MODERNIZATION OF THE CZECH NATIONAL AIR QUALITY MONITORING NETWORK

Installation of the Hanuman system at CHMI stations

Context and Challenge

The Czech Hydrometeorological Institute (CHMI) operates a network of ISKO stations (Air Quality Information System), which is part of the state's critical infrastructure. In 2024, a requirement emerged for the modernization of the data collection and processing system, including heightened demands on cybersecurity, user experience, and compliance with accredited measurement standards.
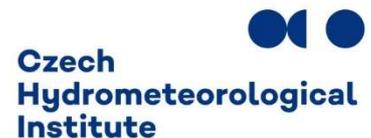
Key project challenges:

- Meet cybersecurity requirements: eliminate reliance on Windows OS.
- Ensure simple and intuitive system operation.
- Adapt software modules to strict SOP requirements.
- Integrate with the ISKO database (Quality Information System in Czechia).
- Replace outdated modules with a modern, unified solution.

Solution

We deployed our proprietary product – the Hanuman datalogger:

- Hardware platform: Unipi IRIS with NXP i.MX 8M Mini processor, OS Debian Linux.
- Software layer: Web interface with intuitive operation and calibration management.
- Cybersecurity: Robust Linux architecture without frequent updates.
- Compatibility: Full integration with ISKO.
- Modular architecture: Combines data management, calibration, alarms, and remote administration.

A crucial part of the project was the reprogramming of the calibration module according to accredited standards. This development was carried out in close collaboration with CHMI specialists.

From left: Hanuman data logger (Unipi IRIS) and Hanuman web interface

Results and benefits

In autumn 2024, we installed the Hanuman datalogger at 96 CHMI stations across the Czech
Republic.
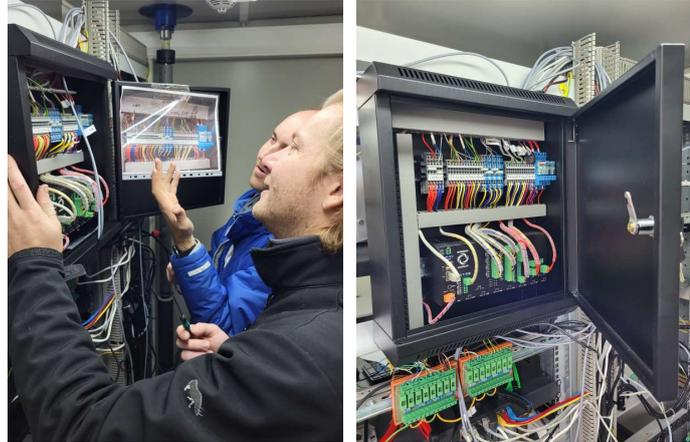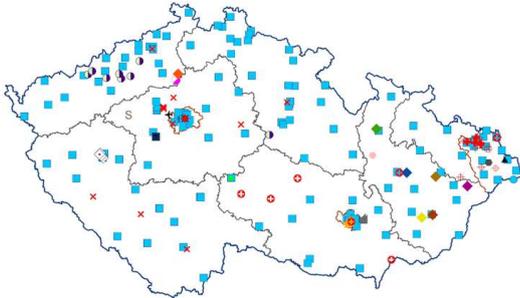
*From left: Network of AIM stations in the Czech Republic (light blue are stations of the Czech
Hydrometeorological Institute), installation of Hanuman datalogger, installed datalogger with cabling*

Main benefits of the solution:

- ✓ Enhanced cybersecurity – Linux-based system meeting NÚKIB requirements.
- ✓ Simplified and accelerated operation – modern web interface.
- ✓ Increased operational efficiency – automation of calibration, alarms, and remote
  administration.
- ✓ Ensured data integrity – internal SSD and intelligent backup.
- ✓ Preparedness for future expansion – flexible integration of new measurement types.

The project was completed without major complications and demonstrated ENVItech
Bohemia's ability to execute large-scale technology deployments.

Conclusion

The installation of the Hanuman system represents a key milestone in the modernization of
the national air monitoring infrastructure. ENVItech Bohemia has proven its ability to deliver a
secure, robust, and user-friendly solution that meets the demanding requirements of critical
infrastructure.

Contact

If you are interested in more information about the suitability of the Hanuman datalogger for
your needs, feel free to contact us:

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