ADVANCED PRESSURE DIFFERENTIAL SYSTEM FOR A LEADING GERMAN INSURANCE HIGH-RISE

A state-of-the-art pressure differential system (PDS) was implemented in the new 21-storey headquarters of a leading German insurance company, enhancing fire safety and enabling future-ready solutions for tall buildings.

THE PROJECT

In 2022, NOVENCO® Building & Industry was commissioned to deliver a complete active pressure differential system (PDS) for a new 75 m high, 21-storey office tower built for one of Germany's largest insurance companies. The scope included active PDSs for two safety stairwells and a fire brigade lift, and two active exhaust shafts - ensuring safe evacuation and reliable fire brigade access in case of emergency.
NOVENCO supplied all critical PDS components, including supply and exhaust air fans, advanced louvre dampers with ultra-fast actuators, control cabinets with newly developed control software and smoke extraction dampers. After independant certified inspection, the system was fully approved at the beginning of 2025.

THE CHALLENGE

As the project evolved, regulatory experts introduced increasingly complex technical requirements to meet the highest safety standards. The challenge was not only to meet these demands but also to future-proof the solution, enabling pressure differential systems to operate efficiently and reliably even in significantly taller buildings.

THE SOLUTION

To meet the stringent requirements and elevate system performance, NOVENCO's engineering team in the Netherlands developed several technical innovations, including:

- Ultra-fast louvre actuators with a response time of just 0.7 seconds, a feature unmatched in the market, ensuring rapid response, pressure stability and avoid peak pressures.
- New PDS control software with integrated summer/winter compensation and continuous outdoor temperature monitoring, enabling reliable operation in high-rise buildings up to 40 storeys.

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FACTS

- MARKET-UNIQUE ULTRA-FAST ACTUATORS (0.7 S)
- SUMMER/WINTER COMPENSATION SOFTWARE
- ADVANCED PRESSURE AND AIRFLOW CONTROL SOLUTIONS
- HIGH-RISE READINESS UP TO 40 STOREYS

> **This project was a milestone for us at NOVENCO Building & Industry. Meeting the customer's high safety requirements pushed us to develop new, ultra-fast louvre actuators with a response time of just 0.7 seconds, a unique feature in the market.**
>
> **Toine van der Wielen**
> **Product Manager PDS**

- Stainless steel pressure measuring points for increased durability and precision.
- Increased reliability with:
  - patented NOVENCO LMM system to monitor cable on short circuiting and cable break for actuators
  - redundant air supply system
  - redundant pressure sensors
  - battery back-up for control system in accordance with EN 12101-10.
- Innovative air supply system for emergency stairwells, using louvre dampers and grilles for homogeneous air and pressure distribution, with floor-specific control logic to mitigate stack effect.

New bypass-solution with NOVENCO NovAx fan installed stalled on the rooftop for optimal airflow and performance

Rooftop louvre hood with high-speed actuator, designed for 0.7-second response, ensuring immediate airflow regulation and system stability

Corridor-mounted combination damper and outletgille, delivering precise airflow and homogeneous pressure as part of the system

Smoke extraction damper installed in the corridor – ensuring safe and efficient smoke control during emergencies

THE RESULTS

The project was successfully completed and approved in early 2025, delivering a robust, responsive and future-proof pressure differential system that ensures safe evacuation and optimal fire brigade access.
The innovations developed here have expanded NOVENCO's capabilities - enabling PDS solutions for much taller buildings, setting new standards in fire safety for high-rise insurance and commercial properties.

> **It's rewarding to see how these innovations not only delivered an exceptional solution for this high-rise building but also opened the door for future PDS applications in even taller structures.**
>
> **Michael Porten**
> **Technical Sales Manager**

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