



Fenagy: Driving Sustainability and Innovation with IoT-Enabled Heat Pumps and Refrigeration Systems

Fenagy is a leading provider of advanced heat pumps and refrigeration systems that utilize CO₂ and hydrocarbons as refrigerants, ensuring zero climate impact. With a primary focus on district heating plants across the Nordic countries, Fenagy is expanding into markets such as the UK, South America, and other industrial segments, delivering cutting-edge solutions to a growing customer base.

Fenagy designs and manufactures all components in-house and commits to servicing its products for up to 10 years. This commitment makes monitoring and preventive maintenance essential to ensure uptime, optimize service resources, and continuously improve product performance and customer satisfaction.



Operating in the realm of critical infrastructure, Fenagy is officially NIS2-certified, demonstrating its commitment to cybersecurity. As a result, Fenagy required a remote maintenance solution with robust security features and user-friendly functionality. The **Secomea remote access solution** emerged as the ideal choice and is now a standard component in all Fenagy systems.

The Secomea SiteManager not only offers secure VPN-based remote access but also supports data collection from industrial protocols like Siemens, Modbus, and OPC UA, enabling seamless integration with various cloud platforms. Given its exceptional compatibility with **Inuatek's Data Collection Cloud (DCC)**, the DCC was the natural choice for Fenagy. The DCC facilitates effortless configuration management, with updates automatically deployed to the SiteManagers. Together, Inuatek DCC and Secomea form a comprehensive maintenance platform that combines remote access, notifications, dashboards, and reports into a fully integrated ecosystem.



Optimized Operations and Energy Balancing

The DCC dashboards provide a comprehensive overview of all Fenagy systems in operation. For district heating plants, this visibility is invaluable, allowing systems to be optimized based on electricity prices. For example, Fenagy systems can be activated when electricity prices drop, helping to balance the power grid and enabling heating plants to participate in ancillary services.



Additionally, Fenagy relies on the DCC to monitor system health and performance. Key parameters, such as suction pressure (which correlates with outside temperature), are factored into performance calculations. These calculations enable Fenagy to compare theoretical and actual performance, providing insight into how much heat a system should produce. If deviations occur, technicians can address issues proactively,

resolving them before they impact customers.

These calculations and visualizations are powered by the DCC platform's built-in equation and post-processing features, which also aggregate data from multiple systems at a plant to meet regulatory reporting requirements.

Emanuel Frid, Automation Team Lead at Fenagy, describes the benefits:

"With this system, we achieve three key goals: optimal system performance, higher customer satisfaction, and more efficient utilization of our service teams. By focusing on proactive work, we avoid the stress of firefighting issues after they arise."



A Vision for the Future

Looking ahead, Fenagy is exploring opportunities to unlock further value from IoT data. One key area of focus is dynamically correlating operational patterns with weather forecasts, electricity tariffs, and spot prices. This approach would allow heating plants to optimize utilization, reduce energy consumption, and further lower CO₂ emissions. While larger heating plants are already embracing these capabilities, Fenagy envisions delivering turnkey solutions that make these benefits accessible to smaller plants, scaling efficiencies across the industry.

However, as **cybersecurity concerns** grow, Fenagy recognizes that stricter security requirements may limit traditional remote access. This shift highlights the importance of isolating critical data to ensure service needs can still be met without compromising security.

As Emanuel Frid explains:

"Data is the backbone of innovation. Historical data—such as operational conditions, error timings, and preceding events—provides vital input for our research and development. Every machine we ship includes improvements, whether in components or procedures. Currently, we collect data from around 200 sample points per machine, but we could easily double that to extract even more value."

A Strong Partnership with Inuatek

Beyond the technical advantages, Fenagy values the collaborative relationship it has built with Inuatek. Emanuel Frid emphasizes:

"The DCC platform evolves in a direction that aligns perfectly with our vision. But what truly sets Inuatek apart is their responsiveness and willingness to act on our feedback. This goes beyond a standard customer/vendor relationship—it's a genuine partnership where our input is valued and implemented. It's clear that Inuatek is passionate about their platform."

Conclusion

Fenagy's integration of IoT solutions through the Inuatek DCC and Secomea SiteManager showcases how technology can drive sustainable innovation in critical infrastructure. By optimizing performance, enhancing customer satisfaction, and proactively addressing security challenges, Fenagy continues to lead the way in environmentally responsible heat pump and refrigeration systems, setting a benchmark for the industry.