

UNIS, a.s.

Brno, Czech Republic

www.unis.cz

UNIS, a.s. - company profile

- Founded in 1990
- Headquarters in Brno, Czech Republic
- Joint stock company
- 170 employees (R&D, engineering)

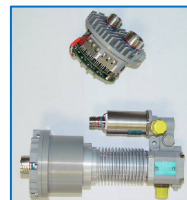
- Business areas
 - Chemical engineering
 - Petrochemical engineering
 - Power engineering
 - Control & Information systems
 - Mechatronic systems



Portfolio of Mechatronic systems

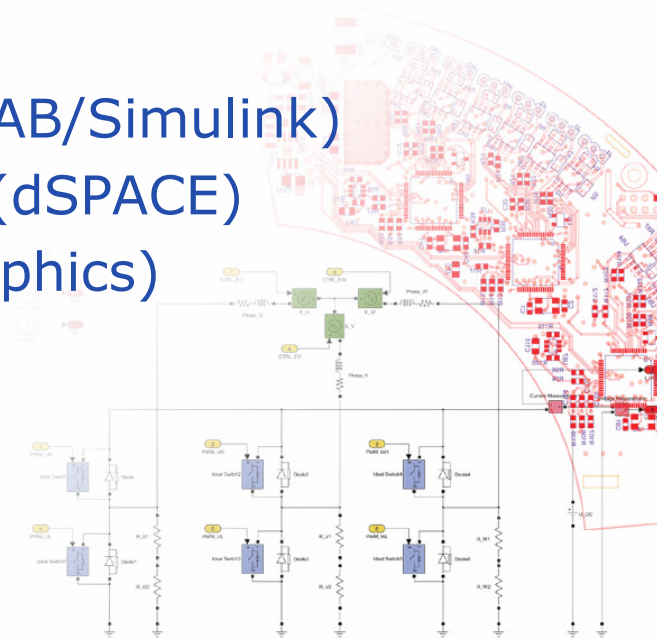
- Research, development and production
- Critical control applications

- Avionics
- Power electronics
- Control systems for EHA/EMA actuators
- Micro turbine control
- Electronic engine control units (FADEC/EEC)



Development life cycle

- Project definition
- Preliminary design
- Model based modeling (MATLAB/Simulink)
- Hardware in the loop testing (dSPACE)
- HW & SW design (Mentor Graphics)
- Code testing (Cantata)
- Target evaluation
- Prototype
- Production



Avionics

- System of Aviation Modules
 - eight independent modules
 - Engine monitoring module (PW PT6)
 - CAN communication data bus

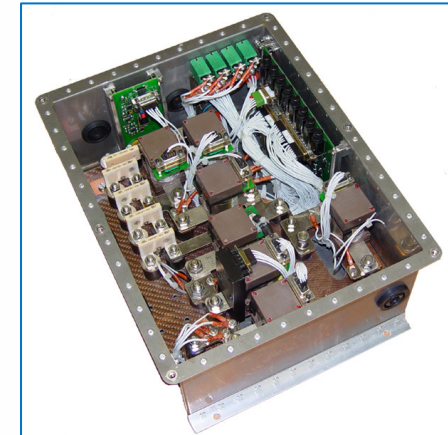
- Multifunction aviation displays
 - cost effective
 - LCD, TFT technology
 - various communication interfaces (ARINC-429, CAN, FlexRay)



Power electronics

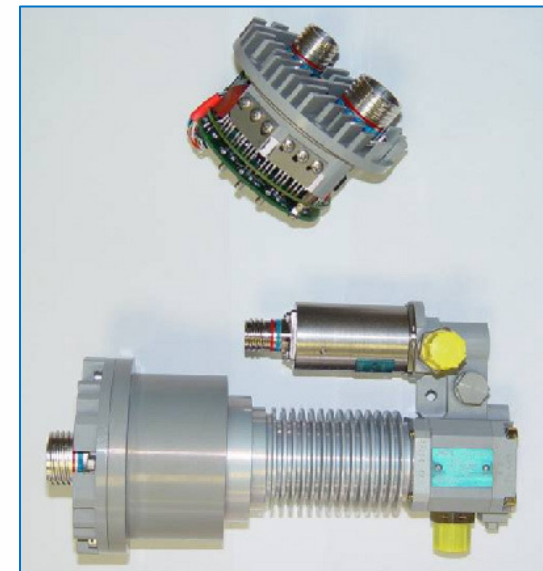
- Electric Power Distribution Box
 - designed for EV-55 civil aircraft
 - management of aircraft's loads
 - implementation of protection
 - cooperation with starter-generation

- Power converters for APUs
 - AC/DC conversion
 - 1kW, 3kW, 9kW



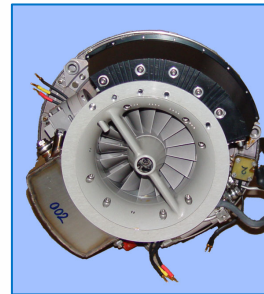
EHA/EMA control systems

- Fuel Pump Control system
 - control of brush-less DC motor
 - explosion proof design
 - parameters monitoring and recording
- Ae270, Aero Vodochody
- APU, variable fuel delivery to maintain constant turbine speed

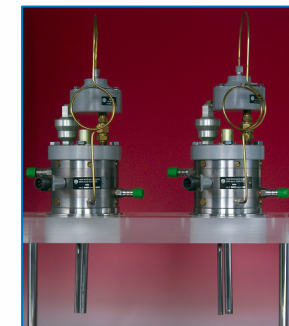


Micro turbine control

- Control system for TJ100 micro turbine
 - regulation of rotational speed (60 000 rpm)
 - parameter monitoring
 - generation of onboard electric supply



- Control of expansion micro turbines
 - control of helium liquefier
 - 350 000 rpm

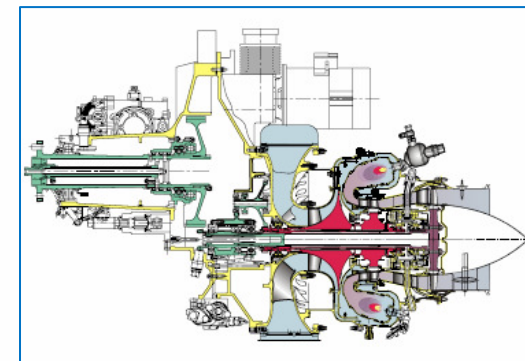


Engine control units

- EEC unit for twin engine helicopter
 - Control of two turbo-shaft engines
 - NA 40 Bongo helicopter



- Dual channel FADEC
 - Twin turbo-prop aircraft
 - Single lever control
 - Automatic power rate control
 - Engine parameters and trends monitoring





Reference projects

- **Aero Vodochody**
 - System of aviation modules
 - Dynamo starter el. board for L39MS
- **EVEKTOR**
 - Electric Power Distribution Box
- **Jihostroj Velešín**
 - Fuel pump control units
- **PBS Velká Bíteš**
 - Engine control system for TJ100 micro turbine
 - Control system for helium liquefier
 - Power converters for APUs
- **SAFRAN group**
 - eAPU fuel metering pump control system



Thank you for your attention...