

ELFOEnergy Ground

WSHN-EE WSH-EE



The geothermal heat pump that can be used to heat and cool any kind of building, from new homes to renovation projects, using the free energy found in the ground or water and offering huge benefits in terms of energy saving.

Water chiller

▶ WSHN-EE: reversible heat pump

▶ WSH-EE: cooling only

Water cooled

Indoor installation

Capacity from 7,05 to 41,6 kW



ELFO ENERGY GROUND

Geothermal energy from the ground or ground water can provide heating and cooling at considerably less expense. **WSHN-EE** and **WSH-EE** units are specially designed for use in closed or open circuit geothermal systems, while preserving all the benefits of air-cooled units, such as **efficiency, automatic adaptation, and silent operation.**

This series also comes ready for use. All the components needed for connection are supplied without the need for additional parts. The hydronic group on the sink side (found in all air-cooled units), is backed up by a second hydronic unit on the source side.

available configurations

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---------|-----|-----|-------|------|-----|-----|
| WSHN-EE | S | 17 | 400TN | HYGU | - | - |

(1) LOW TEMPERATURE:

▶ **S** Standard

▶ **B** Low water temperature

This version allows unit operation within the water and glycol mixing temperature range between +5°C and -8°C inclusive.

▶ **BS** Low water temperature source side

Prearrangement for use of source side water, with temperature conditions lower than +5°C.

(2) SUPPLY VOLTAGE:

▶ **400TN** 400/3/50+N (Standard for sizes 41÷121)

▶ **230M** 230/1/50 (Standard for size 17÷31; optional for sizes 41-51)

(3) HYDRONIC GROUP USER SIDE:

▶ **HYGU** Hydronic group user side (Standard)

▶ - Not required

(4) HYDRONIC GROUP SOURCE SIDE:

▶ - Not required (Standard)

▶ **HYGS** Hydronic group source side

(5) SOFT STARTER:

▶ - Not required (Standard)

▶ **SFSTR** Device for inrush current reduction

(6) VALVE:

▶ - Not required (Standard)

