Your energy consumption for heating will be lowered up to 75% with the use of NIBE ground-source heat pumps.

NIBE produces 15 different types of ground-source heat pumps, ranging from 5 kW to 60 kW. By using a cascade connection it is possible to achieve an output of 540 kW. The energy consumption for heating and hot water can be lowered by up to 75% in comparison to heating systems using fossil fuels.

Heat Pumps using the soil or groundwater as the heat source

Surface collector
During the summer, solar heat is stored in the soil. This is either directly absorbed as insulation or as heat from rain and the air from the near-surface layer of the soil. Using this energy for heating is a cost effective method. The highest yield can be obtained from soil with a high water content. The heat is extracted from the soil by means of buried plastic tubing. An environment-friendly, non-freezing emulsion of water-glycol circulates in the tubing. The soil above the earth collector may not be sealed off under any circumstances, i.e. by buildings, asphalt or concrete.

Earth collectors do not require a permit. Installation depth is approx. 20 cm under the local frost line.

Ground probe
In the lower subsoil of the so-called “near-surface geothermal layer” lies a heat source which can be utilized all year long, which has an almost constant temperature. It can be used for all possible building types, large or small, public or private. Depending on the region it is also referred to as, “vertical absorption, ground spit or ground lance”. It requires little space and the ground probe can even be drilled on the smallest of plots. Therefore it is ideal for refurbishment or adaptation from a heating system fuelled by fossil fuels to the use of geothermal energy.

As with a surface collector a mixture of water-glycol circulates in a closed circuit (similar to the cooling system of a car). Depending on the necessary size of the heat pump unit a specialized company ascertains the depth and amount of bore holes in which the u-shaped plastic tubing is installed and pressed, in order to achieve good heat transfer.
Ground water

If ground water is available and easily accessible, it can be utilized as a heat source due to the fact that it has a temperature of between 7 and 12 °C all-year round. It is advisable not to pump water for single and two-family houses from a depth greater than approximately 15 m. This would lead to expenditures being too high.

A distance of approximately 10 to 15 m should be kept between the withdrawal point (supply well) and the reinserter point (deep-well) and furthermore the flow direction should be taken into consideration in order to avoid a “flow short-circuit”. These installations require a permit and must meet statutory requirements. However, this is no problem for NIBE equipment, due to their ISO 14001-certification. An optimal protection according to §7 MWG is provided by the “separator-exchanger-system”.

Function

In the evaporator (heat exchanger) the energy transfers from the cold medium to the refrigerant. The refrigerant will then evaporate. The refrigerant is transported in the circuit by the compressor to increase the pressure and temperature of the refrigerant. In the condenser (heat exchanger) the refrigerant cools and condense. The energy is then transferred from the refrigerant to the heating system of the house, hot water system or air system. The expansion valve regulates the mass flow of the refrigerant to maintain the pressure difference between the high pressure and the low pressure side.
The complete FIGhTER 1140 is enclosed in a robust frame and thanks to sturdy outer panels and effective sound insulation the unit is so quiet, that it does not have a negative effect on living comfort. To ensure simple installation and easy service most panels can easily be removed.

The following docking options are available:

- Direct connection to a low-temperature radiator/underfloor heating system. The flow temperature is automatically matched to the actual outside temperature. Hot water can be heated in a separate water heater (type NIBE Vp A) via a changeover valve.
- Docking to an existing oil/gas/wood-fuelled boiler or accumulator tank with water heater.

FIGhTER 1140 can be installed in different ways (see page 6 and www.nibe.eu).

The temperature of the heating system must be taken into account, because the upper temperature limit of heat pumps is lower than that of for instance oil or gas-fuelled boilers.

Electrical cartridge (1-phase or 3-phase) is installed in the heat pump. Room sensors, hot water control and add-on units are available as accessories.

It is possible to cool via the heat source on warm summer days (free cooling).

NIBE FIGhTER 1140 is a heat pump for heating single and multi-family houses and industrial buildings. The FIGhTER 1140 is a versatile product with advanced control equipment. The control is also prepared for bivalent heating mode in combination with an oil or gas-fired boiler. This heat pump type is available in the output range of 5 to 17 kW in nine versions. A cartridge heater is fitted in the factory installed electrical cartridge with 3 x 3 kW for 3 x 400 V and 3 x 2 kW for 230V.

