

# Presse

## **Heat Pumps from Viessmann: Efficient heating with ambient heat**

Viessmann is presenting three new heat pumps at the ISH this year:

- The brine/water heat pump Vitocal 350-G (20.5 to 84.6 kW) with high flow temperatures from up to 70 °C and an unusually high COP up to 5.0.
- The brine/water heat pump Vitocal 350-HT (20 to 140 kW) is another innovative product launched by Viessmann. The heat pump for use in trade and industry is operated with the particularly climate-friendly refrigerant HFO 1234ze and achieves flow temperatures of up to 90 °C. This high figure is absolutely unique on the market.
- The new heat pump Vitocal 300-A has outputs from 19.6 to 50 kW and extends the supply of efficient air/water heat pumps into the higher output range. In cascades up to 250 kW, it is particularly suitable for applications in large residential buildings, trade and industry.

Heizsysteme  
Industriesysteme  
Kühlsysteme

Viessmann Werke GmbH & Co. KG  
35107 Allendorf (Eder)  
Telefon: +49 (0)6452 702533  
info-pr@viessmann.de  
www.viessmann.de

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## **Vitocal 350-G: New brine/water heat pump for high flow temperatures**

The new brine/water heat pump Vitocal 350-G permits high flow temperatures of up to 70 °C and is therefore an ideal solution for the modernization of heating systems in existing buildings and monovalent DHW generation.

### **56 possible combinations**

The heat pump is available in four output capacities ranging between 20.5 and 42.3 kW. Should higher output be required, two units can be operated as master and slave, which then makes up to 84.6 kW available. In addition, it can easily be combined with the Vitocal 300-G brine/water heat pump. With a total of 56 possible combinations, a suitable solution can be realized for any single situation.

### **Using an additional vapor injection to achieve high temperatures**

The high flow temperatures are achieved with the new heat pump through the use of an additional vapor injection. This well-proven procedure, also known as EVI cycle (Enhanced Vapor Injection), injects refrigerant into the compressor. This lowers the temperature in the compression system and the working substance can be compressed to a higher degree than usual.

### **COP up to 5.0**

The RCD system (refrigerant cycle diagnostic) and the electronic expansion valve work together to ensure the heat pump's high efficiency. The RCD system constantly monitors the cooling circuit and regulates the expansion valve with precision. With a COP of 5.0 (with B0/W35 according to EN 14511), Vitocal 350-G is one of

Heizsysteme  
Industriesysteme  
Kühlsysteme

Viessmann Werke GmbH & Co. KG  
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the most efficient heat pumps on the market. The seasonal performance factor realized as a result of the high COP is the reason behind low annual operating costs.

## **Exceptionally quiet operation**

The exceptionally low operating noise of the heat pump is achieved by completely soundproofed housing and vibration isolation of the compressor. Its sound power level of less than 55 dB(A) makes Vitocal 350-G much quieter than other comparable heat pumps and it can be installed close to living space without any problem.

## **Convenient operation**

The Vitotronic 200 controller offers convenience of operation and parameterization of the heat pump to both operator and technician. A large easy-to-read user interface with an illuminated graphic display shows information on the welcome page about the outside temperature, the preset room temperature, and current flow temperature. Menu-guided operation is intuitive, and there is no need to consult a printed manual. Heating curves, operating times, and the yields of a connected solar thermal system are presented in diagrams.

Furthermore, it is now possible to use remote control for the heat pump system with a smartphone or tablet using the Vitotrol app. This enables the operator to have his heating system under control the whole time and even when away from home.

## **Prepared for PV power and smart grid capable**

The brine/water heat pump is capable of using self-generated electricity from a photovoltaic system and of integration into smart grids. The Vitotronic 200 automatic control, in conjunction with an energy meter, maximizes the use of self-generated electricity from

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Industriesysteme  
Kühlsysteme

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solar power with the heat pump and minimizes the purchase of expensive mains electricity. To do this, it determines from measurement data and self-learning logic functions whether and when a demand for the heating system or DHW generation can be expected. In addition, it calculates on the basis of the last few days the expected solar radiation for the day. In this way, the automatic controller can put running times for the heat pump into a time window when solar power is high.

## **Easy transport and installation**

Compact dimensions and a low weight make transport of the heat pump quite easy. The individual heat pump modules of the master/slave combinations can be transported more easily than one single large heat pump with a comparable total output. This is especially useful if the equipment has to be transported through tight stairwells and narrow corridors.

