World leaders *in airflow controls and monitors*

Complete Environment Control

About TEL
A reputation for innovation

Established in 1969, Temperature Electronics Ltd (TEL) is a world-leading airflow control and monitor manufacturer and consultant. Our innovative products are used to improve safety, reduce costs and save energy in thousands of laboratories and industrial environments around the world.

In 2016, TEL launched the AFA5000 Laboratory Room Space Controller. The first controller to communicate directly with fume cupboards, it offers laboratory managers complete control of research environments.

Partner with TEL and benefit from:

- A safer, more comfortable environment for lab users
- Reduced energy usage – up to 85%
- Reduced energy costs
- A smaller carbon footprint
- Full compliance with health and safety legislation

Discover a better way of working, call ***TEL on +44 (0) 1457 865 635.***

Global Reach

There are more than 300,000 TEL monitors and controls in laboratories across the world.

International supplier network

With a network of suppliers that stretches across America, Africa, Asia and Europe, TEL products are available anywhere in the world. For an up-to-date list of our global supply partners go to www.tel-uk.com/distributors.

Contents

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TEL Americas

In 2016, TEL launched TEL-Americas and it has fast become the number one supplier of air flow control equipment in America. A member of the ECM Holding Group, it specialises in the development, supply, installation, testing and verification of energy efficient variable air volume (VAV) systems. For more information go to www.TEL-Americas.com.

Complete
Laboratory Control

TEL works in close partnership with laboratory companies, fume cupboard manufacturers, contractors and users around the world. We develop air flow monitors and controls in direct response to the pressures they face to improve safety, reduce costs and deliver energy efficiency.

Our extensive range and unrivalled expertise also means we achieve significant economies of scale which is reflected in our prices.

Partner with TEL for:

- An extensive product range
- World leading product innovation
- Unrivalled expertise
- Worldwide technical support, 24/7
- Outstanding after sales service

Our clients include:

- Laboratory/Facilities Managers
- M&E Contractors
- Energy Managers
- Carbon Reduction Managers
- Sustainability Managers
- OEMs

TEL
Products

TEL designs and manufactures an extensive range of laboratory control products including:

- Airflow Controls (VAV)
- Volumetric Controls
- Laboratory Room Space Controller
- Auto Sash Controllers
- Airflow Monitors (CAV)
- LEV Monitors
- Kitchen Hood Controls

*Full details of all TEL products can be found on pages **12** to **41.***

Flameproof Systems

TEL can provide Airflow Monitors and Airflow Controls suitable for Zone 1 and Zone 2 hazardous or flameproof areas, Gas group IIC, Temperature class T6.

For installations where the hazardous area is contained within the fume cupboard chamber: the standard airflow monitor or controller can be used with certified zener barriers fitted to the airflow sensor.

For installations where any part of the laboratory is classified as the hazardous area: the airflow monitors or controls are mounted in a safe area control panel fitted in a designated safe area with remote Ex rated indicators and alarms fitted to the fume cupboard.

TEL Services

TEL offers a full design and consultation service including design consultation, product supply and installation, training and technical support.

New installations: depending on the requirements of your specific project we will collaborate with laboratory designers and planners from initial concepts through to installation and commissioning.

Retrofit service: we can retrofit our products to virtually any existing fume cupboard system. This unique service includes feasibility study for existing plant (including usage and efficiency), energy calculation giving current costs and potential savings, proposal (including costing and methodology), and installation and commissioning service.

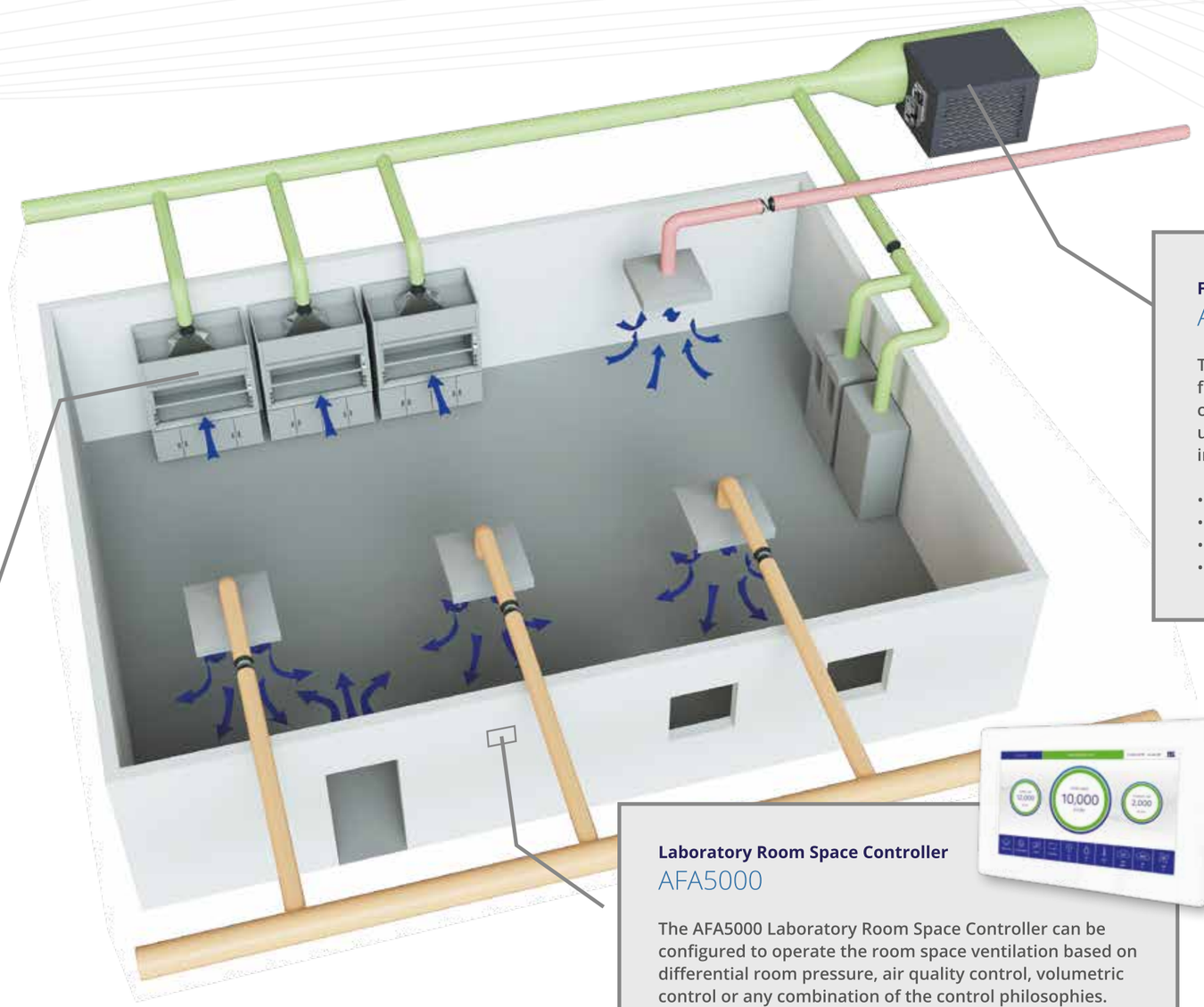
Econ
VAV CONTROLS

VAV controls for fume cupboards are designed specifically to reduce the energy usage and costs associated with running a laboratory, consequently shrinking its carbon footprint.

