



High-Expansion Foam System Protects Commercial Tyre Facility



Customer:

Vianor

Region:

Norway

Product Solutions:

**SKUM HIEX foam fire
suppression system with
2% Meteor X concentrate.**

With more than 85 years of service to the firefighting industry, Johnson Controls SKUM foam concentrates and hardware deliver innovation and performance to protect high-risk special hazards.

Profile

With more than 1,500 outlets, Vianor is the largest chain of tyre stores in the Nordic countries, offering a full range of vehicle maintenance and tyre services for both cars and trucks. It is owned by global tyre and service chain Nokian Tyres which has a turnover of €1.3 billion, employs 4,600 people and is the world's northernmost tyre manufacturer. Finland, Sweden and Norway are Vianor's home markets but, with various partners, it operates in 27 countries throughout Central and Eastern Europe, Russia and on the East Coast of the United States.

In addition to stocking new tyres, an important part of Vianor's business is to offer increasingly popular 'tyre hotel' services. With strict Scandinavian laws on changing winter and summer tyres, many people - especially those living in apartments - need somewhere to store the off-season tyres they are not using. In autumn and spring, Vianor will change the tyres, check them over and then conveniently store the unused set for their customers.



Potential Hazards of Tyre Storage

One of Vianor's latest projects is a newly built 2,000 square meter warehouse and service outlet near Trondheim, Norway, with building and inventory assets of more than a million Euros. Given the thousands of tyres stored in the building, the facility was subject to special fire regulations concerning combustible materials.

The location of the new warehouse created an additional fire hazard consideration. It is situated on an industrial site adjacent to Trondheim's international airport which is used by over four million passengers a year, and a serious fire at the warehouse could bring flights to a halt. Vianor was committed to protecting its employees, facility, surrounding community, and ongoing air traffic, so they specified installation of a reliable, effective fire suppression system at their new tyre centre.

Design Challenge

Vianor and the primary building contractor selected a local firm, Rørteknikk, to install the fire suppression system for the new tyre warehouse and service outlet. This family-owned company was formed in 1953 and is based in Stjørdal with about 30 employees. Rørteknikk provides plumbing products and services throughout the area as a supplier of complete bathrooms, wet rooms, heating installations and fire protection systems.

Because of the specific site risks, the Vianor warehouse required a foam fire suppression system. As Rørteknikk director, Rune Ohren, explained, "This was a challenging installation. It required an effective, sustainable foam solution that would not increase the site infrastructure and water demand."

A long-time user of Johnson Controls products, Rørteknikk recommended a SKUM high-expansion foam system for this installation. A high-expansion foam system provides excellent protection against three-dimensional fires such as might occur with high, multi-level tyre storage racks. The SKUM high-expansion foam system utilizes non-fluorinated foam and requires minimal water usage – key requirements to fulfill Vianor's sustainability goals for this facility.

Johnson Controls, Inc. (JCI) worked closely with Rørteknikk – albeit virtually due to COVID-19 restrictions – to design the high-expansion foam system for the Vianor warehouse. JCI's technical service group provided design assistance with key deliverables such as equipment sizing, flow calculations and comprehensive piping and instrumentation diagrams (P&ID).

"Having JCI's assistance with system design and P&ID were crucial for us because this was a unique fire protection system," says Ohren. "We relied heavily on their deep expertise in this area, and they were a great partner to work with. We need knowledgeable, quality technical support from our supply partners to ensure the systems we provide are designed correctly and can be built and operated efficiently. That is the level of service that Johnson Controls delivers with their SKUM systems."

System Benefits at a Glance

- UL listed, FM approved system – hardware plus non-fluorinated foam concentrate
- Fills 2,000 square meter warehouse with foam in 3 minutes to fight three-dimensional fires
- Safeguards people working in the building and surrounding area
- Protects inventory and facility worth over a million Euros
- Mitigates risk of closure for adjacent international airport
- Meets regional fire hazard regulations for tyre storage
- Utilizes non-fluorinated foam and low water consumption for a sustainable fire protection solution



Solution

SKUM HIEX foam generators can expand Meteor X 2% foam concentrate at ratios up to 1000:1, depending on the operating pressure. SKUM systems are often used to protect high value property by rapidly flooding large rooms and enclosures with a deep layer of foam that suppresses flames and vapours by enveloping the fire and cutting off oxygen.

Triggered by the fire detection system, the SKUM high-expansion foam system at Vianor's Stjørdal center can fill the whole warehouse facility with 10 meters deep foam in less than three minutes. The complete system is UL listed and FM approved – meeting the most rigorous fire and mechanical test protocols. The installation incorporates:

- 7 ceiling-mounted SKUM HIEX 15-A foam generators with corresponding 703701T roof inlet vents
- 4 hydraulic roof mounted door vents (703703T)
- 832 liters of Meteor X 2% high-expansion foam concentrate
- 1 MTB-V 600 liter bladder tank
- 2 Tyco DV5A DN80 deluge valves
- 2400 m³ of foam discharge per minute at 2.8 bar of system pressure
- < 2700 liters per minute of water usage for a full system discharge

The Vianor warehouse and service center was built in six months, and the SKUM high-expansion foam fire protection system was installed in four weeks. The system was completed and commissioned in August 2020 and immediately placed in operation, allowing Vianor to start servicing their customers in the Trondheim region.



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