## **Advantages for market partners**

- Seamless, broad range of performance capabilities
- Enormous planning flexibility due to master/slave packages
- Precise adaptation to a building's heating and hot water needs
- Exact master/slave package balancing based on the building's base and peak loads
- Attractively priced master/slave packages in combination with Vitocal 300-G
- Transport facilitated by low weight and compact dimensions
- Floor clearance is suitable for forklifts.

Heizsysteme  
Industriesysteme  
Kühlsysteme

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35107 Allendorf (Eder)  
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## Advantages for owners

- Low operating costs result from high efficiency in all operating points.
- Operation also possible in existing buildings with radiator heating due to high flow temperatures up to 70° C
- Very convenient for drinking water
- Suitable for utilization of self-generated electricity from PV systems and smart grid integration
- Ultra-convenient remote control mode via Vitotrol app and smartphones/tablets

## Technical specifications

- Outputs: 20.5 to 42.3 kW (single unit)  
41.0 to 84.6 kW (master/slave)
- COP up to 5.0 (with BO/W35 as per EN 14511)
- Max. flow temperature 70° C
- Sound power level < 55 dB(A) with B0/W55

## Availability

The new brine/water heat pump Vitocal 350-G will be available from April 2015.

Heizsysteme  
Industriesysteme  
Kühlsysteme

Viessmann Werke GmbH & Co. KG  
35107 Allendorf (Eder)  
Telefon: +49 (0)6452 702533  
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www.viessmann.de

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## **Vitocal 350-HT: innovative heat pump with climate-friendly refrigerants for commercial and industrial applications**

The brine/water heat pump Vitocal 350-HT with the new climate-friendly refrigerant HFO 1234ze offers flow temperatures up to 90 °C. This high figure is absolutely unique on the market. It can also utilize heat sources such as waste heat from production processes up to a temperature of 45° C. The new mass-produced heat pump is thus especially well-suited to the requirements of commercial and industrial applications as well as for use in local heating networks.

### **Refrigerant is safe and not damaging to the ozone layer or environment.**

The new refrigerant enables Vitocal 350-HT to already fulfill the refrigerant requirements that will be valid starting 2020.

HFO 1234ze does not put any stress on the earth's ozone layer and its Global Warming Potential (GWP) of 6 is particularly climate-friendly. By contrast, the conventional refrigerant R134a, for example, has a GWP value of 1000. HFO 1234ze is almost identical to R134a in its operation.

### **High efficiency ensures low operating costs.**

The new heat pump offers thermal outputs from 20 to 140 kW at B0/W35 °C and from 40 to 280 kW at B40/W90 °C. High efficiency and low operating costs are ensured by up to three semi-hermetic reciprocating compressors. Initially, only one of the compressors is in operation. Only when output demand increases are the other compressors activated. Thus, high efficiency is also guaranteed in partial load operation. Vitocal 350-HT has a COP value of up to

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Industriesysteme  
Kühlsysteme

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4.4 with B0/W35° C. Even at high flow temperatures of 90° C, a COP greater than 3 is still achieved.

The compressor motors have as standard an integrated part winding start. It allows the electric motors to have a graduated start. In this way, the start-up current is less than with motors without part winding. Depending on the network conditions of the power supplier, the starting currents can be reduced even further by means of an optional electronic soft starter.

## **Very quiet operation**

Thanks to the high-quality frame design with fully sound-proofed lining the noise emissions (airborne noise) are reduced to a minimum. The systematic reduction of vibration from the spring-mounted compressors also minimizes the vibrations on the base and therefore the transfer of structure-borne noise to the environment. With a sound power level of just 64 dB(A) when working with the highest output, the new Vitocal 350-HT is setting benchmarks in this performance class.

## **Controller with touch display, remote monitoring and communication**

For convenience of operation, the heat pump is equipped with a PLC-based Vitotronic. Its color touch display enables intuitive operation without having to consult a printed instruction manual. Up to three mixed heating and/or cooling circuits can be monitored and controlled.

For remote monitoring and control the controller offers various communication options. As well as LAN-supported systems there are useful MODBus and BACnet interfaces, which enable the heat pump to be integrated into a superordinate building automation system.

