TROX® TECHNIK

The art of handling air

TROX UK

LABCONTROL

Facility

TROX Test Laboratory

LABCONTROL

Length = 9.0m

Width = 4.0m

Height = 4.0m

Laboratory Facilities:

- The Lab is equipped with two Köttermann 1200mm wide general-purpose fume cupboards manufactured and tested in accordance with BS 7258, and DIN 12924. Each fume cupboard is fitted with a telescopic two piece sash with horizontally sliding windows
- In addition there are supplementary extract points which include an alsident arm and snorkel fitted above Köttermann furniture. The additional extract ports have been included to demonstrate TROX constant volume dampers

Laboratory Equipment:

Supply System:
The Lab supply system is designed to provide Variable Air Volume (VAV) and incorporates a TROX TVR volume flow damper complete with LON controller and fast modulating actuator.
The system uses a centrifugal fan with a flexible control system, operating at an airflow range of 600 to 2900 m3/h. Room temperature, is conditioned by a thyristor controlled 6 kW electric heater and 5kW chilled water cooling coil. Supply air is diffused into the laboratory through three TROX SDW 600mm square swirl diffusers to provide between 216 m3/h and 684 m3/h.

Exhaust System:
The exhaust system also uses a centrifugal fan as detailed above, operating at an airflow range of between 700 to 3800 m3/h. The system has been designed to allow compensation air, through a TROX TVR damper, before being extracted from the Lab via a high level room egg crate grille. This arrangement allows for constant pressure control when the fume cupboards are extracting air at varying volume rates. Extract air from the fume cupboards, are controlled by TROX TVLK and Rlab dampers fitted with LON and analogue controllers respectively. In principle the exhaust system is subdivided into three different areas.
1) Extract grill operating on variable airflow, by using a TVR VAV Controller.
2) Alsident arm operating on fixed volume by using a RN CAV Controller.
3) Fume Cupboards operating on variable airflow by using the TVLK and RLab VAV Systems.

TVLK - System (LON Digital):	**Rlab - System (Analogue):**
1. TVLK, VAV Controller in Polypropylene	RN Volume Controller in painted steel
2. Fume Cupboard Control System:	Fume Cupboard Control System:
TCU LON, Room Control Unit	Fume Cupboard Controller FCCU
FCCU-T Operator Terminal	FCCU-T Operator Terminal
FCC-E Velocity Transducer	FCC-E Velocity Transducer
3. LON Router, Cable Networkand Software	

Features

Integrated control system

Short length (400 mm)

Connection diameter 250 mm

Volume control via velocity sensor and VAV flow grid

Externally removable sensors allow easy cleaning of flow grid

All internal components in contact with contaminated air are manufactured using corrosive resistant plastic materials

High accuracy in varying ambient temperatures

Rapid actuation

Features

Integrated control system

Length to suit diameter

Length to suit diameter

Modulates flow via fume cupboard mounted FCC-E velocity sensor

Manufactured in steel with corrosive resistant painted metal components

High accuracy in varying ambient temperatures

Rapid actuation

Functional Characteristics

As a basic principle the Laboratory area will be kept under a constant negative pressure at all times. The need for airflow modulation requires control of the supply system in relation to the extraction systems.

BS 7258 stipulates that fume cupboards have to maintain an average face velocity of 0.5 m/s. By opening and closing the fume cupboard sash the volume flow will vary depending on its position. In order to ensure the correct face velocity of 0.5 m/s is kept, the extract air via the VAV system has to be adjusted, to keep a constant face velocity at all sash positions. Simultaneously the supplementary exhaust air is controlled, to allow the correct room air change rate and in conjunction with the supply system keep the room under the correct pressure.

In today's changing environment, various controlling strategies are needed, and these have now been applied in many Research and Development facilities throughout the world. Our laboratories at TROX UK have been designed so that we can demonstrate many varying scenarios under different specified conditions.

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