

AIR TO ACHIEVE AT THE MARIANUM SECONDARY SCHOOL

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Indoor Air Quality (IAQ) for IQ - at the Gymnasium Marianum Secondary School

Scientists have studied the effects of high-quality room air on the performance of students, and found that doubling the outdoor air rate increased the speed at which students could solve a maths problem by an average of 14%. The Gymnasium Marianum Secondary School in Meppen has roughly 1,150 students. The school recently added a new three-storey building for biology, physics and chemistry to its complex. Each of the laboratories on the second floor of the new science wing is fitted with roof-mounted extract air fans to remove the required volumes of air from the fume cupboards.

Gymnasium Marianum Secondary School in Meppen

The building was fitted with an X-CUBE AHU with a volume flow rate of 22,000 m³/h and equipped with high-efficiency PM motors. The air conditioning and ventilation system heats and cools the rooms. The X-CUBE control system is integrated into the AHU. It controls the air handling unit and it is also intelligently networked to the ventilation components to ensure that each of the rooms and room areas are controlled with maximum efficiency.

X-CUBE air handling units in the new science wing

Sensors for room occupancy, air quality and temperature report their measured values via the control modules to the higher level X-AIRCONTROL controller, enabling fully demand-based room control. In the 28 zones distributed across three floors, zone master modules – complete with interfaces to the central building management system – manage the controlled air supply. Furthermore, a modem was connected to the switch cabinet in the new building to allow the system to be monitored remotely.

Demand-based room control with X-AIRCONTROL.

XARTO swirl diffusers integrated into the ceiling grid in the classrooms and corridors ensure that air can enter noiselessly and at a low airflow velocity in occupied zones. For a high level of ventilation comfort, the aerodynamically profiled air control blades rapidly slow down the air flow of the mixed air. The extract air is dissipated by a second row of XARTO diffusers. This creates a symmetrical ceiling pattern as extract grilles are not required.

TROX XARTO swirl diffusers in the new laboratory

TROXNETCOM combines fire protection dampers, smoke control dampers and duct smoke detectors in one highly reliable system. Conditions are continuously monitored and analysed. The system thus prevents smoke from escaping via the ducts in the event of a fire by controlling the relevant fire dampers and smoke control dampers.

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