

A photograph of a classroom with rows of wooden desks and blue chairs. In the background, there is a whiteboard and a world map on the wall. A large, dark blue diagonal shape overlays the right side of the image, containing the text.

Solutions for schools and educational institutions

Maximum Indoor Air Quality – Customized Ventilation Systems

Your strong AHU partner for quiet and hygienic learning environments

Many school buildings were constructed between 1963 and 1976, during the education of the baby boomer generation, or are even significantly older. According to the requirements of DIN EN 16798 and the recommendations for classroom ventilation, classrooms should be continuously supplied with hygienically clean, filtered, and tempered outdoor air via mechanical ventilation systems. At the same time, demand-controlled CO₂ regulation must be ensured – in existing buildings, however, these requirements often encounter structural and energy-related limitations. In most cases, space for installing ventilation technology is severely restricted.

When installing mechanical ventilation systems in schools, a number of guidelines, standards, and legal requirements must also be observed: For compliance with strict air quality and building standards, for example, VDI 6040, VDI 3818, and ASR A3.5/A3.6 as well as specifications from the German Environment Agency (UBA) and AMEV apply. Educational institutions require both uniform and high air quality – meaning a hygienic air exchange according to DIN EN 16798-1 based on occupancy density – as well as thermal comfort and energy efficiency. To ensure a quiet learning environment, another requirement is compliance with the noise limit of 35 dB(A) at a distance of 1 meter according to DIN EN ISO 11203.

Another challenge in renovation projects is the time restriction during installation, which generally must take place without interrupting classes, i.e., without closing the school. Structural interventions must therefore be kept as minimal as possible. In many cases, roof trusses and ceilings of older buildings are not statically designed to bear the load of central ventilation systems.

In contrast, when constructing a new educational facility, the infrastructure for one or more central ventilation units can be considered during the planning phase.



Solutions for existing buildings: decentralized ventilation solutions from WOLF

Decentralized ventilation units from WOLF are installed inside the building, either in or directly adjacent to the rooms that require ventilation. The compact units are connected to the outside air through façade air outlets and offer the same level of climate comfort as centrally installed AHU systems in terms of air quality, air distribution, and energy efficiency.

Depending on the available space and structural conditions, either ceiling-mounted units or floor-standing units can be used for each classroom. Thanks to the very short air duct paths, pressure and temperature losses remain extremely low. Semi-centralized solutions, in turn, can autonomously supply several classrooms at once.

Stepless CO₂-controlled air volume flow

The compact school ventilation units from WOLF operate with stepless CO₂ control. This allows them to quickly and individually adjust the air volume flow according to varying room occupancy levels. The units' traffic-light system visualizes the air quality in the classroom in real time. As a result, no more air is exchanged than is actually required, significantly reducing heating operating costs.

Even when 35 people are present in the classroom, the minimum requirement for mechanical school ventilation systems is met, with an outside air volume flow of more than 25 m³/h per person (current recommendation from leading industry associations dated May 23, 2022).

Thanks to innovative insulation elements and fan technology, TÜV SÜD has certified that units in this performance class achieve a sound pressure level of only 35 dB(A) at a distance of one meter (determined according to DIN EN ISO 11203).



Draft-free performance: efficient heat and humidity recovery

In winter, heat recovery with an efficiency of over 90 percent ensures that the heating energy generated for the classroom remains inside the building. Since manual window ventilation is no longer required, this heating energy does not need to be regenerated. In addition, an optional enthalpy heat exchanger ensures that not only the heat of the room air is recovered but also a large portion of the relative humidity.

This keeps humidity levels nearly constant, which benefits comfort and infection control, as mucous membranes are not unnecessarily irritated by dry heating air in winter.

On hot summer days, the night-ventilation function ensures that warm indoor air is replaced with cooler outdoor air during the night. This allows the classroom to reach the desired temperature without mechanical cooling, ensuring a comfortable indoor environment for students and teachers at the start of the day. The decentralized ventilation units are controlled via a central interface, using a time-switch program integrated into the building management system to optimize energy efficiency.

Draft-free and uniform air distribution

For compact decentralized floor-standing units, used air is extracted at floor level without

causing drafts and is discharged entirely to the outside. Any condensate that forms is collected within the unit. A temperature difference of approximately 4 K between the exhaust air and the outdoor air helps prevent draft formation.

For ceiling-mounted units, air is supplied through long-throw nozzles. The air exits at high velocity from the upper section of the unit, adheres to the ceiling, and remains outside the occupied zone. It circulates throughout the upper room area, reaching all corners of the classroom to ensure rapid mixing with the indoor air. Alternatively, air can be distributed through textile ducts installed along the ceiling.



