

# MECHANICAL SMOKE EXTRACT IN UNDERGROUND CAR PARKS



Due to their low ceiling, underground and enclosed car parks present a particular challenge to smoke extract systems.

## **Smoke extract through the ductwork.**

The first and foremost task of extract air systems is removing the exhaust fumes through extract air ducts. At the same time, fresh air is led into the structure through ventilation ducts or additional supply air inlets, e.g. the access ramps. Smoke exhaust fans which can also be used as ventilation fans ensure air changes based on the air quality. In the event of a fire, hot fire gases are removed through the ductwork so that the conditions for safe evacuation can be maintained for as long as possible.

## **Keeping spaces smoke-free with a jet ventilation system (JVS).**

Jet ventilation systems are proven solutions for ventilating underground and enclosed car parks. In ventilation mode, the jet fans blow, or 'throw', the air far into the internal space such that the air in that space is changed and the CO gases are removed; this keeps the car park supplied with fresh air. Fans drive the extract air out of the car park through central smoke shafts. Typically, two fans are installed side by side or one after another as a standby system to ensure operation even if one of the fans fails.

In the event of a fire, the smoke gas temperature increases, and the gases rise towards the ceiling, where they spread. If smoke is detected, the fans in the jet ventilation system are switched on and drive the hot fire gases towards the central ventilation shafts. At the beginning, a layer is created which is nearly free from smoke. Escape and rescue routes are hence easy to recognise and allow people to leave the building.

The jet ventilation fans are only switched on after about three to five minutes. Then people can leave the car park via the short escape routes. Once activated, the jet fans effectively reduce temperatures and dilute hot fire gases in the fire compartment area. This covers also corners and other poorly ventilated areas. The firefighters can now locate and eventually extinguish the fire without being obstructed.

The jet ventilation system allows for large fire compartments so that underground car parks can be designed accordingly – open, spacious, and pleasant. Users will welcome the additional ease of orientation, feel better, feel safer – and are indeed safer in such a car park.



**X-FANS SMOKE EXHAUST**

X-FANS smoke exhaust fans remove hot fire gases from the individual fire compartments of underground or enclosed car parks. Customers have a choice of different constructions for various temperature ranges, depending on the car park layout.



**X-FANS JET VENTILATION FANS**

are used for the ventilation and smoke exhaust in underground car parks.