Constant air volume (CAV) fume cupboards consume a constant volume of air regardless of sash position. The energy spent heating and cooling the supply of this air for the comfort of lab users represents a major operating cost.

TEL's VAV system for fume cupboards works by measuring the face velocity on the fume cupboard and providing a controlled output to maintain the set point face velocity as the sash is opened or closed.

Fitting TEL's VAV controls system to your fume cupboards and air supply system can typically ***reduce your energy costs by up to 85%.***



VAV Controller and Auto Sash Controller

AFA4000/E

TEL's AFA4000/E is a VAV Controller that has been developed with an optional Auto Sash integration, meaning you no longer need a separate Auto Sash keypad.

- Full colour 3.5" LCD Display for continuous velocity reading in m/sec or fpm
- Auto Sash integration
- Audible alarm with red, amber and green LEDS
- 3 relay inputs and 3 relay outputs

Fresh Air Bleed Controller

AFA1000/BLD

The AFA1000/BLD is a wall mounted fresh air bleed controller suitable for controlling the VAV system duct pressure using a fresh air bleed damper or fan inverter drive.

- Digital Display
- 3 Relay Inputs
- 3 Relay Outputs
- Bacnet and Modbus on board

Laboratory Room Space Controller

AFA5000

The AFA5000 Laboratory Room Space Controller can be configured to operate the room space ventilation based on differential room pressure, air quality control, volumetric control or any combination of the control philosophies.

- 7" high resolution HMI touchscreen, wall or panel mountable
- Time scheduling with setback/out of hours control
- Over diversity status/alarms
- Connects up to 64 fume cupboards, with AFA1000 or AFA4000 controllers per room
- Increased I/O to control more devices and connect to more sensors

Upgraded with new features and functionality

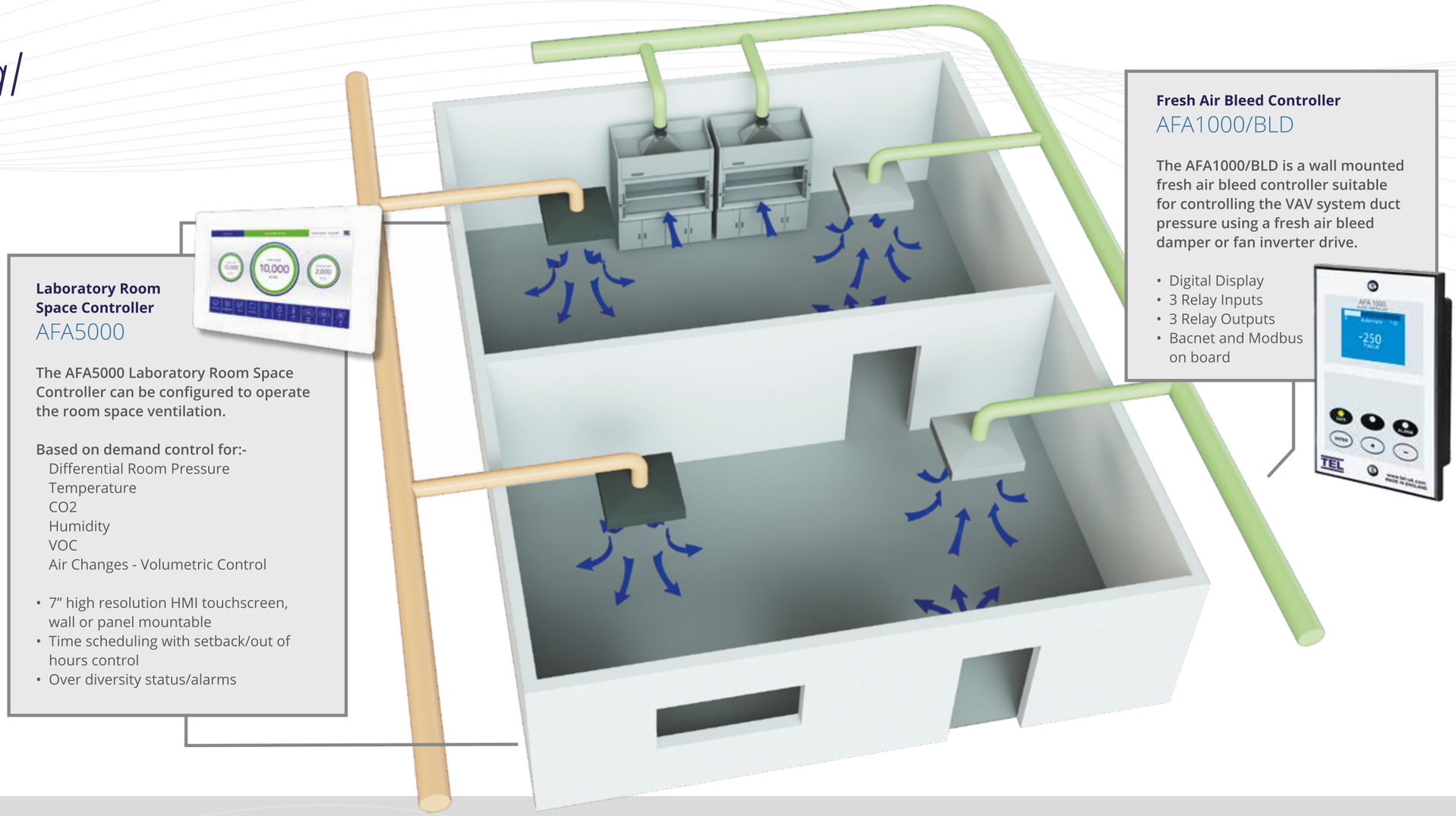
Our VAV controls can be fitted to *new fume cupboards or retro-fitted to virtually all types of existing fume cupboards.*

Environmental
CONTROLS

The AFA5000 can be used to reduce energy consumption and maintain air quality and comfort levels in any type of room space with mechanical ventilation.