▶ **3WV** 3-way valve for sanitary hot water

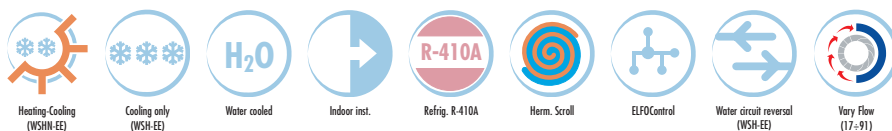
technical data

| Sizes | | 17 | 21 | 31 | 41 | 51 | 61 | 71 | 81 | 91 | 101 | 121 | |
|---|------|---------|----------|------|------|------|------|------------|------|------|------|------|------|
| WSHN-EE - Unit with cooling circuit reversal | | | | | | | | | | | | | |
| Application with radiant panels | | | | | | | | | | | | | |
| W10/W35 (1) | | | | | | | | | | | | | |
| ▶ Heating capacity | (2) | kW | 7,05 | 7,60 | 9,42 | 12,1 | 16,1 | 19,7 | 24,9 | 26,5 | 31,0 | 36,7 | 41,6 |
| Total input | (3) | kW | 1,27 | 1,39 | 1,76 | 2,26 | 2,89 | 3,54 | 4,43 | 4,90 | 5,63 | 6,42 | 7,20 |
| COP EUROVENT | (4) | - | 5,55 | 5,47 | 5,35 | 5,35 | 5,57 | 5,56 | 5,62 | 5,41 | 5,51 | 5,72 | 5,78 |
| COP (EN 14511:2008) | (5) | - | 5,10 | 5,10 | 5,10 | 5,10 | 5,20 | 5,30 | 5,30 | 5,20 | 5,30 | 5,60 | 5,50 |
| B0/W35 (1) | | | | | | | | | | | | | |
| ▶ Heating capacity | | kW | 5,57 | 6,00 | 7,45 | 9,56 | 12,7 | 15,6 | 19,7 | 21,0 | 24,5 | 28,9 | 32,9 |
| Total input | (3) | kW | 1,19 | 1,29 | 1,64 | 2,11 | 2,71 | 3,32 | 4,15 | 4,59 | 5,28 | 6,01 | 6,71 |
| COP EUROVENT | (4) | - | 4,68 | 4,65 | 4,54 | 4,53 | 4,69 | 4,70 | 4,75 | 4,58 | 4,64 | 4,81 | 4,90 |
| W35/W18 (1) | | | | | | | | | | | | | |
| ▶ Cooling capacity | | kW | 8,26 | 8,94 | 10,7 | 13,9 | 17,7 | 21,9 | 26,9 | 29,6 | 33,6 | 37,5 | 42,4 |
| Total input | (3) | kW | 1,39 | 1,57 | 1,90 | 2,32 | 3,05 | 3,89 | 4,81 | 5,18 | 5,95 | 6,88 | 7,57 |
| EER EUROVENT | (7) | - | 5,94 | 5,69 | 5,63 | 5,99 | 5,80 | 5,63 | 5,59 | 5,71 | 5,65 | 5,45 | 5,60 |
| EER (EN 14511:2008) | (8) | - | 5,40 | 5,40 | 5,20 | 5,40 | 5,30 | 5,20 | 5,10 | 5,20 | 5,20 | 5,10 | 5,10 |
| Application with terminal units | | | | | | | | | | | | | |
| W10/W45 (1) | | | | | | | | | | | | | |
| ▶ Heating capacity | (2) | kW | 6,78 | 7,37 | 8,95 | 11,6 | 15,7 | 19,1 | 23,8 | 25,3 | 29,5 | 34,7 | 39,1 |
| Total input | (3) | kW | 1,52 | 1,66 | 2,36 | 2,93 | 3,80 | 4,55 | 5,63 | 6,26 | 7,06 | 8,18 | 8,97 |
| COP EUROVENT | (4) | - | 4,46 | 4,44 | 3,79 | 3,96 | 4,13 | 4,20 | 4,23 | 4,04 | 4,18 | 4,24 | 4,36 |
| B0/W45 (1) | | | | | | | | | | | | | |
| ▶ Heating capacity | | kW | 5,41 | 5,87 | 7,19 | 9,32 | 12,5 | 15,2 | 19,0 | 20,3 | 23,6 | 27,7 | 31,5 |
| Total input | (3) | kW | 1,42 | 1,53 | 2,18 | 2,71 | 3,53 | 4,23 | 5,24 | 5,83 | 6,58 | 7,63 | 8,34 |
| COP EUROVENT | (4) | - | 3,81 | 3,84 | 3,30 | 3,44 | 3,54 | 3,59 | 3,63 | 3,48 | 3,59 | 3,63 | 3,78 |
| W35/W7 (1) | | | | | | | | | | | | | |
| ▶ Cooling capacity | | kW | 6,13 | 6,47 | 7,94 | 10,7 | 13,1 | 16,1 | 20,5 | 22,1 | 25,6 | 29,0 | 32,6 |
| Total input | (3) | kW | 1,40 | 1,53 | 1,90 | 2,32 | 3,17 | 3,86 | 4,66 | 4,80 | 5,80 | 6,78 | 7,50 |
| EER EUROVENT | (7) | - | 4,38 | 4,23 | 4,18 | 4,61 | 4,13 | 4,17 | 4,40 | 4,60 | 4,41 | 4,28 | 4,35 |
| ESEER | (9) | - | 4,82 | 4,71 | 4,49 | 5,15 | 4,50 | 4,48 | 4,86 | 5,14 | 4,87 | 4,76 | 4,80 |
| Application with radiators | | | | | | | | | | | | | |
| W10/W55 (1) | | | | | | | | | | | | | |
| ▶ Heating capacity | (2) | kW | 6,43 | 7,14 | 8,65 | 11 | 14,9 | 17,6 | 22,5 | 23,8 | 28,1 | 32,3 | 37,1 |
| Total input | (3) | kW | 1,94 | 2,03 | 3,12 | 3,70 | 4,87 | 5,81 | 7,15 | 8,06 | 8,74 | 10,3 | 11,1 |
| COP EUROVENT | (4) | - | 3,31 | 3,52 | 2,77 | 2,97 | 3,06 | 3,03 | 3,15 | 2,95 | 3,22 | 3,14 | 3,34 |
| B0/W50 (1) | | | | | | | | | | | | | |
| ▶ Heating capacity | | kW | 5,32 | 5,82 | 7,12 | 9,18 | 12,3 | 14,8 | 18,7 | 19,9 | 23,2 | 27,1 | 30,8 |
| Total input | (2) | kW | 1,59 | 1,69 | 2,51 | 3,06 | 4,00 | 4,79 | 5,91 | 6,61 | 7,33 | 8,57 | 9,29 |
| COP EUROVENT | (4) | - | 3,35 | 3,44 | 2,84 | 3,00 | 3,08 | 3,09 | 3,16 | 3,01 | 3,17 | 3,16 | 3,32 |
| Minimum water temperature | | °C | -8 | -8 | -8 | -8 | -8 | -8 | -8 | -8 | -8 | -8 | -8 |
| Maximum water temperature | | °C | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Water flow rate - user side | (6) | l/s | 0,35 | 0,38 | 0,46 | 0,61 | 0,78 | 0,95 | 1,18 | 1,28 | 1,50 | 1,71 | 1,91 |
| Pump working head - user side | (6) | kPa | 50 | 48 | 51 | 40 | 25 | 49 | 38 | 40 | 32 | 110 | 77 |
| Water flow rate - source side | (6) | l/s | 0,29 | 0,31 | 0,38 | 0,51 | 0,63 | 0,77 | 0,96 | 1,06 | 1,22 | 1,39 | 1,56 |
| Pump working head - source side | (6) | kPa | 52 | 49 | 47 | 36 | 20 | 41 | 30 | 24 | 18 | 84 | 41 |
| Sound pressure level | (10) | dB(A) | 26 | 26 | 27 | 27 | 28 | 29 | 32 | 33 | 34 | 35 | 36 |
| Power supply | | V/Ph/Hz | 230/1/50 | | | | | 400/3/50+N | | | | | |

