



Refra[®]

HEAT PUMPS

Technical Parameters
Cooling and Heating Envelope
Additional Options

V.2.1

R290 Heat Pumps

Natural refrigerants available!
#R290

Choose propane or propylene and
contribute to the environment!

FLAMMA



DESCRIPTION

Small capacity reversible heat pumps with the heating power from 20 kW to 55 kW are designed for small commercial or industrial applications. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. These single circuit heat pumps can be used for heating purposes at ambient temperature of -15°C or higher as well as for cooling purposes with the capacity of 20 kW to 50 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

Compact frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. To prevent ice formation, the frame is equipped with special water drain outlets, which are required to ensure a proper defrosting process. It is also recommended to place the unit on a platform in order to leave some space underneath for water to drain. The galvanized steel and powder coated frame with a reliable insulation material ensures proper unit protection and noise reduction. **An additional 30 mm rock wool material can be supplemented for a super silent unit operation with double insulation.**

PARTS INCLUDED:

- Bitzer Reciprocating compressors with oil charge and oil level monitoring/differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- 4-way valve for reversible operation;
- Single safety valve per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Electronic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- BPHE evaporator;
- R290 leak detector;
- Emergency EX fan;
- EC Fans;
- Muffler.

Technical Parameters

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

| Model | | FLM 103 | FLM 104 | FLM 105 |
|-------|--|---------|---------|---------|
|-------|--|---------|---------|---------|

Standard version

| | | | | |
|-------------------------------------|----|------|------|------|
| Heating capacity ¹ | kW | 39,8 | 47,4 | 51,7 |
| Power consumption | kW | 11,5 | 13,6 | 14,8 |
| COP | | 3,5 | 3,5 | 3,5 |
| SCOP | | 4,2 | 4,5 | 4,5 |
| SSHEE | % | 165 | 177 | 177 |
| Refrigeration capacity ² | kW | 35,1 | 42,2 | 45,8 |
| Power consumption | kW | 11,2 | 13,6 | 14,6 |
| EER | | 3,2 | 3,2 | 3,2 |

System data

| | | | | |
|---|------|------|-----|-----|
| Refrigerant | Type | R290 | | |
| Number of compressors | n | 1 | 1 | 1 |
| Refrigerant quantity per circuit ³ | kg | 7,1 | 7,8 | 7,8 |
| Sound pressure level in 10m ⁴ | dB | 45 | 46 | 47 |

Fan

| | | | | |
|----------------|-------------------|-------|-------|-------|
| Type | | EC | | |
| Number of fans | n | 3 | 3 | 3 |
| Air flow | m ³ /h | 23458 | 23458 | 23458 |

Plate heat exchanger

| | | | | |
|---------------------------------|-------------------|------|------|------|
| Number of plate heat exchangers | n | 1 | 1 | 1 |
| Flow rate heating ¹ | m ³ /h | 7,4 | 8,8 | 9,6 |
| Pressure drop heating | kPa | 25,1 | 34,2 | 39,9 |
| Flow rate cooling ² | m ³ /h | 6,6 | 8,0 | 8,7 |
| Pressure drop cooling | kPa | 25,4 | 35,2 | 40,7 |

Power supply

| | | | | |
|------------------------|---|---------------|------|------|
| Voltage | | 3-400V / 50Hz | | |
| Max. power consumption | A | 26,8 | 31,7 | 34,8 |

Dimensions and weight

| | | | | |
|------------------|----|------|------|------|
| Length | mm | 2620 | 2620 | 2620 |
| Width | mm | 946 | 946 | 946 |
| Height | mm | 1551 | 1551 | 1551 |
| Operating weight | kg | 710 | 730 | 750 |

¹ Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.

² Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.

³ Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.

⁴ Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Heating Envelope | FLAMMA

HEATING | FLM 103

| FLM 103 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 52,0 | 10,1 | 5,1 | 51,0 | 11,2 | 4,5 | 47,1 | 11,5 | 4,2 | 43,6 | 11,7 | 3,8 | 39,9 | 11,8 | 3,5 |
| | 7 | 41,8 | 9,9 | 4,2 | 41,0 | 10,8 | 3,8 | 39,8 | 11,5 | 3,5 | 36,9 | 11,6 | 3,3 | 34,4 | 11,8 | 3,0 |
| | 2 | 36,3 | 9,6 | 3,8 | 35,5 | 10,3 | 3,4 | 34,6 | 10,9 | 3,2 | 33,2 | 11,4 | 3,0 | 31,0 | 11,6 | 2,8 |
| | -7 | 27,8 | 8,8 | 3,2 | 27,2 | 9,3 | 2,9 | 26,3 | 9,2 | 2,9 | 25,6 | 10,1 | 2,5 | 24,8 | 10,6 | 2,3 |
| | -15 | 21,6 | 7,9 | 2,7 | 21,1 | 8,3 | 2,6 | 20,4 | 8,6 | 2,4 | 19,6 | 8,8 | 2,2 | 18,9 | 9,0 | 2,1 |

HEATING | FLM 104

| FLM 104 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 57,0 | 12,1 | 4,7 | 57,0 | 13,3 | 4,3 | 57,0 | 14,0 | 4,3 | 53,5 | 14,2 | 3,9 | 49,7 | 14,5 | 3,6 |
| | 7 | 49,7 | 11,7 | 4,2 | 48,6 | 12,6 | 3,8 | 47,4 | 13,6 | 3,5 | 45,0 | 14,0 | 3,3 | 42,0 | 14,2 | 3,1 |
| | 2 | 43,1 | 11,3 | 3,8 | 42,2 | 12,1 | 3,5 | 41,1 | 12,9 | 3,2 | 39,9 | 13,6 | 2,9 | 38,1 | 14,0 | 2,8 |
| | -7 | 33,0 | 10,3 | 3,2 | 32,2 | 10,9 | 2,9 | 31,3 | 11,4 | 2,7 | 30,3 | 11,8 | 2,6 | 29,3 | 12,2 | 2,4 |
| | -15 | 25,6 | 9,3 | 2,8 | 24,9 | 9,6 | 2,6 | 24,2 | 9,9 | 2,4 | 23,3 | 10,2 | 2,3 | 22,3 | 10,5 | 2,1 |

HEATING | FLM 105

| FLM 105 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 57,0 | 13,6 | 5,1 | 57,0 | 14,6 | 4,6 | 57,0 | 15,0 | 4,2 | 57,0 | 15,3 | 3,9 | 53,3 | 15,5 | 3,6 |
| | 7 | 55,5 | 13,4 | 4,2 | 54,3 | 14,3 | 3,8 | 51,7 | 14,8 | 3,5 | 48,3 | 15,0 | 3,3 | 44,8 | 15,1 | 3,1 |
| | 2 | 48,0 | 12,8 | 3,8 | 46,9 | 13,6 | 3,5 | 45,6 | 14,4 | 3,2 | 43,2 | 14,7 | 3,0 | 40,7 | 14,9 | 2,8 |
| | -7 | 36,6 | 11,5 | 3,2 | 35,6 | 12,1 | 2,9 | 34,6 | 12,5 | 2,8 | 33,4 | 13,1 | 2,6 | 32,1 | 13,5 | 2,4 |
| | -15 | 28,3 | 10,2 | 2,8 | 27,4 | 10,6 | 2,6 | 26,5 | 10,9 | 2,4 | 25,4 | 11,1 | 2,3 | 24,2 | 11,3 | 2,1 |

Cooling Envelope | FLAMMA

COOLING | FLM 103

| FLM 103 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 42,6 | 10,2 | 4,2 | 37,2 | 10,0 | 3,7 | 32,0 | 9,6 | 3,3 | 23,9 | 8,8 | 2,7 | 22,2 | 8,6 | 2,6 |
| | 31 | 39,1 | 10,9 | 3,6 | 35,6 | 10,7 | 3,3 | 30,5 | 10,2 | 3,0 | 22,9 | 9,3 | 2,5 | 21,1 | 9,0 | 2,3 |
| | 35 | 38,3 | 11,3 | 3,4 | 35,0 | 11,2 | 3,2 | 29,2 | 10,8 | 2,7 | 21,8 | 9,7 | 2,2 | 20,1 | 9,4 | 2,1 |
| | 38 | 35,7 | 11,2 | 3,2 | 33,4 | 11,3 | 3,0 | 28,1 | 11,2 | 2,5 | 21,0 | 10,0 | 2,1 | 19,4 | 9,6 | 2,0 |
| | 40 | 34,6 | 11,4 | 3,1 | 32,2 | 11,4 | 2,9 | 27,4 | 11,4 | 2,4 | 20,4 | 10,2 | 2,0 | 18,9 | 9,8 | 1,9 |

COOLING | FLM 104

| FLM 104 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 49,7 | 12,6 | 3,9 | 45,5 | 12,3 | 3,7 | 38,6 | 11,7 | 3,3 | 29,0 | 10,6 | 2,7 | 26,8 | 10,3 | 2,6 |
| | 31 | 47,7 | 13,4 | 3,6 | 43,6 | 13,1 | 3,3 | 36,8 | 12,3 | 3,0 | 27,7 | 11,1 | 2,5 | 25,6 | 10,8 | 2,4 |
| | 35 | 46,2 | 13,5 | 3,5 | 42,2 | 13,6 | 3,2 | 35,2 | 12,9 | 2,7 | 26,3 | 11,6 | 2,3 | 24,3 | 11,2 | 2,2 |
| | 38 | 43,6 | 13,6 | 3,2 | 40,2 | 13,4 | 3,0 | 33,9 | 13,4 | 2,5 | 25,3 | 11,9 | 2,1 | 23,4 | 11,5 | 2,0 |
| | 40 | 42,1 | 13,7 | 3,1 | 38,8 | 13,5 | 2,9 | 32,9 | 13,7 | 2,4 | 24,6 | 12,1 | 2,0 | 22,6 | 11,7 | 1,9 |

COOLING | FLM 105

| FLM 105 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 52,0 | 14,3 | 4,0 | 50,8 | 14,3 | 3,6 | 45,1 | 13,5 | 3,3 | 32,3 | 12,1 | 2,7 | 29,9 | 11,7 | 2,6 |
| | 31 | 52,0 | 14,6 | 3,7 | 49,4 | 14,4 | 3,4 | 43,2 | 14,2 | 3,1 | 30,8 | 12,6 | 2,4 | 28,4 | 12,2 | 2,3 |
| | 35 | 49,2 | 14,6 | 3,4 | 45,8 | 14,6 | 3,2 | 40,2 | 14,3 | 2,8 | 29,3 | 13,1 | 2,2 | 27,0 | 12,6 | 2,1 |
| | 38 | 46,4 | 14,6 | 3,2 | 44,0 | 14,9 | 3,0 | 38,3 | 14,5 | 2,6 | 28,0 | 13,4 | 2,1 | 25,9 | 12,9 | 2,0 |
| | 40 | 44,8 | 14,7 | 3,1 | 41,8 | 14,7 | 2,9 | 36,9 | 14,6 | 2,5 | 27,1 | 13,6 | 2,0 | 25,1 | 13,1 | 1,9 |

R290 Heat Pumps

Natural refrigerants available!
#R290

Choose propane or propylene and
contribute to the environment!