It offers demand-control ventilation, allowing users easy control of a mechanical HVAC system, without the need for a building management system (BMS).

It ensures that the air within the space maintains its optimum quantity and quality, both in terms of the safety and comfort of users and the function of the facility. By precluding the need for a BMS, the AFA5000 enables users to control the air within their facility more efficiently and reliably.



Laboratory Room Space Controller

AFA5000

The AFA5000 Laboratory Room Space Controller can be configured to operate the room space ventilation.

Based on demand control for:-
- Differential Room Pressure
- Temperature
- CO2
- Humidity
- VOC
- Air Changes - Volumetric Control

- 7” high resolution HMI touchscreen, wall or panel mountable
- Time scheduling with setback/out of hours control
- Over diversity status/alarms

Fresh Air Bleed Controller

AFA1000/BLD

The AFA1000/BLD is a wall mounted fresh air bleed controller suitable for controlling the VAV system duct pressure using a fresh air bleed damper or fan inverter drive.

- Digital Display
- 3 Relay Inputs
- 3 Relay Outputs
- Bacnet and Modbus on board

Laboratories

The AFA5000 is ideally suited to laboratory VAV applications where air volumes vary whilst room conditions need to be maintained. The controller can connect to the fume cupboards, room supply and room exhaust to maintain volumetric or room pressure requirements and control the temperature, humidity, CO2 and VOC levels. Occupancy and Setback operation can also be configured using on board time clock or external BMS connections.

Clean Rooms

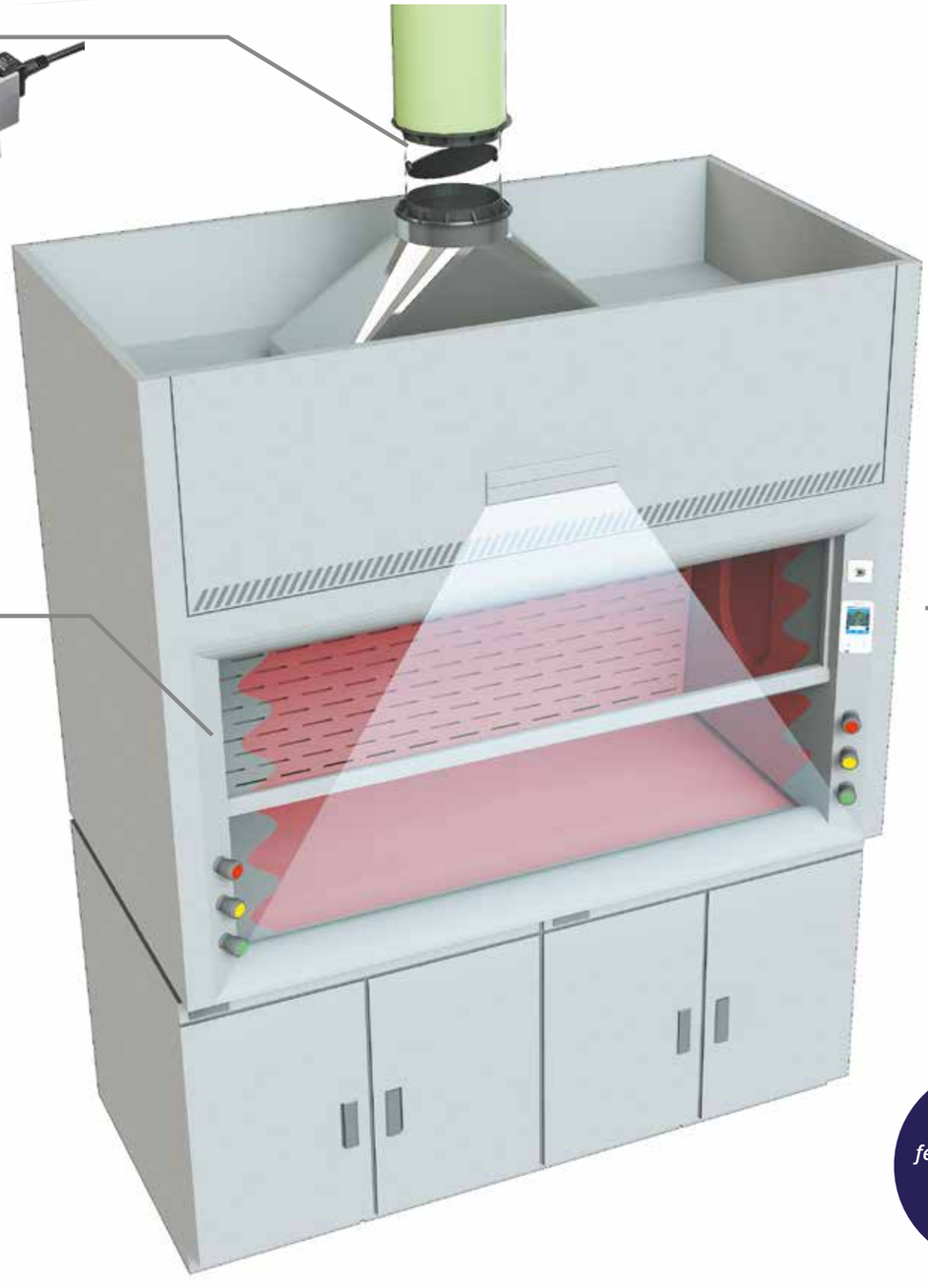
The AFA5000 can operate on pressure set point control to maintain a pressure cascade whilst also monitoring or controlling the environmental conditions, performance graphs and alarm logging which provides local indication of the room conditions over a set period.

Office / Write up Areas

The AFA5000 can be used to control cooling and heating requirements in rooms where the ventilation is constant but the room conditions vary, the controller can operate control set points for occupied, unoccupied and set back conditions. Humidity and CO2 levels can also be monitored and controlled.

Fume cupboard
CONTROL SYSTEM

A fume cupboard is the most widely used exhaust equipment for chemical laboratories. Proper fume cupboard face velocity control impacts overall lab air control significantly. TEL's fume cupboard control systems are designed to consistently maintain the required safe face velocity at any sash position.



