



*Refra*<sup>®</sup>

## HEAT PUMPS

Technical Parameters  
Additional Options

V.4

ESTABLISHED IN 1994  
30+ M TURNOVER  
**30 YEARS OF EXPERIENCE**  
PARTNERS IN  
**28+ COUNTRIES**

**2 FACTORIES**  
260+ EMPLOYEES  
22 000 SQUARE METERS  
OF PRODUCTION AREA

## UNIQUE PRODUCTS

Refra is recognized as one of the most flexible manufacturers in the market. The non-standard, fully adaptive manufacturing sector is able to produce exceptional products that are fully tailored to the customer's needs.

## 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.

### Refra Standard Line

At Refra, we combine expertise with efficiency. While we specialize in custom-designed air conditioning and refrigeration solutions, we also offer standard line products – a predefined selection of our most popular, in-demand units. Designed for seamless selection and faster production, these solutions maintain the same high standards of quality, reliability, and innovation that define Refra.

### We Can Make It Simple

It is our promise to simplify the complex industry of refrigeration for our clients. We understand that navigating the nuances of cooling technology can be overwhelming. That's why we're here to simplify the process. Our expertise and dedication mean that you can rely on us to provide straightforward, efficient, and user-friendly cooling solutions. We are your partners in making the complex simple.



Visit our  
website and  
browse 80+  
product  
catalogue



# | Best quality parts

Refra units are manufactured using world-renowned, high-quality components, ensuring exceptional reliability, performance, and durability in every product we deliver. Using high-quality components is essential because it guarantees the reliability and longevity of our units, reducing the risk of malfunctions and minimizing maintenance costs. These toptier parts contribute to the overall performance, energy efficiency, and safety of the equipment, ensuring that our customers receive solutions that meet the highest industry standards.

SIEMENS



wilo



ebmpapst



# | ATMO Approved

At Refra, sustainability is at the core of everything we do. Leveraging natural refrigerants like Propane and CO2 has been a driving force behind our efforts to minimize carbon emissions and enhance energy efficiency. Receiving the ATMOApproved Label was an honor and a testament to our unwavering commitment to environmental innovation and climate-friendly solutions.

Getting this certification is not just about recognition; it's about holding ourselves accountable to the highest standards in sustainability. As a 'Best in Class' natural refrigerants company, we continually refine our technologies, enhance efficiency, and deliver innovative solutions, all with the goal of creating a greener future for our customers, industry, and planet.

## Leaders in sustainable cooling and heating

ATMO Approved is the world's leading industry label measuring and recognizing impact with natural refrigerants that power millions of refrigeration, chiller and heatpump systems worldwide. Each year 'Best in Class' manufacturers and contractors must meet strict criteria and demonstrate impact in order to 'become' ATMO Approved. Since 2022 over 80 companies have applied. To date only 18 have been (Re) Approved.



# R290 Heat Pumps

FLAMMA



Natural refrigerants available!  
#R290

Choose propane or propylene and  
contribute to the environment!

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°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. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

PARTS INCLUDED:

- Bitzer reciprocating compressors (Ex II-3G) 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;
- Double safety valves per circuit;
- Filter drier on liquid line per circuit;
- Sight glass on liquid line per circuit;
- Magnetic 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 <sup>1</sup>       | kW | 41,1 | 46,9 | 53,4 |
| Power consumption                   | kW | 11,3 | 12,5 | 14,3 |
| COP                                 |    | 3,6  | 3,8  | 3,7  |
| SCOP                                |    | 4,2  | 4,6  | 4,6  |
| SSHEE                               | %  | 165  | 181  | 181  |
| Refrigeration capacity <sup>2</sup> | kW | 35,8 | 41,8 | 44,9 |
| Power consumption                   | kW | 11,8 | 13,4 | 14,5 |
| EER                                 |    | 3,0  | 3,1  | 3,1  |

