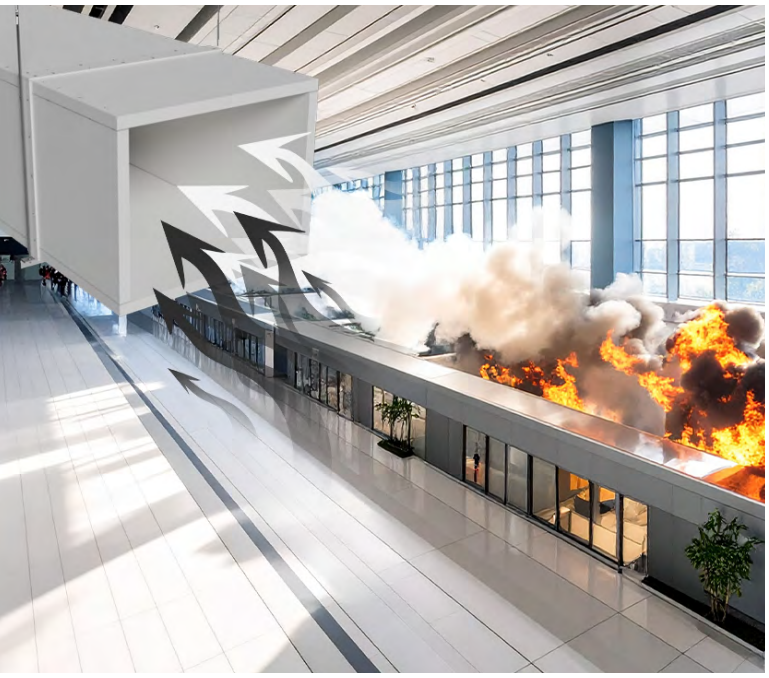
SMOKE EXTRACTION DUCTS

In large buildings, where the stakes are high and the complexity of evacuation is greater, fire-rated smoke extraction ducting systems are not optional—they are essential. They save lives, support emergency response, and protect property. Investing in a properly designed and certified system is a cornerstone of responsible building design and operation.

The PROMADUCT® smoke extraction system consists of ducts specifically designed to extract smoke from fire-affected areas while maintaining their structural integrity under high temperatures. Our fire-rated ducts are tested to withstand fire for a specified duration – typically 60, 90, 120, or even 180 minutes – ensuring they continue to function during critical moments of evacuation and firefighting. Fire-rated ductworks need to extract the smoke from the building rapidly, thanks to fan assisted systems. If a smoke extraction ductwork is wholly contained within a fire compartment, it must be capable of at least resisting the anticipated smoke temperatures generated during the development of a fire. If the ductwork penetrates a fire resisting barrier (a fire-rated partition or ceiling), it must also be capable to provide the same fire resistance as the barrier.

To guarantee effective smoke removal, it is essential to conduct a detailed analysis of the space, considering parameters such as floor surface area, ceiling height, and the expected fire load. While fire propagation speed cannot be