Damper Actuator

TEL provides a fast acting 4Nm actuator for adjusting dampers in laboratory installations.

- Fast acting
- Modulating damper actuator
- Five year warranty

Auto Sash Controller

TEL's innovative fume cupboard auto sash controller maximises energy savings and provides increased safety for the operator.

- Auto close and auto open
- Tiptronic open/close - touch sensitive sash movement (menu selectable)
- Manual sash operation

VAV Controller
AFA1000/E

TEL's AFA1000/E is a pioneering airflow monitoring and alarm system developed to ensure the safety of users working industrial and educational fume cupboards.

- Programmable push buttons
- Bacnet and Modbus on board
- Audible alarm with red, amber and green LEDs
- 3 relay inputs and 3 relay outputs

VAV Controller and Auto Sash Controller
AFA4000/E

TEL's AFA4000/E is a VAV Controller that has been developed with an optional Auto Sash integration.

- Full colour 3.5" LCD Display for continuous velocity reading in m/sec or fpm
- Auto Sash integration
- Audible alarm with red, amber and green LEDs
- 3 relay inputs and 3 relay outputs

Upgraded features includes easy 'snap fit' design

Laboratory Room Space ***CONTROLLER***

The AFA5000 Laboratory Room Space Controller is an intelligent touch screen room controller offering demand-control ventilation for up to 64 fume cupboards per room without the need for a building management system.

The only Room Space Controller of its type available on the market, the AFA5000 can communicate directly with fume cupboard systems, measuring their precise airflow requirements and allowing air to be controlled exactly according to need, minimising energy consumption and allowing you the peace of mind to get on with the job at hand.

AFA5000 Laboratory
Room Space Controller

AFA5000

Laboratory Room Space Controller

The controller can be configured to operate the room space ventilation based on differential room pressure, air quality control, volumetric control or any combination of the control philosophies and can be fully configured in the field using the on board password protected menus.

FEATURES INCLUDE:

- Differential Room Pressure control
- Volumetric control of Supply make-up air
- Volumetric control of Room exhaust air
- CO2/Humidity/VOC Demand based control
- Heating control
- Cooling Demand based control
- Occupancy control
- Time Scheduling with Setback/out of hours' control
- Over Diversity status/alarms
- Connects up to 64 fume cupboards, with AFA1000 or AFA4000 controllers per room
- Historical Graphical display of all active functions
- 15 programmable analogue inputs
- 14 programmable analogue outputs
- 4 programmable relay outputs
- 6 programmable digital intputs
- Local display of active functions with low and high audible/visual alarms
- Password protected menu set up and configuration
- 7" HMI Touchscreen, wall or panel mountable
- Metric/imperial units
- USB connection for file upload/download

Airflow Controls ***(VAV)***

Full fresh air type fume cupboard ventilation systems waste a high amount of energy when they are not in use. TEL's innovative VAV controls are designed to provide variable airflow volume to ensure the safety of fume cupboard users, reduce energy consumption, costs and carbon emissions.

AFA4000/E

AFA4000/E

Fume Cupboard Controller and Auto Sash Controller

The AFA4000/E is a pioneering airflow controlling system developed to ensure the safety of users working with industrial and educational fume cupboards. It is available with optional Auto Sash integration, meaning you no longer need a separate Auto Sash keypad.

SPECIFICATIONS

Digital Display Unit
- Digital velocity display fpm/m/sec
- Graphical display (Green/Safe, Amber/Caution, Red/Alarm)
- Three configurable pushbuttons
- Semi flush mounting

Range

Alarm
- 0.15-2.00 m/s (30-400fpm)
- Remote SM7 or ILS Airflow sensor

Control
- Face velocity control
- 0.15-2.00 m/s (30-400fpm)

Control Resolution
- 0.01 m/sec (2fpm)

Response Time
- < 2Seconds

Accuracy
- Face Velocity +/-5%

Power
- 3 configurable digital outputs
- 3 configurable digital inputs

Communications
- RS485 com port
- Modbus RTU and BACnet

Audio
- Audible alarm

Operating Temperature Range
- Monitor: 13-30 °C (55-86 °F)
- Airflow Sensor: 15-30 °C (59-86 °F)

Storage Temperature Range
- -30-65 °C (-86-150 °F)

Auto Sash
- Optional Auto Sash Integration

AFA1000/E (MK2)

AFA1000/E (MK3)

AFA1000/E MK2 & MK3

Fume Cupboard Controller

TEL's AFA1000/E is a pioneering airflow monitoring and alarm system developed to ensure the safety of users working industrial and educational fume cupboards and biological safety cabinets. The AFA1000/E is available fully flush (MK2) or semi flush (MK3). The dual output version allows control of a secondary function, such as supply air damper/inverter control or fresh air bleed damper or extract inverter speed control.

SPECIFICATIONS

Digital Display Unit
- Digital velocity display fpm/m/sec
- 3 x LEDs (Safe/Caution/Alarm)
- 3 configurable pushbuttons
- Fully flush mounting

Range

Alarm
- 0.15-2.00 m/s (30-400fpm)
- Remote SM7 or ILS Airflow sensor

Control
- Face Velocity control
- 0.15-2 m/sec (30-400fpm)

Control resolution
- 0.01m/sec (2fpm)

Response time
- < 2Seconds

Accuracy
- Face Velocity +/-5%

Power
- 3 configurable relay outputs
- 3 configurable relay inputs

Communications
- RS485 com port
- Modbus RTU and BACnet

Audio
- Audible alarm

Operating Temperature Range
- Monitor: 13-30˚C (55-86˚F)
- Airflow Sensor: 15-30˚C (59-86˚F)

Storage Temperature Range
- -30-65˚C (-86-150˚F)

AFA1000/RM

AFA1000/RM

Room Pressure Controller

The AFA1000/RM model is a wall mounted room differential pressure controller suitable for controlling the supply air into a room using a damper, valve or inverter.

