

Creating a good climate.
For over 35 years. Worldwide.



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AdiabaticPro

Best chilling – without chiller!

30% more capacity than the best Menerga system so far,
50-100% more capacity than conventional systems!
Available from mid-2014 – projectable as from now!



menerga
a systemair company

AdiabaticPro

A quantum leap in the efficiency of air conditioning

What is adiabatics?

Adiabatic evaporative cooling – or short „adiabatics“ – is a very efficient principle that can be found in nature. It makes use of the physical effect when water evaporates it removes thermal energy from the air, which cools it down. Everybody has experienced this effect themselves, e.g. doing sport and sweating. When the sweat film evaporates on the skin, sensible heat, i.e. heat that you can feel, is taken away and the body temperature falls.

Menerga has been using this principle for over 25 years in their highly efficient air-conditioning technology. The air temperature can be reduced up to 14 K using evaporative cooling, without any energy input for the cooling process! Evaporative cooling has its limits in physical terms due to the respective wet-bulb temperature. Systems which are exclusively adiabatic cannot achieve a lower temperature than approximately 21 degrees Celsius. Therefore it has been necessary so far during hot summer month to add a compressor refrigeration system with noticeable higher energy and maintenance requirements.

Menerga has now managed to expand the capacity limits of adiabatic systems. For many areas of application, a separate compression refrigeration system is therefore no longer needed!

Menerga has developed a new technology to significantly optimise adiabatic evaporative cooling. Amongst other things, this is based on pre-cooling the return air before the heat exchanger, as a result of which the overall efficiency of the cooling process is increased to almost 100%. The outside air temperature can be reduced additional without any further energy input in comparison to conventional adiabatic systems, which means a supply air temperature of up to

18° C is possible. At the same time an increase in the cooling performance of up to 30%, taking into account a mean room temperature of 26° C can be reached. AdiabaticPro can be used in Adconair comfort air conditioning units, which can cool down the outside air by more than 15 K with the new system and therefore represent a fully-fledged, energy-saving alternative to conventional comfort air conditioning systems – without any refrigeration system.

What's new in AdiabaticPro?

Adconair Adiabatic

1st Humidification of the return air (RA) at the RA intake of the counterflow plate heat exchanger.

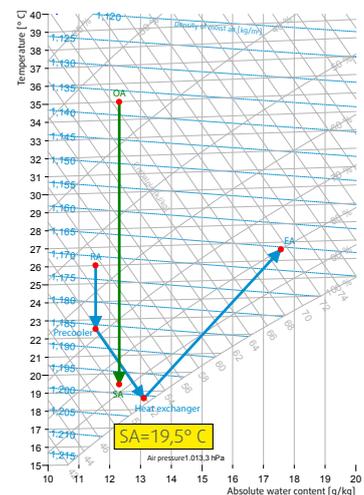
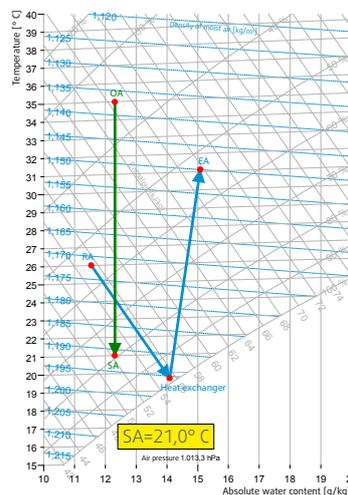
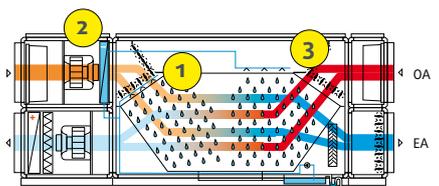
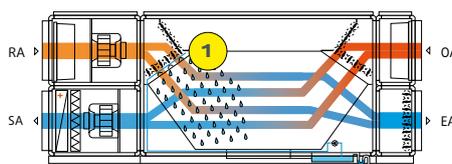
Due to its physical limitations, the principle does not allow any SA temperatures below 20° C.

Adconair AdiabaticPro

1st Humidification of the return air (RA) at the RA intake of the counterflow plate heat exchanger

2nd Pre-cooling of the return air to reduce the wet-bulb temperature with the help of partial flow of the circulating water.

3rd Pre-cooling of the outside air by means of additional humidification in the exhaust air.



AdiabaticPro achieves in summer cooling mode temperature drops up to 15 K and stays under the supply air temperatures of conventional systems even at higher outside air temperatures.



How it works: PP material and counterflow of air!

The key element for the high levels of efficiency of AdiabaticPro is the polypropylene (PP) counterflow plate heat exchanger developed by Menerga. This makes heat recovery rates of > 90% possible in the winter. In the summer it also transfers coolness just as efficiently. The construction of such a recuperator with an actual counterflow share of more than 80% with volume flows of up to 23,600 m³/h and integrated humidification of the return air current is currently only possible if polypropylene is used. An supplied osmosis system ensures perfect hygienic operation with consistently high heat transfer levels and additional water savings.

10 advantages at a glance

- With its advanced cooling performance, AdiabaticPro means that there is no need for a conventional refrigeration system. This has many advantages which pay for themselves:
- 1st No investment costs for the refrigeration system.
 - 2nd No safety requirements in the field of refrigeration engineering.
 - 3rd No annual maintenance costs for the refrigeration system.
 - 4th Minimised connection capacity, as no compressor is required.
 - 5th Considerably better CO₂ balance as no refrigeration system is needed.
 - 6th Environmentally-friendly operation with water - no use of harmful greenhouse gases that damage the climate.
 - 7th Cooling of rooms with a high thermal load, i.e. with increasing RA temperature, the adiabatic cooling performance remains high. Mean year-round SA temperature in cooling mode of 18.8° C, for example for the Mannheim area.
 - 8th Compact unit design as no refrigeration system is required.
 - 9th Demand orientated use of AdiabaticPro via integrated control system only when the system is needed.
 - 10th Robust system that is both fail-safe and environmentally friendly. Cooling without electricity made by Menerga!

Menerga – pioneer of adiabatic evaporative cooling



Ideal application areas

AdiabaticPro is suitable for all applications in which sensible heat has to be taken out of buildings. The performance potential of AdiabaticPro can be demonstrated by looking at air conditioning at a sports hall. With AdiabaticPro it is possible to achieve, for example for the Mannheim area, a mean year-round supply air temperature of 18.8° C. Alternative systems only achieve this with the use of an additional cooling coil or a compression refrigeration system. For a few hours in the year, when it is very warm, the SA temperatures may go up to 20° C, so that it has to be agreed with the building principal whether it is necessary to use an additional cooling coil in these cases.

Best value for money!

Comparison of various adiabatic cooling systems