IGNIS



DESCRIPTION

Medium power range reversible heat pumps with the heating power from 30 kW to 145 kW are designed for commercial and industrial buildings with medium power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. These pumps can be used for heating purposes at ambient temperature of -15° or higher as well as for cooling purposes with the capacity of 30 kW to 125 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

Compact frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. To ensure proper defrosting process the frame has special water drain gutters with electric heating cables. This solution helps avoid additional platform placement costs as you can install the unit directly on the ground. CH galvanized steel and powder coated frame with a reliable insulation material ensures proper unit protection and noise reduction. **An additional 50 mm rock wool material can be supplemented for a super silent unit operation with double insulation.**

PARTS INCLUDED:

- Bitzer Reciprocating compressors with oil charge and oil level monitoring/differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- 4-way valve for reversible operation;
- Single safety valve per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Electronic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- BPHE evaporator;
- R290 leak detector;
- Emergency EX fan;
- EC Fans.

Technical Parameters

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

| Model | | IGN 107 | IGN 108 | IGN 109 | IGN 110 | IGN 111 |
|-------------------------------------|----|---------|---------|---------|---------|---------|
| Standard version | | | | | | |
| Heating capacity ¹ | kW | 68,3 | 75,4 | 86,7 | 95,5 | 113,1 |
| Power consumption | kW | 20,6 | 22,8 | 26,1 | 28,6 | 34,0 |
| COP | | 3,3 | 3,3 | 3,3 | 3,3 | 3,3 |
| SCOP | | 4,2 | 4,4 | 4,4 | 4,5 | 4,5 |
| SSHEE | % | 165 | 173 | 173 | 177 | 177 |
| Refrigeration capacity ² | kW | 62,2 | 69,2 | 79,4 | 86,9 | 102,2 |
| Power consumption | kW | 19,9 | 22,3 | 26,1 | 28,6 | 34,8 |
| EER | | 3,1 | 3,1 | 3,0 | 3,0 | 2,9 |

System data

| Refrigerant | Type | R290 | | | | |
|---|------|------|------|------|------|------|
| Number of compressors | n | 1 | 1 | 1 | 1 | 1 |
| Refrigerant quantity per circuit ³ | kg | 10,7 | 10,7 | 10,7 | 10,7 | 11,6 |
| Sound pressure level in 10m ⁴ | dB | 53 | 53 | 53 | 54 | 54 |

Fan

| Type | EC | | | | | |
|----------------|-------------------|-------|-------|-------|-------|-------|
| Number of fans | n | 2 | 2 | 2 | 2 | 2 |
| Air flow | m ³ /h | 47646 | 47646 | 47646 | 47646 | 47646 |

Plate heat exchanger

| | | | | | | |
|---------------------------------|-------------------|------|------|------|------|------|
| Number of plate heat exchangers | n | 1 | 1 | 1 | 1 | 1 |
| Flow rate heating ¹ | m ³ /h | 12,6 | 13,9 | 16,0 | 17,6 | 18,4 |
| Pressure drop heating | kPa | 17,6 | 21,0 | 27,1 | 32,2 | 22,2 |
| Flow rate cooling ² | m ³ /h | 12,9 | 14,3 | 16,4 | 18,1 | 21,4 |
| Pressure drop heating | kPa | 21,7 | 25,9 | 33,4 | 39,7 | 33,3 |

Power supply

| Voltage | 3-400V / 50Hz | | | | | |
|------------------------|---------------|----|----|------|----|------|
| Max. power consumption | A | 40 | 44 | 50,8 | 58 | 66,9 |

Dimensions and weight

| | | | | | | |
|------------------|----|------|------|------|------|------|
| Length | mm | 2937 | 2937 | 2937 | 2937 | 2937 |
| Width | mm | 1376 | 1376 | 1376 | 1376 | 1376 |
| Height | mm | 2340 | 2340 | 2340 | 2340 | 2340 |
| Operating weight | kg | 1100 | 1120 | 1150 | 1170 | 1200 |

¹ Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.

² Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.

³ Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.

⁴ Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Heating Envelope | IGNIS

HEATING | IGN 107

| IGN 107 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 90,1 | 18,4 | 5,0 | 87,7 | 20,0 | 4,5 | 82,1 | 20,7 | 4,0 | 75,6 | 21,0 | 3,7 | 68,9 | 21,1 | 3,3 |
| | 7 | 72,2 | 18,1 | 4,1 | 70,3 | 19,4 | 3,7 | 68,3 | 20,6 | 3,4 | 62,9 | 20,7 | 3,1 | 58,3 | 20,9 | 2,9 |
| | 2 | 62,5 | 17,7 | 3,6 | 60,8 | 18,7 | 3,3 | 59,0 | 19,7 | 3,1 | 57,1 | 20,7 | 2,8 | 52,4 | 20,6 | 2,6 |
| | -7 | 47,4 | 16,5 | 3,0 | 46,1 | 17,2 | 2,7 | 44,7 | 17,9 | 2,6 | 43,2 | 18,5 | 2,4 | 41,5 | 19,1 | 2,2 |
| | -15 | 36,5 | 15,0 | 2,5 | 35,4 | 15,6 | 2,3 | 34,2 | 16,0 | 2,2 | 31,2 | 16,4 | 2,1 | 31,4 | 16,7 | 1,9 |

HEATING | IGN 108

| IGN 108 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 99,1 | 20,4 | 5,0 | 96,8 | 22,2 | 4,5 | 94,3 | 23,9 | 4,0 | 84,0 | 23,3 | 3,7 | 77,8 | 23,8 | 3,3 |
| | 7 | 79,3 | 20,0 | 4,1 | 77,5 | 21,4 | 3,7 | 75,4 | 22,8 | 3,4 | 70,6 | 23,2 | 3,1 | 65,6 | 23,4 | 2,9 |
| | 2 | 68,7 | 19,4 | 3,6 | 67,0 | 20,6 | 3,3 | 65,1 | 21,8 | 3,1 | 63,2 | 22,8 | 2,8 | 59,6 | 23,2 | 2,6 |
| | -7 | 52,3 | 18,0 | 3,0 | 50,9 | 18,8 | 2,8 | 49,5 | 19,5 | 2,6 | 47,8 | 20,2 | 2,4 | 46,0 | 20,9 | 2,3 |
| | -15 | 40,3 | 16,4 | 2,5 | 39,2 | 16,9 | 2,4 | 37,8 | 17,4 | 2,2 | 36,3 | 17,8 | 2,1 | 34,7 | 18,2 | 2,0 |

HEATING | IGN 109

| IGN 109 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|------|------|-----|------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 113,2 | 23,5 | 4,9 | 110,6 | 25,5 | 4,4 | 107,9 | 27,5 | 4,0 | 97,8 | 27,1 | 3,7 | 89,7 | 27,3 | 3,4 |
| | 7 | 90,8 | 22,9 | 4,0 | 88,8 | 24,5 | 3,7 | 86,7 | 26,1 | 3,4 | 82,4 | 26,9 | 3,1 | 75,8 | 26,9 | 2,9 |
| | 2 | 78,7 | 22,2 | 3,6 | 77,0 | 23,6 | 3,3 | 75,1 | 24,9 | 3,1 | 73,1 | 26,2 | 2,8 | 69,1 | 26,8 | 2,6 |
| | -7 | 60,3 | 20,5 | 3,0 | 58,9 | 21,5 | 2,8 | 57,4 | 22,4 | 2,6 | 55,7 | 23,3 | 2,4 | 53,9 | 24,1 | 2,3 |
| | -15 | 46,9 | 18,6 | 2,6 | 45,7 | 19,3 | 2,4 | 44,4 | 20,0 | 2,3 | 42,9 | 20,5 | 2,1 | 41,1 | 21,0 | 2,0 |

Cooling Envelope | IGNIS

COOLING | IGN 107

| IGN 107 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 75,2 | 18,0 | 4,1 | 68,4 | 17,8 | 3,7 | 55,3 | 17,3 | 3,2 | 41,3 | 16,3 | 2,5 | 37,9 | 15,9 | 2,4 |
| | 31 | 72,0 | 19,1 | 3,7 | 65,2 | 18,9 | 3,4 | 52,9 | 18,2 | 2,9 | 39,2 | 16,9 | 2,3 | 36,2 | 16,6 | 2,2 |
| | 35 | 68,7 | 20,3 | 3,3 | 62,2 | 19,9 | 3,0 | 50,4 | 19,1 | 2,6 | 37,3 | 17,6 | 2,1 | 34,4 | 17,2 | 2,0 |
| | 38 | 67,4 | 20,2 | 3,2 | 59,9 | 20,6 | 2,8 | 48,5 | 19,7 | 2,5 | 35,9 | 18,0 | 2,0 | 33,0 | 17,6 | 1,9 |
| | 40 | 64,2 | 20,1 | 3,1 | 58,5 | 21,1 | 2,7 | 47,1 | 20,1 | 2,3 | 34,8 | 18,3 | 1,9 | 32,0 | 17,8 | 1,8 |

COOLING | IGN 108

| IGN 108 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 83,6 | 20,2 | 4,0 | 76,1 | 19,9 | 3,7 | 61,6 | 19,3 | 3,2 | 45,8 | 18,0 | 2,6 | 42,3 | 17,6 | 2,4 |
| | 31 | 80,0 | 21,5 | 3,6 | 72,6 | 21,1 | 3,3 | 58,7 | 20,3 | 2,9 | 43,7 | 18,7 | 2,3 | 40,3 | 18,3 | 2,2 |
| | 35 | 76,4 | 22,8 | 3,3 | 69,2 | 22,3 | 3,0 | 55,9 | 21,3 | 2,6 | 41,6 | 19,4 | 2,1 | 38,3 | 18,9 | 2,0 |
| | 38 | 71,1 | 22,7 | 3,0 | 66,6 | 23,2 | 2,8 | 53,8 | 22,0 | 2,5 | 40,0 | 20,0 | 2,0 | 36,8 | 19,4 | 1,9 |
| | 40 | 68,5 | 23,0 | 2,9 | 65,0 | 23,7 | 2,7 | 52,5 | 22,4 | 2,3 | 38,9 | 20,3 | 1,9 | 35,9 | 19,7 | 1,8 |

COOLING | IGN 109

| IGN 109 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 95,5 | 23,7 | 3,9 | 86,9 | 23,3 | 3,6 | 70,6 | 22,4 | 3,2 | 52,8 | 20,8 | 2,5 | 48,6 | 20,3 | 2,4 |
| | 31 | 91,5 | 25,2 | 3,5 | 83,2 | 24,7 | 3,3 | 67,6 | 23,6 | 2,9 | 50,5 | 21,7 | 2,3 | 46,6 | 21,1 | 2,2 |
| | 35 | 87,2 | 26,7 | 3,2 | 79,4 | 26,1 | 3,0 | 64,4 | 24,8 | 2,6 | 48,0 | 22,5 | 2,1 | 44,4 | 21,9 | 2,0 |
| | 38 | 80,2 | 26,2 | 3,0 | 74,8 | 26,3 | 2,8 | 62,0 | 25,6 | 2,4 | 46,2 | 23,2 | 2,0 | 42,7 | 22,5 | 1,9 |
| | 40 | 77,6 | 26,4 | 2,9 | 71,5 | 26,1 | 2,7 | 60,5 | 26,2 | 2,3 | 45,0 | 23,6 | 1,9 | 41,5 | 22,9 | 1,8 |