SPECIFICATIONS

Digital Display Unit
- Digital pressure display Pa/Ins/wg
- 3 x LEDs (Safe/Caution/Alarm)
- Control resolution
- IP51 Enclosure
- 255mmH x 180mmW x 110mmD

Ranges
- Pressure range: 0-200 Pascals (0-0.8ins/wg)
- Control range: 0-200 Pascals (0-0.8ins/wg)
- Selectable ranges: multiple ranges available, please see spec sheet

Control resolution
- 1 Pascal (0.004ins/wg)

Pressure overload
- 50K Pa

Response time
- < 1Second

Accuracy
- Pressure 0.25% FSS typical

Power
- Range Programmable low voltage transducer with 0-5V output mounted in IP65 housing
- 3 configurable relay outputs (High / Low Pressure & Door Open)
- 3 configurable relay inputs (Setback, Door Open & Emergency)

Communications
- RS485 com port
- Modbus RTU and BACnet MS/TP

Audio
- Audible alarm

Operating Temperature Range
- Controller: 13-30˚C (55-86˚F)
- Pressure Transducer: -20-70˚C (-4-158˚F)

AFA1000/BLD

AFA1000/BLD

Fresh Air Bleed Controller

The AFA1000/BLD is a wall mounted fresh air bleed controller suitable for controlling the VAV system duct pressure using a fresh air bleed damper or fan inverter drive.

SPECIFICATIONS

Digital Display Unit
- Digital pressure display Pa/Ins/wg
- 3 x LEDs (Safe/Caution/Alarm)
- IP51 Enclosure
- 255mmH x 180mmW x 110mmD

Ranges
- Pressure range: 0-2,500 Pascals (0-0.8ins/wg)
- Control range: 0-2,500 Pascals (0-0.8ins/wg)
- Selectable ranges: multiple ranges available, please see spec sheet

Control resolution
- 1 Pascal (0.004ins/wg)

Pressure overload
- 50K Pa

Response time
- < 1Second

Accuracy
- Pressure 0.25% FSS typical

Power
- Range Programmable low voltage transducer with 0-5V output mounted in IP65 housing
- 3 configurable relay outputs (High /Low Pressure & Night Setback)
- 2 configurable relay inputs (Setback & Emergency)

Communications
- RS485 com port
- Modbus RTU and BACnet MS/TP

Audio
- Audible alarm

Operating Temperature Range
- Controller: 13-30˚C (55-86˚F)
- Pressure Transducer: -20-70˚C (-4-158˚F)

AFA1000/AHU

AFA1000/AHU

Duct Pressure Controller

The AFA1000/AHU model is a wall mounted pressure controller suitable for controlling the duct pressure of an AHU using an inverter drive.

SPECIFICATIONS

Digital Display Unit
- Digital pressure display Pa/Ins/wg
- 3 x LEDs (Safe/Caution/Alarm)
- IP51 Enclosure
- 255mmH x 180mmW x 110mmD

Ranges
- Pressure range: 0-2,500 Pascals (0-4ins/wg)
- Control range: 0-2,500 Pascals (0-4ins/wg)
- Selectable ranges: multiple ranges available, please see spec sheet

Control resolution
- 1 Pascal (0.004ins/wg)

Pressure overload
- 50K Pa

Response time
- < 1Second

Accuracy
- Pressure 0.25% FSS typical

Power
- Range Programmable low voltage transducer with 0-5V output mounted in IP65 housing
- 3 configurable relay outputs (High /Low Pressure & Night Setback)
- 2 configurable relay inputs (Setback & Emergency)

Communications
- RS485 com port
- Modbus RTU and BACnet MS/TP

Audio
- Audible alarm

Operating Temperature Range
- Controller: 13-30˚C (55-86˚F)
- Pressure Transducer: -20-70˚C (-4-158˚F)

Auto Sash ***CONTROLLERS***

TEL's auto sash controller is designed to close the sash when the operator is not present in front of the fume cupboard. A passive infra-red (PIR) sensor constantly monitors the work area in front of the fume cupboard and if no movement is detected and the sash opening is clear, the sash will automatically close after a pre-determined time.

Auto Sash Controllers

AFA4000/E

AUTO
Sash Controller

The Auto Sash Controller can be fitted to new or existing VAV or CAV fume cupboards with a choice of three motor drive systems. A dual auto sash controller is also available to operate on fume cupboards with two sashes, including walk in type, back to back type and side by side type sashes.

AFA4000/E/AS
Auto Sash Controller

The Auto Sash Controller is available with a dedicated keypad or can be used with the AFA4000/E/AS control panel, meaning the dedicated keypad is not required.

SPECIFICATIONS

Digital Display Unit
- Status indication
- 16*2 backlit LCD display keypad with pushbuttons
- AFA4000 display unit

Sensors
- Personnel Sensor: PIR with background re-learn function
- Sash Position Sensor: steel wire sprung potentiometer
- Sash Sensor: PIR sensor with glass detection
- Tilt switch input to inhibit controller if access panel is open

Power
- Supply: 100-240VAC 50/60Hz 3A
- Motor assembly: PWM output DC motor & clutch
- 4 programmable volt free BMS inputs
- 4 programmable volt free BMS outputs

Control Function Options
- Manual sash operation (when user detected)
- Tiptronic "touch sensitive" open/close
- Auto close (unoccupied condition)
- Auto open (pushbutton enable feature)
- Keypad Pushbutton open/close
- Footswitch open/close (optional)
- BMS input open/close

Alarm
- Audio and visual indication

VAV and CAV Terminals

Control the distribution of air into any building space or room.

VAV Terminals

Rectangular VAV Terminal Unit

The Variable Volume terminal type RVP-P enables precision control of the amount of air coming in to a room. It can be supplied with a variety of control options for different applications and is ideally suited for use with the TEL AFA5000 Room Space Controller.

SPECIFICATIONS

Technical data

- Fitted from 2 x duct width to a T junction or bend
- Sizes: ranging from 200*100mm up to 1000mm2
- Range:130 up to 36,000m3/hr
- Materials: galvanised steel (as standard) or 316 stainless steel (on request)

Control options:

- No control – plain box only
- MP-Bus (standard), LONWORKS, Modbus,
- KNX (Siemens), MF (no BUS)
- Standard compact control
- Universal fast acting control

Product features

- Factory parameterisation to client requirements
- Maintenance free
- Multiple control options
- High precision control

VAV Terminals

Circular VAV Terminal Unit

The Variable Volume Circular type RVP-C provides volume flow control of extract and supply air systems across a wide range of sizes and volumes to suit any application. Ideally suited for use with the TEL AFA5000 Room Space Controller.

SPECIFICATIONS

Technical data

- Fitted from 1 x duct diameter from a bend.
- Sizes: ranging from 100 up to 630mm D
- Range: 37 to 12,482m3/hr
- Materials: galvanised steel (as standard) or 316 stainless steel (on request)

Control options

- No control – plain box only
- MP-Bus (standard), LONWORKS, Modbus,
- KNX (Siemens), MF (no BUS)
- Standard compact control
- Universal fast acting control

Product features

- Factory parameterisation to client requirements
- Maintenance free
- Multiple control options
- High precision control

CAV TERMINALS

Constant volume flow controllers work with a smooth-running, asymmetrically angled plate, which guarantees a sensitive response even where volume flow is low.

