


**AL-KO**

QUALITY FOR LIFE

VENTILATION AND AIR-CONDITIONING TECHNOLOGY  
FOR CHEMICAL, PHARMACEUTICAL, MEDICAL AND  
CLEAN ROOM ENVIRONMENTS



HYGIENE  
AND ENERGY  
EFFICIENCY.

# PRODUCTION SAFETY THROUGH PROCESS INTEGRATION



Although their application within chemical and pharmaceutical processes, in hospitals or the food industry is varied, the pre-condition for air-conditioning and ventilation always is the controlled supply and discharge through appropriate systems. Due to the thermodynamic environmental conditions required for research, production and supply, ventilation and air-conditioning systems form a vital part of the process chain. Quality management therefore expects the same of air-conditioning and ventilation units as from all other components of the process chain in terms of precision, hygiene and reliability. Only hygienically designed units can guarantee a safe process environment.

Due to its specific material selection and various structural details, the **ATFLEX®** ventilation and air-conditioning range of models from the AT4 line ensures the customer-specific application to every process situation on all continents and in all climate zones. Thanks to their energetic optimisation – T2/TB2 in all configurations – **ATFLEX®** units combine highest product quality with predictably low costs.

## YOUR ADVANTAGES

- | Process-oriented hygiene solutions with the highest level of energy efficiency
- | Appropriate material selection for any application
- | Design according to ATEX 95, VDI 6022 as well as DIN 1946,4
- | Implementation according to European and international standards
- | Certified performance data

# SOLUTIONS

## FOR THE PHARMACEUTICAL INDUSTRY



In research, test bench engineering or large-scale production environments alike, ventilation and air-conditioning units are of great importance in the pharmaceutical industry.

With **ATFLEX®** AL-KO offers a construction kit that meets all the requirements of the pharmaceutical industry.

### YOUR ADVANTAGES

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- | Device housing with completely smooth interior surfaces without undercuts and artificial caverns through patented housing construction
- | Easy, time-saving and thorough cleaning of all ventilation units and components
- | Well-known high level of operational and process safety
- | All functional units are fully accessible
- | Large inspection glasses and interior lighting for easy inspection
- | Precision in thermal air treatment
- | Highest corrosion protection through appropriate material selection
- | Highest tightness class L1 according to DIN 1886
- | Hygiene certification according to VDI 6022, DIN 1946 and VDI 3803
- | Eurovent-certified performance data

# SOLUTIONS

## FOR MEDICAL AND HOSPITAL ENVIRONMENTS



AL-KO **ATFLEX®** offers hygienically and energetically impressive solutions that are ideal for operation in medical facilities and hospitals.

### YOUR ADVANTAGES

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- | Complete conformity with DIN 1946-4 and VDI 6022
- | Housing with double-shell wall structure as well as completely smooth interior surfaces
- | Elaborate sealing profile on panels and doors, overlapping in the corners for tightness
- | Energy-efficient and hardly prone to condensation (T2/TB2)
- | Powder-coated panels, optionally made of stainless steel



# SOLUTIONS FOR THE CHEMICAL INDUSTRY



AL-KO has been supplying renowned companies in the chemical industry with ventilation and air-conditioning devices in different climate zones for decades. With **ATFLEX®** AL-KO offers a solution tailored to individual needs that meets the challenging requirements with regard to ventilation and air-conditioning of clean room environments, laboratories and production plants. It is based on a construction kit of several thousand components which can be complemented by special-purpose solutions precisely matching the demands of this industry.

## YOUR ADVANTAGES

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- | Resistance against almost all substances and gaseous combinations of substances, appropriate material selection for all components, surfaces with powder coating, epoxy resin coating or entirely made of stainless steel
- | Easy, quick and thorough cleaning due to completely smooth interior surfaces
- | Hygiene certification according to VDI 6022, DIN 1946-4 and VDI 3803
- | Precision in thermal air treatment regarding constancy of temperature, humidity and air flow rate
- | Long service life due to the use of high-quality materials
- | ATEX certification for zones 1 and 2
- | Certified performance data through EUROVENT-certification



# HYGIENE SOLUTIONS ACCORDING TO VDI 6022



Manufacturers of air-conditioning and ventilation systems operating in hospitals, clean rooms as well as the chemical or pharmaceutical industries bear immense responsibility. VDI 6022 provides you and the operators with the certainty of building a hygienically highly safe system. AL-KO **ATFLEX®** is the reliable basis for this:

- | Smooth interior surfaces without corners and edges
- | No galvanised panel surfaces prone to corrosion with unprotected cut edges
- | Door and panel seals with elaborate sealing geometry overlapping in the corners – for airtightness and long service life
- | Easy access with lighting, inspection glasses and operating doors on all components
- | Cabling mainly outside the housing
- | Galvanised and powder-coated or stainless steel corrosion-proof installation elements
- | External air dampers assembled inside the housing to prevent condensation with damper drives positioned outside the air flow
- | Hygiene type examination by an independent testing institute



