Laboratory Control Solutions from TSI

CONTROLLED ENVIRONMENTS

Critical Environments

TRUST. SCIENCE. INNOVATION.

Safe, Flexible

Safety

Research in laboratories helps advance science in many different disciplines. Professionals working in laboratories need protection from potentially hazardous compounds. TSI's direct measurement of critical parameters is a superior method of ensuring the safest laboratory possible. Specifically, fume hood controls maintain a constant face velocity needed to provide containment.

Energy Savings

An additional benefit of properly designed laboratory controls is energy savings. TSI laboratory controls are designed to safely reduce the exhausted air volumes, minimizing the cost of conditioning air supplied to laboratories.

Compliance

Written standards and guidelines provide designers assistance when designing laboratories. ANSI, ASHRAE, NFPA, and OSHA provide requirements and recommendations for fume hood performance and laboratory design. TSI's complete laboratory control solutions make it easy for you to design laboratories that comply with applicable guidelines.

Flexibility

No single solution is optimal for every application. TSI laboratory controls provide choices in control strategies and components, allowing you to match the safety and design requirements of your facility. Design tools and engineering support from TSI streamline the design of your laboratory projects.

Control Solutions

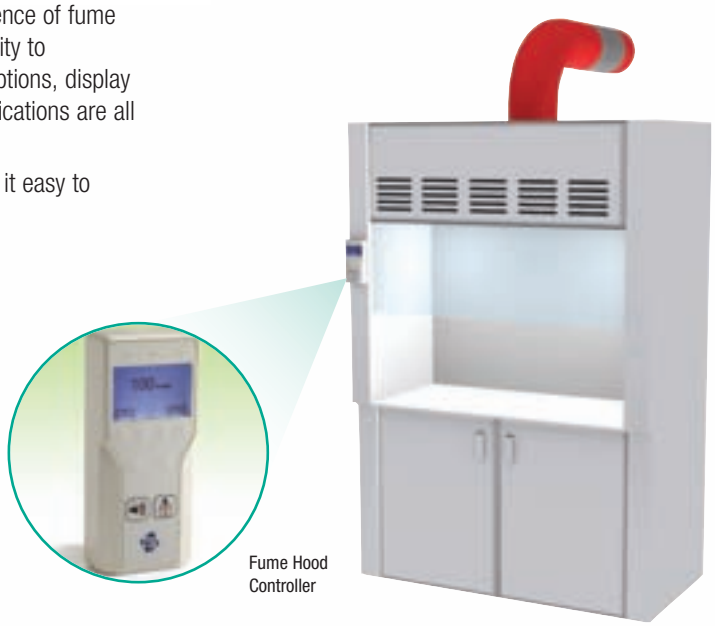
Design Flexibility with FHC50 Fume Hood Controller:

TSI's FHC50 provides the ultimate in flexibility -

- **Direct velocity measurement:** TSI's precision measurement of face velocity, the important safety parameter, provides the basis for a simple closed-loop control system. If the velocity drops, alarms warn users of unsafe conditions. Thousands of researchers rely on TSI products to provide safety each and every day.
- **Sash position control:** Using sash sensors to monitor sash position provides some unique opportunities to enhance fume hood control, including sash management and fast speed of response when sashes are moved.
- **Best of both words:** By applying both a precision side-wall velocity sensor and a sash sensor, you are able to achieve the fastest response possible with the enhanced safety of measuring (and alarming on) the critical safety parameter of face velocity.
- **Complete configuration:** Regardless of your preference of fume hood control method, TSI's FHC50 allows you the ability to completely configure the product in the field. Alarm options, display configurations, I/O alternatives, and network communications are all part of the offering.
- **Field configuration:** A trained TSI technician makes it easy to configure the FHC50 for your specific application.

Fume Hoods: Primary Protection

Fume hoods are a primary source of protection in laboratories. Face velocity measurements are often used to gauge the performance of a fume hood's ability to contain and exhaust harmful vapors. By measuring and controlling face velocity, TSI FHC50 Fume Hood Controllers provide a higher level of fume hood safety and energy efficiency.



Fume Hood Controller

Satisfy Your Unique

Laboratory Room Controls: Design it the Way it Should be Designed

When designing laboratories, you need to consider room pressure, ACH, temperature, and room flow balance. Safety and design requirements are not identical for every laboratory. The wrong choice of lab controls could jeopardize safety, energy efficiency, or comfort on your laboratory projects. Great for new and retrofit projects, TSI SureFlow Laboratory Controls provide you with the flexibility to design your lab the right way.

