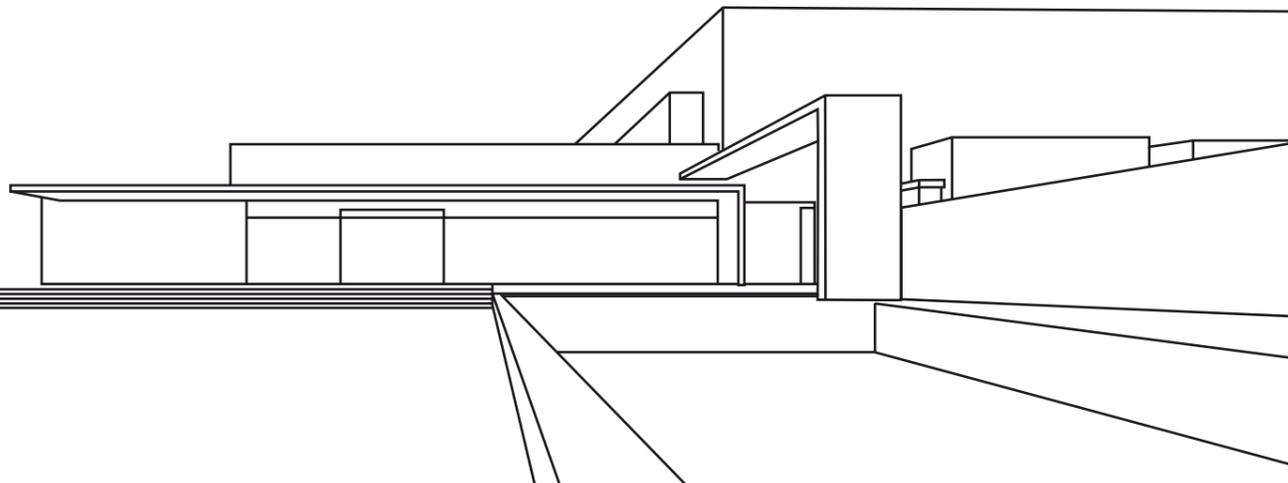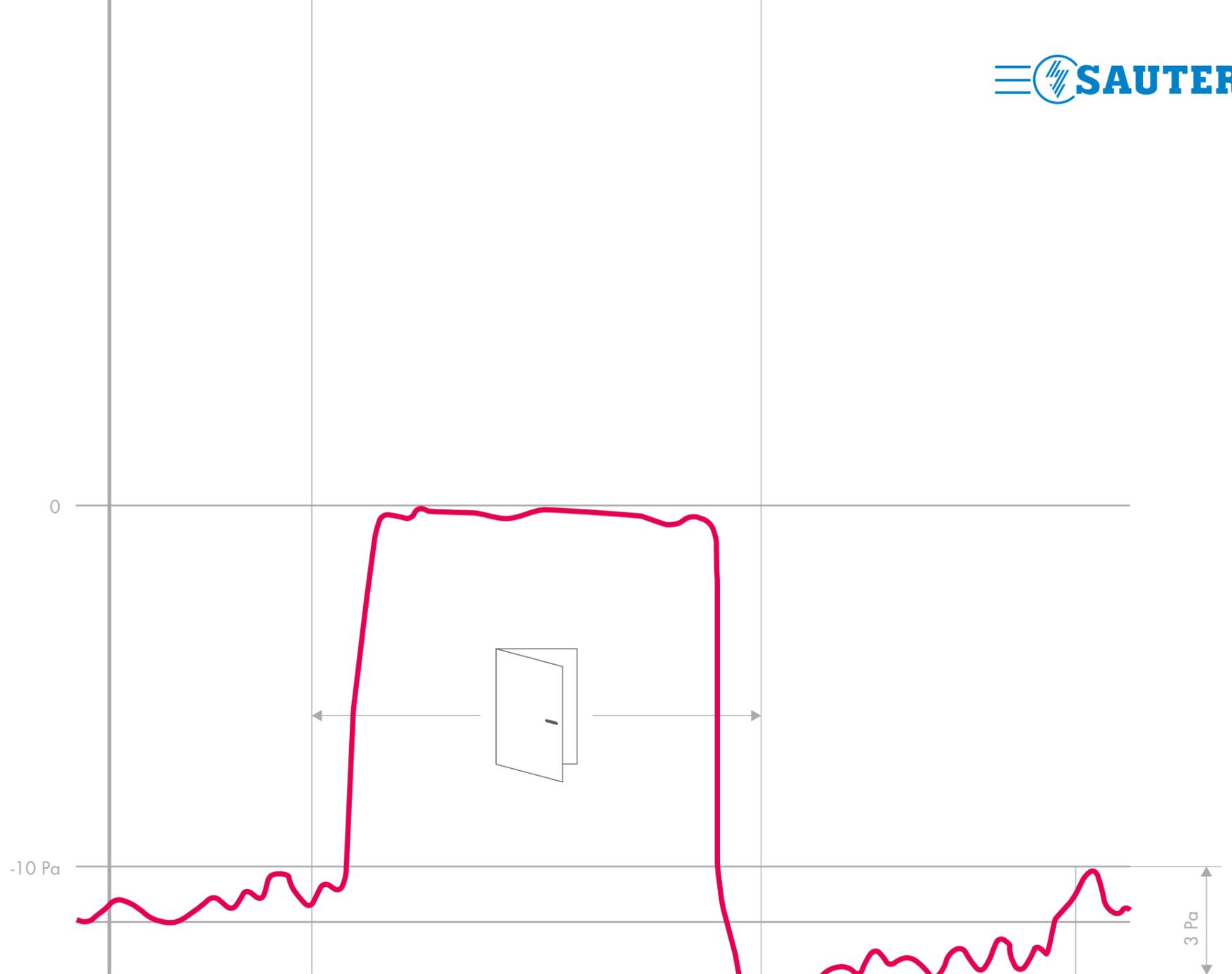# Sauter's system competence for incorporating clean rooms into a building management system.

