Heat pumps up to 2000 kW: **VITOCAL PRO**

**Vitocal heat pumps**

Heating with renewable energy from the environment – even in the higher output ranges
Futureproof and efficient heating technology for all requirements
In industrialised Western nations, heat generation for residential and commercial buildings accounts for the largest proportion of energy consumption – and therefore offers the greatest savings potential. Advanced and energy efficient heating systems from Viessmann are in use around the world, not only in many private households, but also in numerous major international projects, where they make an important contribution to the sustainable conservation of energy reserves.

Viessmann successfully rises to the most diverse challenges facing advanced heating technology by constantly offering innovative solutions – for historical listed buildings, highly productive industrial complexes and the large scale residential and commercial arena.

Viessmann has been developing and manufacturing heat pumps for international markets for almost 40 years. Its product range includes customer-specific solutions and matching services.
6 INTRODUCTION
Heating with renewable energy from the environment – even in the higher output ranges

8 VITOCAL RANGE
Large heat pumps from Viessmann facilitate heating with renewable energy from the environment, even in the higher output ranges, at all times. Even waste heat from various sources and production processes can be made usable.

30 SYSTEM SOLUTIONS
Viessmann offers heat pumps for a wide variety of applications and different heat sources.

40 SERVICE
Viessmann guarantees that the components and assemblies in its large heat pumps will work seamlessly together – from the individual design process right through to maintenance.

42 REFERENCES
Viessmann’s highly efficient systems achieve even greater savings the higher the energy demand, in other words, in commercial and industrial operations, as well as in office blocks, hotels, clinics and schools.

48 THE COMPANY
The Viessmann family business is a leading international manufacturer of efficient energy systems.
Heating with renewable energy from the environment – even in the higher output ranges

Natural heat is an advanced and cost effective alternative to fossil fuels. It is available free of charge and offers independence from oil and gas.

Heat pumps offer ideal conditions for reducing heating bills and achieving environmentally responsible heat generation. After all, the energy a heat pump uses is free and available in unlimited supply from the environment.

With a heat pump, up to 80 percent of the total energy demand can be taken from nature in a highly effective and environmentally responsible manner. Only 20 to 30 percent electrical energy needs to be invested.

The principle is as simple as it is ingenious: the solar energy stored in the ambient air, ground and groundwater is used to efficiently heat domestic hot water and heating water.

**Added value through cooling function and dual mode systems**

Heat pumps are also available with high outputs and are designed to meet the energy demand of larger residential complexes and commercial operations. The operating mode can be “reversed”, allowing them to be used for cooling the interior in summer too.

The idea that a heat pump only suits new build projects is outdated. On the contrary, if an existing conventional oil or gas heating system is modernised or supplemented with a heat pump (to form a dual mode system), significant reductions in heating costs can be achieved and emissions lowered at the same time. Independence from fossil fuels actively contributes to reducing CO₂ emissions and protecting the climate.

**Recovering environmental energy**

Various natural sources are suited to heat recovery using a heat pump:

- Water – such as groundwater, river or lake water, waste water
- Ground – via geothermal probes, geothermal collectors, energy piles
- Air
- Waste heat

Not all of these heat sources can be used in all locations. It is therefore necessary to consult the relevant authorities before making a decision, and discuss the technical options with Viessmann.

Viessmann heat pumps are designed for larger residential complexes and commercial operations.
Heat pumps from Viessmann not only prove their worth in detached and two-family houses, but also ensure a reliable and efficient supply of heating and cooling for properties requiring a rated heating output of up to 2000 kW, such as large residential buildings, commercial and industrial operations and local authority sites.

Large heat pumps are designed for highly efficient operation and achieve and exceed stringent European standards. They are notable for their compact design, with low noise and vibration levels. Depending on the model, the appliances can be extended and therefore quickly and easily adapted to any heating and cooling demand.

Heat sources may include waste heat from different sources, the ground and also groundwater. Alternatively, an ice energy store can be used to generate heat.

**VITOCAL 200-G PRO**
Brine/water heat pump
75.4 and 101 kW (B0/W35)
95.6 and 126.5 kW (W10/W35)*
Page 10

**VITOCAL 300-G PRO**
Brine/water heat pump
84 to 222 kW (B0/W35)
107.2 to 283 kW (W10/W35)*
Page 14

**VITOCAL 350-G PRO**
Brine/water heat pump
27.2 to 197 kW (B0/W35)
37.1 to 274.2 kW (W10/W35)*
Page 20

**VITOCAL 350-HT PRO**
Brine/water heat pump
56.6 to 144.9 kW (B0/W35)
148 to 390 kW (W50/W90)*
Page 26

* in W/W operation with intermediate brine circuit
VITOCAL 200-G PRO
Compact design – even suitable for corner installation
The new Vitocal 200-G Pro heat pump up to 100 kW is an attractively priced solution for conventional heating applications. With its output, it reliably meets many of the requirements arising in residential and commercial buildings – for new build and modernisation projects alike. These appliances are standardised, enabling quick and comprehensive system design, as well as transparent cost calculation parameters.