System data

|                                               |       |      |     |     |
|-----------------------------------------------|-------|------|-----|-----|
| Refrigerant                                   | Type  | R290 |     |     |
| Number of compressors                         | n     | 1    | 1   | 1   |
| Refrigerant quantity per circuit <sup>3</sup> | kg    | 7,0  | 7,8 | 7,8 |
| Inlet/Outlet connection                       | DN    | 40   | 40  | 40  |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 48   | 48  | 49  |
| Sound power level                             | dB(A) | 79   | 79  | 80  |

Fan

|                |      |       |       |       |
|----------------|------|-------|-------|-------|
| Type           |      | EC    |       |       |
| Number of fans | n    | 3     | 3     | 3     |
| Air flow       | m³/h | 19272 | 19272 | 19272 |

Plate heat exchanger

|                                 |      |      |      |      |
|---------------------------------|------|------|------|------|
| Number of plate heat exchangers | n    | 1    | 1    | 1    |
| Flow rate heating <sup>1</sup>  | m³/h | 7,7  | 8,8  | 9,9  |
| Pressure drop heating           | kPa  | 23,2 | 20,2 | 38,1 |
| Flow rate cooling <sup>2</sup>  | m³/h | 6,8  | 7,9  | 8,5  |
| Pressure drop cooling           | kPa  | 24,6 | 30,9 | 34,5 |

Power supply

|                        |   |                     |      |      |
|------------------------|---|---------------------|------|------|
| Voltage                |   | 400 V 50 Hz 3P+N+PE |      |      |
| Max. operating current | A | 43,5                | 51,5 | 51,5 |
| Starting current       | A | 52,8                | 56,2 | 62,4 |

Dimensions and weight

|                  |    |      |      |      |
|------------------|----|------|------|------|
| Length           | mm | 2620 | 2620 | 2620 |
| Width            | mm | 1110 | 1110 | 1110 |
| Height           | mm | 1690 | 1690 | 1690 |
| Operating weight | kg | 710  | 730  | 750  |

<sup>1</sup> Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.  
<sup>2</sup> Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.  
<sup>3</sup> Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.  
<sup>4</sup> Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

# R290 Heat Pumps

## IGNIS



Natural refrigerants available!  
#R290

Choose propane or propylene and  
contribute to the environment!

### 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. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 50 mm rock wool material can be supplemented for a super silent unit operation.

### PARTS INCLUDED:

Bitzer reciprocating compressors (Ex II-3G) 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;  
Double safety valves per circuit;  
Filter drier on liquid line per circuit;  
Sight glass on liquid line per circuit;  
Magnetic 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 |  | IGN 107 | IGN 108 | IGN 109 | IGN 110 | IGN 111 |
|-------|--|---------|---------|---------|---------|---------|
|-------|--|---------|---------|---------|---------|---------|

### Standard version

|                                     |    |      |      |      |      |       |
|-------------------------------------|----|------|------|------|------|-------|
| Heating capacity <sup>1</sup>       | kW | 69,1 | 76,0 | 88,2 | 99,9 | 115,7 |
| Power consumption                   | kW | 19,7 | 22,1 | 25,4 | 28,7 | 33,5  |
| COP                                 |    | 3,5  | 3,4  | 3,5  | 3,5  | 3,5   |
| SCOP                                |    | 4,2  | 4,4  | 4,4  | 4,5  | 4,5   |
| SSHEE                               | %  | 165  | 173  | 173  | 177  | 177   |
| Refrigeration capacity <sup>2</sup> | kW | 63,6 | 69,4 | 80,2 | 90,8 | 105,5 |
| Power consumption                   | kW | 19,0 | 21,6 | 25,4 | 29,2 | 35,4  |
| EER                                 |    | 3,3  | 3,2  | 3,2  | 3,1  | 3,0   |

