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...