ZF North America Group Materials Lab

Northville Township, MI

Michigan Air Products provides energy-efficient lab solutions, poising the world's third-largest automotive supplier for the future.

The automotive industry is constantly evolving and developing new technologies to meet the demands of modern consumers. Companies in the industry must continuously innovate to stay ahead of the competition. A key aspect of this innovation is research and development (R&D) labs, where engineers and scientists work to design and test new products and systems.

ZF North America, the world's third-largest automotive supplier, invested in a major expansion to its technical center in Northville Township, Michigan. The 210,000 sq ft expansion allows ZF North America to increase research and development of its core axle, chassis, steering, and transmission products, where it develops new technologies for cars, commercial trucks, and off-road equipment. This expansion allowed ZF to consolidate its Material Labs into one location.

The Challenge

ZF North America's Materials lab faced the challenge of designing an energy-efficient airflow control system that could meet current needs while being adaptable to future requirements. The lab needed a system that could precisely control the exhaust of hazardous fumes and nuisance odors generated during product tests. Additionally, the system needed to be flexible enough to adjust to changes in the testing environment and seamlessly integrate with the building management system.

MAP's Solution

ZF North America collaborated with Fishbeck, Inc. to design and implement an advanced airflow control system to address this challenge. Antec Controls Venturi Valves were chosen for the lab's variable volume fume hood exhaust, snorkel exhaust, two position hoods, and oven canopy exhaust, as well as to track supply airflow control. These Venturi Valves provide precise and independent airflow control, ensuring full primary and secondary containment of generated fumes while maintaining energy efficiency. Supply air Venturi Valves are used to maintain exact negative pressurization within the lab.

Antec Venturi Valves are mechanically pressure independent airflow control valves that are specifically designed for room pressure and fume hood control applications. They are used to control airflow without the need for airflow measuring devices in the airstream and are designed for applications where the exhaust system static pressure may change unexpectedly, such as in laboratories dealing with hazardous substances at a fume hood.

Antec Venturi Valves utilize an actuator attached to a lever arm that positions a spring and cone assembly to provide active airflow control. The hourglass shape of the valve allows for precise airflow control over a wide range of duct static pressures without the need for actuated airflow control. These valves are accurate to ±5% of flow when operated within the designed pressure range. The integral Pace controllers communicated over a native BACnet MS/TP trunk and seamlessly integrated with ZF's building management system to provide detailed visibility of the critical environment's airflow controls.

Michigan Air Products coordinated with Goyette Mechanical and Smart Building Services to ensure a smooth commissioning process on site and collaborated to incorporate critical airflow control graphics within ZF North America's building management system.

The Result

Implementing the new airflow control system using Antec Venturi Valves yielded significant benefits for ZF North America's Materials lab. The lab achieved energy efficiency improvements and a safe working environment. The system's flexibility and scalability enables the lab to adapt to changing testing requirements or add new components as needed.

Overall, the lab's new airflow control system provides the precision, flexibility, visibility, and scalability required to meet the ZF North America's current needs and future challenges.

Learn More

Venturi Valves: Pressure Independence

Join Matthew Nesbitt Product Manager with Antec Controls as he describes and demonstrates how an Antec Venturi Valve maintains pressure independence mechanically in an HVAC system.



Engineering Webinar: Airflow Control Devices

Airflow control in critical environments is typically accomplished by one of three devices: Venturi Valves, High Accuracy Damper Control Valves and Standard Accuracy Damper Control Valves. Each of these device types can be well applied in a host of applications, however, they are often not easily interchangeable.

This Engineering webinar (PTP3210) identifies the different types of devices and where each technology is best applied.





PROJECT SUMMARY

PROJECT TYPE	Laboratory
LOCATION	Northville Township, MI
PROJECT SIZE	140,000 ft^2
PRODUCTS	Venturi Valves
MANUFACTURER	Antec Controls
ARCHITECT / ENGINEER	Fishbeck, Inc.
CUSTOMER	Goyette Mechanical





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