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Industriesysteme  
Kühlsysteme

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## **Installation and service**

The Vitocal 350-HT enclosure has compact dimensions. This means that for building access and handling purposes, a passage only 850 mm wide is needed. This is narrower than the usual door size in commercial buildings.

The electrical equipment is completely integrated into the heat pump enclosure. Connections for circulating pumps are pre-assembled on the top where they are readily accessible. Optional function extensions can be easily installed using prefabricated accessories or can be ordered ex factory when the order is being customized. For time-saving installation of the hydraulic connections, the Vitocal 350-HT features proven self-sealing plug technology. The ventilator required for operation is already integrated and the exhaust duct leading to the outside can simply be made from spiral duct.

The initial start-up of the heat pump is simplified by the start-up assistant which checks and sets the key system parameters in a dialog with the operator. A diagnostic system monitors the functioning of the refrigerant cycle and ensures a rapid, comprehensive view of the current systems. The data log function stores operating data going back 14 days and thus simplifies servicing. Inspection rounds can be reduced by the integrated seal monitoring system, which reduces operating costs.

## **Advantages for market partners**

- High operational reliability thanks to tried and tested components
- A broad range of applications due to primary source temperatures from 0 to 45° C and flow temperatures up to 90° C

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Industriesysteme  
Kühlsysteme

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- Pressure stage up to 10 bar for industrial applications
- Factory-conducted heat testing with function and performance tests
- Easy integration with communications networks and building management systems via Vitotronic SPS (PLC) with ModBus, BACnet and LAN
- Integrated diagnostic system monitors the sealing and function of the refrigerant cycle

## Advantages for operators

- Low operating costs as a result of limited sealing inspection obligations
- Utilization of high waste heat temperature up to 45° C
- Sustainable refrigerant with GWP 6 already fulfills the requirements now that are slated to go into effect in 2020.
- No additional heating is needed for flow temperatures up to 90° C

## Technical specifications

- Outputs: 20 to 140 kW with B0/W35° C  
40 to 280 kW with B40/W90° C
- COP: up to 4.4 with B0/W35° C  
up to 3.1 with B40/W90° C
- Max. flow temperature 90° C
- Sound power level < 64 dB(A)

## Availability

The new brine/water heat pump Vitocal 350-HT will be introduced to the market in September 2015.

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Industriesysteme  
Kühlsysteme

Viessmann Werke GmbH & Co. KG  
35107 Allendorf (Eder)  
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www.viessmann.de

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## **Vitocal 300-A: two-stage air/water heat pump for high heating load**

The new two-stage heat pump Vitocal 300-A expands the range of Viessmann air/water heat pumps. The output range of the new units extends from 19.6 to 50 kW. Up to five of the new heat pumps can be operated as a cascade for heating loads up to 250 kW. That makes the heat pumps suitable for large residential buildings, trade, and industry. Flow temperatures of up to 65 °C make it a very good solution for modernized existing buildings with radiator heating as well. In addition, the compact unit can also be placed outside to save space.

### **Simultaneous heating or cooling and DHW generation**

Vitocal 300-A was engineered for outdoor installation and is available in five different output capacities. Two of the models have a rated heat output of 25 and 47.6 kW, respectively, can be operated in reverse and are therefore suitable in connection with both area heating systems and ventilator convectors to cool buildings in the summer. They also possess an additional heat exchanger for DHW generation alongside the heating or cooling operations. The other three versions are equipped with a changeover valve for switching between the heating and DHW generating operations.

### **Efficient during both partial and full load operation**

The two-stage design of the refrigerant cycle with two compressors ensures that the heat pump operation is economical. Experience has shown that 70 percent of the annual heat output can be generated in partial load operation. In such a case, the heat pump only operates with one compressor and reaches better performance coefficients than in full load operation. Only when the

Heizsysteme  
Industriesysteme  
Kühlsysteme

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output demand increases does the second compressor switch on. At temperatures of 2° C outside and 35° C flow temperature, the heat pump achieves a COP of up to 3.9 (according to EN 14511).

## **Vitotronic 200 controller**

The Vitotronic 200 controller makes using the heat pump very simple and convenient. It is installed on a wall inside the building and has a large illuminated display that depicts heating curves and operating times as interactive diagrams. Menu-guided operation is intuitive, and there is no need to consult a printed manual. An integrated diagnostic function simplifies servicing for the technician by offering a speedy and comprehensive status analysis of the heat pump. Furthermore, the Vitotronic 200 controller is capable of being integrated into smart grids.