Flow Tracking

- Maintains fixed volumetric difference, or offset, from supply and exhaust flows
- Design of choice for open architecture laboratories
- Used in areas where uninterrupted containment is not critical

Direct Pressure

- Maintains a measured pressure between lab and corridor
- Ideal for small, closed labs with critical safety requirements

Adaptive Offset Control

- Combines the safety of direct pressure measurement with the air flow stability of flow tracking.
- Direct pressure measurement for alarms and slowly adjusts offset.

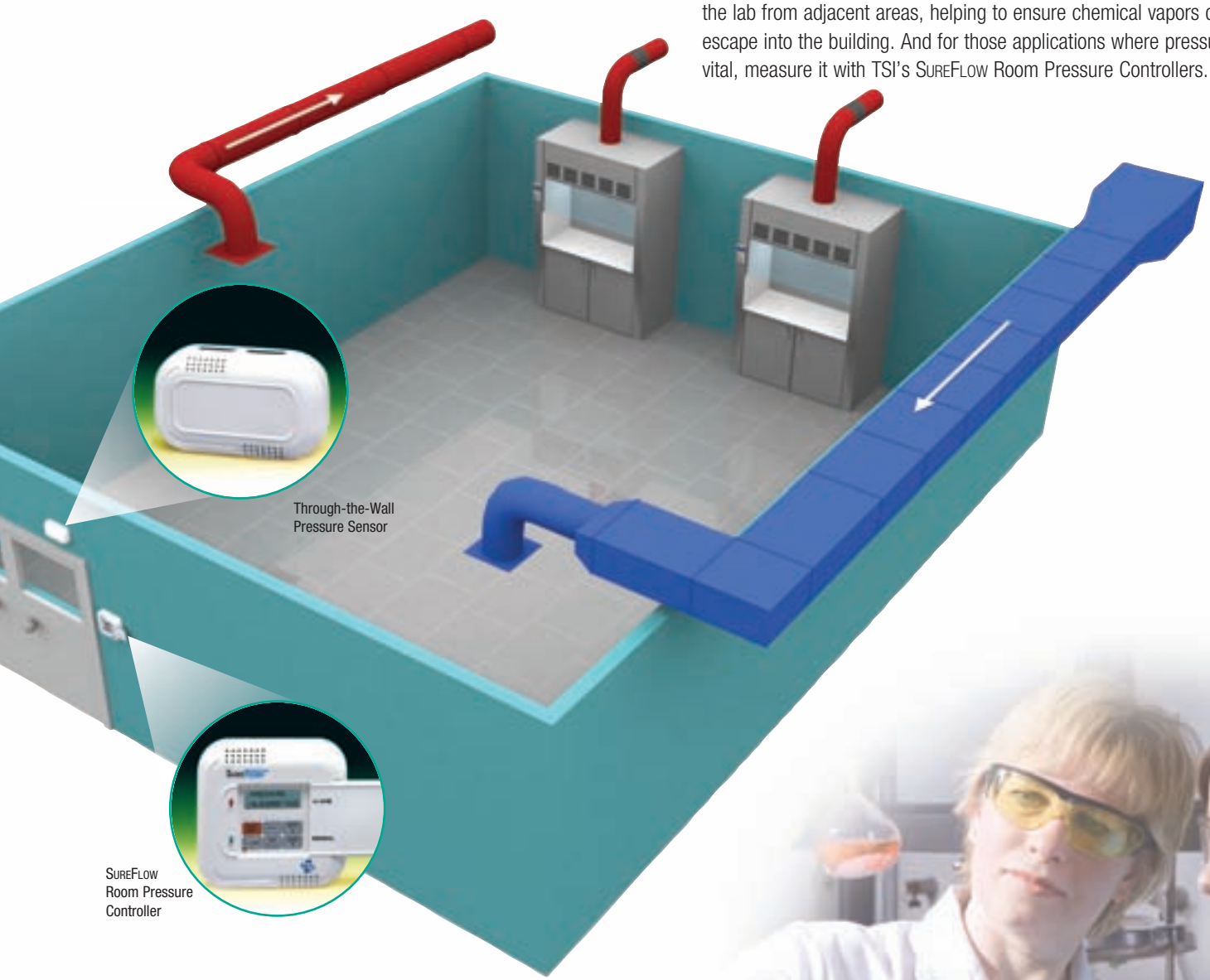
Room Pressure Requirements

Expert Support on Demand

TSI's worldwide network of representatives are committed to understanding your specific laboratory design, installation, and operational needs. With support from the TSI factory, they are prepared to assist you in the optimal laboratory control solution for your application.

