evaluation of different characterization methods
- Preparation and fabrication of specimens
- Perform tests, analyse data and present results

### Requirements

- Basic knowledge of fibre-reinforced composites (Optional)
- Interest in material testing
- Structured and independent work ethic
- Language: English

**Starting date:** Now

For more details please contact:

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