Heating Envelope | IGNIS

HEATING | IGN 110

| IGN 110 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 118,0 | 26,5 | 4,9 | 118,0 | 28,8 | 4,4 | 114,5 | 29,1 | 4,0 | 107,5 | 29,7 | 3,7 | 98,5 | 29,8 | 3,4 |
| | 7 | 102,0 | 25,7 | 4,0 | 100,0 | 27,5 | 3,7 | 95,5 | 28,6 | 3,4 | 89,6 | 29,2 | 3,1 | 83,8 | 29,5 | 2,9 |
| | 2 | 88,6 | 24,9 | 3,6 | 86,8 | 26,5 | 3,3 | 84,8 | 28,0 | 3,1 | 80,7 | 28,7 | 2,9 | 75,5 | 29,0 | 2,7 |
| | -7 | 68,1 | 22,9 | 3,0 | 66,7 | 24,1 | 2,8 | 65,0 | 25,1 | 2,6 | 63,3 | 26,2 | 2,5 | 61,4 | 27,1 | 2,3 |
| | -15 | 53,3 | 20,8 | 2,6 | 52,1 | 21,6 | 2,5 | 50,6 | 22,3 | 2,3 | 49,0 | 23,0 | 2,2 | 47,2 | 23,7 | 2,0 |

HEATING | IGN 111

| IGN 111 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 146,3 | 30,7 | 4,9 | 143,7 | 33,4 | 4,4 | 140,8 | 36,2 | 4,0 | 129,8 | 36,2 | 3,6 | 120,1 | 36,5 | 3,3 |
| | 7 | 117,6 | 29,6 | 4,0 | 115,5 | 31,9 | 3,7 | 113,2 | 34,0 | 3,4 | 108,0 | 35,2 | 3,1 | 101,5 | 35,7 | 2,9 |
| | 2 | 102,2 | 28,6 | 3,6 | 100,3 | 30,5 | 3,4 | 98,2 | 32,3 | 3,1 | 95,8 | 34,1 | 2,9 | 92,3 | 35,4 | 2,7 |
| | -7 | 78,6 | 26,2 | 3,1 | 77,1 | 27,6 | 2,9 | 75,4 | 28,7 | 2,7 | 73,5 | 30,0 | 2,5 | 71,3 | 31,2 | 2,3 |
| | -15 | 61,6 | 23,6 | 2,7 | 60,3 | 24,6 | 2,5 | 58,7 | 25,5 | 2,4 | 56,9 | 26,3 | 2,2 | 54,8 | 27,0 | 2,1 |

Cooling Envelope | IGNIS

COOLING | IGN 110

| IGN 110 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 106,9 | 27,3 | 3,8 | 97,9 | 26,8 | 3,6 | 79,7 | 25,6 | 3,1 | 59,8 | 23,6 | 2,5 | 55,1 | 22,9 | 2,4 |
| | 31 | 100,7 | 28,2 | 3,5 | 93,7 | 28,4 | 3,2 | 76,2 | 27,0 | 2,8 | 57,2 | 24,6 | 2,3 | 52,9 | 23,9 | 2,2 |
| | 35 | 93,0 | 28,4 | 3,2 | 86,9 | 28,6 | 3,0 | 72,7 | 28,3 | 2,6 | 54,4 | 25,6 | 2,1 | 50,3 | 24,8 | 2,0 |
| | 38 | 88,6 | 29,1 | 3,0 | 81,8 | 28,8 | 2,8 | 68,6 | 28,4 | 2,4 | 52,4 | 26,3 | 2,0 | 48,4 | 25,5 | 1,9 |
| | 40 | 84,3 | 28,9 | 2,8 | 78,8 | 29,0 | 2,6 | 66,1 | 28,6 | 2,3 | 51,0 | 26,8 | 1,9 | 47,1 | 25,9 | 1,8 |

COOLING | IGN 111

| IGN 111 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 126,3 | 33,6 | 3,7 | 115,9 | 32,7 | 3,4 | 94,7 | 31,0 | 3,1 | 71,2 | 28,1 | 2,5 | 66,0 | 27,3 | 2,4 |
| | 31 | 119,5 | 35,1 | 3,3 | 110,8 | 34,6 | 3,1 | 90,5 | 32,6 | 2,8 | 68,0 | 29,3 | 2,3 | 63,0 | 28,5 | 2,2 |
| | 35 | 110,8 | 35,3 | 3,1 | 102,2 | 34,8 | 2,9 | 86,2 | 34,2 | 2,5 | 64,7 | 30,5 | 2,1 | 59,9 | 29,5 | 2,0 |
| | 38 | 104,2 | 35,5 | 2,9 | 97,5 | 35,6 | 2,7 | 82,1 | 34,8 | 2,4 | 62,2 | 31,4 | 2,0 | 57,6 | 30,3 | 1,9 |
| | 40 | 100,4 | 35,8 | 2,7 | 92,6 | 35,2 | 2,6 | 79,1 | 35,1 | 2,3 | 60,6 | 31,9 | 1,9 | 56,1 | 30,9 | 1,8 |

R290 Heat Pumps

Natural refrigerants available!
#R290

Choose propane or propylene and
contribute to the environment!

IGNIS+



DESCRIPTION

Medium power range reversible heat pumps with the heating power from 20 kW to 155 kW are designed for commercial and industrial buildings with medium power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. These pumps can be used for heating purposes at ambient temperature of -15° or higher as well as for cooling purposes with the capacity of 25 kW to 145 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

One of the main advantages of this unit is that it has two circuits, which will provide maximum operational safety by ensuring continuous system operation in case of emergency. If one circuit is damaged, the other can still use 50% of unit's capacity to service the end user. When the unit is in the defrost stage, one circuit operates in heating mode and the other in defrost mode. This allows the system to ensure a constant required temperature in the water circuit.

Compact frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. To ensure proper defrosting process the frame has special water drain gutters with electric heating cables. This solution helps avoid additional platform placement costs as you can install the unit directly on the ground. CH galvanized steel and powder coated frame with a reliable insulation material ensures proper unit protection and noise reduction. **An additional 50 mm rock wool material can be supplemented for a super silent unit operation with double insulation.**

PARTS INCLUDED:

Bitzer Reciprocating compressors with oil charge and oil level monitoring/differential pressure switch;
Polymer powder painted RAL7035 frame;
Frequency inverters on all compressors;
HP/LP pressure switch per circuit;
HP/LP pressure gauges per circuit;
Necessary pressure and temperature probes;
Liquid receiver per circuit;
Air cooled condenser (copper tubes - aluminium fins);
BPHE evaporator;
EC fans;

4-way valve for reversible operation;
Single safety valve per circuit;
Filter drier on liquid line per circuit;
Sight glass on liquid line per circuit;
Electronic expansion valve per circuit;
Control board with Siemens Climatix controller;
Suction line accumulator per circuit;
Vibration absorbers;
R290 leak detector;
Emergency EX fan.

Technical Parameters

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

| Model | | IGN 209 | IGN 210 | IGN 212 | IGN 213 |
|-------|--|---------|---------|---------|---------|
|-------|--|---------|---------|---------|---------|

Standard version

| | | | | | |
|-------------------------------------|----|------|-------|-------|-------|
| Heating capacity ¹ | kW | 94,1 | 104,7 | 118,8 | 130,3 |
| Power consumption | kW | 28,2 | 31,4 | 36,0 | 39,9 |
| COP | | 3,3 | 3,3 | 3,3 | 3,3 |
| SCOP | | 4,5 | 4,5 | 4,6 | 4,6 |
| SSHEE | % | 177 | 177 | 181 | 181 |
| Refrigeration capacity ² | kW | 86,8 | 95,2 | 110,6 | 120,2 |
| Power consumption | kW | 29,5 | 31,1 | 37,3 | 41,9 |
| EER | | 2,9 | 3,1 | 3,0 | 2,9 |

System data

| Refrigerant | Type | R290 | | | |
|---|------|------|-----|-----|-----|
| Number of compressors | n | 2 | 2 | 2 | 2 |
| Refrigerant quantity per circuit ³ | kg | 4,0 | 4,0 | 4,1 | 4,5 |
| Sound pressure level in 10m ⁴ | dB | 54 | 54 | 54 | 54 |

Fan

| Type | EC | | | | |
|----------------|-------------------|-------|-------|-------|-------|
| Number of fans | n | 2 | 2 | 2 | 2 |
| Air flow | m ³ /h | 47646 | 47646 | 47646 | 47646 |

Plate heat exchanger

| | | | | | |
|---------------------------------|-------------------|------|------|------|------|
| Number of plate heat exchangers | n | 1 | 1 | 1 | 1 |
| Flow rate heating ¹ | m ³ /h | 17,4 | 19,3 | 22,0 | 24,1 |
| Pressure drop heating | kPa | 25,7 | 31,2 | 39,2 | 34,4 |
| Flow rate cooling ² | m ³ /h | 16,4 | 18,0 | 20,9 | 22,7 |
| Pressure drop heating | kPa | 27,2 | 32,2 | 42,2 | 36,2 |

Power supply

| Voltage | 3-400V / 50Hz | | | | |
|------------------------|---------------|----|------|------|------|
| Max. power consumption | A | 57 | 63,2 | 73,2 | 81,2 |

Dimensions and weight

| | | | | | |
|------------------|----|------|------|------|------|
| Length | mm | 3715 | 3715 | 3715 | 3715 |
| Width | mm | 1363 | 1363 | 1363 | 1363 |
| Height | mm | 2342 | 2342 | 2342 | 2342 |
| Operating weight | kg | 1550 | 1560 | 1580 | 1620 |

¹ Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.

² Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.

³ Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.

