

Case story | SEM-SAFE® high-pressure water mist system

Danfoss Silicon Power in Germany

Fire safety in one of Europe's largest clean rooms

Danfoss Fire Safety A/S



Danfoss Silicon Power is an innovative designer and manufacturer of power modules for solar and wind power plants, electric cars, medical equipment, industrial and automotive controls as well as many other appliances.

Needing to keep up with the growing demand for power modules, Danfoss Silicon Power moved to a larger facility in Flensburg, Northern Germany in 2012.

Building description

The Danfoss Silicon Power building covers a total of 34,000 m². Within the building complex an area of approx. 3,900 m² was constructed and turned into one of Europe's largest single contiguous clean rooms. The clean room has been equipped with specialized production machinery, which is vital for manufacturing sensitive components.

In line with this cutting edge technology, SEM-SAFE® high-pressure water mist system from Danfoss Fire Safety was chosen for fire protection in the clean room at Danfoss Silicon Power.

The project has been a successful collaboration between Danfoss and Callies Brandbekämpfungssysteme GmbH, a Danfoss business partners for high-pressure water mist systems in Germany.



SEM-SAFE® high-pressure water mist system

For ensuring fire protection of the new clean rooms, the initial recommendation was to extend the already installed sprinkler system, which was covering the office and former production area. However, analysis indicated that a traditional sprinkler system was not a favourable solution.

The water usage was problematic, due to the fact that a traditional sprinkler system has large water consumption. Using 8 litres of water per m² per minute, a traditional sprinkler system would cause extensive water damage to the very expensive equipment installed in the clean rooms. Replacing the expensive and sensitive equipment was evaluated to take between 8 and 12 months. This would cause significant business interruption.

Our SEM-SAFE® high-pressure water mist system was evaluated to be the perfect solution for fire protection of the clean room at Danfoss Silicon Power. With approx. 2 litres per m² per minute, the SEM-SAFE® system will cause no water damage if activated. In addition, high-pressure water mist is documented to be harmless to electrical equipment, which is imperative for the high-tech clean rooms in Danfoss Silicon Power.

The SEM-SAFE® high-pressure water mist system uses very small pipes in comparison with traditional sprinkler systems. This allows for flexibility in design, faster installation and easy integration of the system with the other installations present in the clean rooms.

The attic above the clean rooms is also protected with SEM-SAFE® high-pressure water mist. Installing a traditional sprinkler for fire protection in the attic area was not possible. This is due to the fact that the water usage required by a traditional sprinkler system would make the system very heavy when activated.

The area was classified as OH2. A total of 230 SEM-SAFE® nozzles have been used.

Approvals

Design of the high-pressure water mist system was agreed and approved by a fire-consultant. The basics for the design followed the VdS standards.

As a reliable and high-quality manufacturer, Danfoss has passed successfully difficult test criteria and holds CEN, VdS and FM certificates. The Danfoss approval portfolio and the numerous references were extremely important in the process of choosing the SEM-SAFE® high-pressure water mist system.

Willibald Gabler, Director Operations from Danfoss Silicon Power states:

As a supplier to the global automotive industry, we deliver products for up to 10 million cars per year. Highly complex, singular existing production facilities would be destroyed when fighting a fire with conventional sprinkler systems due to the resulting water damage. The replacement of these systems is time consuming and costly. Triggering by false alarms must be excluded at all times. In close cooperation with Danfoss and its partner Callies Brandbekämpfungssysteme GmbH, we have thoroughly analysed the special clean room requirements and could certify the SEM-SAFE® high-pressure water mist system for our needs.



SEM-SAFE® nozzle installed in the clean room at Danfoss Silicon Power.