The efficiency of the FIGhTER 1140 is high, thanks to a highly efficient compressor in a well-dimensioned refrigerant circuit. This results in the considerable coefficient of performance (COP) of 5.0 at 0°C incoming cooling medium temperature and 35°C outgoing heating medium temperature (excluding circulation pumps).

The FIGhTER 1140 is designed with the compressor and the refrigerant unit housed in a separate enclosure for easier servicing. As a result the compressor features double sound-proofing, leading to very low noise levels. Circulation pumps and flexible hoses are already built-in. The heat source and heating circuits are connected at the top of the unit for ease of installation. Dirt filters are also included in the contents of delivery.

The unit can be connected to a low-temperature distribution system such as radiators, convectors or underfloor heating/wall mounted heating.

The FIGhTER 1140 is fitted with a microprocessor to ensure optimal and safe operation. Clear information about status, running time and all essential temperatures in the heat pump is presented on a two-line LCD display. This means that external plant thermometers are not necessary.

The complete FIGhTER 1140 is fitted with a control panel which offers plenty of functions. The benefits are:
- Large control panel with clear symbols
- The easily understandable control simplifies the control and operation of the heat pump
- Double heat curves
- Programmable for climate and cooling control
- Clock
- Timer for temperature control
- Timer for hot water function
- Prepared for GSM- and Internet-integration
- Control unit for swimming pools
- Alarm logbook
- Choice of language
- Soft start relays
- Prepared for the configuration of four different installation systems
- Display of the refrigerant temperature

FIGhTER 1140 has been equipped with a control panel which offers plenty of functions. The benefits are:
### Technical data

<table>
<thead>
<tr>
<th>Type FIGHTER 1140-</th>
<th>Single Phase</th>
<th>Three Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td><em><em>Recorded capacity</em> (B 0/W 35)</em>* kW</td>
<td>1.0</td>
<td>1.8</td>
</tr>
<tr>
<td><em><em>Emitted capacity</em> (B 0/W 35)</em>* kW</td>
<td>4.8</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>CDP at BDW35</strong></td>
<td>4.6</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Height</strong> mm</td>
<td>1030 without adjustable feet (30–50 mm)</td>
<td></td>
</tr>
<tr>
<td><strong>Width</strong> mm</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td><strong>Depth</strong> mm</td>
<td></td>
<td>625</td>
</tr>
<tr>
<td><strong>Net weight</strong> kg</td>
<td>170</td>
<td>190</td>
</tr>
<tr>
<td><strong>Operating voltage</strong> V</td>
<td>230 (1-phase+Zero)</td>
<td></td>
</tr>
<tr>
<td><strong>Integrated cartridge heater (factory installed)</strong> kW</td>
<td>6 (6)</td>
<td></td>
</tr>
<tr>
<td><strong>Refrigerant</strong></td>
<td>R407C</td>
<td></td>
</tr>
</tbody>
</table>

### Design specifications for different heat sources

<table>
<thead>
<tr>
<th>Type FIGHTER 1140-</th>
<th>Single Phase</th>
<th>Three Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ground heat, hose length</strong> <strong>m</strong></td>
<td>200 – 300</td>
<td>400 – 2x300</td>
</tr>
<tr>
<td><strong>Borehole depth for ground probe</strong> <strong>m</strong></td>
<td>70 – 90</td>
<td>140 – 170</td>
</tr>
<tr>
<td><strong>Heating medium flow</strong> l/s</td>
<td>0.10</td>
<td>0.19</td>
</tr>
<tr>
<td><strong>Brine flow</strong> l/s</td>
<td>0.25</td>
<td>0.53</td>
</tr>
</tbody>
</table>

* Specifications relative to 100% Qn with 1800 operating hours heater and 200 operating hours hot water at 450 m above sea level

** Stated values are only approximate guide values, specifications for surface collector with PE-pipe 40 x 2.3.
NIBE FIGHTER 1140

