



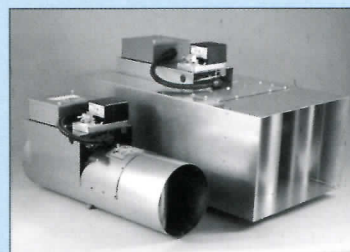
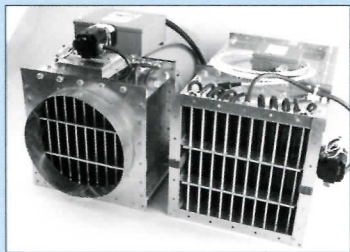
SmartLab™

The Most Reliable
Laboratory Airflow
Control Solution

A COMPREHENSIVE APPROACH FOR CRITICAL AIRFLOW MANAGEMENT

SmartLab™

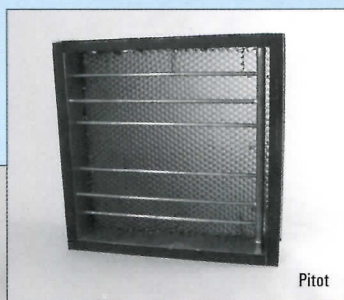
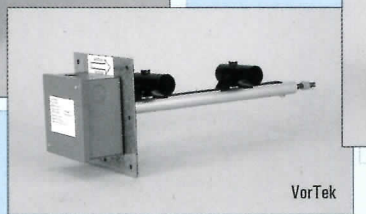
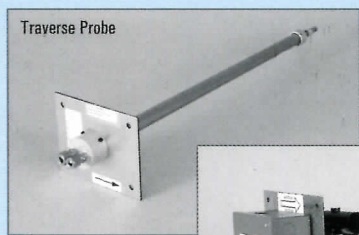
1 Ventilation Control Valves



The foundation of a critically controlled space is the air valves chosen for the job. Tek-Air now has two choices of valves, electric and pneumatic, which both satisfy the demanding requirements of accuracy and dependability without the fear of falling out of calibration. Each type of valve utilizes closed loop control, offering static pressure independence for flow control, based on the signal from

the VorTek™ sensor which has served the industry for over 15 years. These valves can be controlled with Tek-Air's SmartLab controller, or any other controller which has standard analog inputs and outputs, and has PI (proportional and integral) closed loop control.

2 Airflow Measurement Devices



Tek-Air offers a complete product line of airflow devices including; duct insertion or fan inlet probes and airflow measurement stations. For applications that require the highest degree of accuracy and unsurpassed long-term stability, Tek-Air's digital vortex shedding sensors are provided. For less critical applications, Tek-Air also offers various differential pressure airflow sensors.

3 FVC Fume Hood System Ventilation Control



Tek-Air offers the widest variety of fume hood ventilation control for today's demanding laboratory requirements. Applications using face velocity control, measuring airflow through fume hood opening or Sash position control is available for vertical, Horizontal or combination sash fume hoods. Sash position control is for vertical, horizontal or combination sash fume hoods.

4 The SmartLab™ System Controller



The SmartLab Controller is a versatile, high-speed direct digital controller designed specifically for airflow and temperature control in laboratories and other critical environments. The controller monitors supply air, total exhaust volume, and temperature, while it performs calculations, updates all valve outputs, and communicates with the FVC Fume Hood Controller via high speed communications. The SmartLab Controller is a proven, time tested solution to laboratory control.

The Control System For Cr

The Lab Interface Module and Network Converters

The Lab Interface Module (LIM) contains a network isolator, signal repeater for ARCnet communications and thermistor-type room temperature sensor. Through a port in the LIM, it's easy to access the SmartLab system network information where all control parameters can be viewed and setpoints adjusted in the system. Tek-Air can also offer direct network converters.