⁴ Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Heating Envelope | IGNIS+

HEATING | IGN 209

| IGN 209 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 123,0 | 25,5 | 4,9 | 120,4 | 27,7 | 4,4 | 117,7 | 29,9 | 4,0 | 108,1 | 29,9 | 3,7 | 99,5 | 30,0 | 3,4 |
| | 7 | 98,4 | 24,8 | 4,1 | 96,4 | 26,6 | 3,7 | 94,1 | 28,2 | 3,4 | 90,6 | 29,5 | 3,1 | 84,8 | 29,9 | 2,9 |
| | 2 | 85,2 | 24,0 | 3,6 | 83,4 | 25,5 | 3,3 | 81,5 | 26,9 | 3,1 | 79,2 | 28,3 | 2,9 | 76,9 | 29,5 | 2,7 |
| | -7 | 65,0 | 22,0 | 3,0 | 63,6 | 23,1 | 2,8 | 62,0 | 24,0 | 2,6 | 60,2 | 24,9 | 2,5 | 58,1 | 25,8 | 2,3 |
| | -15 | 50,5 | 19,9 | 2,6 | 49,2 | 20,7 | 2,4 | 47,7 | 21,3 | 2,3 | 46,1 | 21,9 | 2,2 | 44,2 | 22,4 | 2,0 |

HEATING | IGN 210

| IGN 210 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 130,0 | 28,9 | 4,9 | 130,0 | 31,3 | 4,4 | 130,0 | 33,1 | 4,0 | 116,2 | 32,0 | 3,7 | 109,6 | 33,0 | 3,4 |
| | 7 | 109,7 | 27,8 | 4,0 | 107,3 | 29,7 | 3,7 | 104,7 | 31,4 | 3,4 | 97,1 | 31,5 | 3,1 | 91,7 | 32,1 | 2,9 |
| | 2 | 94,6 | 26,8 | 3,6 | 92,5 | 28,3 | 3,3 | 90,2 | 29,8 | 3,1 | 86,6 | 30,8 | 2,9 | 81,8 | 31,3 | 2,7 |
| | -7 | 72,0 | 24,4 | 3,0 | 70,3 | 25,4 | 2,8 | 68,3 | 26,3 | 2,6 | 66,0 | 27,2 | 2,5 | 63,5 | 28,1 | 2,3 |
| | -15 | 55,7 | 21,8 | 2,6 | 54,1 | 22,5 | 2,5 | 52,3 | 23,1 | 2,3 | 50,2 | 23,6 | 2,2 | 47,8 | 24,0 | 2,0 |

HEATING | IGN 212

| IGN 212 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 130,0 | 33,1 | 4,8 | 130,0 | 35,8 | 4,3 | 130,0 | 38,5 | 3,9 | 130,0 | 37,8 | 3,6 | 126,7 | 38,4 | 3,4 |
| | 7 | 123,9 | 31,8 | 4,0 | 121,5 | 33,9 | 3,6 | 118,8 | 36,0 | 3,4 | 113,3 | 37,0 | 3,1 | 106,2 | 37,3 | 2,9 |
| | 2 | 107,2 | 30,5 | 3,6 | 105,1 | 32,3 | 3,3 | 102,7 | 34,0 | 3,1 | 100,0 | 35,7 | 2,8 | 97,0 | 37,3 | 2,6 |
| | -7 | 82,0 | 27,6 | 3,0 | 80,1 | 28,9 | 2,8 | 78,2 | 30,0 | 2,7 | 75,9 | 31,1 | 2,5 | 73,4 | 32,2 | 2,3 |
| | -15 | 63,8 | 24,8 | 2,6 | 62,3 | 25,6 | 2,5 | 60,4 | 26,4 | 2,3 | 58,3 | 27,1 | 2,2 | 55,9 | 27,6 | 2,1 |

HEATING | IGN 213

| IGN 213 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 155,0 | 36,9 | 4,7 | 155,0 | 40,0 | 4,2 | 155,0 | 41,8 | 3,9 | 150,8 | 42,8 | 3,6 | 139,6 | 42,9 | 3,3 |
| | 7 | 135,7 | 35,2 | 3,9 | 133,2 | 37,5 | 3,6 | 130,3 | 39,9 | 3,3 | 125,8 | 41,6 | 3,1 | 118,2 | 42,0 | 2,9 |
| | 2 | 117,3 | 33,6 | 3,5 | 115,1 | 35,6 | 3,3 | 112,5 | 37,6 | 3,0 | 109,8 | 39,5 | 2,8 | 106,6 | 41,3 | 2,6 |
| | -7 | 89,7 | 30,3 | 3,0 | 87,8 | 31,7 | 2,8 | 85,7 | 33,0 | 2,6 | 83,3 | 34,3 | 2,5 | 80,7 | 35,4 | 2,3 |
| | -15 | 70,0 | 27,1 | 2,6 | 68,2 | 28,0 | 2,5 | 66,2 | 28,8 | 2,3 | 64,0 | 29,6 | 2,2 | 61,5 | 30,2 | 2,1 |

Cooling Envelope | IGNIS+

COOLING | IGN 209

| IGN 209 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 104,0 | 27,1 | 3,8 | 95,4 | 26,5 | 3,5 | 78,7 | 25,3 | 3,1 | 59,1 | 23,2 | 2,6 | 54,5 | 22,5 | 2,4 |
| | 31 | 99,9 | 28,7 | 3,4 | 91,2 | 28,0 | 3,2 | 75,2 | 26,6 | 2,8 | 56,2 | 24,1 | 2,3 | 52,0 | 23,4 | 2,2 |
| | 35 | 92,0 | 28,9 | 3,1 | 86,8 | 29,5 | 2,9 | 71,6 | 27,8 | 2,6 | 53,5 | 25,0 | 2,1 | 49,4 | 24,3 | 2,0 |
| | 38 | 86,6 | 29,1 | 2,9 | 80,8 | 29,1 | 2,7 | 68,9 | 28,7 | 2,4 | 51,4 | 25,7 | 2,0 | 47,5 | 24,9 | 1,9 |
| | 40 | 83,4 | 29,3 | 2,8 | 76,9 | 28,9 | 2,6 | 66,1 | 28,9 | 2,3 | 49,8 | 26,1 | 1,9 | 46,2 | 25,3 | 1,8 |

COOLING | IGN 210

| IGN 210 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 118,6 | 30,4 | 3,8 | 106,8 | 30,6 | 3,4 | 91,1 | 28,9 | 3,2 | 68,3 | 26,1 | 2,6 | 63,2 | 25,4 | 2,5 |
| | 31 | 105,8 | 30,6 | 3,4 | 102,0 | 30,6 | 3,3 | 87,0 | 30,3 | 2,9 | 65,1 | 27,1 | 2,4 | 60,2 | 26,3 | 2,3 |
| | 35 | 99,5 | 31,6 | 3,1 | 95,2 | 31,1 | 3,0 | 80,9 | 30,6 | 2,6 | 61,8 | 28,1 | 2,2 | 57,1 | 27,2 | 2,1 |
| | 38 | 93,3 | 31,6 | 2,9 | 90,8 | 31,7 | 2,8 | 76,9 | 31,0 | 2,5 | 59,4 | 28,7 | 2,1 | 54,8 | 27,7 | 2,0 |
| | 40 | 89,8 | 31,8 | 2,8 | 87,2 | 31,8 | 2,7 | 74,1 | 31,1 | 2,4 | 57,8 | 29,2 | 2,0 | 53,3 | 28,1 | 1,9 |

COOLING | IGN 212

| IGN 212 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 123,0 | 36,7 | 3,7 | 123,0 | 36,1 | 3,4 | 102,2 | 33,6 | 3,0 | 77,5 | 30,2 | 2,6 | 71,4 | 29,2 | 2,4 |
| | 31 | 123,0 | 37,4 | 3,4 | 118,2 | 36,8 | 3,2 | 98,0 | 35,2 | 2,8 | 74,0 | 31,4 | 2,4 | 68,4 | 30,3 | 2,3 |
| | 35 | 118,1 | 37,3 | 3,1 | 110,6 | 37,3 | 2,9 | 93,6 | 36,7 | 2,6 | 70,3 | 32,4 | 2,2 | 65,0 | 31,3 | 2,1 |
| | 38 | 111,2 | 37,2 | 2,9 | 104,0 | 37,2 | 2,7 | 88,1 | 36,6 | 2,4 | 67,3 | 33,1 | 2,0 | 62,5 | 32,0 | 2,0 |
| | 40 | 107,0 | 37,4 | 2,8 | 100,3 | 37,4 | 2,6 | 85,0 | 36,7 | 2,3 | 65,8 | 33,7 | 2,0 | 60,8 | 32,5 | 1,9 |

COOLING | IGN 213

| IGN 213 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 145,0 | 41,6 | 3,5 | 138,6 | 41,5 | 3,3 | 114,4 | 38,6 | 3,0 | 86,6 | 34,2 | 2,5 | 80,2 | 33,1 | 2,4 |
| | 31 | 137,4 | 41,5 | 3,3 | 129,6 | 42,1 | 3,0 | 109,2 | 40,3 | 2,7 | 82,6 | 35,5 | 2,3 | 76,8 | 34,3 | 2,2 |
| | 35 | 127,9 | 42,0 | 3,0 | 120,2 | 41,9 | 2,8 | 104,2 | 42,0 | 2,5 | 78,7 | 36,7 | 2,1 | 72,9 | 35,4 | 2,1 |
| | 38 | 122,1 | 42,7 | 2,8 | 113,0 | 41,8 | 2,7 | 97,4 | 41,2 | 2,4 | 75,6 | 37,6 | 2,0 | 70,0 | 36,2 | 1,9 |
| | 40 | 117,7 | 42,8 | 2,7 | 108,9 | 41,9 | 2,6 | 94,9 | 42,0 | 2,3 | 73,6 | 38,2 | 1,9 | 68,1 | 36,7 | 1,9 |

R290 Heat Pumps

Natural refrigerants available!
#R290

Choose propane or propylene and
contribute to the environment!

IGNIS+

DESCRIPTION

Medium power range reversible heat pumps with the heating power from 35 kW to 195 kW are designed for commercial and industrial buildings with low to medium power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. These pumps can be used for heating purposes at ambient temperature of -15° or higher as well as for cooling purposes with the capacity of 35 kW to 180 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

One of the main advantages of this unit is that it has two circuits, which will provide maximum operational safety by ensuring continuous system operation in case of emergency. If one circuit is damaged, the other can still use 50% of unit's capacity to service the end user. When the unit is in the defrost stage, one circuit operates in heating mode and the other in defrost mode. This allows the system to ensure a constant required temperature in the water circuit.

Compact frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. To ensure proper defrosting process the frame has special water drain gutters with electric heating cables. This solution helps avoid additional platform placement costs as you can install the unit directly on the ground. CH galvanized steel and powder coated frame with a reliable insulation material ensures proper unit protection and noise reduction. **An additional 50 mm rock wool material can be supplemented for a super silent unit operation with double insulation.**



PARTS INCLUDED:

- Bitzer Reciprocating compressors with oil charge and oil level monitoring/differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- BPHE evaporator;
- EC fans;

- 4-way valve for reversible operation;
- Single safety valve per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Electronic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- R290 leak detector;
- Emergency EX fan.

Technical Parameters

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

| Model | | IGN 216 | IGN 217 | IGN 219 | IGN 220 |
|-------|--|---------|---------|---------|---------|
|-------|--|---------|---------|---------|---------|

Standard version

| | | | | | |
|-------------------------------------|----|-------|-------|-------|-------|
| Heating capacity ¹ | kW | 155,0 | 174,5 | 190,9 | 194,0 |
| Power consumption | kW | 45,5 | 52,1 | 57,2 | 64,6 |
| COP | | 3,4 | 3,3 | 3,3 | 3,0 |
| SCOP | | 4,4 | 4,4 | 4,6 | 4,6 |
| SSHEE | % | 173 | 173 | 181 | 181 |
| Refrigeration capacity ² | kW | 138,1 | 159,9 | 176,8 | 180,0 |
| Power consumption | kW | 44,4 | 52,0 | 57,1 | 55,0 |
| EER | | 3,1 | 3,1 | 3,1 | 3,3 |

System data

| Refrigerant | Type | R290 | | | |
|---|------|------|----|------|------|
| Number of compressors | n | 2 | 2 | 2 | 2 |
| Refrigerant quantity per circuit ³ | kg | 9,0 | 12 | 12,2 | 12,2 |
| Sound pressure level in 10m ⁴ | dB | 54 | 54 | 54 | 54 |

Fan

| Type | EC | | | | |
|----------------|-------------------|-------|-------|-------|-------|
| Number of fans | n | 4 | 4 | 4 | 4 |
| Air flow | m ³ /h | 95296 | 95296 | 95296 | 95296 |

Plate heat exchanger

| | | | | | |
|---------------------------------|-------------------|------|------|------|------|
| Number of plate heat exchangers | n | 1 | 1 | 1 | 1 |
| Flow rate heating ¹ | m ³ /h | 28,6 | 32,2 | 35,3 | 35,8 |
| Pressure drop heating | kPa | 47,2 | 46,8 | 46,0 | 47,4 |
| Flow rate cooling ² | m ³ /h | 26,1 | 30,2 | 33,4 | 34,0 |
| Pressure drop heating | kPa | 46,8 | 48,2 | 47,8 | 49,4 |

Power supply

| Voltage | 3-400V / 50Hz | | | | |
|------------------------|---------------|----|------|-----|-------|
| Max. power consumption | A | 84 | 97,6 | 112 | 133,8 |

Dimensions and weight

| | | | | | |
|------------------|----|------|------|------|------|
| Length | mm | 5385 | 5385 | 5385 | 5385 |
| Width | mm | 1364 | 1364 | 1364 | 1364 |
| Height | mm | 2337 | 2337 | 2337 | 2337 |
| Operating weight | kg | 2150 | 2250 | 2300 | 2420 |

¹ Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.

² Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.

³ Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.

⁴ Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Heating Envelope | IGNIS+

HEATING | IGN 216

| IGN 216 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 155,0 | 41,0 | 4,9 | 155,0 | 0,1 | 4,4 | 155,0 | 48,0 | 4,0 | 155,0 | 46,9 | 3,6 | 153,7 | 47,3 | 3,3 |
| | 7 | 155,0 | 40,0 | 4,0 | 155,0 | 42,8 | 3,6 | 155,0 | 45,5 | 3,3 | 140,1 | 47,3 | 3,1 | 129,9 | 47,3 | 2,8 |
| | 2 | 138,0 | 39,0 | 3,6 | 134,7 | 41,2 | 3,3 | 116,1 | 41,6 | 2,8 | 126,9 | 47,3 | 2,8 | 108,1 | 47,3 | 2,4 |
| | -7 | 105,1 | 35,9 | 2,9 | 102,4 | 37,4 | 2,7 | 99,3 | 39,0 | 2,6 | 95,9 | 47,3 | 2,4 | 92,1 | 47,3 | 2,2 |
| | -15 | 81,1 | 32,5 | 2,5 | 78,7 | 33,5 | 2,4 | 76,0 | 34,6 | 2,2 | 73,0 | 47,3 | 2,1 | 69,5 | 47,3 | 1,9 |

HEATING | IGN 217

| IGN 217 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 175,3 | 35,2 | 5,0 | 175,0 | 45,5 | 4,5 | 175,0 | 49,9 | 4,0 | 175,0 | 53,5 | 3,6 | 175,0 | 53,6 | 3,3 |
| | 7 | 174,5 | 43,5 | 4,0 | 175,0 | 49,0 | 3,7 | 174,5 | 52,1 | 3,4 | 163,5 | 53,2 | 3,1 | 150,5 | 53,0 | 2,9 |
| | 2 | 158,5 | 44,3 | 3,6 | 155,1 | 47,1 | 3,3 | 151,2 | 49,7 | 3,0 | 147,0 | 52,3 | 2,8 | 137,1 | 52,8 | 2,6 |
| | -7 | 121,5 | 40,8 | 3,0 | 118,6 | 42,8 | 2,8 | 115,5 | 44,7 | 2,6 | 111,9 | 46,4 | 2,4 | 108,1 | 48,0 | 2,3 |
| | -15 | 94,4 | 37,1 | 2,6 | 92,1 | 38,4 | 2,4 | 89,1 | 39,7 | 2,3 | 86,2 | 40,7 | 2,1 | 82,7 | 41,7 | 2,0 |

HEATING | IGN 219

| IGN 219 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 194,0 | 44,4 | 5,0 | 194,0 | 49,4 | 4,5 | 194,0 | 55,1 | 4,0 | 194,0 | 59,2 | 3,7 | 194,0 | 59,3 | 3,4 |
| | 7 | 194,0 | 51,1 | 4,0 | 194,0 | 54,8 | 3,7 | 190,9 | 57,2 | 3,4 | 179,3 | 58,2 | 3,1 | 167,4 | 58,9 | 2,9 |
| | 2 | 177,1 | 49,7 | 3,6 | 173,5 | 52,9 | 3,3 | 169,7 | 55,9 | 3,1 | 161,4 | 57,4 | 2,9 | 150,9 | 57,9 | 2,6 |
| | -7 | 136,1 | 45,8 | 3,0 | 133,4 | 48,1 | 2,8 | 130,0 | 50,3 | 2,6 | 126,4 | 52,3 | 2,5 | 122,4 | 54,3 | 2,3 |
| | -15 | 106,4 | 41,5 | 2,6 | 104,0 | 43,2 | 2,5 | 101,2 | 44,6 | 2,3 | 98,0 | 46,0 | 2,2 | 94,2 | 47,3 | 2,0 |

HEATING | IGN 220

| IGN 220 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 194,0 | 43,7 | 5,1 | 194,0 | 48,9 | 4,5 | 194,0 | 54,0 | 4,1 | 194,0 | 60,1 | 3,7 | 194,0 | 65,5 | 3,3 |
| | 7 | 194,0 | 54,0 | 4,1 | 194,0 | 59,8 | 3,7 | 194,0 | 64,6 | 3,4 | 194,0 | 70,7 | 3,1 | 194,0 | 70,8 | 2,8 |
| | 2 | 194,0 | 61,8 | 3,6 | 194,0 | 61,2 | 3,3 | 194,0 | 64,8 | 3,1 | 190,9 | 68,7 | 2,8 | 181,3 | 70,4 | 2,6 |
| | -7 | 158,1 | 56,4 | 3,0 | 153,6 | 55,4 | 2,8 | 150,0 | 58,0 | 2,6 | 145,9 | 60,5 | 2,5 | 141,5 | 62,8 | 2,3 |
| | -15 | 123,7 | 50,8 | 2,6 | 119,8 | 49,2 | 2,5 | 116,8 | 51,1 | 2,3 | 113,3 | 52,7 | 2,2 | 108,9 | 54,2 | 2,1 |

Cooling Envelope | IGNIS+

COOLING | IGN 216

| IGN 216 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|------|------|-----|------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 145,0 | 40,3 | 4,1 | 145,0 | 39,7 | 3,8 | 124,8 | 38,3 | 3,3 | 92,9 | 35,6 | 2,6 | 85,4 | 34,8 | 2,5 |
| | 31 | 145,0 | 42,9 | 3,7 | 143,0 | 42,1 | 3,4 | 119,7 | 40,3 | 3,0 | 89,0 | 37,1 | 2,4 | 82,0 | 36,2 | 2,3 |
| | 35 | 145,0 | 45,4 | 3,4 | 136,7 | 44,4 | 3,1 | 114,4 | 42,2 | 2,7 | 84,9 | 38,5 | 2,2 | 78,2 | 37,5 | 2,1 |
| | 38 | 140,9 | 45,2 | 3,2 | 130,6 | 45,4 | 2,9 | 110,8 | 43,6 | 2,5 | 82,1 | 39,5 | 2,1 | 75,3 | 38,3 | 2,0 |
| | 40 | 135,9 | 45,7 | 3,0 | 124,5 | 45,2 | 2,8 | 108,2 | 44,5 | 2,4 | 80,1 | 40,2 | 2,0 | 73,4 | 38,9 | 1,9 |

COOLING | IGN 217

| IGN 217 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 165,0 | 47,3 | 4,0 | 165,0 | 46,5 | 3,7 | 144,8 | 44,7 | 3,2 | 108,5 | 41,3 | 2,6 | 100,3 | 40,4 | 2,5 |
| | 31 | 165,0 | 50,3 | 3,6 | 165,0 | 49,3 | 3,4 | 139,0 | 47,0 | 3,0 | 104,0 | 43,1 | 2,4 | 96,1 | 42,0 | 2,3 |
| | 35 | 165,0 | 53,2 | 3,3 | 158,3 | 52,0 | 3,1 | 132,9 | 49,2 | 2,7 | 99,3 | 44,8 | 2,2 | 91,7 | 43,5 | 2,1 |
| | 38 | 160,3 | 52,1 | 3,1 | 149,9 | 52,4 | 2,9 | 128,3 | 50,9 | 2,5 | 95,8 | 46,0 | 2,1 | 88,4 | 44,6 | 2,0 |
| | 40 | 155,2 | 52,7 | 3,0 | 145,2 | 52,9 | 2,8 | 125,4 | 52,0 | 2,4 | 93,5 | 46,8 | 2,0 | 86,2 | 45,4 | 1,9 |

COOLING | IGN 219

| IGN 219 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 180,0 | 43,0 | 4,0 | 180,0 | 53,6 | 3,7 | 165,9 | 51,2 | 3,2 | 124,9 | 47,1 | 2,7 | 115,1 | 45,9 | 2,5 |
| | 31 | 180,0 | 56,3 | 3,6 | 180,0 | 55,9 | 3,4 | 159,2 | 53,9 | 3,0 | 119,8 | 49,1 | 2,4 | 110,3 | 47,8 | 2,3 |
| | 35 | 180,0 | 57,7 | 3,3 | 175,0 | 57,1 | 3,1 | 152,2 | 56,5 | 2,7 | 114,4 | 51,1 | 2,2 | 105,8 | 49,6 | 2,1 |
| | 38 | 180,0 | 58,1 | 3,1 | 165,5 | 57,5 | 2,9 | 144,1 | 56,7 | 2,5 | 110,4 | 52,5 | 2,1 | 102,0 | 50,9 | 2,0 |
| | 40 | 170,9 | 57,7 | 3,0 | 159,8 | 58,0 | 2,8 | 139,1 | 57,1 | 2,4 | 107,8 | 53,5 | 2,0 | 99,6 | 51,8 | 1,9 |

COOLING | IGN 220

| IGN 220 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 180,0 | 53,8 | 4,0 | 180,0 | 60,6 | 3,6 | 170,6 | 52,1 | 3,3 | 143,1 | 55,3 | 2,6 | 131,9 | 53,7 | 2,5 |
| | 31 | 180,0 | 59,5 | 3,6 | 180,0 | 67,4 | 3,2 | 167,7 | 56,7 | 3,0 | 137,6 | 57,8 | 2,4 | 126,3 | 55,9 | 2,3 |
| | 35 | 180,0 | 67,6 | 3,2 | 180,0 | 69,8 | 2,9 | 168,1 | 63,4 | 2,7 | 131,2 | 60,0 | 2,2 | 121,4 | 58,1 | 2,1 |
| | 38 | 180,0 | 70,3 | 3,0 | 180,0 | 70,2 | 2,8 | 167,4 | 68,7 | 2,4 | 126,5 | 61,7 | 2,1 | 116,9 | 59,6 | 2,0 |
| | 40 | 180,0 | 70,8 | 2,8 | 180,0 | 70,8 | 2,6 | 161,0 | 69,0 | 2,3 | 123,4 | 62,8 | 2,0 | 114,0 | 60,6 | 1,9 |

R290 Heat Pumps

Natural refrigerants available!
#R290

Choose propane or propylene and
contribute to the environment!