Contents of delivery (see page 19)
NIBE FIGHTER 1140
Dirt filter R25, R32
Temperature sensors with plug contact (hot water control resp. fixed condensing)
Level vessel with safety valve for the heat source
External sensor with enclosure
Compression joint
Insulation tape
Aluminium tape
Outer tubes for sensor
Converter

Accessories (see page 19)
Hot water control VST 11 Three-way valve with motor
Room sensor RG 10
Room thermostat RT 10
Level switch NV10
Pool kit Pool 11
Extra Shunt ESV 20

Docking with electrical immersion heater and hot water tank (floating condensing)
The FIGhTEr 1140 prioritises the filling of hot water heating via the changeover valve (VXV). When the hot water tank/accumulator tank (VpA) is full, the change-over valve (VXV) switches to the heating circuit. The heat pump is then controlled by the outside temperature sensor (UG) in combination with the built-in flow sensor (FG). The immersion heater (ELK) is switched on automatically, when the energy demand exceeds the capacity of the heat pump. The additional system “VST 11” (accessory) is necessary for this option.

Docking with oilboiler (floating condensing)
FIGhTEr 1140 prioritises filling of the water heater (VPA). When the hot water reaches the set temperature, the changeover valve switches to the heating circuit. If the heat pump cannot maintain the correct flow temperature, the oil-fired boiler starts, which also opens the mixing valve (SV). This control option is automatically activated if a boiler sensor has been installed. The flow sensor (FG) and the return sensor (RG) must be located on the main pipe to the radiators. The additional system “VST 11” (accessory) is necessary for this option.
Abbreviations

AV  Shut-off valve
BK/JK  Brine/Ground collector
BV  Check valve
ELK  Electrical cartridge
EL VVB  Electrical hot water tank
NK  Level vessel
SF  Dirt filter
SAV  Safety valve

PG  Boiler temperature sensor
FG  Flow sensor
VVG  Hot water sensor
UG  Outdoor temperature sensor
RG  Return temperature sensor
VPA  Hot water tank/Accumulator tank
VXV  Changeover valve
SV  Mixer valve

Cold water
Hot water
NIBE FIGHTER 1240

The FIGHTER 1240 has been equipped with a control panel which offers plenty of functions. The benefits are:
- Larger control panel with clear symbols
- The easily understandable control simplifies the control and operation of the heat pump
- Double heat curves
- Programmable for climate and cooling control
- Clock
- Timer for temperature control
- Timer for hot water function
- Prepared for GSM- and Internet-integration
- Control unit for swimming pools
- Alarm logbook
- Choice of language
- Soft start relays
- Prepared for the configuration of four different installation systems
- Display of the refrigerant temperature

NIBE FIGHTER 1240 is a complete heat pump unit for heating single-family houses.

This type of unit is available in seven different variants with output levels from 5 to 12 kW.

The efficiency of the FIGHTER 1240 is high, thanks to a highly efficient compressor in a well-dimensioned refrigerant circuit. This results in the considerable coefficient of performance (COP) of 5.0 at 0 °C incoming cooling medium temperature and 35 °C outgoing heating medium temperature (including circulation pumps).

The FIGHTER 1240 is designed in such a manner, that the compressor and the refrigerant unit is housed in a separate enclosure for easier servicing. As a result the compressor features double sound-proofing, resulting in very low noise levels. Both the circulation pumps are built-in and the heat source circuit can be connected to the left or right-hand side of the unit. Dirt filters are also included in the contents of delivery.

The FIGHTER 1240 is fitted with a 160-litre (available in different corrosion protection), double-jacket hot water heater, which is insulated with polyurethane foam to minimise heat loss. The built-in three-stage cartridge heater can be switched on automatically if needed.

The unit can be connected to a low-temperature distribution system such as radiators, convectors or underfloor heating.

The FIGHTER 1240 is fitted with a microprocessor to ensure optimal and safe operation. Clear information about status, running time and all essential temperatures in the heat pump are presented on a two-line LCD display. This means that external plant thermometers are not necessary.

The complete FIGHTER 1240 is enclosed in a robust frame and thanks to sturdy outer panels and effective sound insulation the unit is so quiet, that it does not have a negative effect on living comfort. To ensure simple installation and easy service most panels can easily be removed.