### System data

|                                               |       |      |      |      |      |      |
|-----------------------------------------------|-------|------|------|------|------|------|
| Refrigerant                                   | Type  | R290 |      |      |      |      |
| Number of compressors                         | n     | 1    | 1    | 1    | 1    | 1    |
| Refrigerant quantity per circuit <sup>3</sup> | kg    | 10,9 | 10,9 | 10,9 | 10,9 | 12,2 |
| Inlet/Outlet connection                       | DN    | 50   | 50   | 65   | 65   | 65   |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 54   | 54   | 54   | 55   | 55   |
| Sound power level                             | dB(A) | 85   | 85   | 86   | 86   | 86   |

### Fan

|                |      |       |       |       |       |       |
|----------------|------|-------|-------|-------|-------|-------|
| Type           |      | EC    |       |       |       |       |
| Number of fans | n    | 2     | 2     | 2     | 2     | 2     |
| Air flow       | m³/h | 52434 | 52434 | 52434 | 52434 | 52434 |

### Plate heat exchanger

|                                 |      |      |      |      |      |      |
|---------------------------------|------|------|------|------|------|------|
| Number of plate heat exchangers | n    | 1    | 1    | 1    | 1    | 1    |
| Flow rate heating <sup>1</sup>  | m³/h | 12,9 | 14,2 | 16,4 | 18,7 | 21,6 |
| Pressure drop heating           | kPa  | 13,1 | 15,7 | 20,8 | 26,4 | 18,8 |
| Flow rate cooling <sup>2</sup>  | m³/h | 12,0 | 13,1 | 15,1 | 17,1 | 19,9 |
| Pressure drop heating           | kPa  | 15,0 | 17,4 | 22,4 | 27,7 | 20,1 |

### Power supply

|                        |   |                     |      |      |      |       |
|------------------------|---|---------------------|------|------|------|-------|
| Voltage                |   | 400 V 50 Hz 3P+N+PE |      |      |      |       |
| Max. operating current | A | 57,3                | 57,3 | 64,2 | 78,8 | 88,1  |
| Starting current       | A | 68,1                | 75,3 | 86,4 | 98,0 | 114,0 |

### Dimensions and weight

|                  |    |      |      |      |      |      |
|------------------|----|------|------|------|------|------|
| Length           | mm | 3105 | 3105 | 3105 | 3105 | 3105 |
| Width            | mm | 1363 | 1363 | 1363 | 1363 | 1363 |
| Height           | mm | 2340 | 2340 | 2340 | 2340 | 2340 |
| Operating weight | kg | 1100 | 1120 | 1150 | 1170 | 1200 |

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

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

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

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

# R290 Heat Pumps

## IGNIS+



 Natural refrigerants available!  
#R290

 Choose propane or propylene and  
contribute to the environment!

### 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. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 50 mm rock wool material can be supplemented for a super silent unit operation.

### PARTS INCLUDED:

Bitzer reciprocating compressors (Ex II-3G) 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;  
Double safety valves per circuit;  
Filter drier on liquid line per circuit;  
Sight glass on liquid line per circuit;  
Magnetic 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 <sup>1</sup>       | kW | 95,1 | 108,2 | 122,4 | 133,8 |
| Power consumption                   | kW | 27,0 | 30,6  | 34,6  | 39,0  |
| COP                                 |    | 3,5  | 3,5   | 3,5   | 3,4   |
| SCOP                                |    | 4,5  | 4,5   | 4,6   | 4,6   |
| SSHEE                               | %  | 177  | 177   | 181   | 181   |
| Refrigeration capacity <sup>2</sup> | kW | 87,2 | 99,4  | 110,4 | 117,5 |
| Power consumption                   | kW | 27,3 | 31,7  | 35,6  | 38,8  |
| EER                                 |    | 3,2  | 3,1   | 3,1   | 3,0   |