# HYGIENE SOLUTIONS ACCORDING TO VDI 6022

## HOUSING

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- | Galvanised, powder-coated housing panels
- | Sealed floor joints
- | Insulated base trays with an incline on all sides to discharge condensation or as a cleaning tray
- | Maintenance-free seals on panels and operating doors
- | Disinfectant-proof seals and plastic parts to prevent microbial growth



## HUMIDIFIER

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- | All humidifier units are tested for type examination and VDI 6022 certified

## MULTI-LEAF DAMPERS

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- | Material selection according to hygienic requirements, galvanised and powder-coated steel, aluminium or stainless steel
- | Drive elements outside the air flow
- | Tightness classes 2 and 4 according to DIN EN 1751

## FANS

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- | Can be cleaned easily
- | Plug fans combined with highly efficient motors for top overall efficiency
- | Fans combined with EC or permanent magnet motors for optimum efficiency
- | Housing fans with low-abrasion flat belt and cleaning port on request
- | Continuously adjustable for constant or variable air flow rates

## FILTER

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- | Compact or bag filter made of microbially inert, perfectly hygienic materials
- | Exclusively closed-cell sealing profiles on the filter frames
- | Mechanically stable even in humidity
- | Maintenance-free optical and electric monitoring of filter differential pressure as standard
- | All filters with test certificate according to EN 779
- | Maintenance on polluted air side with space and time-saving filter tension spring
- | Use of perfectly hygienic air filters
- | Also with plasma filter for reliable elimination of viruses, bacteria and VOCs as well as to minimise odours
- | Corrosion-proof powder-coated or stainless steel filter mounting frame
- | Filter elements from active charcoal to HEPA filters



## SILENCER

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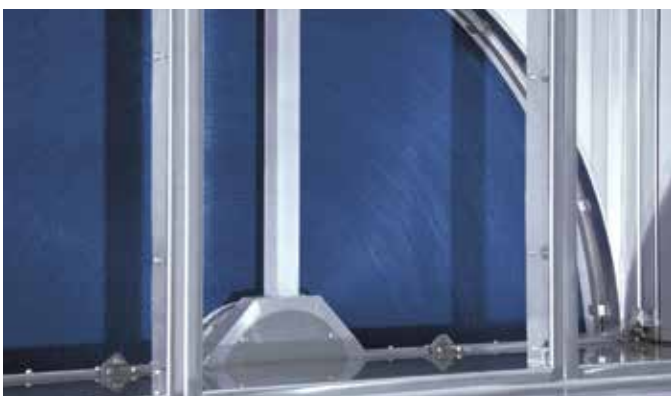
- | Fibre glass coating with particularly high mechanical strength for sound-absorbing panels
- | Tool-less removal of the panels
- | Easily accessible through control panels at the front of the unit
- | Galvanised and powder-coated or stainless steel panel frame



## HEAT EXCHANGER

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- | All sections of the unit can easily be accessed – components are extricable or accessible on foot for inspection/cleaning
- | Can verifiably be high pressure steam-cleaned down to the core (type examination by the Institute for Air Hygiene)
- | Stainless steel drip or cleaning trays for complete discharge of water
- | Extendable and easy-to-clean drop eliminator, integrated after the cooler as standard
- | Prevention of water condensation due to continuous insulation of pipe openings through the housing
- | Aluminium cooler frame and copper collection pipes as standard Additional corrosion protection through electrochemical coating on request



## HEAT RECOVERY

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- | Heat recovery with efficiency of up to 90%
- | Run around coil systems, multi-functional with or without energy feed, optionally with electrochemical corrosion protection
- | Cross flow and counterflow heat exchangers with optional epoxy resin coating
- | Rotary heat exchangers with optional epoxy resin coating or sorption-coated for efficient humidification and dehumidification



# EXACTLY AS ORDERED



In the medical, chemical and pharmaceutical industries, the success of a project or the quality of the production is often dependant on the right quality of air. The performance data of AL-KO units for your industry is reliably tested at the TÜV-monitored, in-house test facilities, where you are also able to inspect your system before delivery and check the setup, parts and components. Naturally a documented check of aerodynamic data can be performed at the suction-side chamber test rig. The air nozzles used for this purpose achieve an accuracy of  $\pm 1.5\%$ . Guaranteed performance data through Eurovent certification ensures an energy-efficient operation.



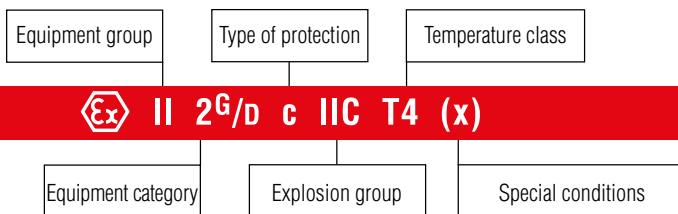


# COMPLETELY SAFE



## ATEX-compliant components

- | ATEX-design direct driven fans for zone 1 to T4 and 21 to T 120°C respectively, in combination with an explosion-proof motor
- | Belt-driven ATEX-fans for zone 2 and temperature class T3
- | Drive motor explosion-proof with frequency inverter operation – efficiency class up to IE3
- | Fan driving belt electroconductive
- | Flexible connections made of conductive material
- | Non-static air filter – for explosion groups (IIA – IIC)
- | Inspection glasses made of glass
- | Eliminators made of conductive material
- | All electric components are ATEX-certified, all mechanical components are tested for type examination with manufacturer's declaration
- | Fully earthed construction
- | Earthing of multi-leaf dampers
- | Heat recovery through run around coil system or plate heat exchanger
- | Earthed and non-static sound-absorbing panels



