CLIMATE TOWER

VERTICAL HEAT TRANSITION

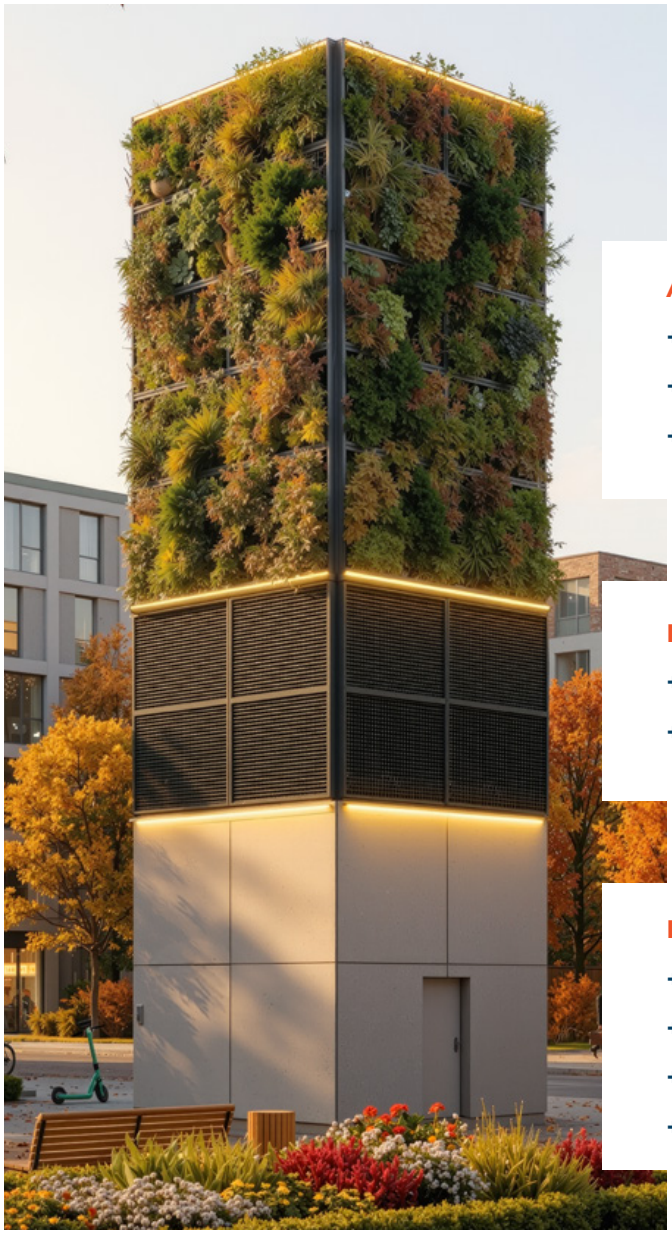
The Climate Tower (Klimaturm) is a large air-to-water heat pump for densely developed neighbourhoods and residential areas. Its patent-pending vertical design with integrated heating technology saves valuable space and enables optimal sound insulation. The result: the quietest and most compact large heat pump on the market – ideal for both existing and new buildings.

YOUR BENEFITS

- Extremely quiet: no disturbing noises even in close proximity
- Power range 300 – 1000 kW: supplies approx. 50 – 300 homes
- Very low space requirement: 4 x 4 – 6 x 6 m depending on power needs; no safety distance required
- Individual façade design: can be perfectly integrated into the surrounding architecture
- Short construction time (approx. 3 months)
- Fully ready for connection – easy integration into existing heating networks
- Natural refrigerant CO_2: meets the most stringent environmental requirements, including upcoming regulations
- Use in densely developed areas: no cold air pockets in the neighbourhood
- Energy-efficient and environmentally friendly
- High network temperatures: ideal for existing buildings with radiators
- Ideal for replacing existing boilers and CHP units
- Future-proof: Compliance with legal requirements and subsidy conditions (GEG, BEG, KfW, QNG) thanks to a high proportion of renewable energies and low primary energy factor
- Comprehensive support in the individual planning process

HOW IT WORKS

The Climate Tower is a high-capacity air-to-water heat pump with a vertical design. Environmental heat is extracted from the outside air and, via a large heat pump, used for heating and hot water supply all year round.



AIR DUCT

+ Air outlet on top of the tower
+ Fans
+ Noise silencers

HEAT EXCHANGER

+ Four-sided air intake
+ Including defrosting

ENGINE ROOM

+ Large-scale heat pump
+ Electrical systems and controls
+ Hydraulics and pumps
+ Power-to-heat module

PERFORMANCE DATA

Operating mode:	Heating to -15 °C outside air temperature
Flow temperatures:	55-85 °C
Return temperatures:	25-55 °C