It is possible to cool via the heat source on hot summer day.
Function principle

FIGhTEr 1240 consists of heat pump, hot water tank, cartridge heater, circulation pumps and control system.

FIGhTEr 1240 must be connected to a heat source and heating circuit.

The heat absorption from the heat source (soil, ground water) is usually performed by a closed system in which a mixture of water and antifreeze circulates. Ground water can also be utilized as a heat source, however this necessitates a heat exchanger, which is installed in-between.

In the evaporator the heat pump gives off its energy to the refrigerant, which evaporates and is subsequently compressed in the compressor. The refrigerant, the temperature of which has now been raised, is passed to the condenser where it gives off its energy to the heating circuit and if necessary to the water heater tank. The installed cartridge heater lies behind the condenser, which is automatically activated at higher energy demand.

Contents of delivery (see page 19)

FIGhTEr 1240
Outdoor temperature sensor
Dirt filter
Compression joint
Level vessel with safety valve for the brine
Anchoring clamps
Isolated heat source connection pipes
Transformers for load control

Accessories (see page 19)
Room sensor RG 10
Room thermostat RT 10
Level switch NV10
Pool kit Pool 11
ESV 20 Extra shunt

Technical data

<table>
<thead>
<tr>
<th>Type FIGhTEr 1240-</th>
<th>Single Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Recorded capacity* (B 0 /W 35) kW</td>
<td>1.5</td>
</tr>
<tr>
<td>Emitted capacity* (B 0 /W 35) kW</td>
<td>4.8</td>
</tr>
<tr>
<td>COP at B 0/W 35</td>
<td>4.6</td>
</tr>
<tr>
<td>Hot water tank capacity litres</td>
<td>160</td>
</tr>
<tr>
<td>Double-jacket tank volume litres</td>
<td>45</td>
</tr>
<tr>
<td>Necessary headroom for installation mm</td>
<td>1745 without adjustable feet (30–50 mm)/1890 mm</td>
</tr>
<tr>
<td>Width mm</td>
<td>600</td>
</tr>
<tr>
<td>Depth mm</td>
<td>625</td>
</tr>
<tr>
<td>Net weight kg</td>
<td>280</td>
</tr>
<tr>
<td>Operating voltage V</td>
<td>230 (1-phase+Zero)</td>
</tr>
<tr>
<td>Integrated cartridge heater (factory installed) kW</td>
<td>6 (6)</td>
</tr>
<tr>
<td>Refrigerant</td>
<td>R407C</td>
</tr>
</tbody>
</table>

* In accordance with EN 255 for cooling medium entry at 0°C / hot water flow at 35°C. The electric input for the circulation pumps is not included.

Design specifications for different heat sources

<table>
<thead>
<tr>
<th>Type FIGhTEr 1240-</th>
<th>Single Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Borehole depth for ground probe** m</td>
<td>70–90</td>
</tr>
<tr>
<td>Ground heat, hose length** m</td>
<td>200–300</td>
</tr>
<tr>
<td>Heating medium flow l/s</td>
<td>0.10</td>
</tr>
<tr>
<td>Brine flow l/s</td>
<td>0.25</td>
</tr>
</tbody>
</table>

* Specifications relative to 100% QN with 1800 operating hours hot water at 450 m above sea level.

** Stated values are only approximate guide values, specifications for surface collector with PE-Rohr 40 x 2,3.
NIBE FIGHTER 1330 is a heat pump for heating larger buildings such as multi-family houses and large scale industrial plants. Soil, brine or ground water can be used as an energy source. FIGHTER 1330 is a flexible product with advanced control equipment which offers a multitude of system solutions. FIGHTER 1330 can run at two different flow temperatures – if necessary with double heat curves. It is furthermore prepared for controlling an oil-fuelled or electric boiler. This heat pump can be controlled in a heating system as either a "master" or "slave".

FIGHTER 1330 is manufactured in four versions; these feature an output of 22, 30, 40 and 60kW.

Due to the two highly effective scroll compressors in a refrigerant circuit of suitable size, the FIGHTER 1330 achieves a high efficiency. With a heat factor (COP) of at least 4.3 * with an incoming cooling medium temperature of 0°C and an outgoing heating medium temperature of 35°C, the unit is an effective cost saver.