Why smoke is more dangerous than fire

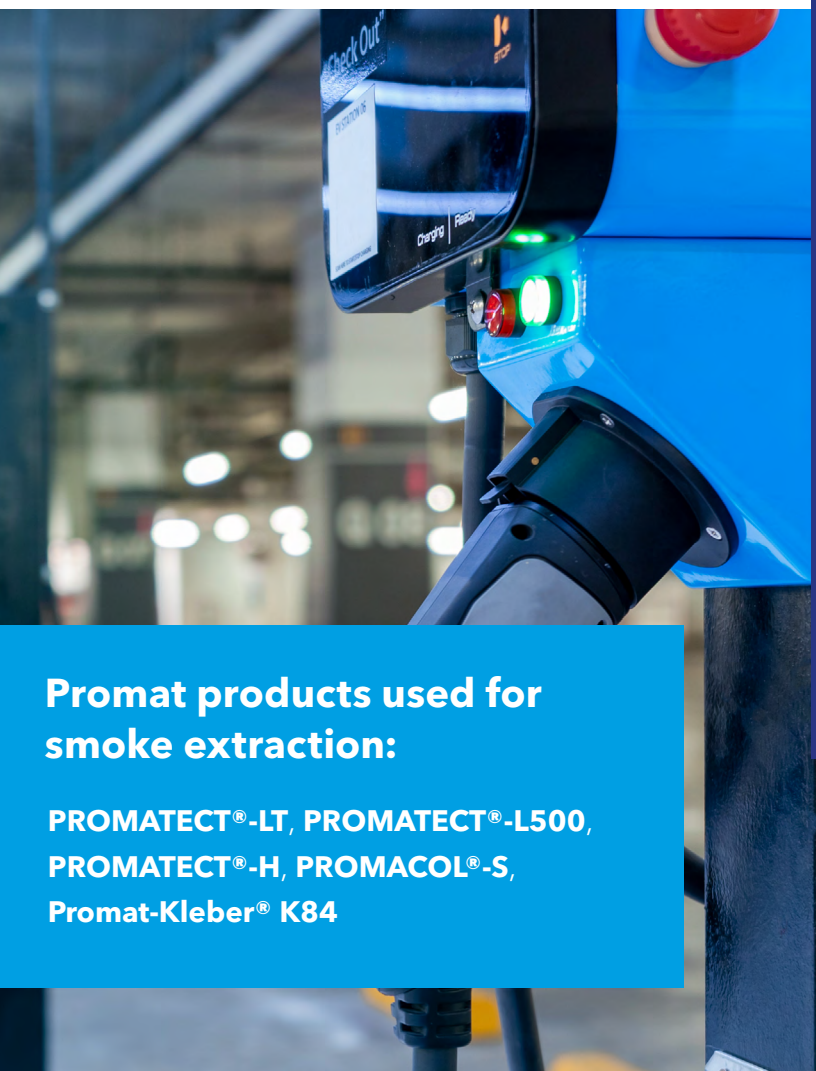
While flames cause visible destruction, smoke is often the leading cause of injury and death in building fires. It spreads quickly, obscures visibility, and contains toxic gases that can incapacitate occupants within minutes. In large buildings, where evacuation routes are long and complex, controlling smoke is essential for survival.

precisely predicted, the Heat Release Rate (HRR) can be calculated and used to model smoke movement and dimension the extraction system accordingly.

Our PROMADUCT® smoke extraction ducts are ideal for large compartments, car parks, high-rise buildings and atriums in commercial, office and residential buildings. **Car parks with low ceilings present dangerous zones because the smoke layer can fill the space very quickly** and prevents evacuation. High compartments (typically above 8 meters in height) pose specific challenges for fire safety design. If the space is also protected with both active systems (like sprinklers) and mechanical smoke extraction, specific design questions should be adressed.

To ensure fire safety objectives are met, it is essential to simulate the interaction between sprinkler activation and mechanical smoke extraction systems. Proper coordination of both systems is critical to maintaining adequate smoke control, tenable escape routes, and effective firefighting conditions.

This is where PROMADUCT® comes in as the perfect solution.



Promat products used for smoke extraction:

PROMATECT®-LT, **PROMATECT®-L500**, **PROMATECT®-H**, **PROMACOL®-S**, **Promat-Kleber® K84**

Why smoke extraction is critical in large buildings

1. Safe evacuation

Fire-rated smoke extraction ducts help maintain clear escape routes by removing smoke from corridors, stairwells, and lobbies. This visibility and air quality are vital for guiding occupants to safety.

2. Support for firefighters

By extracting smoke, these systems improve visibility and reduce heat in fire zones, allowing firefighters to locate and extinguish the fire more effectively.

3. Compartmentation integrity

Large buildings are divided into fire compartments to contain fire and smoke. Fire-rated ducts preserve this compartmentation, preventing smoke from traveling between floors and zones.

4. Regulatory compliance

Building codes and fire safety standards—such as EN 1366-8, BS 476 Part 24, and ISO 6944—require fire-rated smoke extraction systems in many types of large buildings. Compliance ensures legal safety and reduces liability.

5. Minimized property damage

By controlling smoke spread, these systems help protect sensitive equipment, reduce soot contamination, and limit the overall impact of the fire.