## YOUR PARTNER WORLDWIDE

Your industry thinks and works on a global level. So does AL-KO. This means that AL-KO is able to support you and your trusted partners anywhere in the world. From planning and configuration to on-site installation. AL-KO is also happy to help when it comes to servicing your systems.

Worldwide, competently and with consistent quality.



# AS SMOOTHLY-RUNNING AS AIR **ATFLEX**<sup>®</sup> AND **ATEASY**<sup>®</sup>

## **PROJECT MANAGEMENT AND IMPLEMENTATION**

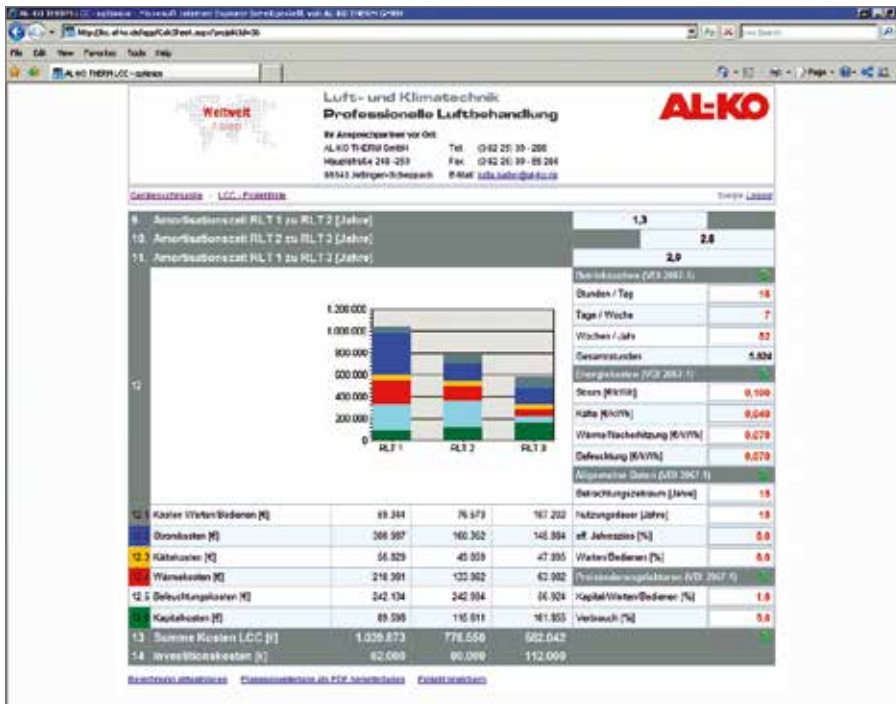
Admittedly, on new-builds or renovation projects, ventilation and air-conditioning technology is one of the more inconspicuous trades for clients and architects. At AL-KO we would like it to stay that way until completion of the construction project and for many years to come.

- | AL-KO stands for long-standing cooperation with technical designers and manufacturers.
- | AL-KO has decades of experience in the international project business. This expertise is available to you.
- | On site, the modular AL-KO **ATFLEX**<sup>®</sup> systems, which can be disassembled, can easily be taken to premises that are difficult to access.
- | AL-KO offers a comprehensive construction kit for ideal climate and air conditions. At the same time, AL-KO makes every effort to continue to reduce delivery times for even the most unusual requirements, so that the project succeeds on time.



# IT IS EASIEST TO CALCULATE WHEN THE SUM IS KNOWN

## ENERGETIC EVALUATIONS



**AT4-F: life cycle costs are known from day 1**

Investors, owners and users of buildings are at an advantage with AL-KO: Even before signing the contract you know exactly which costs to expect during the service life of your AL-KO ventilation system.

Not only does the AL-KO life cycle cost (LCC) calculation ensure you are receiving a ventilation and air-conditioning system perfectly meeting your requirements. As part of the LCC calculation, AL-KO engineers combine the components best suited for your project in terms of function, energy-efficiency and life cycle costs.

The bottom line is a precise calculation including purchase price, maintenance costs and operating costs. Plain, transparent and definite. Do the test: <http://lcc.al-ko.de> is the gateway to the world of life cycle cost calculation by AL-KO.

AL-KO supports you with the energetic evaluation of various concepts for ventilation units – for all climatic zones worldwide. Reliable technical data based on Eurovent certification ensures an energy-efficient choice of components.



**AL-KO THERM GMBH**  
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Figures show configuration examples which are not available in every market.  
Please ask your AL-KO advisor.

Provided by your AL-KO partner:

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