The maximum flow temperature is 65°C with compressors only.

The heat pump consists of two units which contain less than 3 kg refrigerant per unit. The two compressors, which are activated when they are needed, achieve a higher output control by increased operation intervals, which leads to less wear and increased operational safety.

FIGHTER 1330 enables simultaneous production of heating water and hot water. The production of hot water is prioritised by the activation of one or both compressors.

FIGHTER 1330 is constructed in such a manner, that the compressors and refrigerant circuits are encased in separate units, which ensures safe servicing. This double sound-proofing of the compressors results in very low noise levels. Circulation pumps and flexible hoses are fitted at the factory. Cooling medium and heating circuits are connected on the back of the device. Dirt filters are included in the delivery.

The FIGHTER 1330 is fitted with a microprocessor to ensure optimal and safe operation. Clear information on condition, operation time and all temperatures can be read off from the LCD display. External plant thermometers are therefore not necessary.

FIGHTER 1330 features a robust frame with a strong outer casing. Effective sound-proofing guarantees low noise levels and therefore increased living comfort. Detachable front and side panels make the installation and servicing easier.

Nine FIGHTER 1330 can be connected together via a control unit to achieve an output of up to 540 kW.

It is also possible to cool via brine on hot summer days.

FIGHTER 1330 can be installed in different ways (see page 12 and www.nibe.eu).

Necessary accessories would be for example the room sensor “RG 10” or the equipment for hot water control “VST 11”, the temperature signal distributor “TSF 10” and other equipment.
Contents of delivery (see page 19)

NIBE FIGHTER 1330
Dirt filter R32 resp. R40, R25
Temperature sensor with plug contact
External sensor
Tubes for sensors
Aluminium tape
Insulating tape
Hoses and seals
(WQA-flow R25 inner and outer threads)
Heat transfer paste
Connection hoses with seals
Safety valve

Accessories (see page 19)

- Immersion heater IU
  - 3 kW
  - 6 kW
- Switchbox K11
  (with thermostat and thermal overload protection)
- Hot water control VST 11
- Three-way valve with copper pipe Ø28
  (maximum recommended charging capacity is 15 kW)
- Hot water control VST 20 for higher capacity
- Room sensor RG 10
- Room thermostat RT 10
- Level switch NV10

Technical data

<table>
<thead>
<tr>
<th>NIBE FIGHTER 1330-</th>
<th>22 kW</th>
<th>30 kW</th>
<th>40 kW</th>
<th>60 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption* (B 0/W 35) kW</td>
<td>4.8 (2 x 2.4)</td>
<td>6.8 (2 x 3.4)</td>
<td>9.0 (2 x 4.5)</td>
<td>13.8 (2 x 6.9)</td>
</tr>
<tr>
<td>Heating capacity* (B 0/W 35) kW</td>
<td>23.1 (2 x 11.55)</td>
<td>30.8 (2 x 15.4)</td>
<td>39.0 (2 x 19.5)</td>
<td>60.6 (2 x 30.3)</td>
</tr>
<tr>
<td>COP at B 0/W 35</td>
<td>4.8</td>
<td>4.5</td>
<td>4.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Height mm</td>
<td>1625 (without adjustable feet 30-50 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width mm</td>
<td>600</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth mm</td>
<td>625</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net weight kg</td>
<td>315</td>
<td>338</td>
<td>356</td>
<td>350**</td>
</tr>
<tr>
<td>Voltage V</td>
<td>400 (3-phase+Zero)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerant</td>
<td>R407C</td>
<td>R410A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* In accordance with EN 255 for cooling medium entry at 0° C / hot water flow at 35° C. The electric input for the circulation pumps is not included.

** External brine pump not included.
The FIGhTEr 1330 prioritises filling of hot water with half output (heat pump module B) via the three-way valve (VXV). When the hot water tank/accumulator tank (VpA) is full, the three-way valve (VXV) controls against the heating circuit. At heating demand first module A starts. At increased demand module B also starts for heating. The boiler is switched on automatically, when the energy demand exceeds the capacity of the heat pump, and the mixing valve (sV) is activated, when the temperature of the heating boiler (pG) exceeds 55 °C.

