



Tropical air conditioning

The tropics are the climate zone between the tropic of north capricorn and the tropic of south capricorn, which is characterized by very high temperatures and high humidity throughout the year. It is characterized by a daytime climate without distinct seasons, with the sun almost vertical and the days usually between 10 and 13 hours long. The vegetation zones range from the always humid rainforests near the equator to savannahs and deserts towards the tropics.

Tropics (23.5° north to 23.5° south)



Example

Altitude 27 m above sea level, pressure 1.01 bar
 Minimal 3.0°C, Maximal 48.1°C
 Daily average 30.3°C/46.6%/12.6 g/kg
 Night average 26.1°C/62.3%/13.2 g/kg
 24 Hour average 28.2°C/53.8%/12.9 g/kg
 Maximum wet bulb temperature 31.8°C
 Maximum enthalpy 109.3 kJ/kg

Arabic emirate - Abu Dhabi



We distinguish between 3 applications for a supply air mass flow of 10,000 kg/h, which corresponds to an air volume flow of 8,409 m³/h at 20°C/40% (standard). Unfortunately, air volume flows in m³/h are still tendered out of sheer habit, which leads to large errors without reference.

Air conditioning private, 100% recirculating air, 0% fresh air: In this case, the split cooling unit would have to provide the calculated heat load of 50.9 kW. Converted to 1 room of medium size, this amounts to about 10% of the calculated heat load, i.e. 5 kW with an air volume flow of 840 m³/h.



Office air conditioning, 75% recirculating air, 25% fresh air: As long as the oxygen content does not drop too low and the pollutant content does not rise too much, this can be a solution. However, cold recovery is not possible, **see page 2**.



Investment approx. EUR 30,000

Air conditioning hospital, 0% circulating air, 100% fresh air: Due to the risk of virus and bacteria transmission, recirculating air is prohibited. Cold recovery is only permitted with a closed-circuit connected system. As a result of leaks, plate and rotor heat exchangers are prohibited, **see page 3**.



Investment approx. EUR 50,000, including hydraulics and controllers.

What is needed, to perform such calculations?

AHH (Air Humid Handling) = All in one !