### System data

|                                               |       |      |     |     |     |
|-----------------------------------------------|-------|------|-----|-----|-----|
| Refrigerant                                   | Type  | R290 |     |     |     |
| Number of compressors                         | n     | 2    | 2   | 2   | 2   |
| Refrigerant quantity per circuit <sup>3</sup> | kg    | 7,4  | 7,4 | 7,4 | 8,2 |
| Inlet/Outlet connection                       | DN    | 65   | 65  | 65  | 65  |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 54   | 54  | 55  | 54  |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 85   | 85  | 86  | 85  |

### Fan

|                |      |       |       |       |       |
|----------------|------|-------|-------|-------|-------|
| Type           |      | EC    |       |       |       |
| Number of fans | n    | 2     | 2     | 2     | 2     |
| Air flow       | m³/h | 53248 | 53248 | 53248 | 53248 |

### Plate heat exchanger

|                                 |      |      |      |      |      |
|---------------------------------|------|------|------|------|------|
| Number of plate heat exchangers | n    | 1    | 1    | 1    | 1    |
| Flow rate heating <sup>1</sup>  | m³/h | 17,7 | 20,2 | 22,8 | 25,0 |
| Pressure drop heating           | kPa  | 19,3 | 24,4 | 30,7 | 24,6 |
| Flow rate cooling <sup>2</sup>  | m³/h | 16,5 | 18,8 | 20,8 | 22,1 |
| Pressure drop heating           | kPa  | 20,6 | 26,0 | 31,2 | 24,3 |

### Power supply

|                        |   |              |       |       |       |
|------------------------|---|--------------|-------|-------|-------|
| Voltage                |   | 400V/3/ 50Hz |       |       |       |
| Max. operating current | A | 82,6         | 82,6  | 94,0  | 94,0  |
| Starting current       | A | 101,3        | 107,5 | 118,8 | 126,0 |

### Dimensions and weight

|                  |    |      |      |      |      |
|------------------|----|------|------|------|------|
| Length           | mm | 3715 | 3715 | 3715 | 3715 |
| Width            | mm | 1363 | 1363 | 1363 | 1363 |
| Height           | mm | 2340 | 2340 | 2340 | 2340 |
| Operating weight | kg | 1550 | 1560 | 1580 | 1620 |

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

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

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

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

# R290 Heat Pumps

## IGNIS+



 Natural refrigerants available!  
#R290

 Choose propane or propylene and  
contribute to the environment!

### 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. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 50 mm rock wool material can be supplemented for a super silent unit operation.

### PARTS INCLUDED:

Bitzer reciprocating compressors (Ex II-3G) 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;  
Double safety valves per circuit;  
Filter drier on liquid line per circuit;  
Sight glass on liquid line per circuit;  
Magnetic 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 <sup>1</sup>       | kW | 151,7 | 176,3 | 200,7 | 230,6 |
| Power consumption                   | kW | 44,6  | 50,9  | 57,4  | 67,7  |
| COP                                 |    | 3,4   | 3,5   | 3,5   | 3,4   |
| SCOP                                |    | 4,4   | 4,4   | 4,6   | 4,6   |
| SSHEE                               | %  | 173   | 173   | 181   | 181   |
| Refrigeration capacity <sup>2</sup> | kW | 134,7 | 159,8 | 181,0 | 203,7 |
| Power consumption                   | kW | 43,1  | 50,7  | 58,5  | 69,9  |
| EER                                 |    | 3,1   | 3,2   | 3,1   | 2,9   |

### System data

|                                               |       |      |      |      |      |
|-----------------------------------------------|-------|------|------|------|------|
| Refrigerant                                   | Type  | R290 |      |      |      |
| Number of compressors                         | n     | 2    | 2    | 2    | 2    |
| Refrigerant quantity per circuit <sup>3</sup> | kg    | 11,2 | 12,4 | 12,8 | 12,8 |
| Inlet/Outlet connection                       | DN    | 65   | 80   | 80   | 80   |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 57   | 57   | 58   | 58   |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 88   | 88   | 89   | 89   |