**TAKE ADVANTAGE OF THESE BENEFITS**

+ Large brine/water heat pump
+ Rated heating output: 75.4 and 101 kW (B0/W35)
+ Flow temperature: up to 60 °C
+ Low operating costs thanks to high COP (coefficient of performance) to EN 14511: 4.7 (B0/W35)
+ Low noise and vibration levels thanks to sound-optimised appliance design, sound power level (with sound insulated casing): < 70 dB(A) (B0/W55)
+ Compact dimensions (length x width x height): 1753 x 800 x 1457 mm
+ Suitable for corner installation
+ Easy to use Vitotronic 200 control unit with plain text and graphic display
+ Easy access to components simplifies maintenance
+ Electronic soft starter system for a lower starting current and less power drawn from the mains
+ Ready to use connection for fail-safe primary and secondary pumps
+ Reliable commissioning following function test at the factory
+ Energy efficiency class: A++
Compact design – even suitable for corner installation
The design with hermetically sealed scroll compressors requires little space for installation. And for transportation, a width of just 850 millimetres is sufficient. The heat pump is available with connections on the long side on both the left and right, which means it can be installed in various corner areas.

Pre-assembled electrical equipment
The electrical equipment is already integrated inside the heat pump casing. Factory-fitted contactors for fail-safe primary and secondary pumps, as well as protection for the compressors, reduce installation effort and enable rapid heat pump installation. Maintenance and service on the Vitocal 200-G Pro are accordingly straightforward as well.

Proven and reliable technology
The control unit has been adopted from the Vitocal series for detached and two-family houses. Here too, the RCD (refrigerant cycle diagnostic) system checks efficiency continuously and ensures reliable function at any operating point through the interaction between the EEV (electronic expansion valve) and the extensive sensor technology.

Easy to operate
Vitotronic control unit with plain text and graphic display
The Vitotronic 200 regulates up to three heating circuits, and, thanks to its natural cooling function, ensures a pleasant indoor environment on hot summer days. An extensive range of monitoring and system optimisation settings can be adjusted from anywhere, via the internet or a smartphone, utilising the Vitocom 300 communication module that is available as an option.

Easy to use Vitotronic control unit with plain text and graphic display
## Specification

### Vitocal 200-G Pro

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** in W/W operation with intermediate brine circuit
** LT for B0/W35, HT for B0/W55
VITOCAL 300-G PRO

These appliances are standardised, enabling quick and straightforward system design, as well as transparent cost calculation parameters.
Vitocal 300-G Pro brine/water heat pumps for residential and commercial buildings

The Vitocal 300-G Pro heat pumps up to 222 kW are in series production. The Pro series features all characteristics of the highly efficient Vitocal 300-G series. With five output sizes, most requirements from residential and commercial buildings can be reliably met.

These appliances are standardised, enabling quick and comprehensive system design, as well as transparent cost calculation parameters. Higher output levels can be achieved by linking up to five Vitocal 300-G Pro heat pumps in a single cascade.

TAKE ADVANTAGE OF THESE BENEFITS

+ Brine/water heat pump, two-stage
+ Heating output: 84 to 222 kW, max. 1110 kW (in a cascade)
+ Water/water application
+ Heating output: 107 to 283 kW, max. 1415 kW (in a cascade)
+ Low running costs thanks to a high COP (coefficient of performance) to EN 14511 of up to 4.7 (brine 0 °C/water 35 °C) and 5.8 (water 10 °C/water 35 °C)
+ Maximum flow temperature: 60 °C (brine 5 °C) for all sizes
+ Low noise and vibration emissions through sound-optimised appliance design
+ Low running costs with the highest level of efficiency at any operating point through the innovative RCD (refrigerant cycle diagnostic) system with EEV (electronic expansion valve)
+ Easy to operate Vitotronic control unit with plain text and graphic display
+ Ready to use connection for fail-safe primary and secondary pumps
+ Electronic soft starter for lower starting current and less power drawn from the mains
+ Only 944 mm wide doorway required for delivery
+ Exceptionally quiet operation for this output range
+ Total sound power level of between 60 and 70 dB(A) at rated heating output (B0/W35)
+ Series with PLC-based Vitotronic with additional functionalities
Brine/water heat pump with a rated heating output from 84 to 222 kW

**Vitotronic 200 control unit**
Easy to use control unit with plain text and graphic display

**Vitotronic PLC type 2.0 control unit**
Large colour touchscreen with additional functionalities
Space efficient design
The hermetically sealed design with new scroll technology requires little space. At only 944 mm wide, with removable casing panels and a clearance at the bottom to enable it to be moved by pallet truck, the appliance is very easy to handle.

Use of groundwater with an intermediate circuit
The water/water application with an intermediate brine circuit provides a reliable solution for the direct use of groundwater. An intermediate exchanger protects the standard unit against contamination and reduces the maintenance work for the heat pump.

