TROX® TECHNIK
The art of handling air

INTELLIGENT AIR MANAGEMENT IN THE LABORATORY

During daily work in laboratories, airflow and room pressure conditions can change quickly. This not only has an impact on work processes, but also on safety, hygiene and workplace comfort. The requirements for the systems to be used are correspondingly strict.

Air management describes the totality of all related processes in the laboratory. This includes:

- Monitoring different airflows in the room, such as supply air, extract air, fresh air and recirculated air
- Balancing these different air volumes (indoor air balance),
- Adherence to the direction of flow, which, depending on the balance, leads into or out of the room,
- The maintenance of the prescribed room pressure and
- The dissipation of variable thermal loads, taking into account safety and comfort criteria

In addition, air management describes the networking of all relevant components to form a highly functional overall system. An intelligent air management system with short reaction times, precise drives and control algorithms is therefore the basic requirement for safe and trouble-free operation in laboratories. Our smart solutions intuitively controls volume flow rates, room pressure and the removal of high thermal loads while constantly complying with safety and comfort criteria. We emphasize energy-efficient processes that, for example, automatically reduce system operation to a necessary minimum as soon as no work is being done in the laboratory.

Our innovative solutions are individually adapted to your laboratory requirements - and you benefit from many years of practical experience. Hundreds of laboratories around the globe are already working with our trusted and approved air management systems.

INDOOR AIR BALANCE: STABLE THROUGH EFFECTIVE AIR MANAGEMENT

Air management systems in laboratories must be able to adapt quickly and precisely to prevailing air conditions. Equipment used such as safety workbenches and fume cupboards lead to constantly changing conditions in the room due to their variable exhaust air volume volume.

Here it is important to keep the entire supply and extract air in balance without losing **workplace comfort** and **thermal comfort**.

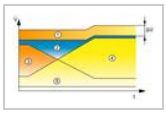
Maintaining the indoor air balance is a complex task, because monitoring and ensuring the required parameters must be guaranteed at all times. Any currents that occur must be accurately recorded and immediately transmitted to sub-systems and components so that they can readjust themselves based on the determined setpoints.

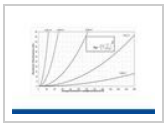
However, fume cupboards are not the only extract air consumers in laboratories. In addition, there are room extract air, hoods, point extraction systems, safety cabinets, devices with their own extract air and much more.

The **TROX EASYLAB** system determines all volume flow rates of the active

consumers and adds them up to a total extract air. In this way, the required supply air volume can be determined by absolute difference. In addition, the maintenance of the required **room pressure** is safeguarded, which is also influenced by all occurring volume flow rates.

ROOM PRESSURE CONTROL AND LEAKAGE!





Targeted negative pressure prevents contamination and undesired airflows or undesired particles from entering a room.

TROX provides systems which ensure that the correct negative pressure is maintained.

Complex room balancing and room monitoring functions are likewise possible.

- Via the system's internal communication line, all network participants can be connected quickly and easily via plug and play, which ensures a **continuous data exchange** between these participants.
- No matter whether BACnet MS/TP, Modbus RTU or BACnet/Modbus TCP/IP - we integrate our system into your **Central Building Automation System**
- Quick-response control loops are suitable for the volume flow control in equipment and for room pressure control.
- Crucial for effective and efficient room pressure control is a **defined leakage**.. As rooms are built tighter and tighter, it is even more important to plan the right leakage for each room.

TEMPERATURE CONTROL: EFFICIENCY THROUGH INTEGRATION OF AIR-WATER SYSTEMS

High energetic demands for buildings leading to heat loads which are hardly ever dissipating via the building façade. In addition, laboratory devices generate large amounts of waste heat. These heat loads must be removed as efficiently as possible without sacrificing comfort and safety.

If these thermal load are removed by air, large amounts of fresh air and energy are required. In addition, large ducts would have to be installed in the ventilation systems to transport the air. A much more energy-efficient method is to remove the heat via local air-water systems. Water has a high thermal conductivity and can therefore carry a higher thermal load than air. Besides, normal cooling water pipes are used instead of large air ducts. Air-water systems not only save energy, but can also be installed in a more space-saving way than fresh air systems.

OUR SYSTEMS: SIMPLIFIED INTELLIGENT CONNECTION

Flexible expandability meets easy handling: Our smart LABCONTROL system ensures that reliably stable room air conditions prevail in the laboratory and that individual ventilation components work together in an optimum manner.

Interlinked sub-systems record and evaluate all relevant data. The entire system is then controled according to predefined parameters.

The LABCONTROL controller EASYLAB was developed especially for use in highly sensitive areas. The system ensures safety for people and the environment at all times, as well as workplace comfort for laboratory personnel. Especially when complying with norms and safety standards, it is important that the components of an air management system fit together perfectly and communicate with each other.

Due to the modular design of the EASYLAB system, all system components can be adapted or extended to suit the specific project requirement.

With our intuitive EasyConnect software, you can get your rooms up and running in no time.

CONSULTING AND PROJECT DEVELOPMENT

I AM HAPPY TO ASSIST YOU

We will be happy to help you with the individual planning and implementation of air distribution strategies for your laboratories. Arrange your non-binding consultation now!

Patric Unterdorfer

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