SOLIS

DESCRIPTION

High power reversible heat pumps with the heating power from 55 kW to 310 kW are designed for industrial and commercial buildings with large power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. With high cooling capacity and many possible extra features these products are widely used in various factories, immense supermarkets and warehouses. These pumps can be used for heating purposes at ambient temperature of -15° or higher as well as for cooling purposes with the capacity of 60 kW to 290 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

One of the main advantages of this unit is that it has two circuits, which will provide maximum operational safety by ensuring continuous system operation in case of emergency. If one circuit is damaged, the other can still use 50% of unit's capacity to service the end user. When the unit is in the defrost stage, one circuit operates in heating mode and the other in defrost mode. This allows the system to ensure a constant required temperature in the water circuit.

Comprehensive modular frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. Larger, raised coils are set to simplify the defrosting process and allow water to drain freely. The galvanized steel and powder coated frame with a reliable insulation material ensures proper unit protection as well as noise reduction and can be produced up to 13 meters in length. **An additional 50 mm rock wool material can be supplemented for a super silent unit operation with double insulation.**



PARTS INCLUDED:

- Bitzer Reciprocating compressors with oil charge and oil level monitoring/differential pressure switch;
- Polymer powder painted RAL7035 frame;
- Frequency inverters on all compressors;
- HP/LP pressure switch per circuit;
- HP/LP pressure gauges per circuit;
- Necessary pressure and temperature probes;
- Liquid receiver per circuit;
- Air cooled condenser (copper tubes - aluminium fins);
- BPHE evaporator;
- EC fans;

- 4-way valve for reversible operation;
- Single safety valve per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Electronic expansion valve per circuit;
- Control board with Siemens Climatix controller;
- Suction line accumulator per circuit;
- Vibration absorbers;
- R290 leak detector;
- Emergency EX fan.

Technical Parameters

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

| Model | | SOL 219 | SOL 225 | SOL 226 | SOL 229 |
|-------|--|---------|---------|---------|---------|
|-------|--|---------|---------|---------|---------|

Standard version

| | | | | | |
|-------------------------------------|----|-------|-------|-------|-------|
| Heating capacity ¹ | kW | 194,0 | 251,8 | 263,3 | 292,8 |
| Power consumption | kW | 62,1 | 74,6 | 77,7 | 87,7 |
| COP | | 3,1 | 3,4 | 3,4 | 3,3 |
| SCOP | | 4,7 | 4,7 | 4,7 | 4,6 |
| SSHEE | % | 185 | 185 | 185 | 181 |
| Refrigeration capacity ² | kW | 184,0 | 219,8 | 240,7 | 266,3 |
| Power consumption | kW | 55,0 | 71,2 | 79,6 | 89,6 |
| EER | | 3,3 | 3,1 | 3,0 | 3,0 |

System data

| Refrigerant | Type | R290 | | | |
|---|------|------|------|------|----|
| Number of compressors | n | 2 | 2 | 2 | 2 |
| Refrigerant quantity per circuit ³ | kg | 14,5 | 15,5 | 15,5 | 16 |
| Sound pressure level in 10m ⁴ | dB | 56 | 57 | 58 | 57 |

Fan

| Type | EC | | | | |
|----------------|-------------------|--------|--------|--------|--------|
| Number of fans | n | 4 | 4 | 4 | 4 |
| Air flow | m ³ /h | 110860 | 110860 | 110860 | 110860 |

Plate heat exchanger

| | | | | | |
|---------------------------------|-------------------|------|------|------|------|
| Number of plate heat exchangers | n | 1 | 1 | 1 | 1 |
| Flow rate heating ¹ | m ³ /h | 35,8 | 46,5 | 48,6 | 54,1 |
| Pressure drop heating | kPa | 47,4 | 32,4 | 35,2 | 42,8 |
| Flow rate cooling ² | m ³ /h | 34,8 | 41,5 | 45,5 | 50,3 |
| Pressure drop heating | kPa | 49,8 | 30,4 | 35,9 | 32,0 |

Power supply

| Voltage | 3-400V / 50Hz | | | | |
|------------------------|---------------|-------|-------|-------|-----|
| Max. power consumption | A | 134,8 | 139,4 | 158,4 | 203 |

Dimensions and weight

| | | | | | |
|------------------|----|------|------|------|------|
| Length | mm | 4431 | 4431 | 4431 | 4431 |
| Width | mm | 2260 | 2260 | 2260 | 2260 |
| Height | mm | 2434 | 2434 | 2434 | 2434 |
| Operating weight | kg | 2400 | 2600 | 2800 | 3100 |

¹ Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.

² Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.

³ Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.

⁴ Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Heating Envelope | SOLIS

HEATING | SOL 219

| SOL 219 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 194,0 | 41,7 | 5,3 | 194,0 | 46,6 | 4,7 | 194,0 | 51,6 | 4,2 | 194,0 | 57,7 | 3,8 | 194,0 | 64,3 | 3,4 |
| | 7 | 194,0 | 52,4 | 4,2 | 194,0 | 57,2 | 3,8 | 194,0 | 62,1 | 3,5 | 194,0 | 68,1 | 3,2 | 194,0 | 70,1 | 2,9 |
| | 2 | 194,0 | 57,6 | 3,7 | 194,0 | 61,5 | 3,4 | 194,0 | 65,2 | 3,2 | 194,0 | 68,9 | 2,9 | 185,3 | 69,9 | 2,7 |
| | -7 | 163,2 | 52,8 | 3,1 | 159,7 | 55,6 | 2,9 | 155,7 | 58,3 | 2,7 | 151,2 | 60,8 | 2,5 | 146,2 | 63,3 | 2,3 |
| | -15 | 127,1 | 47,6 | 2,7 | 124,0 | 49,6 | 2,5 | 120,7 | 51,3 | 2,4 | 116,7 | 53,0 | 2,2 | 112,5 | 54,5 | 2,1 |

HEATING | SOL 225

| SOL 225 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 310,0 | 65,4 | 5,0 | 310,0 | 71,5 | 4,5 | 302,8 | 76,2 | 4,1 | 281,2 | 77,1 | 3,8 | 251,3 | 74,9 | 3,5 |
| | 7 | 262,5 | 64,8 | 4,2 | 257,5 | 69,7 | 3,8 | 251,8 | 74,5 | 3,5 | 237,0 | 76,1 | 3,2 | 212,8 | 73,9 | 3,0 |
| | 2 | 227,8 | 62,6 | 3,8 | 223,2 | 66,8 | 3,5 | 218,2 | 70,9 | 3,2 | 212,5 | 74,9 | 2,9 | 191,5 | 72,6 | 2,7 |
| | -7 | 174,8 | 57,2 | 3,2 | 171,1 | 60,2 | 2,9 | 166,8 | 63,1 | 2,7 | 162,4 | 65,5 | 2,6 | 157,0 | 68,2 | 2,4 |
| | -15 | 136,4 | 51,4 | 2,7 | 133,2 | 53,6 | 2,6 | 129,4 | 55,4 | 2,4 | 125,1 | 57,1 | 2,3 | 120,3 | 58,7 | 2,1 |

HEATING | SOL 226

| SOL 226 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 310,0 | 72,5 | 5,0 | 310,0 | 74,5 | 4,5 | 310,0 | 77,0 | 4,1 | 294,8 | 80,7 | 3,8 | 273,7 | 82,0 | 3,5 |
| | 7 | 293,8 | 73,8 | 4,1 | 275,8 | 75,0 | 3,8 | 263,3 | 77,7 | 3,5 | 250,1 | 80,2 | 3,2 | 230,0 | 79,6 | 3,0 |
| | 2 | 255,3 | 69,4 | 3,7 | 223,3 | 72,6 | 3,2 | 234,2 | 76,0 | 3,2 | 222,7 | 77,9 | 3,0 | 210,8 | 79,5 | 2,7 |
| | -7 | 196,8 | 63,4 | 3,1 | 192,9 | 68,3 | 2,9 | 188,4 | 71,5 | 2,7 | 183,2 | 74,5 | 2,5 | 173,8 | 75,3 | 2,4 |
| | -15 | 154,5 | 57,0 | 2,7 | 151,0 | 60,7 | 2,6 | 146,9 | 63,0 | 2,4 | 142,4 | 64,9 | 2,3 | 137,3 | 66,8 | 2,1 |

HEATING | SOL 229

| SOL 229 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 310,0 | 69,9 | 5,1 | 310,0 | 79,0 | 4,5 | 310,0 | 88,2 | 4,1 | 310,0 | 90,1 | 3,7 | 310,0 | 94,5 | 3,4 |
| | 7 | 310,0 | 80,7 | 4,1 | 306,8 | 84,7 | 3,8 | 292,8 | 87,7 | 3,5 | 278,1 | 90,2 | 3,2 | 263,2 | 92,1 | 3,0 |
| | 2 | 287,7 | 81,7 | 3,6 | 273,1 | 83,4 | 3,4 | 260,9 | 85,7 | 3,2 | 248,0 | 87,7 | 2,9 | 234,8 | 89,2 | 2,7 |
| | -7 | 227,3 | 76,3 | 3,1 | 220,6 | 79,2 | 2,9 | 210,9 | 80,6 | 2,7 | 200,6 | 81,6 | 2,5 | 192,4 | 83,6 | 2,4 |
| | -15 | 179,6 | 68,3 | 2,7 | 175,4 | 71,3 | 2,5 | 171,0 | 73,8 | 2,4 | 165,8 | 76,2 | 2,3 | 160,3 | 78,4 | 2,1 |

Cooling Envelope | SOLIS

COOLING | SOL 219

| SOL 219 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 184,0 | 48,3 | 4,4 | 184,0 | 53,2 | 4,0 | 175,1 | 51,0 | 3,4 | 145,1 | 53,7 | 2,7 | 134,1 | 52,2 | 2,6 |
| | 31 | 184,0 | 53,7 | 3,9 | 184,0 | 59,6 | 3,5 | 174,6 | 56,6 | 3,1 | 139,6 | 56,2 | 2,5 | 128,5 | 54,5 | 2,4 |
| | 35 | 184,0 | 60,4 | 3,5 | 184,0 | 66,3 | 3,1 | 172,9 | 62,4 | 2,8 | 133,8 | 58,6 | 2,3 | 123,6 | 56,8 | 2,2 |
| | 38 | 184,0 | 66,5 | 3,2 | 184,0 | 72,3 | 2,9 | 171,0 | 66,7 | 2,6 | 129,1 | 60,3 | 2,1 | 119,2 | 58,3 | 2,0 |
| | 40 | 184,0 | 70,7 | 3,0 | 184,0 | 74,2 | 2,7 | 169,6 | 69,3 | 2,5 | 126,5 | 61,5 | 2,1 | 116,3 | 49,4 | 2,0 |

COOLING | SOL 225

| SOL 225 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 273,1 | 69,5 | 4,1 | 255,8 | 70,2 | 3,8 | 218,3 | 65,1 | 3,4 | 163,6 | 59,2 | 2,8 | 150,8 | 57,6 | 2,6 |
| | 31 | 254,3 | 70,4 | 3,7 | 235,6 | 69,8 | 3,5 | 208,6 | 68,6 | 3,0 | 156,6 | 61,9 | 2,5 | 144,9 | 60,1 | 2,4 |
| | 35 | 235,6 | 70,8 | 3,4 | 219,8 | 71,2 | 3,2 | 193,1 | 68,8 | 2,8 | 149,4 | 64,4 | 2,3 | 138,2 | 62,4 | 2,2 |
| | 38 | 223,9 | 72,5 | 3,2 | 206,8 | 71,5 | 3,0 | 181,8 | 68,9 | 2,6 | 144,0 | 66,3 | 2,2 | 133,1 | 64,1 | 2,1 |
| | 40 | 215,8 | 73,1 | 3,1 | 199,4 | 72,1 | 2,9 | 175,2 | 69,4 | 2,5 | 140,5 | 67,5 | 2,1 | 129,9 | 65,2 | 2,0 |

