

Case story | Fire suppression Hotel Alsik

High-rise hotel chooses **Danfoss technology** for **low-maintenance**, high-pressure fire suppression system



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to ensure less maintenance and a long servicelife

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PAH pumps is the **heart of the high-pressure water mist system**

When Hotel Alsik opened in the Spring of 2019, the remarkable makeover of the industrial harbor in Sønderborg, Denmark, reached new heights. Designed by one of Denmark's leading architectural firms, Henning Larsen, the 19-story aluminum and glass high-rise hotel completes world-renowned Frank Gehry's waterfront masterplan for Southern Jutland's biggest town with 190 rooms and breathtaking views of Flensborg fjord.

Danfoss provides the low-maintenance fire suppression system for the entire hotel with a SEM-SAFE® high-pressure water mist system using PAH pumps, VRH, VCH and VDHT valves.

The challenge:

Power a high-pressure water mist system that climbs 70 m – and consistently covers 24,500 m²

High-pressure water mist systems have many advantages compared to traditional wet pipe sprinkler systems, especially for high-rise buildings. Owners and architects like them because they save precious space by eliminating the need for large-diameter water pipes and reservoirs on the roof and multiple floors. The technology efficiently protects glass facades from heat damage, too. And if a fire does break out, the fine water mist suppresses flames both by removing oxygen and by reducing heat – with significantly lower flux density and, consequently, less water damage.

While simpler to install than conventional sprinklers, the technology does depend on something more complex than gravity to disperse water. The taller the building – and the greater its area – the more important is the reliability of the system's high pressure, without which the specially designed nozzles cannot atomize water.

The solution:

Eight Danfoss PAH 80 pumps that deliver **120 bars of reliable pressure**

Danfoss Fire Safety's SEM-SAFE® high-pressure water mist system requires unflinching pressure, and complete redundancy is typically built into installations of this scale: if the primary system fails for any reason, the backup must take over immediately. To ensure fail-safe performance, engineers specified two identical pump units, each with four high-pressure pumps.

"Pump reliability is, of course, important," explains Peter Knudsen, Market Solution Manager, at Danfoss Fire Safety. "But for this installation, low maintenance and long service intervals were also critical. That's why we specified the Danfoss PAH high-pressure pumps. In addition to industry-leading dependability, they are very low-maintenance. The only lubrication the Danfoss high-pressure pumps need is the pumped medium, and they usually require no maintenance for the first 8,000 operational hours and very little after that compared to alternative technologies."



SEM-SAFE® High-pressure water mist system

The results:

Peace of mind and **no maintenance** so far

Hotel Alsik opened to rave reviews in May, 2019. Its unique architecture, high-end restaurants, and massive spa have already become a destination for many Danes and Germans. Fortunately, the fire suppression system has not been called on to put out any fires. But it has passed all of its routine tests with flying colors.

"As expected, we have not had to perform any maintenance whatsoever on any of the eight PAH pumps to date," reports Knudsen. "Installation was simple, and system performance has been predictably problem-free."

"The new Hotel Alsik, with 19 stories, is an installation that demonstrates the benefits of this solution for high-rises. But SEM-SAFE® high-pressure water mist systems and PAH pumps have also been installed in much higher buildings, including the 53-storey, 310 m Varso Tower currently under construction in Warsaw," says Knudsen.



PAH 80 high-pressure pump

About Danfoss Fire Safety

Danfoss Fire Safety A/S, an integral member of the Danfoss Group, is a global leader in the sale, development, production, and service/commissioning of certified fixed firefighting systems under the brand name SEM-SAFE®.

For more information: www.semsafe.danfoss.com.

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