Room Pressure

Chemicals escaping into the laboratory area must not drift to other regions of the building. Laboratory controls are the second line of defense. Guidelines, such those from ASHRAE and ANSI stipulate the need to maintain a small negative pressure in the lab relative to surrounding areas. In practice, negative pressure is achieved by exhausting more air than is supplied. The extra air must infiltrate into the lab from adjacent areas, helping to ensure chemical vapors do not escape into the building. And for those applications where pressure is vital, measure it with TSI's SureFlow Room Pressure Controllers.



Complete Laboratory

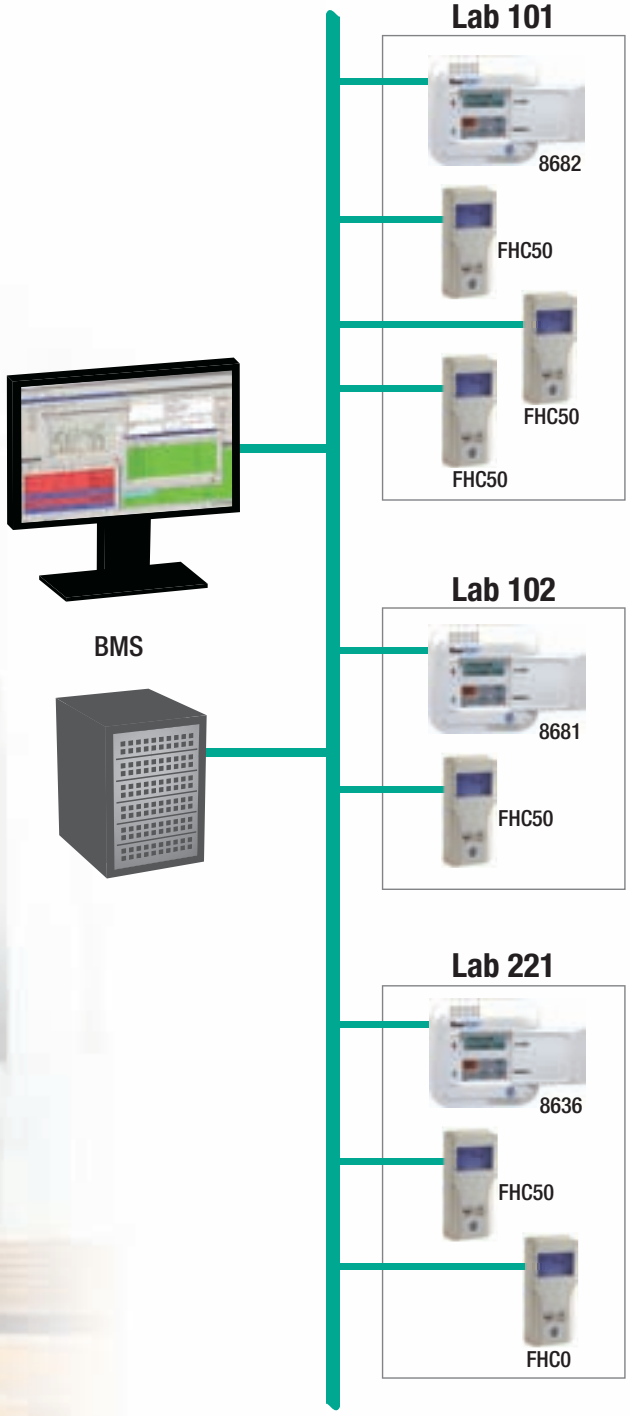
Seamless Integration into Your Building Management System

Local control of your laboratory spaces is only the first step to optimal safety and building efficiency. Linking the laboratory controls to your Building Management System (BMS) enables the implementation of building-wide strategies.