Pre-assembled electrical equipment
The electrical equipment is already integrated inside the heat pump casing. Factory-fitted contactors for fail-safe primary and secondary pumps, as well as protection for the compressors, reduce installation effort and ensure rapid heat pump installation.

Proven and reliable technology
The control philosophy has been adopted from the Vitocal series for detached and two-family houses. Here too, the RCD (refrigerant cycle diagnostic) system checks efficiency continuously and ensures reliable function at any operating point through the interaction between the EEV (electronic expansion valve) and the extensive sensor technology.

The Vitotronic 200 regulates up to three heating circuits, and, thanks to its natural cooling function, ensures a pleasant indoor environment on hot summer days. With the optional Vitocom 300 communication module, a comprehensive range of system optimisation settings can be made from anywhere via internet or mobile phone.

Series with PLC-based Vitotronic
All output sizes are also available with a PLC (programmable logic controller). Data communication via Modbus/ BACnet (optional) or LAN in particular provides options for even more targeted integration into building management systems. The Vitotronic PLC type 2.0 also allows management of dry coolers and control of up to four heating/cooling circuits.

Combination with air/brine heat exchanger
In conjunction with an air/brine heat exchanger, the 300-G Pro offers both cooling operation and the use of air as a heat source.

The air/brine heat exchanger is connected to the heat pump via a brine circuit and enables heat recovery down to an air temperature of –5 °C. Below –5 °C, a second heat generator takes over the heat supply in dual alternative mode. This allows for flexible system design and forms a robust system together with a second heat generator.

The AW package contains both the heat pump and also the air/brine heat exchanger designed for this and is an attractive solution from a single source.
### Specification

**Vitocal 300-G Pro**

|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|

#### Performance data
**(to EN 14511, B0/W35, 5 K spread)**

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<th>Parameter</th>
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#### Number of compressors

| pce | 2 |

#### Energy efficiency class LT/HT**

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* in W/W operation with intermediate brine circuit

** LT for B0/W35, HT for B0/W95
AW package (air/water application)

System components

- 1 heat pump
- 1 hydraulic module defrost box
- 1 air/brine heat exchanger, standard (table shape)
- 1 heating circuit without mixer
- up to 4 heating/cooling circuits with mixer

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System components

- 1 heat pump
- 1 hydraulic module defrost box
- 1 air/brine heat exchanger, low-noise (V shape)
- 1 heating circuit without mixer
- up to 4 heating/cooling circuits with mixer

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VITOCAL 350-G PRO
Two or three-stage large heat pump
Vitocal 350-G Pro brine/water heat pumps with flow temperatures of up to 73 °C

The frame design of the brine/water heat pump makes the powerful and efficient Vitocal 350-G Pro heat pump easier to handle and install. The sound insulated casing (supplied separately) offers a snug fit and reduces the transport weight by around 200 kg. The unit is ideal for modernising heating systems with high flow temperatures.

**Hygienic DHW heating**
With high flow temperatures of up to 73 °C, the Vitocal 350-G Pro series meets the requirements for hygienic DHW heating. The special temperature maintaining facility guarantees hot inlet temperatures at all times, even during the loading cycle.

**Straightforward operation and reliable technology**
Depending on the output, two or three compressors are integrated into the refrigerant circuit by way of a compound connection. This guarantees high levels of efficiency, even in partial load operation.

Efficiency is enhanced by electronic injection valves which are self-closing at zero volt to ensure maximum safety if there is a power failure, for example. Additionally, the hermetically sealed design with fewer threaded connections, and the absence of safety valves in the refrigerant circuit, guarantee tightness and a long service life.

For optimal control of the system and refrigerant circuit, the Vitocal 350-G Pro features a PLC-based Vitotronic. The large graphic touchscreen enables intuitive operation. Its full colour mode highlights the different way that functions and operation are displayed.

**Remote monitoring and communication**
The control unit recognises numerous data communication options. From a simple analogue modem to a LAN based system: Modbus technology and BACnet (both optional) can be used to enable the system to be accessed via the internet for remote maintenance and communication purposes.

**Appliance design optimised for quiet operation**
As is the case for all heat pumps, the compressors generate noise in the 50 to 60 Hz range. Due to the very high quality construction of the appliance frame and sound insulation, it has been possible to compensate for any noise within the casing.

Vibrations on the base support are barely perceptible, as the 3D anti-vibration design is specifically constructed to dissipate vibrations. With a sound power level of 65 dB(A) for the 197 kW heat pump, it offers great value in comparison to the other products available in this market segment.