Data referred to the following conditions:

- (1) W10/W35 water at the user side heat exchanger 30/35°C; inlet water at the source side heat exchanger 10°C
B0/W35 water at the user side heat exchanger 30/35°C; inlet water at the source side heat exchanger 0°C; ethylenic glycol 30% 30%
- (2) W10/W45 water at the user side heat exchanger 40/45°C; inlet water at the source side heat exchanger 10°C
B0/W45 water at the user side heat exchanger 40/45°C; inlet water at the source side heat exchanger 0°C; ethylenic glycol 30%
- (3) W10/W55 water at the user side heat exchanger 45/55°C; inlet water at the source side heat exchanger 10°C
B0/W50 water at the user side heat exchanger 45/50°C; inlet water at the source side heat exchanger 0°C; ethylenic glycol 30%
- (4) W35/W18 water at the user side heat exchanger 23/18°C; inlet water at the source side heat exchanger 30/35°C
W35/W7 water at the user side heat exchanger 12/7°C; inlet water at the source side heat exchanger 30/35°C
- (5) EUROVENT COP: coefficient of performance in heating mode. Relationship between heating capacity output and power input according to EUROVENT. The power input is the total power absorbed by the compressor + fan + auxiliary circuit
- (6) COP (EN 14511:2008) coefficient of performance in heating mode. Relationship between the heating capacity output and the power input according to standard EN 14511:2008. The power input is the total power absorbed by the compressor + auxiliary circuit + part of the pump to overcome internal pressure drops
- (7) The values given refer to performances in heating mode at rated conditions
- (8) EUROVENT EER: coefficient of performance in cooling mode. Relationship between cooling capacity output and power input according to EUROVENT. The power input is the total power absorbed by the compressor + auxiliary circuit
- (9) EER (EN 14511:2008) coefficient of performance in cooling mode. Relationship between the cooling capacity output and the power input according to standard EN 14511:2008. The power input is the total power absorbed by the compressor + auxiliary circuit + part of the pump to overcome internal pressure drops
- (10) ESEER coefficient of seasonal performance in cooling mode calculated according to Eurovent. Outlet water 7°C
- (11) Sound levels refer to units with full load under nominal test conditions. The sound pressure is measured at 10 m from the external surface of the unit in open field conditions.

