

From equipment supplier to R&D partner

Endress+Hauser customized a SWAS solution for Alfa Laval's steam systems for ships and power plants



Alfa Laval Aalborg Oy designs and supplies flue gas heat recovery boiler systems and burner boilers for ships, power plants and the process industry, including cement and steel plants. Innovative solutions have been delivered to more than 100 countries, improving the energy efficiency of numerous end users.

Endress+Hauser and Alfa Laval Aalborg have developed a steam and water analysis system (SWAS) that meets their clients' needs. The solution is currently showcased and in use at the Alfa Laval Training Center in Rauma, where Alfa Laval's Finnish and international clients can come and see it.

A metal-gray hall stands in the middle of the Susivuori industrial area in Rauma. Upon entering the building, we are treated to a literal warm welcome. Erected in the middle of the room is a complex system of chambers and pipes. An oil burner supplies the system with hot flue gas, which is then used in the heat recovery boiler to generate steam.

We have arrived at Alfa Laval Aalborg's Training Center. Completed in 2021, the facility is used for training the company's employees, developing new products and studying

the energy efficiency of water and steam systems.

"The new Training Center is an action-oriented learning and testing environment – practically an entire heat recovery boiler system in miniature. All of the solutions offered to clients can be found under the same roof. The Training Center also features a wider range of measurement instruments than at a normal power plant," says Business Development Manager **Taneli Ruohola** from Alfa Laval Aalborg.

Alfa Laval Aalborg designs and supplies flue gas heat recovery boiler systems and burner boilers for ships, power plants and process industry applications. The international company has clients in more than a hundred countries.

Alfa Laval Aalborg and Endress+Hauser's collaboration on the SWAS solution kicked off when Alfa

Laval became interested in developing a joint product. This collaboration resulted in a SWAS solution, i.e., a steam and water analysis system, customized to the needs of Alfa Laval's shipping company and power plant clients.

The SWAS solution prolongs the boiler's service life

We circle to the other side of this room full of boilers, where we find the SWAS solution mounted to the wall. For Sales Manager **Jarmo Partanen** and Strategic Account Manager **Virpi Varjonen** from Endress+Hauser, this is their first time seeing the finished product.

"This SWAS version features four sensors supplied by Endress+Hauser, while another version has two. The panel shows us the process data in real time. It's similar to the instrument panel in a car – a relatively small yet important part of the car when it comes to driving safely and efficiently," describes Partanen, who is responsible not only for Alfa Laval but also other industrial clients based along Finland's coast, from Raahe to Lappeenranta.

Instead of speed and consumption, the SWAS panel measures water and steam quality, such as their pH value, direct and indirect conductivity, and the oxygen content of supply water. Ruohola boasts that the SWAS solution is an excellent addition to Alfa Laval's product range, allowing the company to offer a comprehensive solution to its clients.

"Previously, we had to order and install individual meters separately. The SWAS system can be easily integrated into a water and steam system to provide added value to the

process and quality monitoring and to ensure our equipment's reliable operation and long service life."

Alfa Laval delivered the information on the physical quantities to be measured to Endress+Hauser, which designed the solution. International colleagues with experience in the development of SWAS solutions also provided support.

"Based on a proposal by experts, we incorporated a special support structure in SWAS that meets the requirements of the application and can now also withstand ship vibration," says Varjonen, who works in the global Strategy and Business unit of Endress+Hauser Group in Denmark.

Alfa Laval set high quality requirements for Endress+Hauser's solution. This was because the SWAS panel will be sold to clients as part of a broader water treatment solution in which every element – whether supplied by Alfa Laval or Endress+Hauser – must operate perfectly.

"Of course, the most important things for clients are price and quality. That's why we relied on Endress+Hauser's expertise in the development and delivery of the product," Ruohola says.

SWAS has wide-ranging potential

Monitoring water quality is one of Endress+Hauser's areas of special expertise, and it supplies SWAS solutions to water treatment and power plants around the world. The modular, scalable and easily retrofitted panels are suitable for use in applications such as water treatment and power plants or as part

of the steam and water circulation in the paper industry.

"A great number of sales have already been made around the world, but the panels have not yet to reach their full potential in Finland. SWAS is a more compact solution than a traditional sampling system, which is why its potential applications in Finland could especially include smaller water cooperatives and utilities and steam boiler plants," muses Partanen from Endress+Hauser.

SWAS utilizes Memosens technology, which ensures reliable digital data transmission between the sensors and the panel. It is also possible to integrate an SMS control system into the panel to inform operators about upcoming maintenance and help them anticipate maintenance needs and costs.

"These are important selling points when it comes to our shipping company clients. Anticipation is especially important in the shipping industry because the ships must be kept in operation without long and unexpected interruptions for maintenance," points out Ruohola from Alfa Laval.

The cooperation is off to a good start and may expand in the future from the sea to land – from Alfa Laval's Marine business to its other industrial sectors and the group's other operators around the world.

"I hope that we will continue to discover new opportunities to partner with Alfa Laval Aalborg," Varjonen says with a smile. She also hopes to soon see the SWAS solutions implemented at the Alfa Laval group's other Training Center in Denmark.

Endress+Hauser is a technical enabler

The visit to Alfa Laval's Training Center is a great conclusion to the one and a half years of development efforts focused on the SWAS solution. The project has been challenging, but it has also provided important experience of close collaboration.

"Historically, Endress+Hauser is well-known as a supplier of instruments. However, the collaboration with Alfa Laval is a good example of the fact that we are much more than that: we can also design solutions and customize them to meet the client's needs," Varjonen says.

Both Varjonen and Partanen thank Alfa Laval for its trust and courage to involve Endress+Hauser in the product development process. They both feel that the collaboration was a pleasant experience and also consider it to offer potential far into the future. In addition to the collaboration with the client, Partanen and Varjonen also praise their mutual partnership between the two countries – good teamwork ensured that everything went smoothly.

They also want to make sure that future collaborations with Alfa Laval will be as smooth as possible. Partanen has offered to provide the client with support for

product standardization and system integration.

"In practice, we have gone through the equipment previously ordered and harmonized the product codes between Alfa Laval and Endress+Hauser. In the future, we can order the equipment we need from Alfa Laval directly through their system," Partanen says.

Next, it is time for training. Endress+Hauser's maintenance experts will come and guide Alfa Laval's personnel in person in the maintenance, upkeep and sale of the SWAS system. Endress+Hauser has also provided Alfa Laval with webinars in which experts have shared tips, experiences and observations about boiler level measurement, flow measurement and steam measurement, among other things.

"Our personnel have found the webinars to be very useful. Endress+Hauser's solid expertise and international networks ensure that we always receive answers to our questions as well as solutions to the challenges we face," Ruohola praises.

"We look forward to new shared successes. We believe that we will be an excellent partner to the end client through Alfa Laval's overall solution and Endress+Hauser's measurements as part of the solution." Varjonen says.

www.fi.endress.com