When the hot water tank/accumulator tank is fitted with a cartridge heater (IU) and a switchbox (K11), the function “additional hot water” can be used. We recommend using a contactor which can be bypassed.

The accessories “VST 11”, “IU” and “K11” are necessary for this option.

Docking of two or more FIGhTEr 1330 with heating boiler and accumulator tank (floating condensing)

FIGhTEr 1330 is designed in such a manner, that several units can be connected together to meet high power demands.

If there is a heating demand, one of the compressors starts up. If additional heat is needed, a further compressor is started, until the heating demand is met.

If the compressors cannot maintain the correct flow temperature, the boiler starts. The mixing valve (SV) remains closed until the boiler reaches 55 °C. The flow sensor (FG) and the return sensor (RG) must be located on the main pipe to the radiators.

In order to avoid hot water turbulence in the accumulator tank, a possible hot water circulation connection must be moved to an additional hot water tank (VVB).
The passive cooling module (PKM) consists of a compact unit with integrated separation heat exchanger, circulation pump as well as regulating valves.

PKM makes the passive cooling possible for a building over a suitable "surface heating" (floor, winding or ceiling heating) or a fancoils. The brine water circle is running separately from the cool and/or heating circle. PKM can cool if necessary and at the same time and prepare warm industrial water.

The integrated circulation pump is only used if the free cooling is used. There to the electrical cooling energy needed, only the driving power of the circulation pumps. Therefore the system works with high energy-saving and environmental friendly. For free / passive cooling by the use of brine or groundwater systems is the suitable warming and/or cooling source.

The brine can feed the energy entry into the soil and provides in such a way for an optimal energy use in the cooling.

The NIBE system program offers extensive combination options matching different demands on energy savings solutions - here only some:

### Technical data

<table>
<thead>
<tr>
<th>Model</th>
<th>PKM 10</th>
<th>PKM 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection heating side</td>
<td>mm</td>
<td>22</td>
</tr>
<tr>
<td>Connection cold side</td>
<td>mm</td>
<td>28</td>
</tr>
<tr>
<td>Height (excl. pipe)</td>
<td>mm</td>
<td>515</td>
</tr>
<tr>
<td>Width</td>
<td>mm</td>
<td>600</td>
</tr>
<tr>
<td>Depth</td>
<td>mm</td>
<td>370</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>30</td>
</tr>
<tr>
<td>Cooling output</td>
<td>kW</td>
<td>2–5</td>
</tr>
<tr>
<td>Intended for heat pump (kW at 0/35°C)</td>
<td></td>
<td>5–8</td>
</tr>
</tbody>
</table>
NIBE HPAC

Cooling/Heating Systems with Geothermal exchange

HPAC is an accessory that turns the FIGhTER 1140/ 1240 and 1330 NIBE brine/water heat pumps into complete climate systems.

In the winter the heat pump extracts thermal energy from the heat source and heats the house via the fan convectors. When there is less need for cooling, brine from the cold ground probe circulates through the fan convectors and passively cools the house. However on hot days the heat pump starts and actively cools the fan converter by delivering the available thermal energy to the ground probe system. This results in effective cooling of the house while at the same time charging the ground probe system for winter days.

HPAC provides the most economic and environmentally friendly, total solution for heating, comfort cooling as well as hot water production.

Instead of fan convectors, cooling blankets, air coolers for ventilation systems etc. can be connected for cooling.

Technical data

<table>
<thead>
<tr>
<th>Model</th>
<th>HPAC 28</th>
<th>HPAC 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>mm</td>
<td>515</td>
</tr>
<tr>
<td>Width</td>
<td>mm</td>
<td>600</td>
</tr>
<tr>
<td>Depth</td>
<td>mm</td>
<td>360</td>
</tr>
<tr>
<td>Net weight</td>
<td>kg</td>
<td>30</td>
</tr>
<tr>
<td>Pipe connection</td>
<td></td>
<td>1&quot;</td>
</tr>
<tr>
<td>Heat pump sizes</td>
<td></td>
<td>5–17</td>
</tr>
<tr>
<td>Heating capacity per unit based on (B0/W35) kW</td>
<td></td>
<td>4.8–17.0</td>
</tr>
<tr>
<td>Cooling capacity per unit based on (7/12°C*, 35°C**) kW</td>
<td></td>
<td>11–20</td>
</tr>
</tbody>
</table>

* Temperature to the van coil in active cooling
** Temperature of the brine in active cooling
FLM 30 and FLM 40 are exhaust air modules specially designed to combine recovery of mechanical exhaust air of the heat source in the ground or brine.