### Fan

|                |      |        |        |        |        |
|----------------|------|--------|--------|--------|--------|
| Type           |      | EC     |        |        |        |
| Number of fans | n    | 4      | 4      | 4      | 4      |
| Air flow       | m³/h | 104869 | 104869 | 104869 | 104869 |

### Plate heat exchanger

|                                 |      |      |      |      |      |
|---------------------------------|------|------|------|------|------|
| Number of plate heat exchangers | n    | 1    | 1    | 1    | 1    |
| Flow rate heating <sup>1</sup>  | m³/h | 28,3 | 32,9 | 37,4 | 43,0 |
| Pressure drop heating           | kPa  | 31,1 | 26,0 | 33,3 | 42,9 |
| Flow rate cooling <sup>2</sup>  | m³/h | 25,5 | 30,2 | 34,1 | 38,4 |
| Pressure drop heating           | kPa  | 30,8 | 26,6 | 33,2 | 40,9 |

### Power supply

|                        |   |              |       |       |       |
|------------------------|---|--------------|-------|-------|-------|
| Voltage                |   | 400V/3/ 50Hz |       |       |       |
| Max. operating current | A | 101,6        | 115,4 | 144,6 | 163,2 |
| Starting current       | A | 133,6        | 151,6 | 177,8 | 203,1 |

### Dimensions and weight

|                  |    |      |      |      |      |
|------------------|----|------|------|------|------|
| Length           | mm | 5385 | 5385 | 5385 | 5385 |
| Width            | mm | 1363 | 1363 | 1363 | 1363 |
| Height           | mm | 2340 | 2340 | 2340 | 2340 |
| Operating weight | kg | 2150 | 2250 | 2300 | 2420 |

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

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

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

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

# R290 Heat Pumps

SOLIS

Natural refrigerants available!  
#R290

Choose propane or propylene and  
contribute to the environment!

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. TGalvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.



PARTS INCLUDED:

Bitzer reciprocating compressors (Ex II-3G) 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;  
Double safety valves per circuit;  
Filter drier on liquid line per circuit;  
Sight glass on liquid line per circuit;  
Magnetic 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 <sup>1</sup>       | kW | 240,8 | 251,1 | 285,0 | 310,2 |
| Power consumption                   | kW | 68,5  | 71,3  | 82,8  | 91,1  |
| COP                                 |    | 3,5   | 3,5   | 3,4   | 3,4   |
| SCOP                                |    | 4,7   | 4,7   | 4,7   | 4,6   |
| SSHEE                               | %  | 185   | 185   | 185   | 181   |
| Refrigeration capacity <sup>2</sup> | kW | 210,1 | 225,1 | 248,2 | 265,3 |
| Power consumption                   | kW | 69,2  | 73,8  | 84,5  | 92,9  |
| EER                                 |    | 3,0   | 3,1   | 2,9   | 2,9   |

System data

|                                               |       |           |           |           |           |
|-----------------------------------------------|-------|-----------|-----------|-----------|-----------|
| Refrigerant                                   | Type  | R290      |           |           |           |
| Number of compressors                         | n     | 2         | 2         | 2         | 2         |
| Refrigerant quantity per circuit <sup>3</sup> | kg    | 14,9/15,6 | 15,5/16,2 | 15,5/16,2 | 16,0/16,7 |
| Inlet/Outlet connection                       | DN    | 80        | 100       | 100       | 100       |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 58        | 57        | 59        | 59        |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 88        | 88        | 89        | 89        |

Fan

|                |      |        |        |        |        |
|----------------|------|--------|--------|--------|--------|
| Type           |      | EC     |        |        |        |
| Number of fans | n    | 4      | 4      | 4      | 4      |
| Air flow       | m³/h | 120910 | 120910 | 120910 | 120910 |

