



Polar air conditioning

The coldest city in the world is Yakutsk with 270,000 inhabitants in Russia in Siberia. The fact, that it often gets minus 40 degrees, even in normal winters, is due to the subarctic continental climate: The capital of the Russian republic of Yakutia stands on a never-thawing perma-frozen soil and in depressions, where the cold accumulates. Now particularly icy air is blowing over from the Arctic.

Polar regions



Example

Altitude 98 m above sea level, pressure 1.00 bar
Minimal -53°C (www.meteonorm.com)
Minimal -64°C (Internet)
Maximum 35°C
24 Hour average -7.82°C/68.92%/1.34 g/kg
Maximum wet bulb temperature 23.2°C
Maximum enthalpy 69.4 kJ/kg

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

Private, 0% recirculating air, heating with fossil fuels: As a result of poorly insulated buildings and plenty of oil deposits, far too much oil is used for heating.

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, heat recovery is not possible, **see page 2.**

Air conditioning hospital, 75% recirculating air, 25% fresh air: Due to the risk of virus and bacteria transmission, recirculating air would actually be prohibited. Therefore, ultraviolet lamps are used, which are supposed to be able, to solve a large part of the problems. However, heat recovery is not possible, **see page 2.**

Russia-Siberia-Jakutsk



What does it take to be able to carry out such calculations?