FLM 30 and FLM 40 are designed to connect to the FIGHTER 1140/1240 or FIGHTER 1330 heat pump type.

The built-in fan in FLM 30 and FLM 40 extracts the air from the wet areas of the house to the module. Here the recovered energy is transferred to the heat pump from the ground probe or earth collector. This leads to an increase of the temperature of the heat source and enhances the heating capacity of the heat pump. Even when the heat pump is not in operation, energy is stored in the ground and the exhaust air energy is utilised to the full.

The brine/water heat pump capacity is not bound by the amount of air as with an exhaust air heat pump, but the output can be optimally adapted to suit the size of the house.

FLM 30 and FLM 40 are best connected directly to FIGHTER 1240, but can also be wall-mounted.

- FLM 30 and FLM 40 can be connected to FIGHTER 1140/1240/1330 irrespective of output size.
- A total solution for heat recovery from the exhaust air, as well as the increase of the energy levels of the ground or brine.
- The length of the collectors can be optimised.
- High fan capacity and low sound level.
- Simple installation.

**Technical data**

<table>
<thead>
<tr>
<th></th>
<th>FLM 30</th>
<th>FLM 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (mm)</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Depth (mm)</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Max. air flow</td>
<td>approx. m³/h</td>
<td>400</td>
</tr>
<tr>
<td>Max. cooling capacity (kW)</td>
<td>2,3</td>
<td>2,3</td>
</tr>
</tbody>
</table>
VPA is a range of water heaters intended primarily to be connected to heat pumps. They are also suitable for use with other heat sources. VPA is manufactured in three sizes, 200/70, 300/200 and 450/300.

The water heater is made up of a hot water tank, encased by a double jacket of sheet steel. The hot water tank is fitted with copper or enamel corrosion protection on the inside. See table.

The water heaters are designed and approved to meet current pressure vessel standards.

Due to the polyurethane foam insulation the water heater provides excellent thermal insulation.

If necessary VPA enables the use of an immersion heater for sensor controlled hot water heating.

The cold water supply line must be fitted with safety equipment in accordance with current standards.

If the water heaters are heated to more than 65°C, a mixing valve must be fitted. The highest permitted temperature is 100°C.

### Technical data

<table>
<thead>
<tr>
<th>Size</th>
<th>200/70</th>
<th>300/200</th>
<th>450/300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot water tank capacity</td>
<td>litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double-jacket tank volume</td>
<td>litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net weight</td>
<td>kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width x Depth/Diameter</td>
<td>mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat exchange (55/45–10/45°C)</td>
<td>kW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat content at 50 °C</td>
<td>kWh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corresponding hot water amount (40°C)</td>
<td>litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum cartridge heater length</td>
<td>mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. pressure in the double jacket</td>
<td>MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. pressure in hot water tank</td>
<td>MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrosion protection*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Cu = Copper
NIBE VPAS 300/450

Accumulator tank optimally prepared for connection to heat pump in combination with solar panels

NIBE VPAS is an accumulator tank that is primarily designed for connection to heat pumps in combination with solar panels. NIBE VPAS consists of a hot water tank and a surrounding, double walled sheet steel jacket. The hot water tank is lined with copper or enamel to prevent corrosion. The insulation is polyurethane, which provides excellent heat insulation.

NIBE VPAS is equipped with immersion heater connections for the possibility of electrical addition and pocket tubes for temperature sensors to control water heating.

The insulation on NIBE VPAS can be removed, to facilitate work in confined spaces.

NIBE VPAS has four height adjustable feet.

