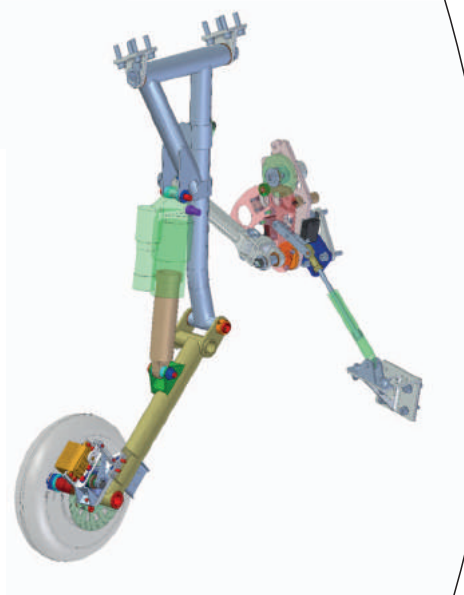
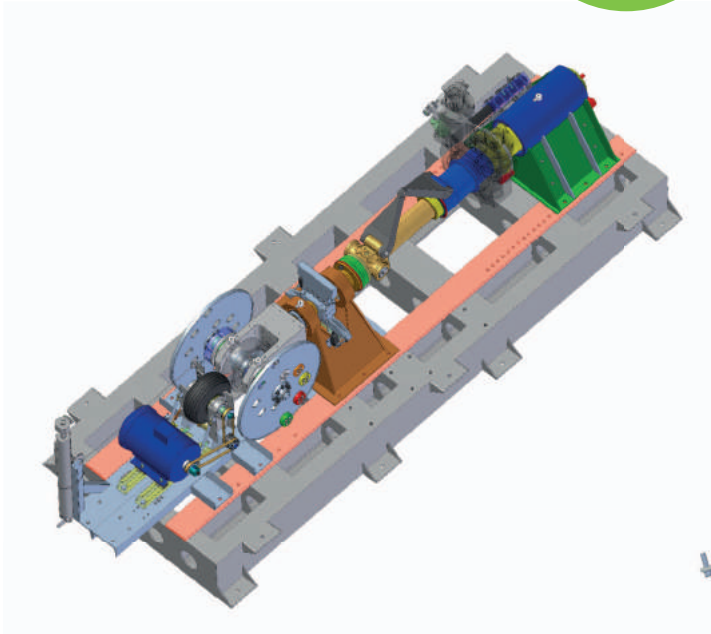




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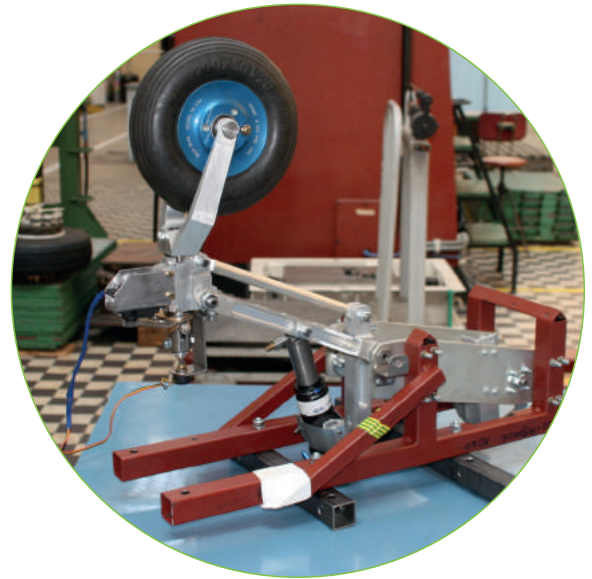


Design, testing & engineering

LANDING GEAR

CHARACTERISTICS

The Łukasiewicz Research Network – Institute of Aviation in Poland is a leading centre for designing and testing landing gears. We offer comprehensive engineering services, including testing compliant with regulations and standards such as CS, FAR, EASA, MIL, AP, PN EN ISO9001, PN EN ISO17025, and AQAP 2110. Landing gear tests are performed under the accreditation AB 131 granted by Polish Centre for Accreditation (PCA) an ILAC compliant.



SERVICES AND DESIGN AREAS

- Landing gear design and testing for airplanes and helicopters.
- Manufacturing of "shimmy" and anti-resonance dampers.
- Shock absorbers, actuators, and locks for landing gears.
- Custom test stand design and fabrication.
- Design and implementation of ABS for aircraft brake systems.
- Production of high-energy wheels and brakes.
- Design of landing gears for UAVs and technology demonstrators.
- Electric brake systems for UAVs.
- Evaluation of design processes to meet aviation standards.
- Utilization of CAD 3D SOLID EDGE system, compatible with UNIGRAPHICS and CATIA systems, to aid in design processes.
- Custom solutions tailored to meet individual client needs.
- Analysis of static and dynamic loads on aircraft landing gear components and other structures.
- Shimmy vibration analysis.
- Analysis of the strength, stiffness, and flexibility of components or entire landing gears and other structures, including composites.
- Integration and optimization of landing gear components, other structures, braking systems, and shock absorbers.
- Analysis of braking-related phenomena, including dynamics, thermal phenomena, and vibrations.
- Durability assessment of landing gear components and other structures using both analytical and experimental methods.
- Numerical analysis of energy-absorbing materials.
- Design and analysis of energy-absorbing lattice structures using additive manufacturing (3D printing).
- Numerical simulation of landing gear drop tests.
- Analysis utilizing MSC NASTRAN / PATRAN, FEMAP / NASTRAN, and HYPERWORKS packages, with dynamic analysis using LS-DYNA.

TESTING SCOPE

- Aircraft/UAV landing gear.
- Brakes.
- Friction materials.
- Shock absorbers.
- Dampers.
- Energy absorption.
- Static and dynamic strength.
- Fatigue.
- Dynamic and functional characteristics.
- Resistance to shock load.
- Thermal endurance tests.

MEASUREMENTS

- Force, range: 0.1 up to 400 kN.
- Displacement, range: 0.05 up to 2400 mm.
- Relative strain, range: 10 up to 15000µm/m.
- Rotational speed, range: 10 up to 20000 rpm.
- Acceleration, range: 0 up to 200 m/s².
- Pressure, range: 0 up to 60 MPa.
- Temperature, range: -40 up to 1084°C.



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.

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