**Optional factory-fitted equipment**
The electrical equipment is already fully integrated inside the heat pump. The contactors for the circulation pumps are prefitted and easily accessible. If requested by the customer, assemblies for optional function extensions can be ordered from the factory.
VITOCAL 350-G PRO

1. Vitotronic 200 PLC control unit (type 2.0)
2. Condenser/evaporator
3. Compressor
4. Highly attenuating sound insulation

TAKE ADVANTAGE OF THESE BENEFITS

+ Brine/water heat pump, two or three-stage
+ Heating output: 27.2 to 197 kW
+ High flow temperatures: up to 73 °C
+ Low running costs thanks to a high COP (coefficient of performance) to EN 14511 of up to 4.4 (brine 0 °C/water 35 °C)
+ Viable under partial load conditions due to the use of two or three compressors with an equal rating
+ Low noise and vibration emissions through sound-optimised appliance design
+ Intuitive operation of the control unit via touchscreen with schematics
+ Possibility of factory pre-installation in the case of project-related manufacture
+ Electronic soft starter for lower starting current and less power drawn from the mains
+ Conventional cooling/heating function with heating water buffer cylinder
+ PLC-supported Vitotronic with Modbus and BACnet communication interface (optional)
## Specification

### Vitocal 350-G Pro

#### Performance data

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<td>Rated heating output (kW)</td>
<td>27.2</td>
<td>34.3</td>
<td>56.1</td>
<td>76.0</td>
<td>96.9</td>
</tr>
<tr>
<td>Cooling capacity (kW)</td>
<td>20.8</td>
<td>26.4</td>
<td>43.2</td>
<td>58.8</td>
<td>74.6</td>
</tr>
<tr>
<td>Power consumption (kW)</td>
<td>6.4</td>
<td>7.9</td>
<td>12.8</td>
<td>17.3</td>
<td>21.9</td>
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<tr>
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<td>4.4</td>
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#### Dimensions

<table>
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</tr>
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<tbody>
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<td>811 (750)</td>
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<td>672</td>
<td>723</td>
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<td>Number of compressors</td>
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</tr>
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#### Energy efficiency class LT/HT**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Rated heating output (kW)</td>
<td>27.2</td>
<td>34.3</td>
<td>56.1</td>
<td>76.0</td>
<td>96.9</td>
</tr>
<tr>
<td>Cooling capacity (kW)</td>
<td>20.8</td>
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<td>43.2</td>
<td>58.8</td>
<td>74.6</td>
</tr>
<tr>
<td>Power consumption (kW)</td>
<td>6.4</td>
<td>7.9</td>
<td>12.8</td>
<td>17.3</td>
<td>21.9</td>
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<tr>
<td>COP in heating mode</td>
<td>4.2</td>
<td>4.4</td>
<td>4.4</td>
<td>4.4</td>
<td>4.4</td>
</tr>
</tbody>
</table>

### Notes

* in W/W operation with intermediate brine circuit
** LT for B0/W35, HT for B0/W55
Vitocal 350-G Pro brine/water heat pumps with flow temperatures of up to 65 °C

The Vitocal 350-G Pro brine/water heat pump and liquid cooled chiller unit with compact rotary screw compressors achieves a heating output of up to 564 kW and a cooling capacity of up to 661 kW.

Output control
A refrigerant circuit with optimised design is equipped with large area plate heat exchangers on both the evaporator and condenser sides. Integral output control is possible in stages of 50 and 100 percent.

Comprehensive equipment level and straightforward operation
The machine’s control is supported by a PLC-based Vitotronic. Intuitive operation of the 5.7 inch colour touchscreen allows parameter settings to be made quickly. The touch function can also be used to directly access a visualised display of the scheme and the internal refrigerant circuit. System data can be automatically saved up to 14 days retroactively.

As an extended means of control, a Modbus interface can be used to provide external cascade control or for other options. To prevent any liquid evaporator medium from reaching the compressor in the event of a power failure, all Vitocal 350-G Pro appliances are equipped with a separate power pack. This reliably closes the injection valves and shuts down the machine in a controlled way.

Optional accessories
The standard heat pumps comprise a modular frame design with a mounted control panel. Sound insulation sets are available as a retrofit option.
TAKE ADVANTAGE OF THESE BENEFITS

+ Brine/water heat pump and liquid cooled chiller unit with compact rotary screw compressors
+ Single stage heating output: 223 to 564 kW (B0/W35 °C)
+ Single stage cooling capacity: 417 to 661 kW (W7/W35 °C)
+ EER (= energy efficiency ratio) W7/W35 °C up to 5.02
+ Low running costs thanks to a high COP (coefficient of performance) to EN 14511 of up to 4.71 (brine 0 °C/water 35 °C)
+ Maximum flow temperature: 65 °C
+ Low pressure drop in operation with higher flow temperatures (e.g. at a flow temperature of 65 °C only up to 10 % pressure drop compared with a flow temperature of 35 °C)
+ Optional sound insulation set for noise reduction of 8 to 10 dB(A)
+ 10 bar pressure stage (secondary) for industrial applications
+ Menu-guided assistant for straightforward commissioning
+ Factory testing of output and function

Specification
Vitocal 350-G Pro with compact rotary screw compressors (single stage)

