



# **30,000 Danfoss nozzles** are ready to fight fire



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The world's largest water-mist system for firefighting is currently being installed in a new hospital in Denmark. Danfoss Semco is the company delivering the nozzles – and the solution will save the hospital millions.

BY NIELS CHR. LARSEN  
PHOTO: GLENN SIMONSEN

Danfoss Semco has been in the water-mist-system market for several years, and with the order for Skejby Hospital, it is generating impressive savings through the installation of a high-pressure water-mist system, instead of an ordinary sprinkler system.

On the whole, they cost the same – in this case, 20m Euros – but with the Danfoss Semco solution, the contractor is saving as much as 11.4m Euros on other parts of the construction: lower costs for the insulation of ventilation shafts, for fire glass, chimney dampers, fire doors, etc.

To get the complete picture, we first need to know how the Danfoss Semco solution works.

We all recognize the little nozzles which hang down from the ceiling in offices, cinemas, hospitals, and elsewhere. If fire breaks out, water is sprayed over the fire, and everything is covered in water. This is a conventional sprinkler solution.

But, Danfoss Semco offers a gentler way: to the untrained eye, the nozzles look the same, but they cover a larger area, so there are fewer of them. And they are connected to a high-pressure system which, in response to a fire, vaporizes the water which then covers the flames like a fog. First of all, this means that far less water is needed; from a third to a tenth the quantity, depending on the system. Secondly, the high-pressure water mist causes the heat generated by the fire to drop dramatically – which is precisely why major savings are obtained with the high-pressure water-mist solution.

Normally, quite a lot of insulation is needed around ventilation pipes to stop warm air transporting the fire along them. This is prevented with a high-pressure water-mist solution. The engineers can also install cheaper types of glass in areas where the fire could spread to surrounding buildings. All in all, the installations are more straightforward, and that leads to major savings.

## Easier to install

At Skejby Hospital, Danfoss Semco has cooperated with consulting engineering company, DNU Rådgivergruppen, which has been a part of the construction right from the start, and this is vital in order to obtain the optimum savings – because a lot of the elements of the construction can be planned differently with a high-pressure water-mist system.





## Facts

### How it operates:

- The water is filtered, separating particles measuring as little as 100th of a millimeter. Then, it is piped into a buffer tank.
- A stand-by pump ensures a constant pressure of 10-14 bar in the pipe system.
- If a nozzle is activated because of a fire, the main pumps are activated, and the water is released into the system at a pressure of 130 bar.



Usually, 3,000 nozzles are a big order at Danfoss Semco. So far, 15,000 have been delivered to Skejby Hospital, and another 15,000 are on their way. The expansion of the hospital will be completed by 2018. In the photo: Lasse Sørensen Laustsen.

"In the construction of hospitals with limited space for technical installations, the high-pressure water-mist installation is the optimal choice. It means major savings on building components, increased flexibility, and greater architectural freedom of scope," says fire advisor Kenneth Jaquet, Rådgivergruppen DNU I/S.

As Danfoss Semco's partner, Denmark's largest installation company Kemp & Lauritzen is in charge of detailed planning and installation of the system. Preben Christensen is the project

leader for Kemp & Lauritzen. He is managing the plumbing, heating and sanitation contractors installing the system, and he also emphasizes the major benefits of installing the high-pressure system.

"The pipe diameter is much smaller, and this means that the installation time is much shorter. With a sprinkler system, it takes two to three people to lift a pipe. Here, only one person is needed. Bends are easier to do, and it is easier to make the pipes fit under the ceiling," he says. ▶





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*Kenneth Jaquet,  
fire advisor, Rådgivergruppen DNU I/S*



## Facts

In the long connecting corridors, fire doors have been replaced by a circle of nozzles in the walls and in the ceiling, where the fire doors would normally sit. When activated, the nozzles release a curtain of water mist, which can isolate the smoke in a restricted area. With this solution, you also avoid fire doors shutting by mistake or being damaged by collisions.

► It is precisely hospitals like the one in Skejby – and the health-care system overall – that make up one of the markets which Danfoss Semco has identified as being of particular interest. The company has already installed water-mist systems in several hospitals and expects that the Skejby Hospital will open up the door to more projects.

“This places heavy demands on visionary consultants to obtain correspondingly large

savings as in this case, and for us this is about getting in contact early with the consulting engineers and the architects,” says Lasse S. Laustsen, Country Manager for Danfoss Semco.

Apart from the major savings, he can also point to faster reaction to a fire. No matter whether a sprinkler or water-mist system has been installed, the goal is to contain the fire until the fire brigade arrives. With a high-pressure water-mist system, smoke divers can be sent in in

advance to special hose closets, which are also connected to the high-pressure system. These are located in such a way that it is possible to go from one to the next. It saves two to seven minutes of the rescue personnel's time compared to the sprinkler solution, where the firefighters must first roll out their equipment before entering the building.



Some of the small nozzle heads are produced by the Danfoss company Burner Components. All of the high-pressure pumps are delivered by High Pressure Pumps, which is also a Danfoss company.