CAV Terminals

Rectangular CAV Terminal Unit

The Volume flow controller type VRRK maintains a constant volume on extract and supply air systems covering a wide range of sizes and volumes to suit any application. It keeps a default nominal value of the volume flow constantly, lastingly and independently of the varying pressure in the duct.

SPECIFICATIONS

Technical data

- Sizes: ranging from 200*100mm to 600mm2
- Range: 330 to 10,000m3/hr
- Materials: galvanised Steel

Product features

- Factory Parameterisation to client requirements
- Maintenance free
- High precision control
- Field adjustable

CAV Terminals

Circular CAV Terminal Unit

The VRK volume flow controller is designed for use in complex piping systems to automatically control air distribution. It maintains a predetermined air flow for the supply or exhaust air of a room that is sustainable and independent from fluctuating channel air pressure.

SPECIFICATIONS

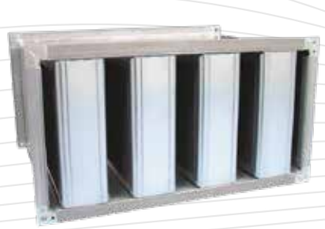
Technical data:

- Sizes: ranging from 80 up to 315mm D
- Range: 75 to 1,650m3/hr
- Material: galvanised steel

Product features

- Factory parameterisation to client requirements
- Maintenance free
- High precision control
- Field adjustable

ATTENUATORS



Attenuators

Rectangular Attenuators Type PZX

Reduce sounds and save energy with TEL's aerodynamically shaped, flame retardant sound attenuation splitters.

SPECIFICATIONS

Technical data:

- Sizes: ranging from 300*300mm to 1800mm2
- Thickness: 100, 200 and 300mm
- 5 standard cross-section dimensions: d/s = 100/50; 100/100; 200/100; 200/200 and 300/100
- Material: galvanised steel

Product features

- Energy saving - reduces drag by 30%
- Flame-retardant

Attenuators

Circular Attenuator type PZM

For sound attenuation in ventilated ducts and ventilated areas.

SPECIFICATIONS

- Sizes: ranging from 100 up to 315mm D
- Material: galvanised steel

Attenuators

Circular Attenuator type PZC with POD

For sound attenuation in ventilated ducts and ventilated areas.

SPECIFICATIONS

- Sizes: ranging from 355 to 1000mm D
- Material: galvanised steel

Actuators

TEL's actuators can adjust dampers in technical building installations with an option of emergency control function and extended functionalities.

4NM

4NM

Fume cupboard Actuator

Modulating damper actuator for adjusting dampers in laboratories.

SPECIFICATIONS

Technical data

- Air damper size up to approx. 0.8 m²
- Nominal torque 4 Nm
- Nominal voltage AC/DC 24 V
- Control Modulating DC (0)2...10 V
- Position feedback DC 2...10 V
- Running time motor 2.5 s

Product features

- Direct mounting
- Manual override
- High functional reliability
- Adjustable angle of rotation

6NM

6NM

SuperCap Actuator

Modulating SuperCap rotary actuator with emergency control function and extended functionalities for adjusting dampers in laboratories.

SPECIFICATIONS

Technical data

- Air damper size up to approx. 1.2 m²
- Nominal torque 6 Nm
- Nominal voltage AC/DC 24 V
- Control Modulating DC (0)2...10 V
- Position feedback DC 2...10 V
- Running time motor 4 s
- Design life SuperCaps: 15 years

Product features

- Direct mounting
- Manual override
- High functional reliability
- Adjustable angle of rotation

Volumetric ***CONTROLS***

Our innovative volumetric controller, which can also be used as a monitor, utilises a bell mouth type venturi restrictor to accurately measure the extract volume of a fume cupboard. It also provides VAV control based on sash position, programmable fixed set points or 0-10VDC analogue input.

VAV
(Sash Position Control)

The controller operates using a floating set point dependent on sash position.

3 Term control
(Pushbutton Control)

The controller operates using fixed volume set points (Vmax/Vnorm/Vmin) independent of sash position.

CAV Box control
(Fixed Volume set point)

The controller operates to a fixed volume set point to give Constant Volume operation.

VAV Box control
(Remote 0-10VDC Input control)

The controller operates from an analogue input voltage to a volume range between Vmin and Vmax parameter values.

SPECIFICATIONS

High Contrast Backlit Minatare Display
- Display of Volume and Alarms

LED Indication
- Safe/Warning/Low volume

Audio
- Red LED with Audio alarm

Pressure Sensor
- High Accuracy Pressure cell(s)

Pushbuttons
- Fan On/Off
- Lights On/Off
- Vmax/Vnorm/Vmin
- Mute

Inputs
- 2 x Sash Position Sensor
- 5 x Programmable Digital Sash Switch Inputs

Outputs
- Analogue 0-10VDC volumetric output
- Analogue 0-10VDC control output
- Volt Free Change Over Fan Relay
- 2 x Volt Free Change Over Lights Relays
- Volt Free Change Over Low Volume Alarm Relay Output

Pressure Range
- Max 250 Pascals across orifice/ venture device

Volume Range
- Dependant on orifice device, max 0 – 5000m3/hr

Optional
- Plug in RS485 Coms with BACnet MS/TP and Modbus RTU protocols
- Plug in Mains Fail Battery Unit
- Plug in Battery Back Up Unit
- Plug in Fail Safe Actuator Enerdrive Unit

Airflow Monitors ***(CAV)***

Our range of innovative airflow monitors are designed specifically to ensure the safety of users working with industrial and educational fume cupboards and biological safety cabinets.

TEL airflow monitors can be found in research centres, universities and colleges, government facilities, hospitals and laboratories across the world, ensuring the safety of staff and legislation compliance.

AFA4000/1

AFA4000/1

Airflow Monitor

The AFA4000/1 is a pioneering airflow monitoring system developed to ensure the safety of users working with industrial and educational fume cupboards. It is available with optional Auto Sash integration.