<table>
<thead>
<tr>
<th>Compressor version: Hanbell</th>
<th>Type</th>
<th>Performance data – heating</th>
<th>Performance data – cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(to EN 14511, B0/W35, 5 K spread)</td>
<td>(to EN 14511, W12-W30-35)</td>
</tr>
<tr>
<td>Compressor version</td>
<td>Type</td>
<td>Rated heating output (kW)</td>
<td>Rated cooling capacity (kW)</td>
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<tr>
<td></td>
<td></td>
<td>223</td>
<td>259</td>
</tr>
<tr>
<td></td>
<td>BW 351.AS240SAH</td>
<td>280</td>
<td>325</td>
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<td>BW 351.AS300SAH</td>
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<td>426</td>
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<td>BW 351.AS390SAH</td>
<td>464</td>
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<td>BW 351.AS600SAH</td>
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<tr>
<td></td>
<td></td>
<td>4.49</td>
<td>4.73</td>
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</tbody>
</table>
VITOCAL 350-HT PRO
High temperature heat pump for utilisation of waste heat in renewable heat for the commercial sector
Vitocal 350-HT Pro brine/water heat pumps with flow temperatures of up to 90 °C

The use of renewable heat in commercial applications is determined by the need for high flow temperatures.

**Heat pump with flow temperatures up to 90 °C**
As a heat pump from standard production, the Vitocal 350-HT Pro high temperature heat pump delivers flow temperatures up to 90 °C and utilises heat source temperatures up to 50 °C. This makes it particularly suitable for the utilisation of waste heat and for the generation of high temperatures for industrial and commercial processes, or for older local heating networks.

**New refrigerant meets stringent requirements**
The use of the new HFO refrigerant, R1234ze, means that this range of appliances already complies with the refrigerant regulations set for 2020 and beyond. The GWP (global warming potential) is in the single-figure range and is therefore almost as low as that of natural refrigerants.

**Remote monitoring and communication**
In addition, the control unit features many communication options. LAN-supported systems as well as Modbus and BACnet interfaces can be used. These make the system accessible for remote monitoring and integration into building management systems.

The 5.7 inch colour touchscreen offers intuitive operation and easy control.

**TAKE ADVANTAGE OF THESE BENEFITS**

- High temperature heat pump for utilisation of waste heat in renewable heat for the commercial sector
- Brine/water rated heating output: 56.6 to 144.9 kW (B0/W35)
  Water/water rated heating output: 148 to 390 kW (W50/W90)
- COP at B0/W35: up to 4.3 and COP at W50/W90: up to 3.4
- Maximum flow temperature: 90 °C
- High permissible primary source temperature up to 50 °C: optimum utilisation of waste heat
- Sound power level: <66 dB(A)
- 91 cm standard width
- PLC control unit, intuitive operation via colour touchscreen
- HFO refrigerant: R1234ze, GWP 7
- 10 bar pressure stage for industrial applications
- Menu-guided assistant for straightforward commissioning
- Factory tests at operating temperature including function and output
- Automatic tightness monitoring for lower service costs
- Wide application range through secondary temperatures up to 90 °C (no booster heater required)
- High sustainability due to futureproof refrigerant
- Low running costs with the highest level of efficiency at any operating point through the innovative RCD (refrigerant cycle diagnostic) system with EEV (electronic expansion valve)
VITOCAL 350-HT PRO

1. COP boosted by internal heat exchanger
2. PLC control unit with colour touchscreen
3. Circulator
4. Pressure monitoring
5. Refrigerant collector for large temperature application range
6. Condenser/evaporator
7. Piston compressor
8. Highly attenuating sound insulation
9. Anti-vibration measures
### Vitocal 350-HT Pro

#### Specification

**Vitocal 350-HT Pro**

<table>
<thead>
<tr>
<th>Type</th>
<th>BW 352.AHT058</th>
<th>BW 352.AHT071</th>
<th>BW 352.AHT084</th>
<th>BW 352.AHT096</th>
<th>BW 352.AHT119</th>
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<tbody>
<tr>
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<td>2</td>
<td>2</td>
<td>2</td>
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</table>

**Compressor type**

- Piston

**Performance data**  
*(to EN 14511, B0/W35, 5 K spread)*

<table>
<thead>
<tr>
<th>Rated heating output</th>
<th>kW</th>
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<th>72.4</th>
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<tbody>
<tr>
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<td>kW</td>
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<td>55.4</td>
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<tr>
<td>Power consumption</td>
<td>kW</td>
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<td>17.0</td>
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<td>23.2</td>
<td>28.4</td>
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<td>4.3</td>
<td>4.2</td>
<td>4.2</td>
<td>4.1</td>
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</table>

**Performance data**  
*(to EN 14511, W50/W90, 10 K spread)*

<table>
<thead>
<tr>
<th>Rated heating output</th>
<th>kW</th>
<th>148.0</th>
<th>194.3</th>
<th>222.9</th>
<th>265.0</th>
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<tbody>
<tr>
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<td>kW</td>
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<td>56.8</td>
<td>65.4</td>
<td>78.4</td>
<td>88.4</td>
</tr>
<tr>
<td><strong>COP E in heating mode</strong></td>
<td></td>
<td>3.4</td>
<td>3.4</td>
<td>3.4</td>
<td>3.3</td>
<td>3.3</td>
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**Dimensions**

