

Building & Industry

NOVENCO 

SCHAKO Group

NOVENCO ClearChoice Pressure Differential Systems

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Pressure Differential Systems

Pressure differential systems are designed to protect escape routes and fire-fighting shafts. This is achieved by limiting the spread of smoke from one space within a building to another through leakage paths or open doors.

Criterion pressure

If the doors towards the protected space are closed a pressure differential system offers the facility of maintaining tenable conditions in the protected space by creating a (relative) higher pressure within the protected space.

If the pressure differential is too low, smoke may ingress the protected space. If the pressure is too high, the force required to open any doors towards within the escape route may be too high.

Criterion airflow

In case of (simultaneous) open doors, the pressure differential system must be designed to create a minimum air velocity over the area of the open doors to prevent smoke from entering the protected space. To achieve this air velocity, the air supply fan to the protected space must supply sufficient airflow over the sum of the open door areas.

When a door to the protected space opens, the pressure in the protected space will suddenly drop. Using a fast response system the pressure differential system is activated and the supply rate is increased for the required minimal air velocity over the open door(s).

With an air release path in the accommodation it can be guaranteed that the air velocity over the open doors can be maintained in case the door to the accommodation with the fire is also opened.

Pressure differential systems are designed to hold back smoke at a leaky physical barrier in a building, such as a door (either open or closed) or other similarly restricted openings.

These systems are intended to protect means of escape such as stairwells, corridors and lobbies, as well as systems intended to provide a protected firefighting bridgehead for the Fire Services.



ClearChoice Pressurisation System

With the doors closed, the pressure in the protected space is set to 50 Pa using a supply fan in combination with a control system. In case a door opens, the fast control system will accelerate the supply fan to create a sufficient air velocity over the open door.

ClearChoice Depressurisation System

With the doors closed, the pressure differential between the protected space and the lobby is set to 50 Pa using a smoke exhaust fan. If a door towards the protected space is opened, the system create sufficient air velocity over the open door.

Advantages

- The Clear Choice Fast Response System (control time < 3s) ensures the correct air volume and pressure
- Modular structure - flexible and suitable for any building structure
- High adaptability to changing weather conditions
- Programmable self-test of the complete system
- Ability to monitor all components
- Remote control for service and maintenance (optional)

System Compliance

All Clear Choice Systems are compliant with the requirements from the EN 12101 Part 6 and all related normative references and EU directives.

The system design conditions will be based on further national regulations and the fire plan strategy set by the local authorities.

About NOVENCO

Since 1947, NOVENCO Building & Industry has been a global leader in high-performance air solutions. Its Life Safety Systems division specializes in Mechanical Smoke Ventilation Systems (MSVS) designed to protect lives and infrastructure by ensuring clear escape routes and heat removal during fire emergencies.

Commitment to International Standards

NOVENCO products are engineered for extreme reliability and carry comprehensive certifications to ensure global compliance:

- **EN 12101-3 Certified:** Smoke extract fans, including the high-efficiency ZerAx® and NovAx™ series, are tested and certified for high-temperature operation in classes F200, F300 and F400.
- **System Integration:** NOVENCO is a pioneer in certifying the complete drive package—ensuring fans and Frequency Converters (VSDs) function together seamlessly at high temperatures without emergency bypasses.
- **Pressure Differential Systems:** Solutions for stairwell and shaft protection comply with EN 12101-6 and EN 12101-13, providing precise air pressure control in escape routes.
- **Quality & Sustainability:** All systems are manufactured under ISO 9001, 14001 and 45001 standards, balancing critical safety with energy efficiency for LEED and BREEAM-certified buildings.

Through rigorous testing and international accreditation, NOVENCO provides guaranteed performance where safety is non-negotiable.

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