

Slovak Urban Air Mobility solution pushed forward by academia-industry collaboration

Auto-gyro or gyrocopter is concept invented by Spanish engineer Juan de la Cierva in an attempt to create an aircraft that could fly safely at low speeds. From its inaugural flight in 1923 benefits of Cierva's novel rotorcraft are being explored and planned for upcoming new sector of transportation called Air Urban Mobility bringing on-demand, highly automated, passenger or cargo-carrying air transportation services within and around a metropolitan environment, usually in low-altitude airspace.

Gyroplane Nisus produced by Slovak SME Jokertrike has started research and development cooperation with the Faculty of Aeronautics of the Technical university of Košice to further Nisus capabilities and find answers for technical and operational challenges faced also by upcoming novel category eVTOLs getting ready for demand in personal automated metropolitan and urban aerial transportation.

Nisus – effective and innovative solution for Urban Air Mobility, transportation and surveillance is being set onto the course of eco-friendly, automated and fully-connected aerial solution by academia and industry cooperation.

Our research is focused on:

Communication solution for Unmanned Traffic Management integration capable of real-time two-way data stream for V2V and V2I connections



Full flexibility to fit alternative power sources, such as batteries, fuel cells or hydrogen

Lifting-body solution for effective and improved aerodynamic characteristics reducing consumption and improving endurance



The Faculty of Aeronautics of the Technical university of Košice was established on 1st February 2005 as successor of institutions, which have provided aerospace and aeronautics education, research and training for past 61 years. Our campus has been home to four cosmonauts – first European cosmonaut Vladimir Remek, first Slovak cosmonaut Ivan Bella with their alternates – accomplished military aviators, successful professional in aviation sector and two Slovak cubesat missions.

Our expertise is ready to answer your demand:

- Creation and analysis of spatial emission characteristics of aircraft antennas in a special anechoic chamber and on real aircraft and helicopters.
- Development of sensors and electronic systems according to the specific user requirements, including sensors based on the magnetic microwires, analogue circuits of the signal processing, UAV on-board electronics, magnetic measurements and measured data processing, testing and calibration of sensors.
- Aviation security and safety, human efficiency, modelling and analysis of aircraft operations and procedures.
- Research in the area of design and optimization of routes in the final approach in the airports with different navigation infrastructure.
- Implementation of new technologies, working procedures and safety practices for Air Traffic Management, Unmanned Traffic Management and Space Traffic Management
- Aerodynamic measurement, flight dynamics modelling, numerical modelling of fluid flow, heat transfer and cooling.
- Computer aided design, manufacturing and engineering, mold design and manufacturing for the plastic components, CAD/CAM model creation using the 3D scanner, manufacturing of real models developed in the CAD/CAM software using the 3D printers.

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Learn more about our mission and story:



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