- Length: 2153 mm, 2153 mm, 2153 mm, 2153 mm, 2153 mm
- Width: 911 mm, 911 mm, 911 mm, 911 mm, 911 mm
- Height: 1650 mm, 1650 mm, 1650 mm, 1650 mm, 1650 mm

**Weight**

- 1077 kg, 1195 kg, 1251 kg, 1357 kg, 1426 kg

---

**Vitocal 350-HT Pro**

<table>
<thead>
<tr>
<th>Type</th>
<th>BW 353.AHT126</th>
<th>BW 353.AHT147</th>
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<tbody>
<tr>
<td>Number of compressors</td>
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</table>

**Compressor type**

- Piston

**Performance data**  
*(to EN 14511, B0/W35, 5 K spread)*

<table>
<thead>
<tr>
<th>Rated heating output</th>
<th>kW</th>
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<tr>
<td>Power consumption</td>
<td>kW</td>
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<td><strong>COP E in heating mode</strong></td>
<td></td>
<td>4.2</td>
<td>4.2</td>
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</table>

**Performance data**  
*(to EN 14511, W50/W90, 10 K spread)*

<table>
<thead>
<tr>
<th>Rated heating output</th>
<th>kW</th>
<th>337.4</th>
<th>390.0</th>
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<td><strong>COP E in heating mode</strong></td>
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<td>3.3</td>
<td>3.3</td>
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</table>

**Dimensions**

- Length: 2816 mm, 2816 mm
- Width: 911 mm, 911 mm
- Height: 1650 mm, 1650 mm

**Weight**

- 1779 kg, 1865 kg
With many years of experience and a high level of manufacturing expertise, Viessmann is your heat pump manufacturer of choice for standardised and bespoke solutions.
Heat pumps for any application and all kinds of energy from nature or processes

Drawing on almost 40 years of experience, Viessmann works together with its customers to develop energy solutions that will stand up to any challenge.

Whenever standard production appliances from the Vitocal range are no longer adequate, bespoke solutions are the answer. Reliable deadlines and predictable costs – no unexpected surprises. All heat pumps – standard products and special solutions – demonstrate the required outputs on the test bed and in practice. All materials and processes used are certified, and have been awarded the ISO 9001 quality seal.

**Mono mode or dual mode solutions**

Depending on the available space and the tasks required, the heat pump system is engineered and manufactured individually for each application: water/water, brine/water and air/water.

The output spectrum of these systems ranges from 15 to 2000 kW and can be extended if required, for example with a cascade linking several heat pumps.

It is also possible to implement a dual mode heating system. Here, the heat pump provides the base supply to provide domestic hot water and heating water. Any additional heat required, for example when temperatures are extremely low, is then supplied by an oil or gas condensing boiler, which kicks in automatically.

**Intelligent control concepts**

Advanced building services require integrated control concepts in an open system architecture. Viessmann control systems offer the customer maximum functionality and reliability.

As part of the building management system, a control unit for large heat pumps also regulates, for example, the ventilation and heating/cooling circuits, as well as DHW heating. It hooks up the energy meter and captures the energy flow via Modbus – visualised clearly for the user on the display.

Remote monitoring is also possible. This enables operational characteristics and data to be analysed and evaluated. In the event of a fault, suitable steps to eliminate the cause can be initiated immediately.
Brine/water heat pump with a heating output of 290 kW
Heat recovery with geothermal probes: a stable and durable heat source

Brine/water heat pumps utilise the heat stored in the ground. It is both free and readily available.

Geothermal probes are durable and maintenance-free and tap into the heat source. In conjunction with heat pumps, they deliver heating energy, and are also the ideal heat exchanger for natural cooling. In both cases, Viessmann brine/water heat pumps utilise the free heat stored in the ground.

**Perfect size for all kinds of heat transfer**

Heat pumps are designed and sized according to customer specifications. Flow temperatures of 35 to 40 °C are economical and cost effective for area heating systems. If required, they can be equipped with efficient output modulation or multi stage refrigerant circuits.

Ventilation systems work with flow temperatures of up to 55 °C. If, for technical reasons, temperatures of up to 70 °C are required, heat pumps from the Vitocal 350-G Pro series offer the perfect solution.

**Convenient DHW heating**

Frequently, DHW temperatures above 60 °C are required. However, particularly for large heat pumps, the performance proportion for DHW heating is low. In such cases, multi stage heat pumps or hot gas decoupling are a convenient solution. The use of special safety heat exchangers guarantees global potable water requirements are maintained.