Clean rooms, laboratories and fume cupboards are never used in isolation, and their control system – whether electronic or pneumatic – is always part of a superior building management system. And when this sub-system is created by qualified specialists, there is a guarantee that it is integrated without interfaces into the overall system.

In the interests of safety, comfort and energy efficiency, it is important to include the system specialists in the project team right from the early phases of planning (this also applies to buildings with clean rooms or laboratories). Integral planning with Sauter's participation helps to create systems more quickly and less expensively, and to make them more economical to run. Furthermore, Sauter provides extensive services relating to system accreditation in accordance with GMP and FDA standards. To all this can be added an advantage that should not be underestimated: the components that really determine quality are manufactured by Sauter itself and are geared perfectly towards the requirements of the system.

0

-10 Pa

3 Pa

10 s

7001 0880003 U2

Pneumatic room pressure control for clean rooms and high-security laboratories.
Where the best control quality and reliability are needed.

Accurate control of either the supply air or the exhaust air, depending on the type of room.
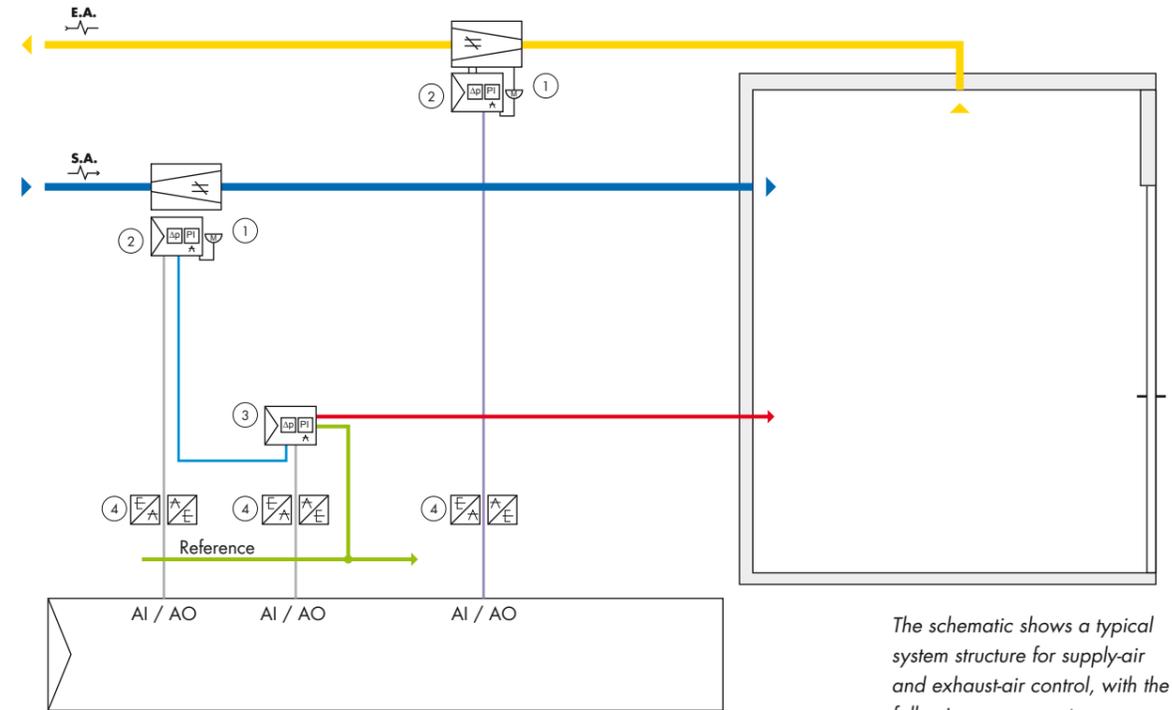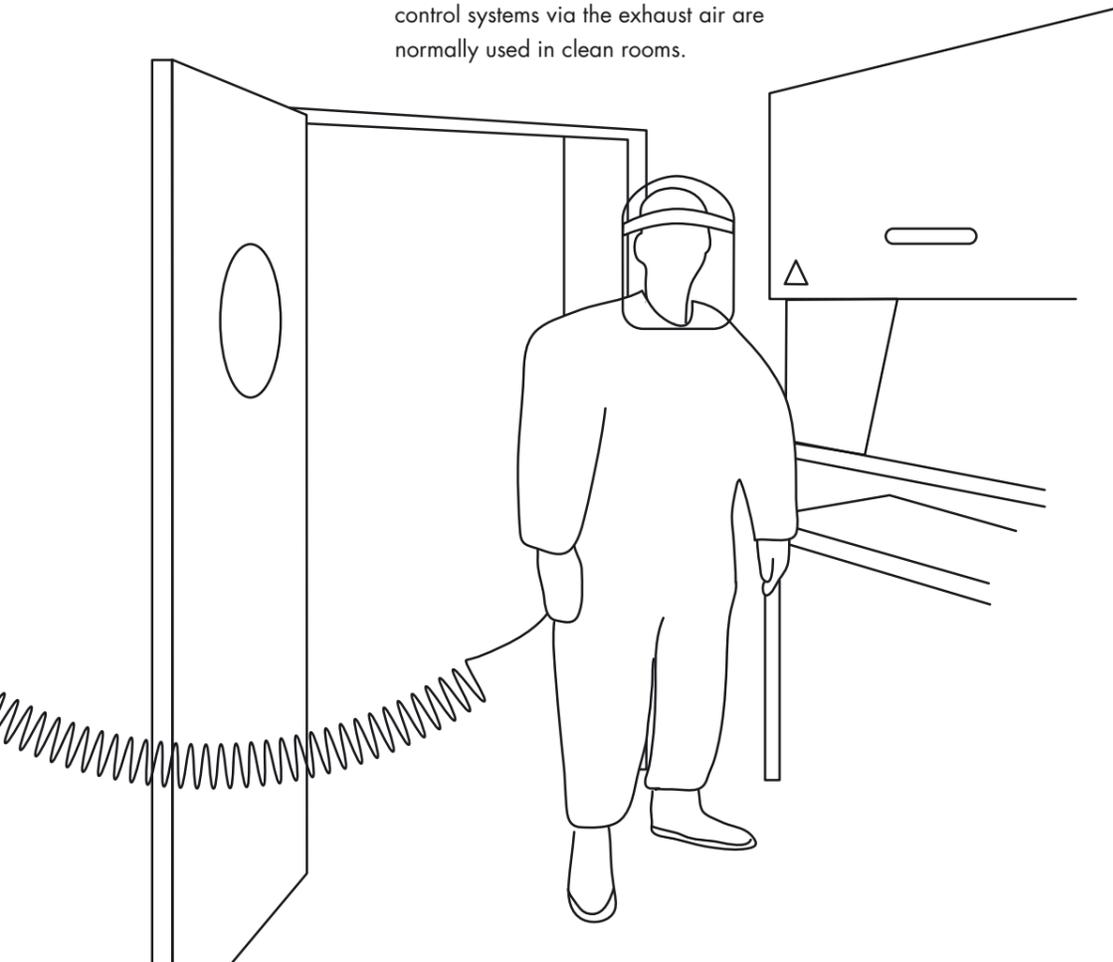
In clean rooms in the pharmaceuticals industry and, in particular, in high-security laboratories used to carry out research on human or veterinary pathogenic viruses, the strictest of rules need to be observed with regard to air-conditioning and contamination control between adjoining areas. The accurate control of room conditions – such as temperature, humidity and, above all, room pressure – necessitates safe, flexible and robust systems.