Climate Tower model		300	500	750	1000
Heating performance / COP at air temperature - 8 °C	kW/-	310 / 2.3	450 / 2.4	770 / 2.4	1030 / 2.4
Heating performance / COP at air temperature - 5 °C	kW/-	330 / 2.4	490 / 2.5	820 / 2.5	1090 / 2.5
Heating performance / COP at air temperature 0 °C	kW/-	360 / 2.5	510 / 2.5	890 / 2.6	1190 / 2.7
Heating performance / COP at air temperature 5 °C	kW/-	390 / 3.0	580 / 3.0	1060 / 3.0	1430 / 3.1
Heating performance / COP at air temperature 10 °C	kW/-	350 / 3.1	460 / 3.1	1160 / 3.2	1560 / 3.3
Max. electrical power	kW	180	260	470	610
Max. current	A	305	440	800	1030
Heating performance WP with P2H	kW	500	750	1100	1500
Supply voltage (50 Hz)	V	400 or medium voltage			
Dimensions					
Base area	m	3.8 x 3.8	4.5 x 4.5	5.2 x 5.2	5.6 x 5.6
Height	m	12	13	14	15
Maintenance area		3 m all around			
Sound pressure level (at 10 m)	dB (A)	< 32	< 32	< 33	< 35
Weight	t	approx. 70	approx. 80	approx. 100	approx. 110

Heating performance and COP refer to a 70/35 °C heating circuit, including defrosting capacity. Preliminary data.

STANDARD FEATURES

+ Energy-efficient, robust heat pump
+ Large air evaporator including energy-efficient defrosting
+ Concrete enclosure for the large heat pump to minimise noise levels
+ Silencer to reduce noise emissions from the fans
+ Low-voltage main distribution board as well as measurement, control and regulation technology
+ Hydraulics for direct connection to existing heating networks
+ Environmentally friendly refrigerants
+ Façade made of HPL panels, can be changed on request
+ Durable enclosure casing made of reinforced concrete and hot-dipped galvanised steel
+ Lightning protection
+ Interface for data transmission (e.g. LoRaWan)
+ Fully assembled and factory-tested technology

OPTIONAL FEATURES AND SERVICES

AIR CONDITIONING AND COOLING

The Climate Tower is available with a cooling function for air conditioning in residential buildings and/or cooling of server rooms (in parallel with heating).

+ Cooling performance up to 80% of heating performance
+ Cold water flow temperatures: 6 – 12 °C
+ Return temperatures: 12 – 22 °C

HIGHER RETURN TEMPERATURES

For heating networks with a permanent return temperature above 55 °C, we recommend using a second heat pump for return cooling. We are also planning the use of an alternative refrigerant.

HIGHER FLOW TEMPERATURES

On request, part of the heating output can be generated at higher flow temperatures of up to 100 °C, e.g. to increase the storage capacity of a water buffer. The good news: the efficiency of the heat pump remains the same!

DEMAND-SIDE MANAGEMENT AND LARGE HEAT STORAGE TANKS

Thanks to our specially developed forecasting and operating control system in combination with a buffer storage tank, we mainly operate the large heat pump when electricity comes from renewable sources. This is beneficial for the environment and significantly reduces operating costs in the long run.

+ Water buffer with a volume of 80 – 200 m^3
+ Load transfer potential: 4 – 12 hours
+ Advantageous installation next to the Climate Tower
+ Delivery with integrated pressure maintenance

As an alternative, battery storage is being developed.

INTEGRATED GRID STATION

The Climate Tower is particularly space-saving with a grid station integrated into the lower level. This allows it to be connected directly to medium voltage supply – there is no easier way to connect a heat pump!

+ Delivery of transformer system including medium-voltage switchgear and cabling
+ No space required for an external compact power station
+ Ideal in combination with your PV system and charging infrastructure

POWER-TO-HEAT

We recommend using a power-to-heat module to supply heat to existing buildings. This can increase the performance of the Climate Tower by up to 50%, which reduces both the performance-related investment costs and the operating costs – particularly useful if buildings are to be modernised in terms of energy efficiency in the future.

INTEGRATION OF EXISTING HEAT GENERATORS

The Climate Tower's energy management system can control any external heat generators, such as gas boilers or CHP units, in an energy-efficient manner and in coordination with the heat pump. This means that existing systems can continue to be used to cover peak loads on a few particularly cold days – similar to the use of a power-to-heat module, but even more cost-effective.

PERMIT PLANNING

On request, specialists at our company can take on tasks for you, such as

+ Drafting noise reports
+ Calculating statics for the respective installation site
+ Preparing and supporting the planning permission application including all necessary formalities.

FOUNDATIONS OF CLIMATE TOWER AND STORAGE

On request, we can also take care of the foundation and base on site – from planning to completion. The Climate Tower can thus be installed immediately.

MAINTENANCE

Our technicians will of course take care of all regular maintenance of the Climate Tower for you.

ON-SITE SERVICES / CONNECTIONS

WHAT WE NEED FROM YOU:

+ Provision of installation space, depending on heating output – see table above
+ Access to an electrical connection (medium voltage or low voltage with transformer available)
+ Wastewater connection for rainwater drainage
+ Flow and return pipes for the heating circuit to be connected (directly at the Climate Tower or, otherwise, permission to lay underground pipes to the buildings)

THE CLIMATE TOWER IN YOUR NEIGHBOURHOOD

There are two ways to integrate the Climate Tower into your neighbourhood: you can purchase and operate it yourself. Or you can simply purchase heat (and cooling, if required) on a contracting basis – we will take care of everything else for you. Are you interested? We look forward to talking to you. Just drop us a message at climatetower@towergy.de

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