LIM and Network Converter

Face Velocity Monitors

These fume hood face velocity monitors are designed to indicate and alarm low and unsafe velocities at the front of the fume hood in critical controlled spaces. These required monitors are easily retrofitted to existing hoods, or supplied with fume hoods on new installations. Both monitors utilize the same dependable technology to assure stable and accurate operation, with one of them giving the user a touch sensitive pass word protected digital display for configuration of the monitor.



Face Hood Monitors

Iso-Tek Space Pressurization Monitoring System

Used in cleanrooms, isolation rooms, research labs, hospitals, as well as various other applications for a visual and audible assurance that critical space pressure differentials are being maintained.



Iso-Tek

IAQ-Tek Indoor Air Quality Monitoring System

One of the most significant parameters associated with indoor air quality is the volume of fresh outdoor air being drawn into a building through the ventilation system. Tek-Air provides a complete system for measuring outdoor air intake volume and temperature over a wide range of conditions.



IAQ-Tek

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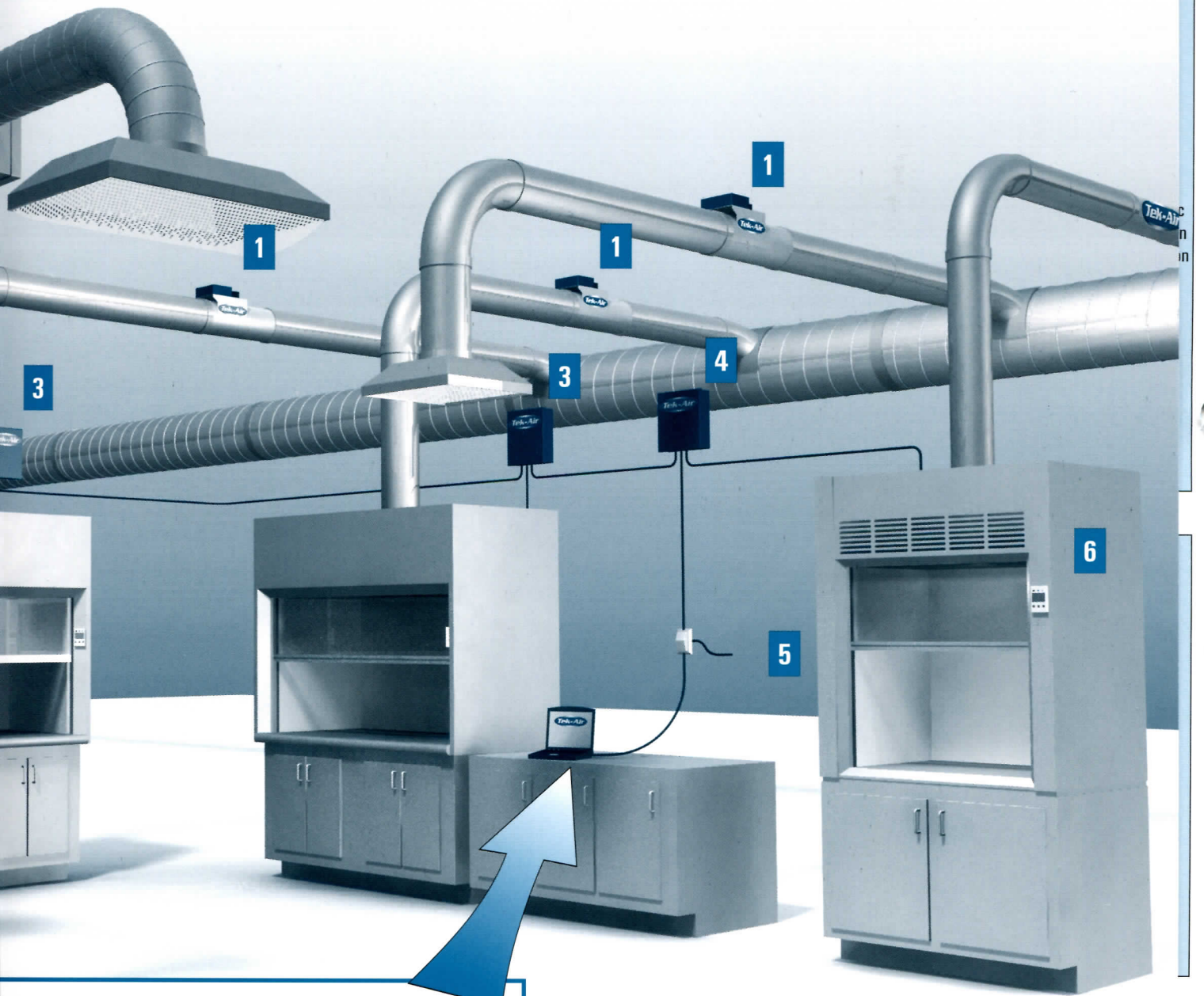
SmartLab Graphic User Interface