Mechanical Ventilation for Genuine Added Value

The CO₂ footprint of a building is influenced equally by heating, cooling (where applicable), and ventilation. These factors must therefore be considered together. Heat recovered by a ventilation system—rather than lost through open windows—does not need to be regenerated by a central heating source. The same principle applies during hot summer periods: when a ventilation system is in operation, heat stays outside.

Significant energy-saving potential

Heat recovery reduces heating costs by approximately 40 percent. Up to an outdoor temperature of around 12 °C, the heating system typically does not need to operate at all, and below this threshold, the heat demand is significantly reduced. In this way, the ventilation units recover 7 to 10 kWh of heat from just 1 kWh of electricity, achieving annual performance figures that are twice as high as those of today's most efficient heat pumps.

Space-saving and fast installation

Central air handling units, air shafts, and horizontal air distribution ducts are not required for the operation of decentralized ventilation units, as the supply and exhaust air are routed directly through the building façade. With minimal planning and preparation effort, installation is typically completed within two to three working days per classroom, including commissioning, ensuring a fast and highly efficient overall process.



New construction: sustainable right from the start

Customized WOLF ventilation systems combine comfort and sustainability with standard-compliant design and economical operation. Precise control of climate, humidity, and noise is a top priority during planning – and, of course, perfectly tailored to your individual requirements, on every floor, every side of the building, and in every season.

WOLF ventilation technology is virtually invisible and inaudible. Thanks to innovative fan technology and low airflow velocities (up to 0.15 m/s), drafts are a thing of the past. When maximum comfort and healthy well-being are required, it can already be considered at this early project stage whether additional active humidification is appropriate to prevent the phenomenon of “dry heating air” during winter months.

Smart sensor technology ensures hygienically clean and conditioned air – exactly where it is needed and only as much as is required at any given time. Even in complex room layouts, the indoor climate – particularly temperature and relative humidity – remains consistently fresh and pleasant. Thanks to efficient filter technology, this is also possible in disadvantaged areas exposed to high environmental emissions.

Requirements regarding thermal indoor climate and air quality are implemented early in the planning phase. In new construction, it can be decided at an early stage whether the ventilation system should be installed on a technical floor or on the roof – possibly with colour design adapted to the architecture. High-performance heat exchangers recover around 90 % of the heat.



An investment that pays off immediately

Investing in mechanical ventilation ensures demand-controlled and uniform supply of hygienically fresh air in classrooms. This has a positive impact on hygiene and health and effectively reduces absenteeism caused by virus-laden aerosol particles – all without drafts or disturbing noise.

Another pleasant side effect of mechanical ventilation compared to window ventilation is the permanent reduction of pollen, volatile organic compounds (VOC), and fine dust particles in the room – not only allergy sufferers will breathe easier (workplaces in kitchens and cafeterias can also be equipped comfortably and in compliance with regulations). Students and staff feel comfortable during lessons thanks to the continuous supply of fresh, filtered air, which increases productivity and performance.

Window ventilation is a thing of the past – energy-efficient WOLF HVAC technology with heat recovery and whisper-quiet state-of-the-art fan technology significantly reduces heating and cooling demand – and thus also energy costs and the building's CO₂ footprint. Our highly energy-efficient HVAC units are therefore also used in DGNB- or LEED-certified green buildings.



WOLF is one of the leading international suppliers of innovative solutions for indoor climate control. Here's what matters most to our customers:



German know-how

We develop our products at our headquarters in Mainburg, Bavaria. We manufacture them with the highest precision and vertical integration. WOLF Campus training programme offers you in-depth expert knowledge on professional installation, maintenance, etc. with seminars and in-house training courses.



Partnership at eye level

A nationwide and international network of personal contacts at our locations ensures fast and uncomplicated support. The WOLF Service Team provides you with expert advice and support during commissioning and maintenance.

A network of wholesale partners facilitates the procurement of spare parts.



Simply powerful solutions

WOLF ventilation systems combine efficiency, durability and ease of operation.

The wide-ranging air handling product portfolio is complemented by digital services that save time, money and CO₂.



For an intact environment and diversity

We consciously prioritise durability and sustainability in our design and choice of materials. At WOLF, different generations and nations work hand in hand and benefit from each other.

WOLF Air handling

A suitable solution for every demand



Hotel and accommodation



Professional kitchen



Production and industrial buildings



Offices



Agriculture



Transport and traffic



Pools and spa



Logistics and warehouses



Retail stores



Healthcare



Experience, culture and sports buildings



Data centers

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