- Night setback of flow rates and temperatures to reduce operating expenses
- Automated data collection, trend analysis and report generation
- Reports validate safe operation of labs and trend energy consumption
- Remote diagnostics

TSI's Laboratory Control Products are easily integrated into your BMS system to record alarms and trend data. Our laboratory controls support analog communications and tie seamlessly into BMS systems using the following protocols:

- BACnet®
- LonWorks®
- Modbus™
- Johnson Controls N_2



Solutions From TSI

Customize your Laboratory Design

With TSI's FHC50 Fume Hood Controller and SureFlow™ Laboratory Controls, it is easy to integrate the best components for each application. When properly applied, TSI controls work with the following components:

- **Integrated VAV Boxes:** With factory mounted flow grids and temperature reheat coils, these are an excellent choice as a low pressure drop, easy installation option on supply.
- **Pressure Independent Venturi Valves:** excellent choice for fume hood exhaust where making a turbulent measurement of flow is difficult. Also, good option for constant volume exhaust found in snorkels and chemical storage cabinets.
- **Blade and Frame Dampers:** use with direct pressure measurement labs and labs where combined flow measurements are easy
- **Flow stations:** pressure or thermal based

Local, authorized TSI representatives are available to assist you with your design to ensure you use the best, most appropriate components for your application.

Venturi Valve

Additional TSI Solutions for Laboratories

Fume Hood Testing: Performing ASHRAE 110 velocity tests on fume hoods are easy with TSI's VelociCalc® Air Velocity Meters.

Contamination Control: AeroTrak™ Particle Counters help to certify clean rooms, like those found in pharmaceutical companies, ensuring safety and compliance. TSI offers portable, handheld and remote particle counters. AeroTrak™ remote particle counters are permanently installed to continuously measure contamination levels in clean areas. When tied into TSI's FMS software, 21 CFR part 11 compliant monitoring systems can be created for recording critical environmental data.

TAB/Commissioning/Energy Savings:
Laboratories, with their unique needs, can be large consumers of energy. Performing commissioning, looking for energy saving opportunities, is easily done with the right tools, like TSI's VelociCalc® Meters and Alnor® Capture Hoods. These best-in-class instruments, utilized by TAB professionals, accurately measure velocities, flows, temperatures, and humidity helping to optimize energy consumption in your facility.

Parameters and Features Charts

Fume Hood Controls

	FHM10-01	FHM10-02	FHC50-01	FHC50-02	FHC50-03	FHC50-04
TSI's Sidewall Velocity Sensor	•		•		•	
Sash Position Sensor				•	•	
Flow Control						•
Controls Damper			•		0	0
Control Venturi Valve			0	•	0	0
Visual and Audible Alarms	•	•	•	•	•	•
Flow Input		•	0	•	•	•
Contact Inputs	C	C	C	C	C	C
Analog Outputs	C	C	C	C	C	C
Alarm Contact Outputs	•	•	•	•	•	•
RS-485 (Modbus, Johnson N2)	•	•	•	•	•	•
BACnet MS/TP or LonWorks Compatible	0	0	0	0	0	0

• = Feature of Instrument 0 = Optional versions available C = Configurable - see manual for options

Laboratory Room Controls

	8635-M	8636	8681	8682
Direct Pressure Monitoring	•			
Direct Pressure Control		•		
Adaptive Offset Control			•	•
Flow Offset Control Only			0	0
Temperature Control		•	•	•
Lab Ventilation ACH Control		•	•	•
Visual/Audible Alarms	•	•	•	•
Controls Damper		0	0	0
Control Venturi Valve		0	0	0
Flow Inputs		C	C	C
Night Setback Contact Input	•	•		•
Door Open Mode	•	•	•	•
Alarm Contact Outputs	•	•	•	•
Analog Output	•	•		•
RS-485 (Modbus, Johnson N2)	•	•	•	•
BACnet MS/TP or LonWorks Compatible	0	0	0	0

• = Feature of Instrument 0 = Optional versions available C = Configurable - see manual for options

TSI Incorporated serves a global market by investigating, identifying and solving measurement problems. As an industry leader in the design and production of precision instruments, TSI partners with research institutions and customers around the world to set the standard for measurements relating to aerosol science, air flow, health and safety, indoor air quality, fluid dynamics and biohazard detection. With headquarters based in the U.S. and field offices throughout Europe and Asia, TSI has established a worldwide presence in the markets we serve. Every day, our dedicated employees turn research into reality.

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