Plate heat exchanger

|                                 |      |      |      |      |      |
|---------------------------------|------|------|------|------|------|
| Number of plate heat exchangers | n    | 1    | 1    | 1    | 1    |
| Flow rate heating <sup>1</sup>  | m³/h | 44,9 | 46,8 | 53,1 | 57,8 |
| Pressure drop heating           | kPa  | 46,7 | 31,9 | 40,1 | 46,8 |
| Flow rate cooling <sup>2</sup>  | m³/h | 39,7 | 42,5 | 46,8 | 50,1 |
| Pressure drop heating           | kPa  | 43,2 | 31,5 | 37,6 | 42,5 |

Power supply

|                        |   |              |       |       |       |
|------------------------|---|--------------|-------|-------|-------|
| Voltage                |   | 400V/3/ 50Hz |       |       |       |
| Max. operating current | A | 163,6        | 163,6 | 199,2 | 229,8 |
| Starting current       | A | 207,5        | 207,3 | 242,6 | 288,4 |

Dimensions and weight

|                  |    |      |      |      |      |
|------------------|----|------|------|------|------|
| Length           | mm | 4440 | 4440 | 4440 | 4440 |
| Width            | mm | 2378 | 2378 | 2378 | 2378 |
| Height           | mm | 2401 | 2401 | 2401 | 2401 |
| Operating weight | kg | 2400 | 2600 | 2800 | 3100 |

<sup>1</sup> Outside air temperature 7°C, medium temperature 40/45°C, medium EG 35%.  
<sup>2</sup> Outside air temperature 35°C, medium temperature 12/7°C, medium EG 35%.  
<sup>3</sup> Theoretical values refer to the basic unit. The actual amount of gas charge in the unit may differ.  
<sup>4</sup> Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

# R290 Heat Pumps

## SOLIS+

Natural refrigerants available!  
#R290

Choose propane or propylene and  
contribute to the environment!

### 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.

Solis+ 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. Galvanized steel and powder coated frame with a reliable 20 mm non-flammable acoustical PU foam insulation material ensures proper unit protection as well as noise reduction. An additional 30 mm rock wool material can be supplemented for a super silent unit operation.

### PARTS INCLUDED:

Bitzer reciprocating compressors (Ex II-3G) 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;  
Double safety valves per circuit;  
Filter drier on liquid line per circuit;  
Sight glass on liquid line per circuit;  
Magnetic 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 335 | SOL 336 | SOL 340 | SOL 334 |
|-------|--|---------|---------|---------|---------|
|-------|--|---------|---------|---------|---------|

### Standard version

|                                     |    |       |       |       |       |
|-------------------------------------|----|-------|-------|-------|-------|
| Heating capacity <sup>1</sup>       | kW | 362,4 | 377,8 | 421,3 | 471,8 |
| Power consumption                   | kW | 101,7 | 105,9 | 119,3 | 137,1 |
| COP                                 |    | 3,6   | 3,6   | 3,5   | 3,4   |
| SCOP                                |    | 4,8   | 4,7   | 4,7   | 4,6   |
| SSHEE                               | %  | 189   | 185   | 185   | 181   |
| Refrigeration capacity <sup>2</sup> | kW | 327,6 | 345,3 | 378,3 | 402,4 |
| Power consumption                   | kW | 105,2 | 109,9 | 124,0 | 135,8 |
| 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 <sup>3</sup> | kg    | 15,6/16,3/17,0 | 16,4/17,1/17,8 | 16,4/17,1/17,8 | 17,2/17,9/18,6 |
| Inlet/Outlet connection                       | DN    | 100            | 100            | 125            | 125            |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 59             | 59             | 60             | 60             |
| Sound pressure level in 10m <sup>4</sup>      | dB(A) | 90             | 90             | 91             | 91             |

