

Ethernet-APL proves its value

Expanded testing shows broad industry adoption

Ethernet-APL has moved beyond readiness. The instrumentation manufacturer Endress+Hauser successfully conducted another set of load tests of a realistic PROFINET over Ethernet-APL setup. Two years after the last successful multi-vendor tests, the technology has proven its strength again in a realistic simulation.

The load tests were tailored to meet customer-specific requirements, demonstrating that components from various manufacturers can seamlessly work together to build a robust and reliable system based on PROFINET over Ethernet-APL. Requirements were defined from the end-user perspective by the global chemical company **BASF**. On the supplier side, devices from **Endress+Hauser**, **Pepperl+Fuchs**, **R. Stahl**, **Phoenix Contact**, and **Samson** were integrated into an **Emerson** control system and their interoperability was confirmed.

Ethernet-APL proves consistently high performance

Two years after the first set of successful tests with other automation systems, Emerson DeltaV was in scope of the mass load test with nearly 240 Endress+Hauser measuring devices, including flow, pressure, temperature and level sensors, as well as positioners from Samson. They were tested in a ring topology consisting of Ethernet-APL field switches from Pepperl+Fuchs, Phoenix Contact and R. Stahl. Emerson provided the control system DeltaV DCS including PROFINET System Redundancy (S2) support as well as the AMS Device Manager System.

The results spoke for themselves: Ethernet-APL performs reliably under full-scale conditions. The test scenarios on a network with the maximum number of devices successfully verified both, performance and reliability with the Pepperl+Fuchs switches. Key performance metrics – such as total net load and redundancy switchover times – met and even surpassed the required standards.

The field switches from Phoenix Contact were subsequently subjected to similar tests and were able to demonstrate their performance. The pre-series switches from R. Stahl were tested as well and based on the valuable results, the optimized devices will be now available for the market launch.

Gerd Niedermayer, Senior Expert Emerging Automation Technologies at BASF extends his gratitude: “Thank you to Endress+Hauser for the opportunity to conduct the scalability tests with our PROFINET-APL partners. With the help of their digital field devices, we are able to optimize diverse topics centering around engineering, commissioning and lifecycle in BASF plants and save CAPEX and OPEX costs.”

A technology with a bright future ahead

“With the success of the recent scalability test, the cooperating companies have again proven that the multi-vendor infrastructure is open, future-proof and ready for the Industrial Internet of Things (IIoT)”, emphasizes Harald Müller, technical lead of Ethernet-APL and director technology at Endress+Hauser Temperature+System Products. This gives planners and end users further evidence that Ethernet-APL

is an enabler to create more flexible, efficient and cost-effective industrial automation systems, leveraging the full scale of benefits through digitalization.

Karl Büttner, expert product manager system integration and marketing lead of Ethernet-APL at Endress+Hauser Flow, is proud and excited about the proven success of this technology: “Since 2023 we provide instrumentation for Ethernet-APL projects worldwide. Endress+Hauser is pleased with the successful launch of the technology, which helps our customers to digitalize their process plants.”

Endress+Hauser’s PROFINET support for Netilion is an additional step to support the Ethernet-based communication. It ensures remote access for example to process values and health diagnostics for all native and PROFINET-APL devices, ensuring high plant availability.

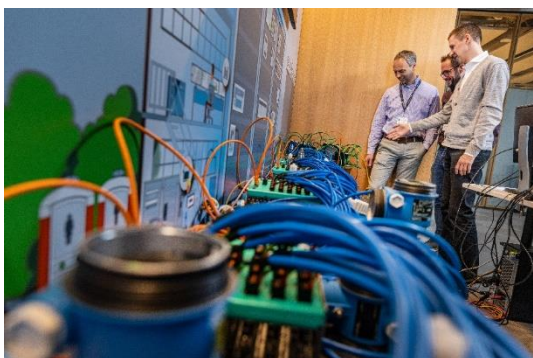
Ethernet-APL, already backed by a wide ecosystem, sees even more devices and manufacturers coming on board. The high market demand and worldwide successful implementations in the first medium-sized and large projects prove that Ethernet-based field communication in process automation has a bright future.

Find out more at www.endress.com/APL



EH-Reinach-Ethernet-APL-Test2025-075.jpg

Ethernet-APL load test setup: About 240 Endress+Hauser and Samson field devices were integrated into an Ethernet-APL system using field switches from Pepperl+Fuchs (shown), Phoenix Contact and R. Stahl, as well as Emerson DeltaV DCS.



EH-Reinach-Ethernet-APL-Test2025-042.jpg

Friendly atmosphere during the load test execution: Christoph Hammer (BASF), Frederik Beckers (BASF) and Karl Büttner (Endress+Hauser) discuss the test setup.



EH-Reinach-Ethernet-APL-Test2025-073.jpg

Ethernet-APL test case evaluation: Mathias Koch (BASF) and Klaus Erni (Emerson) test Emerson DeltaV and analyze the network traffic and diagnostic events.



EH-Reinach-Ethernet-APL-Test2025-002.jpg

Most measuring principles are available with Ethernet-APL: Flow, temperature, level and pressure transmitters were part of the load test setup.



PEFU_APL-Switches_2023-01-17_HD_rgb.jpg

Growing Ethernet-APL field switch offering: With the ramp-up of the Ethernet-APL technology, more and more switch vendors enter the market.



SAMSON_TROVIS_3797.png

The TROVIS 3797 is the world's first Ethernet-APL capable positioner, communicating via PROFINET. Its modular design allows option modules to be interchanged in the field, and its physical layer certificate and PA-Profile 4 ensure reliable process control.



Flowmeter with PROFINET over Ethernet-APL.jpg

Proline Prowirl F 200 is a versatile flowmeter with detection of wet steam conditions and best-in-class accuracy. Over Ethernet-APL it transmits a variety of insights about your process.



Ethernet-APL-ready level sensor.jpg

Micropilot FMR62B using 80-GHz radar technology can send data on build-up or foam index to provide insights on actual process conditions and possible process anomalies.



Ethernet-APL-ready differential pressure measurement.jpg

The Deltabar PMD75B smart transmitter detects process anomalies like plugged impulse lines.



Ethernet-APL-ready temperature measurement.jpg

The iTEMP TMT86 head transmitter fits perfectly in all Endress+Hauser thermometers. Beneficial diagnostic functions like corrosion monitoring of the sensor wires help to improve plant uptime.

The Endress+Hauser Group

Endress+Hauser is a global leader in measurement and automation technology for process and laboratory applications. The family company, headquartered in Reinach, Switzerland, achieved net sales of more than 3.7 billion euros in 2024 with a total workforce of over 17,000.

Endress+Hauser devices, solutions and services are at home in many industries. Customers thus use them to gain valuable knowledge from their applications. This enables them to improve their products, work economically and at the same time protect people and the environment.

Endress+Hauser is a reliable partner worldwide. Its own sales companies in more than 50 countries as well as representatives in another 70 countries ensure competent support. Production facilities on four continents manufacture quickly and flexibly to the highest quality standards.

Endress+Hauser was founded in 1953 by Georg H Endress and Ludwig Hauser. Ever since, the company has been pushing ahead with the development and use of innovative technologies, now helping to shape the industry's digital transformation. Over 9,000 patents and applications protect the Group's intellectual property.

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