

Up to **50%** reduction in energy costs*



Ionisation module
AIRPERFECT 2000



Air Quality Controller
AIRPERFECT AQC

AIRPERFECT
Air Quality Control System

For installation in air-conditioning
and ventilation systems

- Sustained reduction in energy costs
- * due to best possible use of recirculated air
- High degree of air pollution control achieved by natural processes
- Perfectly matched system components
- Easy and cost-efficient installation into existing systems
- Reduction in maintenance and operating costs
- Indoor air quality in accordance with DIN EN 13779



New opportunities: the European norm EN 13779

In order to prevent health problems with persons living in non residential buildings and caused by air pollution, the European norm EN 13779 has been passed. The aim of this norm is to make the indoor air healthier and more comfortable with air purification systems requiring low investment and running costs. Since its publication, this norm has been ratified in all European countries as the national norm. It reports not

only the different classes of external air but also the expected values in terms of "Indoor Air Quality". In practice, Indoor Air Quality is being improved by an elevated flow of outdoor air that is often more polluted than the recirculated indoor air.

The contaminated air may contain as pollutants not only particles but also volatile compounds (gas) and disease promoters, such as micro-organisms, viruses, pollen, etc. In order to improve indoor air quality, it is thus essential to filter not only the particles but also these volatile compounds and disease promoters.

A natural law – the process of air regeneration

By using oxidation by means of **actived oxygen** to neutralise germs and odour molecules, clean, healthy and fresh air is achieved. In outdoor environments, the actived oxygen occurs in form of positive and negative air ions and ozone. The natural processes of air regeneration are copied by **bioclimatic** air ionisation systems and transferred to the indoor environment. The Indoor Air Quality is improved consequently, germs are inac-

tivated, odours are neutralised and the ambient air is enhanced with natural ions. In detail this substance is a mixture of oxygen and hydroxyl radicals, bipolar oxygen ions (positive/negative) and ozone molecules, a mixture of gaseous oxidants.

Proven principles - learned from nature.



Perfect system components for sustained savings in energy costs



Ionisation module **AIRPERFECT 2000**

- Especially powerful module equipped with 14 high-performance, long-life ionisation tubes
- Perfect air purification and air disinfection
- Lasting removal of germs, viruses, bacteria and odour molecules
- A positive influence on physical and mental well-being



Air Quality Controller **AIRPERFECT AQC**

- Multifunction measuring and control unit
- Option to connect air, ozone, flow, temperature and humidity sensors
- Illuminated display
- Processing of all measured values and control of ionisation systems
- Measured values and control values can be retrieved by external systems
- Manual or automatic control

Air Recirculation Rate Increase

Energy savings in buildings is a key issue for achieving the ecological objectives, such as climate protection. The steady price increase of the fossil energies encourages the development of new concepts aimed at reducing energy consumption. Regarding air treatment and air conditioning technologies, energy is mainly consumed by the fan and the group producing the cold and heating fluids.

Introducing less outdoor air, recirculating more indoor air and reducing the total air flow are essential actions for reducing energy consumption.

In practice, this is not feasible because the various indoor air pollution sources (human odour emission, emissions from construction materials and furniture, microbial contamination in the air treatment system and in the pulsion ducts, etc.) would make the indoor air improper for recirculation due to too high concentration of air contaminants. If the air is not correctly purified, its recirculation can provoke indoor air quality problems that will worsen with time.

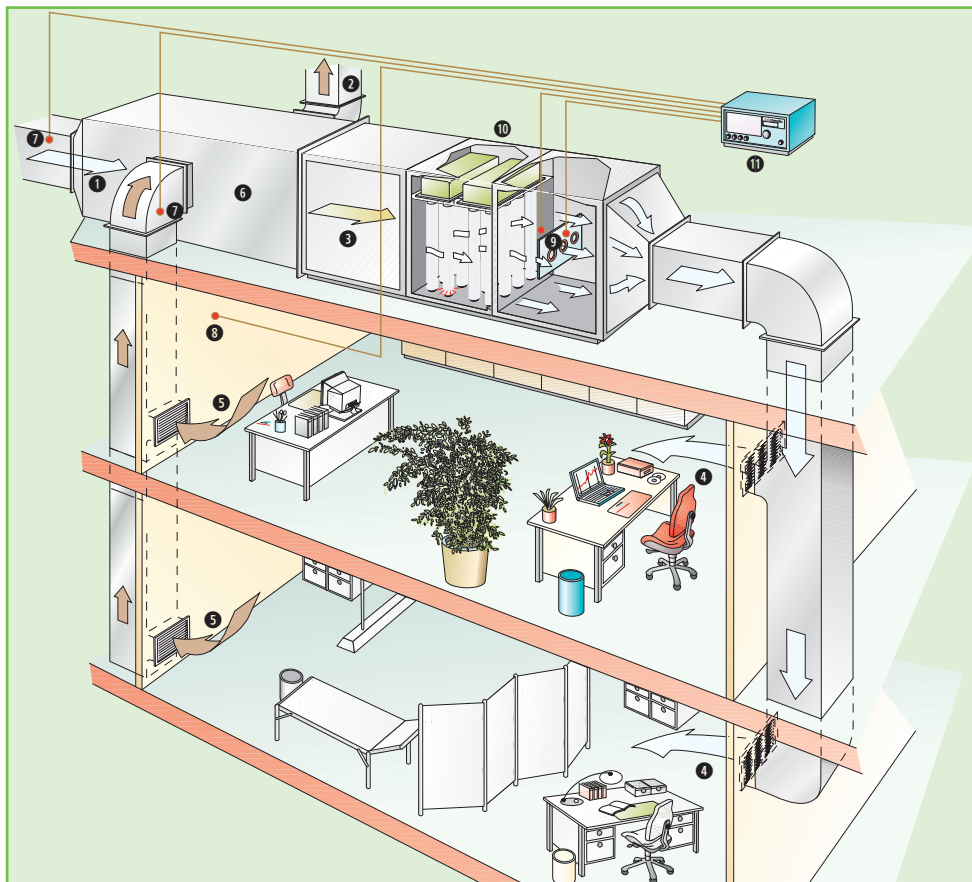
Thanks to integration of the **bioclimatic** air ionisation systems in the air treatment and conditioning systems, the airborne contaminants (odours, micro-organisms, viruses, allergens, volatile compounds) are efficiently abated and eliminated thanks to the production of "active oxygen". The ionisation modules can be inte-