The SmartLab system is configured using a MS Windows based software. It features a basic menu driven screens for local viewing of critical

The personal computer has several ways to access the controllers of the Smart Lab Controller (SLC), and also remotely via the lab network. Network (LAN) via an Ethernet port, without the requirement for serial which also allows offsite monitoring and troubleshooting to aid in the

Optical Airflow Management

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are developed by Tek-Air and runs on a standard personal computer.
om parameters during set-up and commissioning of each lab space.

er locally in the room at one of the Lab Interface Modules (LIM) or
Each room has the option to connect to a building's Local Area
ate proprietary cables connecting sections of the Lab Network,
maintenance of the system,

The Ultimate Solution in Comprehensive Laboratory Airflow Management.

Tek-Air has provided laboratory airflow control systems since our incorporation in 1983. The experience gained through the completion of hundreds of installations, for a wide variety of customers, is reflected in our design philosophy. Our design for each project is intended to embody the following key elements of this philosophy.

*"If a parameter is important,"
"measure it directly"*

Be it airflow volume, space pressure, or face velocity; if a parameter is important enough to be controlled, it should be **measured directly**. Most competitors of fume hood controls measure sash open area only and then position a calibrated mechanical volume regulator (springs, bearings, and levers) to achieve volumetric flow control.

Tek-Air has designed fume hood controls for many specialized Hood applications using three different methods of control.

1. Control based on the **Velocity Measurement** of the air drawn from the room through the open sash over our velocity sensor. Virtually any occurrence which affects the face velocity is detected by the sensor, even those which are caused by improper use of the hood. This measured face velocity is used as the parameter for the controller to change the flow in the duct to maintain face velocity set point.
2. Control based on **Sash Position with Flow Measurement** is an enhanced version of what our competitors provide using the sash position to determine the volume set point for the hood. **Tek-Air** takes accuracy and safety a step further by providing flow measurement in the fume hood duct where the volume set point is used as an input to the controller which is monitoring and controlling the duct air flow.
3. Control based on **Constant Volume or Two Position Control** where a constant face velocity at the sash is not as critical as the two other methods. Even though this is simpler to accomplish with less hardware, **Tek-Air** still measures and controls the duct air flow, and provides face velocity monitors to alarm individuals when the hood is outside of acceptable limits.

Tek-Air measures duct air volume with sensors which have been specifically designed for laboratory airflow measurement. VorTek sensors are digital in operation, immune to fouling and calibration drift, offering a wide turndown. Rather than position a mechanical volume regulator and assume that the airflow is sufficient to insure worker safety, **Tek-Air** actually measures the volumetric flow rate.

*"Keep it simple. Only incorporate the"
"minimum number of devices required"
"to accomplish control objectives."*

The majority of laboratories are a combination of constant volume and variable volume exhaust valves each having an affect on the room. All variable volume fume hoods require accurate measurement for safety, but other less critical exhaust flows in the lab can be combined to a single point of measurement, simplifying the design and ensuring all flows are monitored for offset flow tracking resulting in stable room pressurization. **Tek-Air** offers simple, unitary, and easy to maintain control valve assemblies without complicated external interdependent mechanical assemblies to control larger ducts in both round and rectangular configurations.

