



EnOcean

Self-powered IoT

Airedale International Enhances HVAC with AI and Analytics

EnOcean's SmartServer™
IoT enables technology
leadership in AI-driven
HVAC

01 The Challenge

Airedale is a dynamic, growing business that recognizes the potential of artificial intelligence (AI) to transform the operational efficiency of HVAC systems. AI, specifically in the form of machine learning (ML), enables vast volumes of system data to be classified, grouped and analyzed. The analysis reveals patterns within the data, creating valuable insights that help companies simplify operational workflows and maximize system uptime, while cutting maintenance costs and energy consumption.

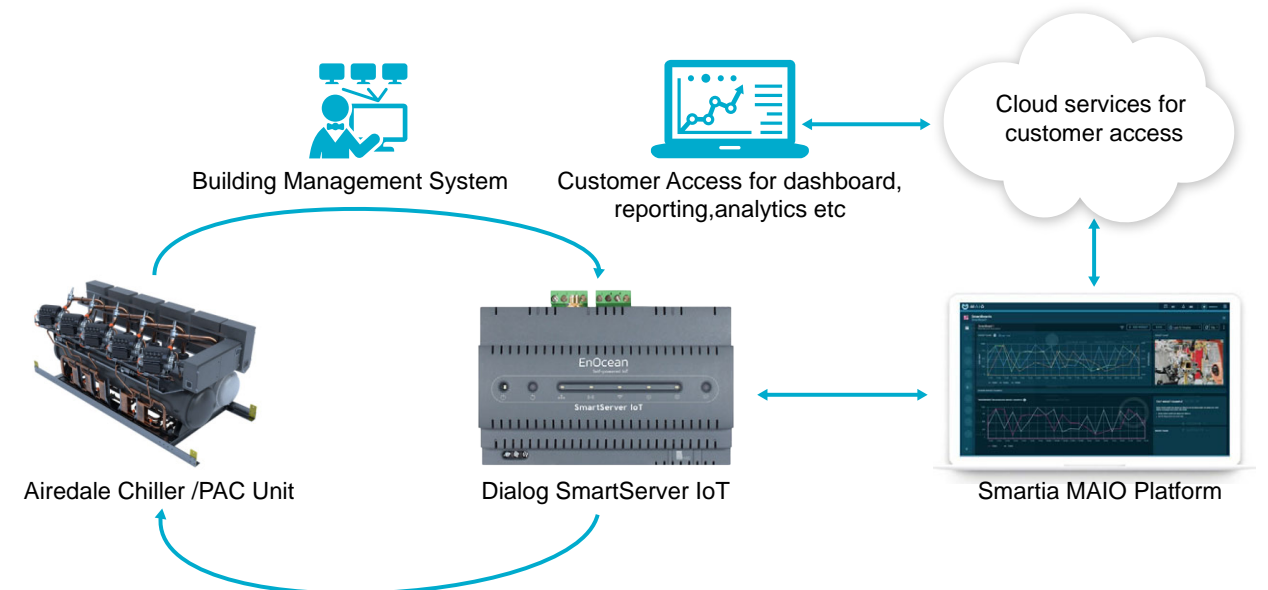


The challenge, which is common to many industrial internet-of-things (IIoT) applications, is how to collate diverse, multi-protocol network data from the 'edge', close to sensors and actuators, send it to ML platforms hosted in the cloud, then effectively communicate and deploy the results of the processed data. Data security is paramount throughout.

Airedale has a large installed base of equipment in data centers, but the company is diversifying into other sectors, including telecommunications and pharmaceuticals. In order to succeed, Airedale needed to find a flexible, scalable solution that could be deployed in almost any industrial or commercial environment. By doing so, it would be able to optimize its offering to existing customers, perhaps creating incremental sales, and expand its potential market to encompass other industry sectors.

02 The Solution

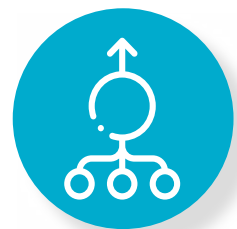
After reviewing the options, Airedale opted to partner with EnOcean for its SmartServer™ IoT Edge Server, and with Smartia Technologies for its MAIO, cloud-based AI platform. SmartServer IoT allows Smartia's AI platform to co-exist with existing operational or building management systems (BMS), enhancing both by creating a feedback loop that ties them together.