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Geothermal probe

The geothermal probe is composed of two U-shaped tubes. In the centre of this tube bundle there is an injection tube through which a bentonite/cement mixture is pressed after the probe has been installed in situ. The drilled hole is filled from bottom to top. This guarantees the entire probe is connected with the surrounding earth, seals off any water-carrying layers from one another and protects the probe.
Water/water heat pump with a heating output of 500 kW

High quality stainless steel tubular heat exchangers guarantee high output and reliable operation of the water/water heat pumps.
Groundwater and surface water: Heat sources for high efficiency

For heat pumps, groundwater in a temperature range of 8 to 12 °C is a very rich heat source, as the temperature level is high all year round.

**Energy from water at 4 °C**
With brine/water heat pumps and using an intermediate brine circuit, heat can still be generated down to a minimum water temperature of 4 °C. Viessmann must be consulted before using water directly in the primary circuit of a brine/water heat pump.

**Stainless steel heat exchangers offer many benefits**
Upon customer request, custom made heat pumps can also be equipped with high quality stainless steel tubular heat exchangers. These have a large volume and generously sized surfaces in the evaporator and offer important benefits when using groundwater or surface water. They are not susceptible to icing up in borderline situations. Light floating matter is simply flushed through, and corrosive chemical liquids have little destructive effect on the high grade stainless steel. With such systems, there is no need for an intermediate brine circuit. Under these conditions, heat generation to a minimum water temperature of 7 °C is possible.

**Modules simplify handling**
When existing heating centres are being modernised or converted, transporting the new unit on site often proves difficult. In such situations, Viessmann can (upon request) deliver the heat pump as several modules for assembly on site.
This heat pump uses waste heat and, at the same time, cools the data processing centre and appliance test beds at the Viessmann head office in Allendorf.
Using waste water and waste heat from production processes as heat sources

Waste water and waste heat contain a considerable amount of latent energy, which is rarely utilised. The fuel to generate this heat has already been paid. Using a large Viessmann heat pump enables this heat to be utilised efficiently.

**DHW heating in hotels**
Waste water from hotels and leisure complexes is usually at a residual temperature of 25 to 35 °C. However, a large amount of fresh hot water is also required for showers and spas. Before the warm waste water reaches the sewer system, a heat pump extracts the residual heat latent in the water and compresses it to a flow temperature of 60 °C or above.

**Utilising waste heat for heating**
Heating doesn’t always come first. In many sectors of industry, process water has to be cooled, for which cooling towers are often used. However, a heat pump is generally a more efficient and economical solution, especially when the heat extracted from this process can be re-used elsewhere.

For both application ranges, Viessmann develops and builds special heat pumps, which have been used successfully in many energy systems for a number of years.

In the 5 star Ritz Carlton Hotel in St Moritz, heat is recovered from waste water.

This waste water heat pump with 150 kW output is used for DHW heating.

This waste water shaft is used as a primary source for DHW heating.
In conjunction with conventional heat generators, air source heat pumps are an economical solution if cooling is also required.
Air as heat source: Ideal in dual mode systems or for cooling

When an air source heat pump is used, the outdoor air fulfills two tasks: for heating, the heat pump utilizes the outdoor air at a temperature of down to 5 °C, managing to cover up to 50 percent of the annual heat load in a particularly efficient way. Where cooling is required, the surplus heat inside the building is routed to the outdoor air.

Split design comprising a heat pump and a cooler
Air source heat pumps in the high output range comprise two units: the indoor heat pump and the dry cooler, which is installed outdoors. Both units of this split design are connected by hydraulic lines carrying brine.

A system of this magnitude is operated as part of a dual mode energy system. From a specific outside temperature, a second heat generator assists with or wholly assumes efficient heat generation. The system is controlled by a common control unit.

Heating and cooling with high efficiency
Air source heat pumps from Viessmann are designed for heating and cooling. In both cases, the highest level of efficiency is guaranteed thanks to variable speed DC fans. The special design of the air heat exchangers, with gaps twice as wide as in conventional chillers, optimises heat transfer. It also lowers the pressure drop of the air stream, ensures a fast defrost process and reduces noise.
A 24 hour service is available for Viessmann bespoke heat pumps.

The individual design of large Viessmann heat pumps and full in-house manufacturing guarantee optimum interaction of all components.
Following installation of a large heat pump, Viessmann engineers or authorised service contractors commission the system, check its performance and reliability, document all the work carried out, and instruct the future operators.

As the only heat pump manufacturer with full in-house manufacturing, Viessmann guarantees optimum interaction of components and assemblies.

**Service round the clock**
Large heat pumps designed for specific projects can be monitored on a contractual basis from the Viessmann control centre. Data communication and remote maintenance are used to detect irregularities early during operation and enable appropriate steps to rectify them to be initiated.

These services are particularly appropriate for large residential complexes, commercial and industrial buildings, restaurants, hotels, and communal facilities such as schools and swimming pools, etc. This, of course, also includes dual mode systems, such as a combination of heat pump and oil/gas boiler to cover peak loads.

The results for the user are a high level of serviceability, top quality and maximum flexibility. Additional building services can be integrated, providing the perfect finishing touches to the range of services on offer.