functions and features



| Sizes | | | 17 | 21 | 31 | 41 | 51 | 61 | 71 | 81 | 91 | 101 | 121 | |
|--|------|---------|----------|------|------|------|------|------------|------|------|------|------|------|--|
| WSH-EE - Unit with water circuit reversal | | | | | | | | | | | | | | |
| Application with radiant panels | | | | | | | | | | | | | | |
| W10/W35 (1) | | | | | | | | | | | | | | |
| ▶ Heating capacity | (2) | kW | 7,27 | 7,85 | 9,59 | 12,6 | 16,2 | 19,9 | 24,6 | 26,4 | 30,9 | 36,1 | 41,4 | |
| Total input | (3) | kW | 1,53 | 1,66 | 1,97 | 2,41 | 3,16 | 3,78 | 4,69 | 5,02 | 5,87 | 6,55 | 7,55 | |
| COP EUROVENT | (4) | - | 4,78 | 4,76 | 4,89 | 5,25 | 5,14 | 5,28 | 5,08 | 5,27 | 5,27 | 5,52 | 5,49 | |
| B0/W35 (1) | | | | | | | | | | | | | | |
| ▶ Heating capacity | | kW | 5,78 | 6,24 | 7,61 | 9,96 | 12,8 | 15,8 | 19,4 | 20,9 | 24,4 | 28,5 | 32,7 | |
| Total input | (3) | kW | 1,43 | 1,52 | 1,81 | 2,24 | 2,93 | 3,52 | 4,38 | 4,67 | 5,47 | 6,11 | 7,03 | |
| COP EUROVENT | (4) | - | 4,04 | 4,11 | 4,20 | 4,45 | 4,37 | 4,49 | 4,43 | 4,48 | 4,46 | 4,66 | 4,65 | |
| W35/W18 (1) | | | | | | | | | | | | | | |
| ▶ Cooling capacity | | kW | 8,34 | 8,95 | 10,1 | 14,0 | 18,3 | 22,5 | 26,1 | 30,0 | 33,4 | 41,8 | 47,5 | |
| Total input | (3) | kW | 1,47 | 1,49 | 1,86 | 2,33 | 2,98 | 3,95 | 4,98 | 5,10 | 6,00 | 6,65 | 7,96 | |
| EER EUROVENT | (7) | - | 5,67 | 6,01 | 5,43 | 6,01 | 6,14 | 5,70 | 5,24 | 5,88 | 5,57 | 6,29 | 5,97 | |
| Application with terminal units | | | | | | | | | | | | | | |
| W10/W45 (1) | | | | | | | | | | | | | | |
| ▶ Heating capacity | (2) | kW | 7,00 | 7,63 | 9,28 | 12,0 | 15,6 | 19,1 | 23,4 | 25,1 | 29,5 | 34,3 | 39,3 | |
| Total input | (3) | kW | 1,89 | 2,06 | 2,53 | 3,02 | 4,12 | 4,62 | 5,90 | 6,39 | 7,21 | 8,17 | 9,22 | |
| COP EUROVENT | (4) | - | 3,68 | 3,69 | 3,65 | 3,96 | 3,78 | 4,13 | 3,96 | 3,92 | 4,09 | 4,19 | 4,26 | |
| B0/W45 (1) | | | | | | | | | | | | | | |
| ▶ Heating capacity | | kW | 5,64 | 6,15 | 7,48 | 9,65 | 12,5 | 15,3 | 18,9 | 20,2 | 23,7 | 27,5 | 31,4 | |
| Total input | (3) | kW | 1,78 | 1,93 | 2,36 | 2,82 | 3,83 | 4,32 | 5,42 | 5,96 | 6,73 | 7,63 | 8,61 | |
| COP EUROVENT | (4) | - | 3,17 | 3,19 | 3,17 | 3,42 | 3,26 | 3,54 | 3,49 | 3,39 | 3,52 | 3,60 | 3,65 | |
| W35/W7 (1) | | | | | | | | | | | | | | |
| ▶ Cooling capacity | | kW | 5,95 | 6,42 | 7,90 | 10,5 | 13,4 | 16,7 | 20,2 | 22,1 | 25,8 | 30,5 | 35,0 | |
| Total input | (3) | kW | 1,51 | 1,64 | 1,95 | 2,40 | 3,15 | 3,78 | 4,82 | 5,02 | 5,88 | 6,56 | 7,55 | |
| EER EUROVENT | (7) | - | 3,91 | 3,89 | 4,03 | 4,36 | 4,24 | 4,41 | 4,18 | 4,39 | 4,38 | 4,64 | 4,63 | |
| ESEER | (9) | - | 4,29 | 4,25 | 4,54 | 4,84 | 4,48 | 4,70 | 4,59 | 4,92 | 4,86 | 5,13 | 5,04 | |
| Application with radiators | | | | | | | | | | | | | | |
| W10/W55 (1) | | | | | | | | | | | | | | |
| ▶ Heating capacity | (2) | kW | 6,65 | 7,37 | 9,03 | 11,5 | 14,8 | 18,0 | 22,4 | 23,8 | 28,2 | 32,1 | 36,6 | |
| Total input | (3) | kW | 2,42 | 2,70 | 3,33 | 3,82 | 5,57 | 5,83 | 7,35 | 8,09 | 8,90 | 10,5 | 11,6 | |
| COP EUROVENT | (4) | - | 2,75 | 2,73 | 2,71 | 3,01 | 2,66 | 3,09 | 3,05 | 2,94 | 3,17 | 3,06 | 3,16 | |
| B0/W50 (1) | | | | | | | | | | | | | | |
| ▶ Heating capacity | | kW | 5,56 | 6,10 | 7,44 | 9,50 | 12,3 | 15,0 | 18,6 | 19,8 | 23,3 | 26,8 | 30,6 | |
| Total input | (2) | kW | 2,00 | 2,19 | 2,69 | 3,17 | 4,44 | 4,83 | 6,08 | 6,71 | 7,47 | 8,54 | 9,57 | |
| COP EUROVENT | (4) | - | 2,78 | 2,79 | 2,77 | 3,00 | 2,77 | 3,11 | 3,06 | 2,95 | 3,12 | 3,14 | 3,20 | |
| Minimum water temperature | | °C | -8 | -8 | -8 | -8 | -8 | -8 | -8 | -8 | -8 | -8 | -8 | |
| Maximum water temperature | | °C | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | |
| Water flow rate - user side | (6) | l/s | 0,35 | 0,38 | 0,46 | 0,61 | 0,78 | 0,95 | 1,18 | 1,28 | 1,50 | 1,71 | 1,91 | |
| Pump working head - user side | (6) | kPa | 50 | 48 | 51 | 40 | 25 | 49 | 38 | 40 | 32 | 110 | 77 | |
| Water flow rate - source side | (6) | l/s | 0,29 | 0,31 | 0,38 | 0,51 | 0,63 | 0,77 | 0,96 | 1,06 | 1,22 | 1,39 | 1,56 | |
| Pump working head - source side | (6) | kPa | 52 | 49 | 47 | 36 | 20 | 41 | 30 | 24 | 18 | 84 | 41 | |
| Sound pressure level | (10) | dB(A) | 26 | 26 | 27 | 27 | 28 | 29 | 32 | 33 | 34 | 35 | 36 | |
| Power supply | | V/Ph/Hz | 230/1/50 | | | | | 400/3/50+N | | | | | | |

