Keeping cool – and safe

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Should refrigerant gas leak into a room, action needs to be taken quickly. With LOGO! 8, Rowse designed and implemented an innovative control panel solution that detects leaks and automatically starts countermeasures, protecting the safety of guests, employees, and service engineers.

The historic port city of Plymouth, Devon, is home to several marinas, a fish market, quaint cobbled streets – and Rowse– one of the area's most highly respected control and automation distributors. Rowse was founded 15 years ago by John Rowse, who'd spotted a gap in the market when it came to controls and automation in the southwest of England. His son, Tom, joined the company four years later, and the business grew rapidly. "Locally, we serve Devon, Cornwall and Somerset", Tom Rowse expounds, "but we actually have customers all over the United Kingdom and the world – we export to many different countries."

When a leading international HVAC manufacturer needed assistance in designing a refrigerant leak detection control panel for air conditioning units, their first port of call was Rowse. The air conditioning units are installed in hotels and office buildings, and it is vital that any leaks are detected promptly. "There's a certain level of refrigerant that can be leaked off, but if this is exceeded, action needs to be taken. It's very, very rare, but if refrigerant gases were to leak into a room, the worst-case scenario would be that they could cause death", Tom Rowse explains.
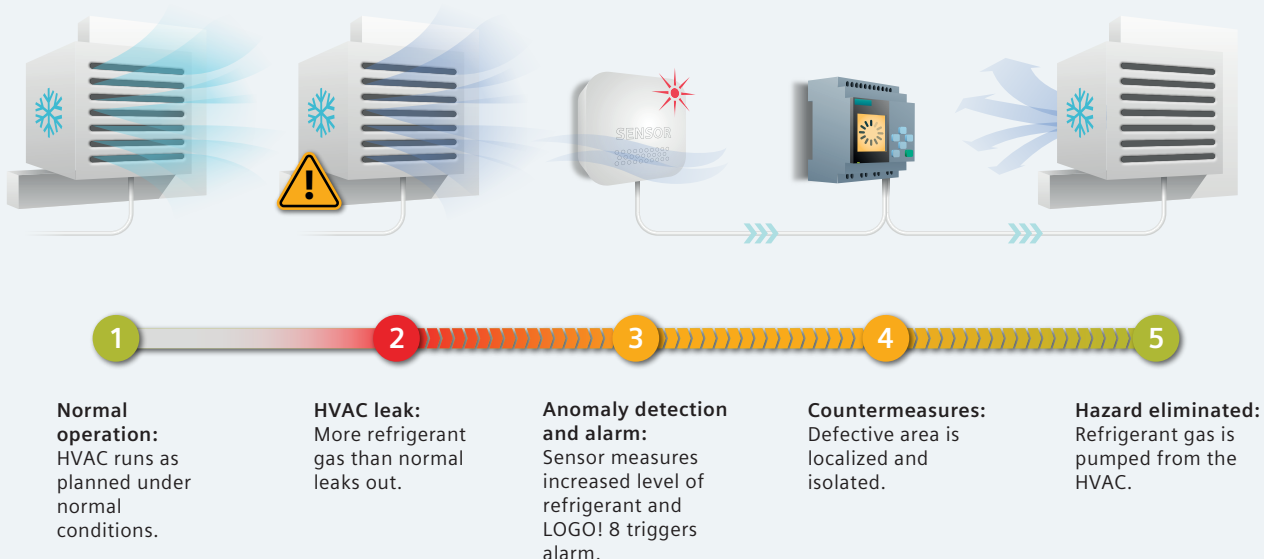
Plymouth

Integrated seamlessly

The HVAC manufacturer was keen to comply with the BS EN 378-1:2016 standard (refrigerating systems' and heat pumps' safety and environmental requirements), specifying that when refrigerant levels in a room exceed 0.44kg/m3, the HVAC system should automatically isolate and pump back any remaining refrigerant gas from the indoor units to the outdoor unit. Immediately, Tom Rowse knew that LOGO! 8 was the ideal control panel solution.

"Because LOGO! 8 is so versatile, it can be seamlessly integrated in the already developed HVAC units and utilize pre-existing digital and analog signaling, as well as inbuilt inputs and outputs. That's one of the reasons we selected it." The already developed air conditioning units offered outputs to monitor both external leak detection and internal leak detection with additional temperature sensing and feedback, signaling of the isolation valves, and external alarm signals. A customized control panel integrating LOGO! 8 was designed to continuously monitor and evaluate leak detection.

If the predetermined parameters are exceeded, an alarm is triggered and the refrigerant gas automatically isolated and pumped from the HVAC. Thanks to the new solution, a specific section of refrigerant pipework can be isolated rather than isolating the complete system.

Refrigerant gas leak detection with LOGO! 8

1 Normal operation: HVAC runs as planned under normal conditions.

2 HVAC leak: More refrigerant gas than normal leaks out.

3 Anomaly detection and alarm: Sensor measures increased level of refrigerant and LOGO! 8 triggers alarm.

4 Countermeasures: Defective area is localized and isolated.

5 Hazard eliminated: Refrigerant gas is pumped from the HVAC.

Cost effectiveness

Intuitive operation

Security functions

LOGO! 8 impresses with versatility

The logic module scored with its cost effectiveness, usability and security features: "Our client wanted a technical innovation but it had to be cost-effective – LOGO! 8 is both", says Rowse. Since end users and service engineers working on the installed HVAC equipment have little or no experience with PLCs or programmable devices, the intuitive programming capability offered by LOGO! 8 proved to be an important asset. "New programs can be uploaded into the device without any programming experience", he explains. "It's as simple as inserting a pre-written SD memory card into the card reader on the front of the LOGO! 8 device. Any future software updates can be sent out in a cost-effective manner."

Rowse worked with local Siemens solution partner Oakmount Control Systems to write the program for the leak detection control panel using the LOGO! Soft Comfort software. They simulated various program editions, optimizing and configuring the hardware requirements with drag and drop functions. Security was a top priority for Rowse' customer and LOGO! 8 offers password protection against unauthorized access and modification. Retrofitting the control panels to older HVAC systems was also made possible in a simple, easy manner – saving the client both time and money. The HVAC unit has since gone on to win several industry awards, and Tom Rowse believes that the success is in part thanks to Rowse and Siemens: "Our client wasn't aware of what LOGO! 8 can do – if we hadn't got involved with LOGO!, they wouldn't have the product that they do now."

"Our client wanted a technical innovation but it had to be cost-effective – LOGO! 8 is both" "

Tom Rowse, Certified Machinery Safety Expert, Rowse

A look into the future of smart homes

Tom Rowse has long been a fan of LOGO! 8 and is already discussing new product developments and enhanced features with his client. One of them is remote support for the HVAC units, to be able to log in from anywhere in the world and have error codes sent to the maintenance department. With the LOGO! WebEditor, the web server can be configured for control by mobile devices.

"The more Siemens has invested in LOGO! 8, the more we can use it in different applications. Our customers love it. We ran quite a few free training courses here too, to get our customers up to speed on the use of LOGO! 8. We're also getting a lot of enquiries for implementing LOGO! 8 in smart homes", Rowse notes, "and it's so easy to use. With just a little guidance, anyone can start programming."

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