Internet data communication enables an energy centre to be monitored at any time, and parameters to be adjusted for efficient operation.
Tailor-made solutions for all output sizes

SPECIAL HEAT PUMPS FROM VIESSMANN ARE BUILT ACCORDING TO CUSTOMER SPECIFICATIONS AND FACTORY TESTED FOR FAULT-FREE FUNCTION.

Geothermal heat

ZBW Business College, Duisburg
21,600 drilled metres are spread across 180 geothermal probes reaching to an average depth of 135 metres in twelve probe arrays.

- Performance factor > 4
- DHW temperature > 60 °C
- Cooling demand 100 % covered
- No. of heat pumps: 3
- Cooling capacity installed: 1050 kW for each
- Heating output installed: 1060 kW for each

The three large heat pumps each have a heating output of 1060 kW, cooling capacity of 1050 kW and DHW output of 155 kW.

Schematic diagram
**Heat from groundwater**

**Mammut, Memmingen**
Two brine/water heat pumps draw heat from groundwater through an up to 60 m deep well.

- Standard heat pumps
- Total heating output: 450 kW
- Flow temperature: 50 °C
- No. of heat pumps: 3
- Total heating output installed: 1060 kW

![Schematic diagram](image)

Vitocal 300-G Pro (right) and Vitocal 300-G (left) heat pumps
Tailor-made solutions for all output sizes

Heat from ambient air

**Kiesel, Stockstadt am Rhein**

The Rhine valley’s generally mild climate lent itself to the installation of two air source heat pumps drawing their energy from ambient air.

- Sufficient heating energy for halls and offices down to – 5 °C
- Flow temperature: up to 45 °C
- Concrete core activation and radiating ceiling panels
- No. of heat pumps: 2

Two large air source heat pumps

Schematic diagram

![Diagram showing heat pumps, concrete core activation, heating water buffer cylinder, and distributor for underfloor heating and radiating ceiling panels.](image-url)
Heat from waste heat

**Erfverband, Bergheim**
Groundwater must be pumped from depths as low as 500 meters to keep the mine dry. The water at around 26 °C serves as the primary energy source.

- Free heat from mine drainage water
- Self-cleaning heat exchanger system
- High energy savings
- No. of heat pumps: 2
- Total heating output installed: 620 kW

---

**Schematic diagram**

Vitocal 350-G Pro heat pumps with a total output of 620 kW
Tailor-made solutions for all output sizes

Heat from waste water

**AXIS apartment building, Frankfurt/Main**
Heat recovery from a waste water drain from the Messe Frankfurt exhibition halls – this concept received the Vattenfall Special Award for Energy.

- Utilisation of heat from waste water
- Valveless system technology
- Award-winning living and energy concept
- No. of heat pumps: 1
- Cooling capacity installed: 438 kW
- Heating output installed: 360 kW

The large Viessmann heat pump has an output of 360 kW for heating and 438 kW for cooling.

Schematic diagram

System engineering: ipp-hanau.de
Heat from systems with an ice store

Blauhaus, Mönchengladbach
A power supply utility and university share use of this building under the theme: "studying and understanding energy systems".

- Zero emissions building in effect
- Model energy centre
- Significant CO₂ reduction
- No. of heat pumps: 1
- Heating output installed: 82.8 kW
- Ice store with 175 m³ capacity

The Vitocal 300-G Pro large heat pump has a heating output of 82.8 kW.

Schematic diagram
Sustainability in action
As a family business Viessmann takes the long view and places great value on acting responsibly; sustainability is firmly enshrined in the company’s principles. For Viessmann, sustainability in action means striking a balance between economy, ecology and social responsibility throughout the company; meeting current needs without compromising the quality of life of future generations.

With its strategic sustainability project, Viessmann demonstrates at its own head office in Allendorf (Eder) that the energy and climate policy goals set by the German government for 2050 can in fact be achieved today with the help of commercially available technology.

Viessmann comprehensive range
- Boilers for oil or gas
- Combined heat and power generation
- Hybrid appliances
- Heat pumps
- Wood combustion technology
- Biogas production plants
- Biogas upgrading plants
- Solar thermal
- Photovoltaic
- Electric heating/DHW systems
- Refrigeration systems
- Accessories

Milestones of heating technology
As an environmental pioneer and technological trailblazer for the heating sector, Viessmann has been supplying exceptionally clean and efficient systems for heating, refrigeration and decentralised power generation for decades. Many of the company’s developments are recognised as heating equipment milestones.

Practical partnership
As part of its comprehensive range, Viessmann also offers a wide selection of complementary services. These services include a comprehensive training and further development programme for trade partners at the well equipped training facilities of the Viessmann Academy.

We create living spaces for generations to come.
Viessmann is a leading international manufacturer of efficient energy systems.

<table>
<thead>
<tr>
<th>Year</th>
<th>Viessmann was founded</th>
<th>Employees</th>
<th>Group turnover in billions of euros</th>
<th>Export share in percent</th>
<th>Production companies in countries</th>
<th>Countries with agents and sales companies</th>
<th>Sales offices worldwide</th>
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<td>54</td>
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