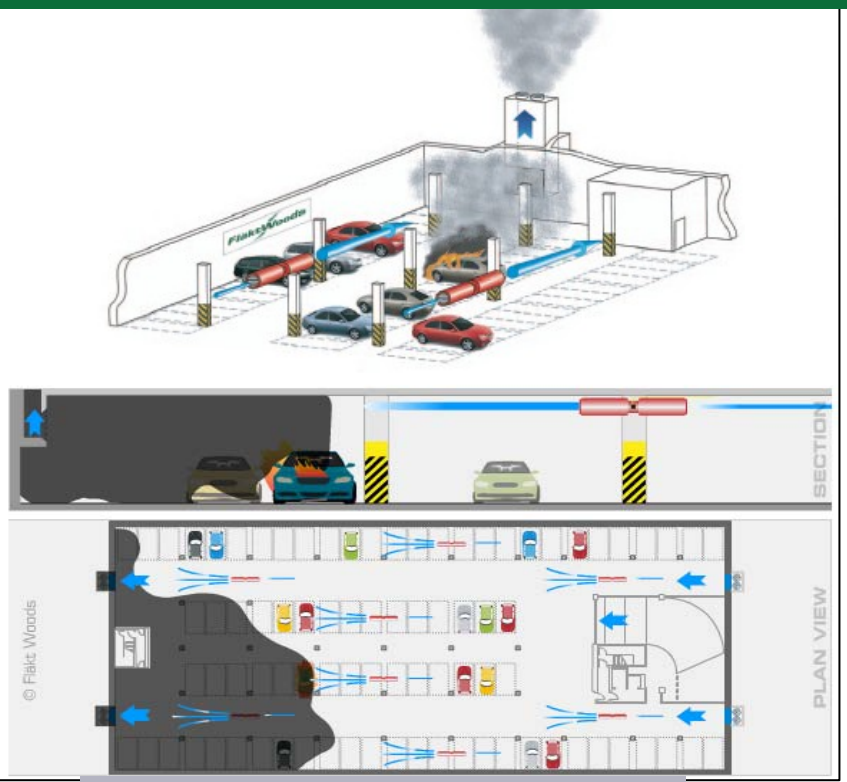
Mariehamn uses new smoke control solution for Miramar underground car park



Fläkt Woods has recently provided ventilation to the new Miramar Garaget Car Park in Mariehamn, Åland in Finland. With a capacity of 130 vehicles and an extension to the City Library's existing car park, Fläkt Woods has provided smoke control solutions to enable optimum ventilation.

FACTS

Customer:
Miramar Garaget Car Park
in Mariehamn, Åland.

Need:
Efficient smoke control solutions to enable optimum ventilation.

Solution:
Jet thrust fans controlled by carbon monoxide detectors.

FläktWoods

“Great emphasis is put on fire safety and energy efficiency”

The Miramar car park has one access route. Therefore the need for ventilation is essential through natural or fan assisted requirements. With no heating and open walls to allow for supply, exhaust and smoke extraction, Fläkt Woods was able to provide the precise solution.

The building developer for the car park is Mariehamn City Technical Services. Modern technical solutions were selected in order to reduce building and operating costs. The project was managed by Lars-Göran Åström from the Technical Services and the ventilation system was designed by Ture Karlsson from TURING AB.

The car park is divided into four zones and has 13 jet thrust fans installed in the ceiling, a fan for normal extraction and smoke control as well as another fan for boosting smoke control in the common shaft. “The carbon monoxide content of the air controls the fans”, says Ture Karlson. “When the use of the car park is limited and the CO level is low, the exhaust fan runs at minimum output and the jet thrust fans are inactive. As the load increases and the CO concentration gets higher, the jet fans are powered up, steering the air masses towards the exhaust fan, which at that point runs at maximum output.”

Fläkt Woods system solutions has many advantages compared to a traditional ducted system, the ceiling mounted jet thrust fans are energy effective due to demand control. Installing a traditional ducted ventilation system is more expensive and it consumes more energy.

Jet thrust fans generate strong air flows along the ceiling and these air flows make the air masses in the car park migrate to its desired direction. With lower pressure, main extract fans can be used as they do not have to cope with system resistances found in ducted systems. At the Miramar Garaget car park the incoming air is supplied mainly through the openings in the walls. The jet fans make the air move towards the extract shaft, where a 1000 mm diameter axial fan blows the exhaust air outdoors.

The air flow for normal ventilation is 10,2 m3/s and for smoke extraction the air flow is 23,5 m3/s. In case of a fire, the fire brigade will operate the equipment switching to boost mode. Once the fire brigade has switched the smoke extraction system on, the axial fan that is on standby will start up at full speed. All other fans in the facility will also run at full speed to boost the flue gas extraction, thereby allowing the fire brigade to focus on extinguishing the fire.

Antti Kontkanen from Fläkt Woods said ”this system solution provides the customer with a facility where great emphasis is put on fire safety and energy efficiency”.

Jet Thrust Fans
Fläkt Woods comprehensive range of fans allows individual project requirements to be met.
An appropriate number of Thrust fans are selected and carefully positioned to ensure even distribution and movement of air.
The controls philosophy will depend on the individual project and can range from a simple timed system, to a full pollution sensing multi-stage 6 system, with the ability to optimise efficiency and provide effective compliant solutions.

Fläkt Woods Group
Fläkt Woods is a global company providing solutions for ventilation and air treatment for buildings as well as fan solutions for Industry and Infrastructure applications.

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