



Łukasiewicz
Institute
of Aviation



DESIGN AND DEVELOPMENT OF HIGH PRESSURE HYDROGEN STORAGE TANK

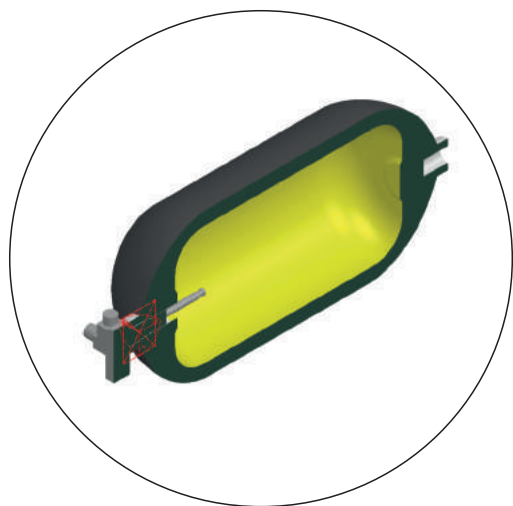
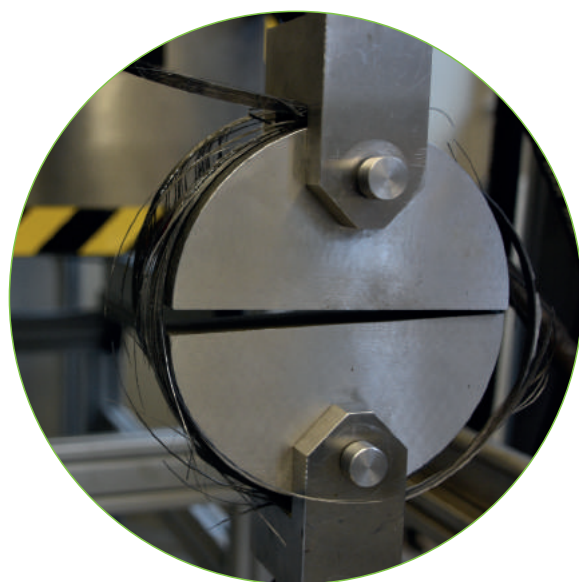
development of high-pressure tank / material compatibility /
hydrogen embrittlement testing / functional /
leakage tests technology verification / experimental tests /

CHARACTERISTICS

Łukasiewicz – Institute of Aviation provides wide range of capabilities in the area of design, optimization, filament winding technology development and testing high-pressure tanks for hydrogen storage.

DESIGN & ANALYSIS

- Dome profile design.
- FEM analysis.
- Boss – liner interface.
- Simulation of winding layers.
- Prediction of burst pressure.



MATERIAL SELECTION & TECHNOLOGY DEVELOPMENT

- Composite and liner materials selection.
- Screening tests.
- Filament winding technology development.
- Elaboration of process specification.
- Quality control.
- Compatibility of metallic materials with hydrogen environment.
- Methods for testing the effect impact of hydrogen on material properties.

HIGH-PRESSURE TESTS

- Temperature limits: from -100°C to +260°C.
- Temperature rate 2°C/min.
- Hydraulic testing – up to 2900 bar.
- Gas testing – up to 1720 bar.
- Vacuum helium leak tests.
- Proof, endurance tests.
- FAT's (Factory Acceptance Tests).
- Rapid Gas Decompression tests.

Qualifications according to:

PN-EN ISO/IEC 17025:2018-02 standard requirements.



The Łukasiewicz Research Network – Institute of Aviation offers a wide range of specialized research, engineering services and products. We provide comprehensive solutions, ranging from dedicated analyzes, simulations, engineering design, through the selection, testing and certification of materials and structures, to rapid prototyping and additive manufacturing.

al. Krakowska 110/114, 02-256 Warsaw, Poland
e-mail: info@ilot.lukasiewicz.gov.pl / www.ilot.lukasiewicz.gov.pl