Negative-pressure control for laboratories, positive-pressure control for clean rooms

To provide secure and reliable room pressure control in clean rooms and laboratories, only systems with supply-air and exhaust-air controllers come into question, due to the high standards required of the room's tightness of seal. To achieve this, negative-pressure control systems via the supply air are employed as standard for laboratories, while positive-pressure control systems via the exhaust air are normally used in clean rooms.

Reliable maintenance of pressure levels across several zones

For clean rooms and laboratories with safety levels S3 and S4, building and technical requirements are prescribed which, amongst other things, place great emphasis on the maintenance of pressure levels across several zones. The resultant system requirements can be reliably achieved by the use of pneumatic controllers in particular.

More possibilities, lower costs

Sauter's pneumatic control system for maintaining the room pressure is considered to be one of the best in the world with regard to control performance and stability. So-called gas-tight rooms require great constancy of room pressure at low pressure levels (compared with adjoining areas) without risk of cross-contamination. This allows whole systems to be designed smaller, which means lower investment and running costs. Of course, the system meets the ATEX regulations concerning usage in areas at risk from explosions.

Through using a pneumatic solution, room pressures can be kept stable with a tolerance of ±1.5 Pa. The room pressure is kept constant by a room pressure controller, which is fed to the corresponding volume-flow controller with an air-volume influence of ±10% in cascade. Because of the limited influence of the room pressure controller, no additional measures, such as door contacts, are needed to freeze the room pressure control system. After a door has been opened and then closed again, the correction time for the room pressure is 7–10 seconds.
The integration into the building management system is achieved by means of electro-pneumatic converters, which transmit the desired signals from and to the automation level.

The schematic shows a typical system structure for supply-air and exhaust-air control, with the following components:-

1 Pneumatic damper drive
2 Air-volume controller
3 Room pressure controller
4 E/P-P/E converter

E.A.

S.A.

Reference

AI / AO   AI / AO   AI / AO

1 Pneumatic damper drive AK41P1 F003

2 Air-volume controller 1…160 Pa; dV adjuster RLP 100 F003

3 Room pressure controller RLP 100 F9xx F901-20…20 Pa F915-50…50 Pa F924-185…-35–35…185 Pa

4 E/P – P/E converter XEP 301 F001