COOLING | SOL 226

| SOL 226 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 290,0 | 73,9 | 4,0 | 276,1 | 76,7 | 3,7 | 236,5 | 72,0 | 3,3 | 184,8 | 68,5 | 2,7 | 171,2 | 66,6 | 2,6 |
| | 31 | 278,4 | 79,1 | 3,6 | 258,3 | 78,4 | 3,4 | 224,0 | 74,6 | 3,0 | 176,9 | 71,5 | 2,5 | 163,8 | 69,3 | 2,4 |
| | 35 | 256,7 | 79,1 | 3,4 | 240,7 | 79,6 | 3,1 | 209,4 | 75,6 | 2,8 | 167,4 | 73,3 | 2,3 | 156,2 | 71,9 | 2,2 |
| | 38 | 244,6 | 80,7 | 3,1 | 226,3 | 79,6 | 2,9 | 194,9 | 74,3 | 2,6 | 158,9 | 74,1 | 2,1 | 148,7 | 72,7 | 2,1 |
| | 40 | 235,6 | 81,2 | 3,0 | 218,0 | 80,2 | 2,8 | 190,4 | 75,9 | 2,5 | 153,8 | 74,4 | 2,1 | 143,4 | 72,8 | 2,0 |

COOLING | SOL 229

| SOL 229 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|-------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 290,0 | 84,4 | 3,8 | 290,0 | 85,8 | 3,6 | 260,9 | 81,9 | 3,2 | 205,9 | 78,8 | 2,6 | 193,1 | 77,6 | 2,5 |
| | 31 | 290,0 | 87,7 | 3,5 | 282,5 | 88,9 | 3,3 | 245,9 | 84,4 | 2,9 | 194,6 | 80,7 | 2,4 | 183,9 | 79,7 | 2,3 |
| | 35 | 290,0 | 90,8 | 3,2 | 266,3 | 89,6 | 3,0 | 232,4 | 86,8 | 2,7 | 184,6 | 82,7 | 2,2 | 173,1 | 81,2 | 2,1 |
| | 38 | 274,0 | 90,6 | 3,0 | 254,2 | 93,3 | 2,8 | 221,2 | 88,0 | 2,5 | 175,6 | 83,5 | 2,1 | 164,7 | 82,0 | 2,0 |
| | 40 | 261,1 | 93,2 | 2,9 | 244,8 | 93,6 | 2,7 | 212,9 | 88,2 | 2,4 | 169,1 | 83,5 | 2,0 | 158,5 | 82,0 | 1,9 |

R290 Heat Pumps

Natural refrigerants available!
#R290

Choose propane or propylene and
contribute to the environment!

SOLIS+

DESCRIPTION

High power reversible heat pumps with the heating power from 55 kW to 550 kW are designed for industrial and commercial buildings with large power demand. Manufactured using R290 refrigerant only and full-inverter technology the units are a part of the extremely economical and environmentally friendly Refra product line. With high cooling capacity and many possible extra features these products are widely used in various factories, immense supermarkets and warehouses. These pumps can be used for heating purposes at ambient temperature of -15° or higher as well as for cooling purposes with the capacity of 60 kW to 480 kW. This dual solution is very efficient in terms of price, installation and space, as there is no need to install two separate systems.

CJ heat pumps are made with three circuits to ensure continuous system operation in case of emergency – if one circuit is damaged, the others can still use the remaining unit capacity to service the end user. When the unit is in the defrost stage, two circuits operate in heating mode and the third operates in defrost mode. This allows the system to ensure a constant required temperature in the water circuit.

Comprehensive modular frame construction is assembled with high-quality EC fan motor technology, finned tube heat exchangers and reciprocating compressors. Larger, raised coils are set to simplify the defrosting process and allow water to drain freely. The galvanized steel and powder coated frame with a reliable insulation material ensures proper unit protection as well as noise reduction and can be produced up to 13 meters in length. **An additional 50 mm rock wool material can be supplemented for a super silent unit operation with double insulation.**

4-way valve for reversible operation;
Single safety valve per circuit;
Filter drier on liquid line per circuit;
Sight glass on liquid line per circuit;
Electronic expansion valve per circuit;
Control board with Siemens Climatix controller;
Suction line accumulator per circuit;
Vibration absorbers;
R290 leak detector;
Emergency EX fan.



PARTS INCLUDED:

Bitzer Reciprocating compressors with oil charge and oil level monitoring/differential pressure switch;
Polymer powder painted RAL7035 frame;
Frequency inverters on all compressors;
HP/LP pressure switch per circuit;
HP/LP pressure gauges per circuit;
Necessary pressure and temperature probes;
Liquid receiver per circuit;
Air cooled condenser (copper tubes - aluminium fins);
BPHE evaporator;
EC fans;

Technical Parameters

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

| Model | | SOL 335 | SOL 336 | SOL 340 | SOL 344 |
|-------|--|---------|---------|---------|---------|
|-------|--|---------|---------|---------|---------|

Standard version

| | | | | | |
|-------------------------------------|----|-------|-------|-------|-------|
| Heating capacity ¹ | kW | 352,9 | 360,2 | 395,5 | 439,7 |
| Power consumption | kW | 101,8 | 101,4 | 111,1 | 125,4 |
| COP | | 3,5 | 3,6 | 3,6 | 3,5 |
| SCOP | | 4,8 | 4,7 | 4,7 | 4,7 |
| SSHEE | % | 189 | 185 | 185 | 185 |
| Refrigeration capacity ² | kW | 320,8 | 325,1 | 351,3 | 388,4 |
| Power consumption | kW | 103,6 | 104,0 | 114,1 | 131,1 |
| EER | | 3,1 | 3,1 | 3,1 | 3,0 |

System data

| Refrigerant | Type | R290 | | | |
|---|------|------|----|----|------|
| Number of compressors | n | 3 | 3 | 3 | 3 |
| Refrigerant quantity per circuit ³ | kg | 14,5 | 17 | 17 | 17,3 |
| Sound pressure level in 10m ⁴ | dB | 58 | 59 | 59 | 59 |

Fan

| Type | EC | | | | |
|----------------|-------------------|--------|--------|--------|--------|
| Number of fans | n | 6 | 6 | 6 | 6 |
| Air flow | m ³ /h | 166290 | 166290 | 166290 | 166290 |

Plate heat exchanger

| | | | | | |
|---------------------------------|-------------------|------|------|------|------|
| Number of plate heat exchangers | n | 3 | 3 | 3 | 3 |
| Flow rate heating ¹ | m ³ /h | 65,2 | 66,6 | 73,1 | 81,4 |
| Pressure drop heating | kPa | 29,3 | 21,8 | 25,9 | 31,4 |
| Flow rate cooling ² | m ³ /h | 60,6 | 61,5 | 66,4 | 73,4 |
| Pressure drop heating | kPa | 30,1 | 21,9 | 25,2 | 30,2 |

Power supply

| Voltage | 3-400V / 50Hz | | | | |
|------------------------|---------------|-------|-------|-------|-------|
| Max. power consumption | A | 202,2 | 209,1 | 237,6 | 304,5 |

Dimensions and weight

| | | | | | |
|------------------|----|------|------|------|------|
| Length | mm | 6010 | 6010 | 6010 | 6010 |
| Width | mm | 2283 | 2283 | 2283 | 2283 |
| Height | mm | 2355 | 2355 | 2355 | 2355 |
| Operating weight | kg | 4200 | 4250 | 4300 | 4350 |

¹ Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.

² Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.

³ Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.

⁴ Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

Heating Envelope | SOLIS+

HEATING | SOL 335

| SOL 335 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 457,9 | 90,8 | 5,1 | 449,1 | 99,4 | 4,6 | 429,2 | 105,0 | 4,1 | 393,4 | 105,1 | 3,8 | 361,6 | 105,8 | 3,5 |
| | 7 | 368,1 | 88,1 | 4,2 | 361,1 | 95,0 | 3,8 | 352,9 | 101,8 | 3,5 | 332,3 | 103,9 | 3,2 | 310,9 | 105,6 | 3,0 |
| | 2 | 319,7 | 85,1 | 3,8 | 313,2 | 91,2 | 3,5 | 306,2 | 96,9 | 3,2 | 298,2 | 100,5 | 3,0 | 283,0 | 104,9 | 2,7 |
| | -7 | 245,4 | 78,1 | 3,2 | 240,3 | 82,4 | 2,9 | 233,9 | 86,7 | 2,7 | 227,8 | 76,7 | 2,6 | 221,2 | 93,6 | 2,4 |
| | -15 | 191,4 | 70,5 | 2,7 | 187,0 | 73,4 | 2,6 | 181,9 | 76,1 | 2,4 | 176,2 | 78,6 | 2,3 | 169,9 | 80,9 | 2,1 |

HEATING | SOL 336

| SOL 336 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 463,5 | 89,1 | 5,2 | 469,9 | 102,4 | 4,5 | 432,3 | 103,1 | 4,2 | 399,2 | 104,2 | 3,8 | 370,7 | 105,9 | 3,5 |
| | 7 | 393,6 | 93,1 | 4,2 | 385,7 | 100,5 | 3,8 | 360,2 | 101,4 | 3,5 | 337,9 | 103,3 | 3,2 | 314,7 | 104,5 | 3,0 |
| | 2 | 341,6 | 90,0 | 3,8 | 334,8 | 95,9 | 3,5 | 327,1 | 101,8 | 3,2 | 303,8 | 101,8 | 3,0 | 283,7 | 102,5 | 2,7 |
| | -7 | 262,3 | 82,1 | 3,2 | 256,7 | 86,4 | 2,9 | 250,2 | 90,6 | 2,7 | 243,1 | 94,4 | 2,6 | 235,1 | 98,1 | 2,4 |
| | -15 | 204,7 | 73,8 | 2,7 | 199,7 | 76,8 | 2,6 | 194,0 | 79,6 | 2,4 | 187,6 | 82,0 | 2,3 | 180,6 | 84,3 | 2,1 |

HEATING | SOL 340

| SOL 340 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 541,7 | 91,2 | 5,1 | 508,1 | 110,9 | 4,6 | 474,1 | 112,3 | 4,2 | 443,5 | 115,1 | 3,8 | 411,9 | 116,9 | 3,5 |
| | 7 | 441,0 | 112,1 | 4,1 | 419,0 | 108,8 | 3,8 | 395,5 | 111,1 | 3,5 | 371,3 | 112,7 | 3,3 | 350,9 | 115,5 | 3,0 |
| | 2 | 383,4 | 112,1 | 3,7 | 372,2 | 106,9 | 3,5 | 352,0 | 108,6 | 3,2 | 334,7 | 111,4 | 3,0 | 316,7 | 113,8 | 2,8 |
| | -7 | 295,5 | 112,1 | 3,2 | 289,8 | 97,6 | 2,9 | 283,0 | 102,3 | 2,7 | 272,6 | 105,1 | 2,6 | 261,4 | 107,8 | 2,4 |
| | -15 | 232,0 | 112,1 | 2,8 | 226,8 | 87,0 | 2,6 | 220,8 | 90,2 | 2,4 | 213,9 | 93,1 | 2,3 | 206,4 | 95,7 | 2,1 |