SPECIFICATIONS

Digital Display Unit
- Digital velocity display fpm/m/sec
- Graphical display (Green/Safe, Amber/Caution, Red/Alarm)
- Semi flush mounting
- 3.5" screen

Range

Alarm
- 0.15-2.00 m/s (30-400fpm)
- Remote SM7 or ILS Airflow sensor

Accuracy
- Face Velocity +/-5%

Power
- 3 configurable digital outputs
- 3 configurable digital inputs

Communications
- RS485 com port
- Modbus RTU and BACnet

Audio
- Audible alarm

Operating Temperature Range
- Monitor: 13-30 °C (55-86 °F)
- Airflow Sensor: 15-30 °C (59-86 °F)

Storage Temperature Range
- -30-65 °C (-86-150 °F)

Auto Sash
- Optional Auto Sash Integration

AFA4000/2

AFA4000/2

Airflow Monitor

The AFA4000/2 is a pioneering airflow monitoring system developed to ensure the safety of users working with industrial and educational fume cupboards, featuring a unique customisable push button function. It is available with optional Auto Sash integration.

SPECIFICATIONS

Digital Display Unit
- Digital velocity display fpm/m/sec
- Graphical display (Green/Safe, Amber/Caution, Red/Alarm)
- Three configurable pushbuttons
- Semi flush mounting
- 3.5" screen

Range

Alarm
- 0.15-2.00 m/s (30-400fpm)
- Remote SM7 or ILS Airflow sensor

Accuracy
- Face Velocity +/-5%

Power
- 3 configurable digital outputs
- 3 configurable digital inputs

Communications
- RS485 com port
- Modbus RTU and BACnet

Audio
- Audible alarm

Operating Temperature Range
- Monitor: 13-30 °C (55-86 °F)
- Airflow Sensor: 15-30 °C (59-86 °F)

Storage Temperature Range
- -30-65 °C (-86-150 °F)

Auto Sash
- Optional Auto Sash Integration

AFA500

AFA500

Airflow Monitor

An entry level airflow monitor designed for applications where airflow velocity indication is not required. The AFA500 is available with either a built in or remote unique airflow sensor that is used to measure face velocities or duct velocities and available fully flush (MK2) or semi flush (MK3). Also available for Bio Safety Cabinets (AFA500/BSC).

SPECIFICATIONS

Digital Display Unit
- 2 x LEDs (Safe/Alarm)

Accuracy
- Velocity +/-5%

Audio
- Red LED with audible alarm

Operating Temperature Range
- 13-30 °C (55-86 °F)

AFA1000/1

AFA1000/1

Airflow Monitor

The AFA1000/1 is a digital airflow monitor designed for applications where pushbutton functions are not required and is available with a range of remote unique airflow sensors used to measure face velocities or duct velocities. Available fully flush (MK2) or semi flush (MK3).

SPECIFICATIONS

Digital Display Unit
- Digital velocity display fpm/m/sec
- 3 x LEDs (Safe/Caution/Alarm)

Accuracy
- Face velocity +/-5%

Communications
- RS485 com port
- Modbus RTU and BACnet

Audio
- Red LED with audible alarm

Airflow sensor
- Integral Airflow Sensor or remote SM7/ILS

Operating Temperature Range

Monitor
- 13-30 °C (55-86 °F)

Airflow Sensor
- 15-25 °C (59-77 °F)

Power
- 3 configurable relay inputs
- 3 configurable relay outputs

AFA1000/2

AFA1000/2

Airflow Monitor

The AFA1000/2 is a digital airflow monitor designed for applications where pushbutton functions are required and is available with a range of remote unique airflow sensors used to measure face velocities or duct velocities. Available fully flush (MK2) or semi flush (MK3).

SPECIFICATIONS

Digital Display Unit
- Digital velocity display fpm/m/sec
- 3 x LEDs (Safe/Caution/Alarm)
- Three configurable pushbuttons

Accuracy
- Face velocity +/-5%

Communications
- RS485 com port
- Modbus RTU and BACnet

Audio
- Red LED with audible alarm

Airflow sensor
- Integral Airflow Sensor or remote SM6/ILS

Operating Temperature Range

Monitor
- 13-30 °C (55-86 °F)

Airflow Sensor
- 15-25 °C (59-77 °F)

Power
- 3 configurable relay inputs
- 3 configurable relay outputs

AFA1000/PR

AFA1000/PR

Pressure Monitor

The AFA1000/PR is a pressure monitor suitable for room or duct differential pressure monitoring and BSC pressure monitoring, available fully flush mounting (MK2).

SPECIFICATIONS

Digital Display Unit
- Digital pressure display Pa/Ins/wg
- 3 x LEDs (Safe/Caution/Alarm)
- Control resolution
- IP51 Enclosure
- 255mmH x 180mmW x 110mmD

Ranges
- Multiple selectable ranges, please see spec sheet for more details

Control Resolution
- 1 Pascal (0.004ins/wg)

Pressure overload
- 50K Pa

Accuracy
- Pressure 0.25% FSS typical

Power
- Range Programmable low voltage transducer with 0-5V output mounted in IP65 housing
- 3 configurable relay outputs (High/Low pressure & Door Open)
- 3 configurable relay inputs (Setback, Door Open & Emergency)

Communications
- RS485 com port
- Modbus RTU and BACnet MS/TP

Audio
- Audible alarm

Operating Temperature Range
- Controller: 13-30 °C (55-86 °F)
- Pressure Transducer: -20-70 °C (-4-158 °F)

Volumetric

Monitor

SPECIFICATIONS

High Contrast Backlit Minatare Display
- Display of Volume and Alarms

LED Indication
- Safe/Warning/Low volume

Audio
- Red LED with Audio alarm

Pressure Sensor
- High Accuracy Pressure cell(s)

Pushbuttons
- Fan On/Off
- Lights On/Off
- Mute

Outputs
- Analogue 0-10VDC volumetric output
- Volt Free Change Over Fan Relay
- 2 x Volt Free Change Over Lights

Relays
- Volt Free Change Over Low Volume Alarm Relay Output

Pressure Range
- Max 250 Pascals across orifice/ venture device

Volume Range
- Dependant on orifice device, max 0 – 5000m3/hr

Optional
- Plug in RS485 Comss with BACnet MS/TP and Modbus RTU protocols
- Plug in Mains Fail Battery Unit
- Plug in Battery Back Up Unit
- Plug in Fail Safe Acuator Enerdrive Unit

LEV Monitor

Designed specifically for low and high pressure, TEL's LEV Monitor can be fitted to any ducting or LEV extraction device, to check the airflow is adequate and keeping your employees continually safe in their working environment.

LEV Monitor

LEV
Monitor

TEL's LEV monitor provides the reassurance that the flow-rate is being maintained, protecting your employees and alerting operators of any problems immediately. It can be fitted to any ducting or LEV extraction device.