## **Convenient operation by radio or app**

The remote control options offer great convenience. Vitotrol 300 RF controls the heat generator by radio from the building. It can also be operated via smartphone or tablet, using the Vitotrol app.

## **Advantages for market partners**

- High air/water heat pump output up to 50 kW for modernized existing buildings and trade, cascaded up to 250 kW
- Broad application spectrum due to models for both heating and cooling
- Simple start-up procedure based on a high degree of system integration with Vitotronic 200 control (Type WO1C)
- Easy servicing due to integrated diagnostic function
- Integration with building services via optional Vitogate 200 KNX

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Industriesysteme  
Kühlsysteme

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35107 Allendorf (Eder)  
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## Advantages for operators

- Low operating costs due to excellent partial load operation efficiency
- Reverse operation models for building cooling have an added integrated heat exchanger for simultaneous DHW generation.
- High level of operating ease through optional integration with superordinate building services, in combination with wireless remote control Vitotrol 300 RF, or via Vitotrol app and smartphone/tablet
- Does not require placement within building

## Technical specifications

- Output 19.6 to 50 kW, cascades up to 250 kW
- COP up to 3.9 (with A2/W35° C as per EN 14511)
- Max. flow temperature 65 °C
- Sound power level  $\leq 74$  dB(A)

## Availability

The new air/water heat pump Vitocal 300-A for heating and DHW generation will be available from April 2015. The models with reverse operation will follow in August 2015.

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Industriesysteme  
Kühlsysteme

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35107 Allendorf (Eder)  
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## **Comprehensive range of products for all fuel sources**

Viessmann offers heat pumps with outputs from 1.7 to 2,000 kW for the use of heat from the ground, groundwater, ambient air, and waste heat. The comprehensive range of products also contains individual solutions with efficient systems and outputs from 1.0 to 120,000 kW for all areas of application and all fuel sources. This includes condensing boiler systems from 1.0 to 6,000 kW and CHP units from 0.75 to 530 kW<sub>el</sub> or from 1.0 to 660 kW<sub>th</sub>, solar thermal systems with flat-plate and vacuum tube collectors, biomass boilers from 2.4 to 50,000 kW for logs, woodchips, and wood pellets, and photovoltaic systems.

The Viessmann Group covers the whole area of refrigeration technology, with a comprehensive product range of temperature-controlled rooms, high-performance cold rooms and cooling units, refrigeration solutions for the food retail industry, as well as accessories and services.

## **Comprehensive services portfolio**

Furthermore, Viessmann supports their market partners with a comprehensive services portfolio. It encompasses a flexible logistics concept, the customer-oriented service concept offered by the Technical Service department, the Viessmann Academy's needs-oriented training program, advertising of special offers, the online platform, and the brand's sponsorship of winter sports.

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## Images / captions



**Image 1:** The new brine/water heat pump Vitocal 350-G made by Viessmann provides a master/slave solution up to 84.6 kW. With a total of 56 possible combinations, Vitocal 300-G can be a suitable solution for any application.



**Image 2:** With the aid of the intermediate vapor injection (EVI, enhanced vapor injection), the new Viessmann Vitocal 350-G has flow temperatures of up to 70 °C.

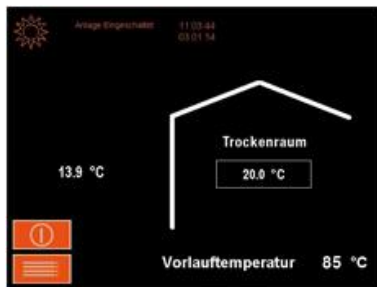
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Industriesysteme  
Kühlsysteme

Viessmann Werke GmbH & Co. KG  
35107 Allendorf (Eder)  
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**Image 3:** The new climate-friendly refrigerant HFO 1234ze allows the brine/water heat pump Vitocal 350-HT by Viessmann high flow temperatures up to 90° C.



**Image 4:** To make operation easier, the Viessmann Vitocal 350-HT is equipped with a PLC-supported, weather-compensated Vitotronic controller with a color touch display.



**Image 5:** The new two-stage heat pump Vitocal 300-A expands the range of Viessmann air/water heat pumps for applications with high heating loads.

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Heizsysteme  
Industriesysteme  
Kühlsysteme

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35107 Allendorf (Eder)  
Telefon: +49 (0)6452 702533  
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