HEATING | SOL 344

| SOL 344 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|-----|-------------------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| | | 35°C | | | 40°C | | | 45°C | | | 50°C | | | 55°C | | |
| | | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP | Q/kW | P/kW | COP |
| T ambient | 15 | 550,0 | 111,4 | 5,0 | 550,0 | 101,3 | 4,7 | 465,4 | 109,6 | 4,2 | 461,3 | 120,1 | 3,8 | 455,8 | 130,9 | 3,5 |
| | 7 | 461,3 | 112,1 | 4,1 | 464,9 | 123,2 | 3,8 | 439,7 | 125,4 | 3,5 | 418,3 | 128,7 | 3,2 | 395,3 | 131,8 | 3,0 |
| | 2 | 427,0 | 115,5 | 3,7 | 410,0 | 119,4 | 3,4 | 392,0 | 122,6 | 3,2 | 372,8 | 125,3 | 2,9 | 352,6 | 127,9 | 2,7 |
| | -7 | 341,3 | 109,3 | 3,1 | 335,1 | 114,7 | 2,9 | 316,7 | 115,4 | 2,7 | 308,7 | 120,2 | 2,5 | 293,0 | 121,3 | 2,4 |
| | -15 | 269,3 | 98,1 | 2,7 | 263,5 | 102,1 | 2,6 | 256,8 | 105,8 | 2,4 | 249,3 | 109,2 | 2,3 | 241,1 | 112,3 | 2,1 |

Cooling Envelope | SOLIS+

COOLING | SOL 335

| SOL 335 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|-------|-----|-------|-------|-----|-------|-------|-----|-------|------|-----|-------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 384,7 | 95,5 | 4,1 | 353,4 | 93,5 | 3,9 | 301,2 | 89,1 | 3,4 | 227,0 | 81,6 | 2,8 | 209,3 | 79,4 | 2,6 |
| | 31 | 370,4 | 102,0 | 3,7 | 339,0 | 99,5 | 3,5 | 289,0 | 94,1 | 3,1 | 217,6 | 85,5 | 2,6 | 200,5 | 82,9 | 2,4 |
| | 35 | 342,5 | 103,0 | 3,4 | 320,8 | 103,6 | 3,2 | 276,4 | 99,0 | 2,8 | 207,9 | 89,1 | 2,3 | 191,5 | 86,3 | 2,2 |
| | 38 | 327,0 | 105,7 | 3,2 | 299,1 | 102,7 | 3,0 | 266,8 | 102,6 | 2,6 | 200,5 | 91,8 | 2,2 | 184,6 | 88,7 | 2,1 |
| | 40 | 312,9 | 105,1 | 3,0 | 288,7 | 98,2 | 2,8 | 257,7 | 103,4 | 2,5 | 196,5 | 93,7 | 2,1 | 180,2 | 90,3 | 2,0 |

COOLING | SOL 336

| SOL 336 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 406,3 | 101,5 | 4,1 | 375,3 | 100,8 | 3,8 | 328,6 | 97,8 | 3,4 | 247,2 | 89,1 | 2,8 | 228,9 | 86,7 | 2,6 |
| | 31 | 377,3 | 102,7 | 3,8 | 352,8 | 103,6 | 3,5 | 315,0 | 103,2 | 3,1 | 236,8 | 93,1 | 2,5 | 219,1 | 90,4 | 2,4 |
| | 35 | 351,9 | 105,2 | 3,4 | 325,1 | 104,0 | 3,2 | 291,6 | 103,4 | 2,8 | 225,9 | 97,0 | 2,3 | 208,9 | 93,9 | 2,2 |
| | 38 | 331,2 | 105,7 | 3,2 | 306,0 | 104,4 | 3,0 | 274,6 | 103,7 | 2,7 | 217,7 | 99,8 | 2,2 | 201,3 | 96,5 | 2,1 |
| | 40 | 319,2 | 106,7 | 3,1 | 295,0 | 105,2 | 2,9 | 264,7 | 104,3 | 2,5 | 212,4 | 101,6 | 2,1 | 196,4 | 98,2 | 2,0 |

COOLING | SOL 340

| SOL 340 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 434,6 | 110,6 | 4,0 | 403,4 | 109,9 | 3,8 | 360,2 | 110,0 | 3,3 | 277,2 | 102,7 | 2,7 | 258,6 | 100,1 | 2,6 |
| | 31 | 407,6 | 113,3 | 3,7 | 377,2 | 112,2 | 3,5 | 337,1 | 112,0 | 3,0 | 265,4 | 107,2 | 2,5 | 247,8 | 104,3 | 2,4 |
| | 35 | 379,7 | 115,4 | 3,4 | 351,3 | 114,1 | 3,2 | 315,2 | 113,6 | 2,8 | 248,2 | 108,3 | 2,3 | 236,1 | 108,2 | 2,2 |
| | 38 | 356,7 | 115,5 | 3,2 | 334,7 | 116,3 | 3,0 | 300,3 | 115,5 | 2,6 | 237,3 | 109,7 | 2,2 | 222,2 | 107,8 | 2,1 |
| | 40 | 343,6 | 116,2 | 3,0 | 322,5 | 116,9 | 2,8 | 285,6 | 113,9 | 2,5 | 228,7 | 110,0 | 2,1 | 216,8 | 109,6 | 2,0 |

COOLING | SOL 344

| SOL 344 | | T outlet / ΔT=5 K | | | | | | | | | | | | | | |
|-----------|----|-------------------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| | | 10°C | | | 7°C | | | 2°C | | | -6°C | | | -8°C | | |
| | | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER | Q/kW | P/kW | EER |
| T ambient | 27 | 484,4 | 129,2 | 3,9 | 441,9 | 125,3 | 3,6 | 394,0 | 123,2 | 3,2 | 312,3 | 118,7 | 2,6 | 293,1 | 117,0 | 2,5 |
| | 31 | 452,1 | 131,3 | 3,5 | 417,9 | 129,7 | 3,3 | 372,6 | 127,1 | 2,9 | 295,2 | 121,6 | 2,4 | 277,0 | 119,7 | 2,3 |
| | 35 | 420,3 | 132,9 | 3,2 | 388,4 | 131,1 | 3,0 | 346,3 | 128,1 | 2,7 | 274,5 | 122,1 | 2,3 | 257,0 | 120,1 | 2,1 |
| | 38 | 405,2 | 133,6 | 3,1 | 370,7 | 133,4 | 2,9 | 329,5 | 129,9 | 2,5 | 261,0 | 123,3 | 2,1 | 244,8 | 121,1 | 2,0 |
| | 40 | 384,9 | 135,8 | 2,9 | 356,9 | 133,8 | 2,7 | 317,1 | 130,2 | 2,4 | 254,6 | 125,5 | 2,0 | 238,8 | 123,2 | 1,9 |

Additional Options



Pump on/off 10m head

Designed for pumping of water or glycol mixtures without abrasive substances. "On/Off" function is used in applications where the pump only needs to operate when there is a demand for fluid flow.



Pump on/off 20m head

Designed for pumping of water or glycol mixtures without abrasive substances. "On/Off" function is used in applications where the pump only needs to operate when there is a demand for fluid flow.



Pump inverter 10m head

Designed for pumping of water or glycol mixtures without abrasive substances. Integrated inverter provides precise control over the flow rate of the fluid and ensures energy-efficient operation.



Pump inverter 20m head

Designed for pumping of water or glycol mixtures without abrasive substances. Integrated inverter provides precise control over the flow rate of the fluid and ensures energy-efficient operation.



Twin Pump on/off 10m head

Double pump setup, designed for pumping of water or glycol mixtures without abrasive substances. One pump serves as the base-load pump, while the second pump can serve as a reserve in the event of a fault.



Twin Pump on/off 20m head

Double pump setup, designed for pumping of water or glycol mixtures without abrasive substances. One pump serves as the base-load pump, while the second pump can serve as a reserve in the event of a fault.



Twin Pump inverter 10m head

Double pump setup, designed for pumping of water or glycol mixtures without abrasive substances, ensures reliable operation in case of an emergency and precise control over the fluid flow rate.



Twin Pump inverter 20m head

Double pump setup, designed for pumping of water or glycol mixtures without abrasive substances, ensures reliable operation in case of an emergency and precise control over the fluid flow rate.



Desuperheater

Utilizes the high-temperature energy of the superheated refrigerant gas to heat water. By using the waste heat generated during the cooling process, desuperheater can improve the overall energy efficiency of the system.



Trace heating

Maintains or raises the temperature of pipes and vessels through specially engineered cables to protect it from freezing at sub-zero temperatures.

Additional Options



Thick insulation frame

Additional 30-50 mm rock wool material for a super silent unit operation with double insulation reduces the sound level and strengthens the frame construction.



Flow switch

Detects the flow of liquid medium in HVAC systems. Used as a safety device to ensure there is an adequate flow of the fluid, and to trigger an alarm or shut down the system in case of low flow.



Check valve

Allows fluid to flow in one direction only, and prevents backflow in the opposite direction. Recommended for systems with more than one heat pump, to prevent backflow and ensure proper fluid flow.



Aqua Aero

Helps to lower energy consumption by reducing airside fouling in cooling coils, thus improving the overall energy efficiency of the system. The hydrophobic coating acts as a barrier which prevents corrosive agents from infiltrating the underlying metal surface.



Varipack

Intelligent frequency inverter that controls AC motors efficiently and intelligently, allowing for precise speed regulation.



Antivibration mounts

Reduces and isolates the transmission of vibrations from the unit by using a rubber element with a metal casing.



Flow meter

Utilises ultrasonic transit-time technology to provide accurate and repeatable water-flow measurement and insures the correct measured flow. Monitors the performance and efficiency of the system, ensures the adequate flow of fluid.



Double safety valve

Allows the user to work on the isolated valve for periodic inspection or replacement, while the line is completely operative and the system safety is integral.



Siemens cloud + modem GSM

This kit provides remote access to the unit controller. The cloud provides all relevant equipment data and allows to evaluate and control it efficiently using leading IoT analytics tools. **Customers who purchase Siemens Cloud option receive a full 2-year warranty on Refra unit.**

Register the Varipack product code along with the Bitzer compressor code and get a 2-year compressor warranty! <https://bit.ly/BitzerWarranty>



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| About us

Founded in 1994, Refra is a well-known manufacturer of refrigeration and air conditioning equipment in Europe today. Distinguished by a highly complex and unique offer of refrigeration products, the company can design and manufacture non-standard products, fully customized and completed according to customer requirements.

Over the course of 30 years in operation, Refra has firmly established itself as a prominent leader in the European refrigeration market, overseeing the successful execution of numerous intricate projects.



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🌿 R290

We are on a mission to make a positive impact in the refrigeration industry since 2011 – that's when Refra became a pioneering company with an unwavering commitment to environmental sustainability and started producing refrigeration equipment with natural refrigerants.

We can make it simple