### Fan

|                |      |        |        |        |        |
|----------------|------|--------|--------|--------|--------|
| Type           |      | EC     |        |        |        |
| Number of fans | n    | 6      | 6      | 6      | 6      |
| Air flow       | m³/h | 181365 | 181365 | 181365 | 181365 |

### Plate heat exchanger

|                                 |      |      |      |      |      |
|---------------------------------|------|------|------|------|------|
| Number of plate heat exchangers | n    | 3    | 3    | 3    | 3    |
| Flow rate heating <sup>1</sup>  | m³/h | 67,6 | 70,4 | 78,6 | 88,0 |
| Pressure drop heating           | kPa  | 20,3 | 15,2 | 18,8 | 23,2 |
| Flow rate cooling <sup>2</sup>  | m³/h | 61,8 | 65,1 | 71,3 | 75,8 |
| Pressure drop heating           | kPa  | 21,4 | 16,5 | 19,3 | 21,5 |

### Power supply

|                        |   |              |       |       |       |
|------------------------|---|--------------|-------|-------|-------|
| Voltage                |   | 400V/3/ 50Hz |       |       |       |
| Max. operating current | A | 238,9        | 238,9 | 292,3 | 338,2 |
| Starting current       | A | 290,8        | 290,6 | 343,7 | 404,8 |

### Dimensions and weight

|                  |    |      |      |      |      |
|------------------|----|------|------|------|------|
| Length           | mm | 6010 | 6010 | 6010 | 6010 |
| Width            | mm | 2378 | 2378 | 2378 | 2378 |
| Height           | mm | 2401 | 2401 | 2401 | 2401 |
| Operating weight | kg | 4200 | 4250 | 4300 | 4350 |

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

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

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

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

# 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 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 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.

# Additional Options



## 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.



## 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.



## 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.



## 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.



## 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. **Not possible with additional buffer tank.**



## Antivibration mounts

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

# Additional Options



## Trace heating

Maintains or raises the temperature of pipes and vessels through specially engineered cables to protect it from freezing at sub-zero temperatures. **Not possible with additional buffer tank.**



## 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.



## 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 2-year free cloud connection and a full 2-year warranty on Refra unit.**



## Smart Grid (SG) Ready

Allows the controller to communicate with smart grid infrastructure, responding to signals from the grid to optimize energy usage. It supports demand response, energy management, and grid stabilization by enabling real-time monitoring, automated load adjustments, and integration with energy systems.



## Keypad

Offers data point access and system configuration for Climatix controllers, featuring 240x128 dpi resolution display and 6 easy-to-use keys. Equipped with Alarm, Info, and Cancel functions, it supports multiple languages and local HMI settings.



## Touch screen

High-resolution, 7-inch touch display offers an intuitive operator interface, quick connection to controllers via Ethernet or RS485/422. It minimizes engineering, lifecycle costs and commissioning, ensuring local control in production, process, and building automation.

# Additional Options



## Electric energy meter

Monitors and records active, reactive, and apparent energy consumption, displaying the data with real-time visualization. Integrates seamlessly with power monitoring systems via Modbus and calculates average consumption over time.



## Thermal energy meter

Measures heat energy in heating and cooling systems by combining an electric energy meter and an ultrasonic flow meter. Utilizes transit-time technology for accurate, repeatable water flow measurement, ensuring precise energy monitoring, optimal system performance, and efficiency.



## Varipack

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

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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# | Go Green

With a strong emphasis on environmental responsibility and sustainable practices Refra is leading the way in reducing global warming and embracing natural cooling technology. **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.**

Our commitment to a better tomorrow drives us to engineer cutting-edge systems that provide our customers with the tools to make a positive impact on the planet. **At Refra, we envision a future where all of our products are powered by natural refrigerants, contributing to a world that’s not just cooler, but also greener.**

# 🌿 R290

As we witness the growing demand for Hydrocarbon refrigeration systems, we are inspired to push the boundaries of innovation and develop technologically advanced refrigeration solutions.



Green by choice, safe by design