Technical data

<table>
<thead>
<tr>
<th>VPAS 300/450</th>
<th>CU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosion protection</td>
<td>Copper</td>
</tr>
<tr>
<td>Volume, hot water heater</td>
<td>l 300</td>
</tr>
<tr>
<td>Volume, double-shelled</td>
<td>l 450</td>
</tr>
<tr>
<td>Net weight</td>
<td>kg 315</td>
</tr>
<tr>
<td>Height (excl. feet 20–55 mm)</td>
<td>mm 2015</td>
</tr>
<tr>
<td>Required ceiling height</td>
<td>mm 2120</td>
</tr>
<tr>
<td>Diameter</td>
<td>mm 860</td>
</tr>
<tr>
<td>Heat content at 50°C</td>
<td>kWh 17,4</td>
</tr>
<tr>
<td>Equivalent amount of hot water (40°C)*</td>
<td>l 370</td>
</tr>
<tr>
<td>Max. immersion heater length</td>
<td>mm 750</td>
</tr>
<tr>
<td>Max. cut-off pressure in hot water tank</td>
<td>bar 10</td>
</tr>
<tr>
<td>Max. operating pressure in double jacket</td>
<td>bar 3</td>
</tr>
<tr>
<td>Highest permitted temperature</td>
<td>°C 95</td>
</tr>
<tr>
<td>Part No</td>
<td>087720</td>
</tr>
</tbody>
</table>

Solar coil: Ø22 mm, length 9.4 m, surface 2.3 m²

* With an incoming temperature of 10°C and hot water usage of 12 l/min

* Copper
** Copper or enamel
*** Without upper connection pipe

The diameter of the product without insulation is 770 mm.
As buffer vessels for heating systems NIBE offer the UKV 40, 100, 200, 300 and 500. The UKV can be used as normal buffer upstream or downstream or connected to the heat pump in order to avoid stop of circulation.

The UKV 40 is available with or without a spiral for connection to a heating device.

All UKV are designed for maximum 6 bar and 95 °C.

UKV 40 and 100 are wall hung.

UKV 40 is top, bottom and side connected.

UKV 100 has the connections on top and in the bottom.

UKV 200, 300 and 500 are side connected and floor standing.

**Technical data**

<table>
<thead>
<tr>
<th>Model</th>
<th>Volume (litres)</th>
<th>Max operating pressure (bar)</th>
<th>Working temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200/300/500</td>
<td>200/300/500</td>
<td>6</td>
<td>16–95</td>
</tr>
</tbody>
</table>
Contents of delivery (see page 6, 9 and 11)

- Dirt filter R25, R32, R40
- Insulating tape
- Temperature sensor with plug contact
- Aluminium tape
- External sensor with enclosure
- Compression joint
- Level vessel with safety valve
- Heat transfer paste
- Anchoring clamps
- Overload protection EBV 200
- Connection hoses with seals

Accessories

- Bracket pack FLM 30
  Part no. 089 304
- Pipe set FLM 30/FIGHTER 1240
  Copper/Stainless: Part no. 089 318
  Enamel Part no. 089 319
- Extra shunt ESV 21
  Art nr 067 012
- Level monitor NV 10
  Part no. 089 315
- Filling set KB R25/R32
  including insulation
  Part no. 089 368 (max 12 kW)
  Part no. 089 971 (max 30 kW)
- Extra shunt ESV 20
- Room sensor
  RG 10
  Part no. 018 433
- Room thermostat
  RT 10
  Part no. 418 366
- Communication unit RCU 10
  Part no. 418 925
- Passive cooling module PKM
  PKM 10 (intended for 5–8 kW)
  Part no. 089 397
  PKM 20 (intended for 10–17 kW)
  Part no. 089 398
- POOL 11
  Art nr 089 435
- Hot water control VST 11
  Three-way valve with motor
- VST 20
NIBE Energy Systems Limited is a subsidiary of NIBE Heating with its headquarters in Markaryd in Sweden. NIBE is one of Europe’s leading manufacturers in the domestic heating sector.

We supply homes with products that provide domestic hot water and ensure a comfortable indoor climate. We offer high-tech solutions for heating, ventilation, cooling and heat recovery that reflect today’s demand for sustainable construction.