

FIRE PREVENTION



Frankfurt/Main, Germany

Airports are complex buildings. Huge quantities of air are supplied to and extracted from an airport terminal. In the event of a fire, adjacent areas such as shopping zones must be closed off from the departure hall. Underground car parks present, due to their low ceiling, a particular challenge for smoke extract systems. Following the devastating fire at Düsseldorf airport in 1996, airports all over the world have examined and modernised their smoke control and smoke exhaust systems. Düsseldorf International is today one of the most modern and safe airports with regard to fire and smoke protection.

The prime objectives of fire and smoke protection are as follows:

- Ensure the safety of people
- Support the firefighters in extinguishing the fire and in rescuing people
- Ensure the safety of buildings and equipment (keep disruption of operations to a minimum)

For these objectives to be achieved, modern smoke extract management for complex buildings must fulfil a multitude of tasks:

- A fire must be detected, and an alarm emitted, at an early stage – even if the temperature remains comparatively low, e.g. in case of a smouldering fire.
- The smoke extract system must be automatically triggered at an early stage to give the people in a building sufficient time to escape.
- Spread of the fire and transmission of smoke to adjacent occupied zones must

be prevented, e.g. by a mechanical smoke exhaust system.

- Positive pressure must be maintained in corridors, stairwells, and escape and rescue routes; pressurisation systems must be installed.
- Escape routes must allow passengers and staff to safely escape as quickly as possible.
- In the event of a fire, elevators must be made to stop only on floors where no smoke has been detected.

A mechanical smoke exhaust system ensures a smoke-free layer with a height of at least 2.50 m, extending the time available for escape; this is essential for large indoor spaces such as departure halls, atria, or conference rooms.