SERIES SPECIFICATION – Mains Powered & Battery Powered

Pressure sensor
- Integral pressure cell with 3mm x 25mm duct spigot

Pressure range
- 30 - 1000 Pascals (0.12 - 4ins/wg)

Repeatability
- Duct pressure +/-1%

Alarm Range
- 24 - 800 Pascals (0.10 - 3.2ins/wg)
- High pressure: 0-1200 Pascals (0-6ins/wg)/+20% of captured pressure

Indication
- Safe pressure: green LED, single LED flash every 60 seconds
- Low pressure: red LED with audible alarm, single LED flash every 60 seconds
- High pressure: red LED with audible alarm, double LED flash every 60 seconds

Mounting
- Duct Mounting bracket to fit 35mm - duct up to flat surface

Temperature Range
- Monitor operation: 13-30˚C (55-86˚F)
- Storage: -40-65˚C (-40-150˚F)

Kitchen Hood Controls ***(VAV)***

TEL's kitchen control system can detect both smoke and temperature rises, increasing the airflow only when full performance is needed, significantly reducing energy costs and the carbon emissions of your kitchen hood.

Kitchen Hood VAV System

Kitchen Hood

VAV System

TEL's kitchen control system can detect both smoke and temperature rises, increasing the airflow only when full performance is needed, significantly reducing energy costs and the carbon emissions of your kitchen hood. The system can be supplied with a Gas Interlock system, which will cut off gas flow in the event of kitchen ventilation failure.

SPECIFICATIONS

Digital Display Unit
- LCD graphical display showing output status, operating mode, temperatures and alarms
- Metric/imperial units
- Manual/Off/Auto operation, preset with 10 manual speeds
- Wall mounted enclosure
- On board clock with up to 4 on/off periods per day

Control
- Method: temperature differential between room and hood
- Range: room temp + 50⁰ C max
- Room temperature control override if set point is exceeded

Fans
- Exhaust: 0-10v control signal to VFD with volt free stop/start output
- Supply: 0-10v control signal to VFD with volt free stop/start output

Auto Control
- Auto detect/Auto run on: auto start up and control if cooking detected during off period
- Menu selectable operation via keypad
- BAS coms
- Volt free input

Sensors
- IR sensor input for smoke detection
- 10K thermistor type room and hood temperature sensors

Fire system interlock
- Volt free input

Power
- Operating voltage: 100-240VAC 1.8A Max
- Manual boost function for selectable time period

Communications
- Modbus RTU and BACnet MS/TP

Case Studies

Liverpool John Moores University

Overview & Challenge

Liverpool John Moores University's £4.2m STEM 2 (science, technology, engineering and maths) project stipulated the refurbishment of the first and fourth floor laboratories of the James Parsons Building, together totaling an area of 14,000 sq ft.

A major goal of the project was to help the university to meet the Higher Education Funding Council for England's (HEFCE) Carbon Reduction Strategy targets of a 43% reduction in emissions by 2020 and an 83% reduction by 2050 (both against a 2005 baseline).

Solution

One of the UK's leading laboratory refurbishment companies, Sanber Ltd, was contracted to design and install 41 new fume cupboards, energy-efficient VAV controls, fume extract ductwork and fans.

Sanber commissioned its airflow controller partner, TEL, to supply 41 energy-efficient AFA1000 VAV controllers which automatically adjust airflow according to laboratory demand. The VAV systems were linked to the supply air and building management system.

Benefits

The 23-week STEM 2 project was completed in September 2016, with TEL working closely with Sanber to enable it to achieve its tight 10 week target for the replacement of the old fume cupboard system with a new, more energy-efficient one.

"Liverpool John Moores is committed to the pursuit of HEFCE's sustainability targets, and as such, to ensuring that all our refurbishment schemes contain the most energy-efficient equipment options."

Nottingham BioCity

Challenge

Sygnature Discovery is the UK's largest independent contract research organisation, providing facilities to the pharmaceutical industry. It is the anchor tenant in the new £30m Discovery biosciences building in Nottingham's life-sciences incubator hub, BioCity. It required a fume cupboard system that would support the building's goal of achieving an excellent BREEAM energy-efficiency rating.

Solution

Fume cupboard specialist Clean Air Ltd was commissioned to create a bespoke energy-efficient fume cupboard solution that enabled Sygnature Discovery's scientists to work in safe conditions.

TEL supplied 78 AFA1000 variable airflow volume (VAV) controllers and six of the UK's first AFA5000 room space controllers.

The VAV controller automatically adjusts the fume cupboards' airflow according to need, consuming up to 75% less energy than conventional constant air volume (CAV) units, while the AFA5000s enable demand-control ventilation.

Together, the two products enable Sygnature to sustainably achieve complete environmental control.

Benefits

The building was launched in spring 2017, and its sustainable fume cupboard system contributed to the building's achievement of its desired excellent BREEAM energy-efficiency rating.

"From inception, energy-efficiency was a primary stipulation for the facility, and TEL's airflow and room space controllers played an important role in enabling it to achieve BREEAM excellence."

Tracey Allford, Sygnature Discovery Facilities Manager

University of Nottingham Centre for Sustainable Chemistry

Challenge

The School of Chemistry at the University of Nottingham is engaged in world-leading research in sustainable chemistry. Together with pharmaceuticals giant GSK, the university was dedicated to establishing the UK's first carbon neutral laboratory in which to carry out and showcase its research.

Constructed largely from natural materials and using renewable energy sources, the £24m building was to feature a plethora of sustainable technologies, including a green fume cupboard system.

Solution

Laboratory design and equipment supplier Köttermann was commissioned to supply a variable air volume (VAV) fume cupboard solution for the 4,500m² two-storey carbon neutral laboratory building.

VAV controllers automatically adjust airflow according to need, decreasing the volume of air extracted when the cupboards are not in use, providing a more energy-efficient solution than traditional constant air volume (CAV) controllers. To this end, Köttermann used preferred supplier TEL to provide 52 TEL AFA1000 controllers.

Benefits

The university's pioneering Carbon Neutral Laboratories for Sustainable Chemistry have gone on to win a host of sustainability awards, including the 2017 H&V (Heating and Ventilation) News Renewable Project of the Year title.

"TEL's VAV controllers were the natural choice for us in this state-of-the-art laboratory. Our extensive experience of these products gives us confidence that we will get the performance, long-term reliability and support required in a project of this nature."

Pete Collins, Köttermann Head of Projects

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