"Utilize the best components available"

Given the fact that a **Tek-Air** design minimizes the quantity of control devices, it becomes economically feasible to apply the best quality devices to the application; industrial strength **Tek-Air** products.

The elements of "simple design" and "the best components available" are a powerful combination. Every building operator knows that *fewer components* means *less maintenance* and *that high quality components* require *service less frequently*. These two factors work together to slash long term maintenance requirements and costs. Again, this fact will be appreciated years after your project is completed and out of warranty.



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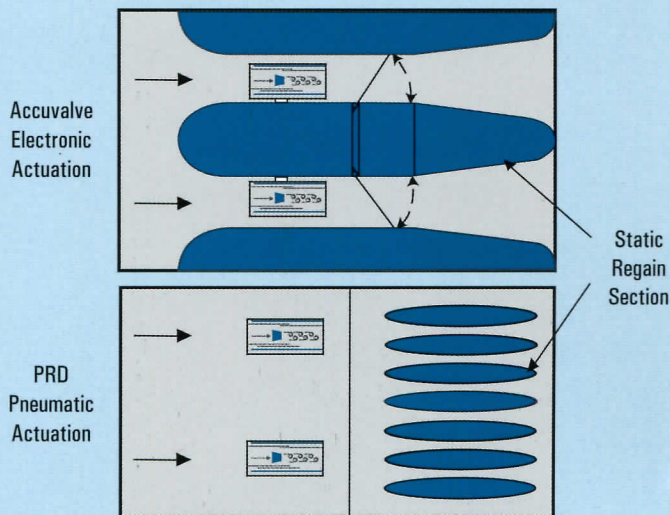
A Unique, Patented Approach For All Critical Environments That Yields The Most Reliable Ventilation Airflow Management System

Critical Ventilation Control Valves

Both the PRD, (Pressure Regulating Device), and the AccuValve are designed to handle Critical Ventilation requirements of Accuracy, Speed and Durability. Both types of valves modulate the airflow in a linear fashion, and monitor the volume of the air flow with VorTek™ air flow sensors. The combined use of the VorTek™ sensors, along with a valve designed for low pressure drop and linear control, make these valves the best available in the market for your critical ventilation requirements in the laboratory, clean room, or animal care facility.

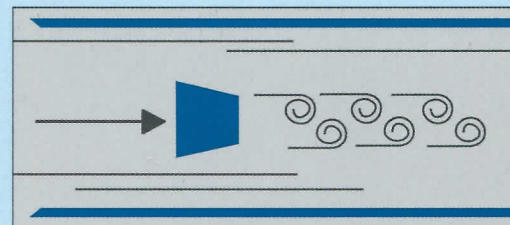
PERFORMANCE BENEFITS OF VALVES

- Low pressure drop
- Quick response to set point changes
- Laminar airflow at point of measurement
- Excellent shut off capability
- Tolerant to High Static Pressure
- Fail Safe operation
- Low sound levels
- Wide turn down
- Aerodynamically designed
- Corrosion resistant materials



Vortex Shedding

The principle of physics known as vortex shedding is the basis for Tek-Air's patented digital approach to airflow measurement. When an obstacle, such as the trapezoidal shedder in a VorTek™ probe, is placed in the path of the airflow, spiraling eddy currents are created. These vortices, in accordance with the laws of physics, are shed in alternating fashion from one side of the shedder to the other. Tek-Air measures the rates at which these vortices are produced, converting alternating pulses into digital signals for the precise measurement of airflow volume.



PERFORMANCE BENEFITS OF VORTEK™ AIRFLOW MEASUREMENT

- Primary signal is directly proportional to velocity
- No compensation is required for temperature, density and humidity changes
- Linear primary signal
- True velocity averaging from multiple sensors
- Accuracy not affected by dust/dirt
- Self cleaning
- Doesn't require recalibration
- Lower cost of ownership



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