grated either in the Air Treatment Unit or in the ducts. Efficient air contaminant reduction allows recirculation of a fraction of the indoor air, which reduces the cold & heating fluids consumption, needed for air conditioning, and consequently lowering energy costs.

Total Air Flow Reduction

Efficient reduction of air contaminants thanks to the **bioclimatic** air ionisation systems also allows reduction of the total air flow while keeping an optimal indoor air quality. A lower total air flow has the following impacts on installation: more compact air treatment and conditioning systems, smaller air duct sections and fans, lighter supporting structures, lower quantity of insulation material, etc. It not only reduces investment costs but also working costs in terms of energy consumption, spare parts, etc.

Integration of the **bioclimatic** air ionisation systems in the existing ventilation units can be easily and rapidly performed, which means that the installation costs are low. Since they do not significantly increase the pressure drop on the system, the fan power does not have to be modified.



AIRPERFECT
Air Quality Control System

Functional representation

- 1 Outside air
- 2 Exhaust air
- 3 Mixed air
- 4 Inlet air
- 5 Outlet air
- 6 Combining chamber
- 7 VOC sensors
- 8 Ozone sensor
- 9 Sensors for temperature, ozone, air-flow speed and humidity values
- 10 Ionisation systems
- 11 Air Quality Controller

Economic considerations

Aim:

Recirculating a fraction of indoor air and reducing the total air flow without increasing the air contaminant concentration. Thanks to reduction of the total air flow and of the quantity of outdoor air to be treated, energy consumption decreases significantly.

Solution:

Installation of **bioclimatic** air ionisation modules, type **AIRPERFECT** in the air treatment unit or on the ducts.

Result:

Significant indoor air quality improvement obtained thanks to the installation of **bioclimatic** air ionisation modules allows recirculation of around 30% of indoor air, thus reducing by 30% the quantity of outdoor air. Taking into account the important energy savings in terms of cold and heating fluids and their low investment costs, the **bioclimatic** air ionisation modules are paid off quickly. An extra advantage: they produce fresher and more hygienic air, bringing more well-being to the users of the building. Thanks to reduction of energy consumption, the air treatment system upgraded with the **bioclimatic** air ionisation technology better matches the requirements related to CO₂ emission.

The total air flow can also be decreased, which reduces installation size and energy consumed by the fan.

Application example: Office building

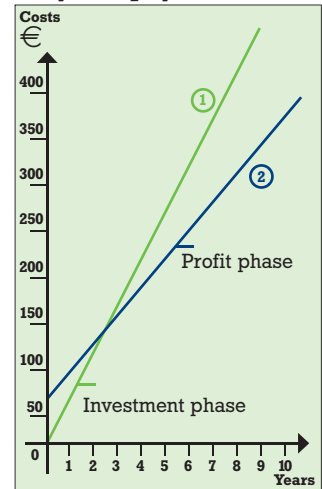


Ludwig Erhard Haus / Berlin

User: IHK. Offices with variable amount of people. Only 100% outdoor air is ventilated. No recirculated air.

Summary of the parameters in working conditions and evaluation of pay off time. 2½ years pay off time

	Initial situation	with bioclimatic- AIRPERFECT
Total air flow	139.000 m ³ /h	139.000 m ³ /h
Outdoor air flow	139.000 m ³ /h	97.500 m ³ /h
Recirculated air flow	–	41.500 m ³ /h
Energy for the cold and heating fluid production	850.000 kWh/a	520.000 kWh/a
Energy savings/year (cold and heating fluid pr.)	68.000 EUR/a	41.600 EUR/a
Energy savings/year		26.400 EUR/a
Investment for bioclimatic air ionisation modules		39.000 EUR
Investment costs for their installation		27.000 EUR
Investment costs paid off within		2½ years
Money savings after 10 years' use		ca. 264.000 EUR



bioclimatic - since 1977, competence and experience centre in the field of high quality air purification and decontamination technologies. Planning, construction, assembly and after sales service under the same roof !

Please do not hesitate to ask for :

- references
- technical documentation on our air purification systems
- information on our pilot installations
- ... or simply a piece of advice !



bioclimatic®
—The Air - Quality Company—



bioclimatic GmbH
Im Niedernfeld 4
D-31542 Bad Nenndorf
Phone +49 57 23 - 94 40 - 0
Fax +49 57 23 - 94 40 - 30
E-Mail: info@bioclimatic.de
www.bioclimatic.de