Data referred to the following conditions:

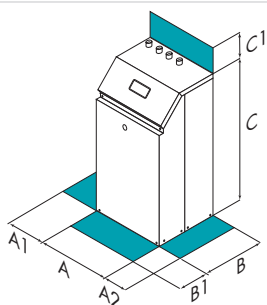
See notes on the previous page

accessories

- ▶ Serial communication module to supervisor (MODBUS)
- ▶ Double temperature control kit, set point compensation 4-20 mA, 3-way valve
- ▶ Phase monitor
- ▶ Set point compensation with according to outdoor enthalpy
- ▶ Source side modulating valve
- ▶ Shut-off valve on source side
- ▶ Rubber antivibration mounts

Key to symbols:

- Accessories supplied separately.

dimensions and clearances

CAUTION! For trouble-free operation of the unit it is essential to maintain the clearances in green.

| Sizes | | 17 | 21 | 31 | 41 | 51 | 61 | 71 | 81 | 91 | 101 | 121 |
|-----------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Length (A) | mm | 402 | 402 | 402 | 402 | 402 | 573 | 573 | 573 | 573 | 573 | 573 |
| Width (B) | mm | 602 | 602 | 602 | 602 | 602 | 604 | 604 | 604 | 604 | 604 | 604 |
| Height (C) | mm | 785 | 785 | 785 | 785 | 785 | 858 | 858 | 858 | 858 | 858 | 858 |
| ▶ (A1) | mm | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| (A2) | mm | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| (B1) | mm | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| (C1) | mm | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| WSHN-EE | | | | | | | | | | | | |
| Weight in oper. | kg | 81 | 83 | 86 | 90 | 98 | 114 | 129 | 147 | 162 | 164 | 169 |
| WSH-EE | | | | | | | | | | | | |
| Weight in oper. | kg | 78 | 80 | 83 | 87 | 95 | 111 | 126 | 144 | 159 | 161 | 166 |

The above data refer to standard units.