Airedale chillers have integrated Carel programmable logic controllers (PLCs). These connect to the company's building management system (BMS) using IP, Modbus RS485, or BACnet protocols. A further two-way, Modbus RS485 connection from each controller feeds EnOcean's SmartServer IoT unit. Utilizing EnOcean's IoT Access Protocol™ (IAP) open API, the SmartServer then interfaces to the Smartia MAIO cloud platform using the MQTT protocol running over a 4G cellular radio link.

Data calls and control signals are routed back to the PLCs in the chillers via Smartia's VPN client, which runs on SmartServer IoT. Airedale customers access analytics and reporting online from the Smartia MAIO platform over a secure data pipeline, and the development of control sequences and custom visualization is made easy and intuitive thanks to SmartServer's drag-and-drop programming tools.

03 The Benefits



For Airedale, SmartServer IoT brings two substantial benefits. The first is the opportunity to diversify its business through the openness, flexibility, and scalability of EnOcean's edge server technology.

SmartServer IoT offers open, multi-channel support for connecting to BACnet, IAP, LON and modbus networks, whether they are in legacy installations or designed into new ones. The edge server harmonizes data from these networks, simplifying the process of linking them to Smartia's MAIO AI platform.



The second is more powerful monitoring and control for Airedale customers. As Smartia says, "Your industrial assets hold 'secrets' related to data correlations, trends, anomalies, deviations, root causes, and other key operational information. By analyzing and presenting data for actionable use, companies improve business decisions."

Specifically, in addition to the overall effectiveness of the Airedale HVAC system, customers will benefit from:



30%

reduction in
maintenance and
service calls

- Up to 30% reduction in maintenance and call out costs. There is ongoing performance analysis of connected units using a variety of algorithms and machine learning techniques. If a drop in performance against operating conditions is detected, this gives an early warning system to customers and their maintenance teams. Early intervention can then prevent prolonged periods of higher energy consumption and eventual breakdown, with all the associated costs. The system evaluates the HVAC unit's performance on a variety of factors. For example, for a refrigerant-based cooling system it will measure superheat, sub-cool, suction and head pressures, water and air flow, analyzing these factors for deviations against normalized behavior while taking into account the installation's overall duty cycle, efficiency, and power consumption.



10-30%

in energy
savings

- Energy savings of 10% to 30%. The HVAC unit's load profile will be analyzed to determine if it's possible to improve operating efficiency. For example, if an air handling unit (AHU) serves a meeting room that is only used at certain times of the day, the system would detect and highlight to the user if it is wasting energy by being left on all day. The system will autonomously learn to correct this and turn the AHU off – or adjust the temperature/airflow setpoint – as needed.

It's the combination of Airedale's long experience in industrial HVAC, the flexibility and scalability of EnOcean's SmartServer IoT, and the powerful analytics and reporting functions of Smartia MAIO that together propel Airedale into technological leadership in the HVAC sector.

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SmartServer IoT is now at the heart of Airedale's intelligent HVAC offering. It helps us accelerate digital transformation in industrial applications, delivering tangible business benefits for our customers.



Jon Martinez,
Commercial Controls Manager,
Airedale

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04 About Airedale



Airedale International Air Conditioning is a world leader in the design and manufacture of precision thermal management systems. The systems, which are designed for maximum efficiency and minimal environmental impact, employ sophisticated monitoring and control electronics. Customers enjoy an end-to-end view of system availability and the ability to manage multiple installations remotely, wherever these are located. After design, installation, and commissioning, Airedale supports its customers with service and maintenance programs, and technical support and training.

Looking for more?

For more information on our SmartServer, please visit the EnOcean website:
www.enocean.com

For additional support, please contact info@enocean.com

EnOcean

EnOcean GmbH
Kolpingring 18a
82041 Oberhaching
Germany

Contact Information
For further information about our products or technology
please visit www.enocean.com or contact us
at info@enocean.com.