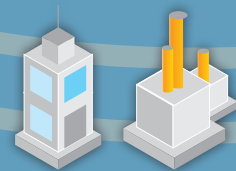


Water cooled chillers and heat pumps  
with screw compressors

**RWH / PWH .... K /Ka series**  
**From 1 to 3 circuits – from 87 to 2440 kW**



- Indoor installation
- High capacities and compact dimensions
- Wide range of options



Water cooled chillers and heat pumps



screw  
compressors



water cooled  
unit



only cooling  
and heat  
pump units



units available  
in low noise  
versions and/or  
with options  
for reduction of  
sound level



**EMICON**

AIR CONDITIONING AND INDUSTRIAL APPLICATION

# Water cooled chillers and heat pumps with screw compressors

The water cooled chillers and heat pumps of **RWH / PWH series** are designed for indoor installation and are particularly suitable for industrial processes and air conditioning systems. Depending on the cooling capacity, they are available with 1, 2 or 3 cooling circuits. Thanks to their compact dimensions and to the several options available, these units are particularly easy to install also in small spaces, with no building works. They are completely assembled and tested in the factory and supplied with refrigerant and non-freezing oil charge. Therefore, once on site, the units only need to be positioned and electrically and hydraulically connected.

**For heat pump units, the cycle inversion is on water side (and not on refrigerant side) to be realized at customer's care during installation.**

The following versions are available:

- RWH / PWH ...K with R407C ecological refrigerant charge
- RWH / PWH ...Ka with R134a ecological refrigerant charge

Water operation limits (standard units):

- EVAPORATOR (OUT): from 5 to 15°C
- CONDENSER (OUT): from 30 to 50°C for R407C - from 30 to 55°C for R134a

## Main components

**Strong and compact frame**, made of bended and coloured steel profiles (col our RAL 9005-black), supporting the exchangers of the evapo-condensers group and on which all the main components are installed at sight. On request, the compressors can be isolated by a soundproofing cabinet with standard material (option CF) or with bituminous rubber coated material (option CFU), so to further reduce the overall sound level of the unit itself.

**Semi-hermetic screw compressors** equipped with capacity steps, motor thermal protection, oil crankcase heater and phase monitor. The compressors lubrication is of forced type, with no pump and in order to prevent many oil migrations to the cooling circuit, the compressors are provided with an oil separator, in-built to the discharge side. The electrical motor is foreseen for lower inrush current and, in this case, the unit is equipped with an automatic partial load inrush device and mechanical interlock of the inrush control switches, to prevent accidental short circuits (options DS and PW).

Dry expansion **shell and tube evaporator** with two refrigerant circuits and one water circuit, with very low pressure drops. Shell and tubes plate made in stainless steel and copper tubes. Some plastic and corrosion-proof baffles are suitably placed inside the shell, allowing a correct water distribution and making the tube bundle particularly strong and vibration-free, also in case of very high water flows.

**Shell and tube condensers** with copper pipes, externally grooved to increase the heating exchange coefficient and tube bundle in carbon steel. On request, the condenser is also available in cupro-nichel suitable for sea water use (option CA).

Each compressor works on an independent **cooling circuit**, assuring a remarkable reliability to multi-compressor units. Each circuit, made of copper or carbon steel tube, is composed of thermostatic expansion valve, dehydrating filter, sight glass, high pressure safety device, antifreeze thermostat, high and low pressure switches, high and low pressure gauges, non-return valve on discharge side, shut-off valve on liquid line.

**Electric board** in compliance with CE norms, contained in a suitable partition protected by the internal safety panel, provided with a lock-door main switch. Inside, it is complete with all control and protection switches, the terminal board and auxiliaries. The electrical board also includes the control device for power supply phases, to prevent the compressor to turn in the wrong sense. The micro processor, complete with display, is also placed inside the electrical board.

**Unit management microprocessor** installed on the internal safety panel of the electrical board, controlling the chilled water temperature regulation, the working parameters, auto-detection failure system, remote management and supervision, complete with compressors hour counter.

## R134a - 1 circuit

| Model RWH               |             | 91 Ka                | 111 Ka | 131 Ka | 151 Ka | 171 Ka | 211 Ka | 241 Ka | 271 Ka |
|-------------------------|-------------|----------------------|--------|--------|--------|--------|--------|--------|--------|
| Cooling capacity        | kW          | 86,6                 | 107    | 127    | 150    | 165    | 195    | 213    | 278    |
| Nominal input power     | kW          | 19,2                 | 23,9   | 29,5   | 32,4   | 36,6   | 42,8   | 47,8   | 58,8   |
| EER                     |             | 4,51                 | 4,48   | 4,3    | 4,6    | 4,5    | 4,6    | 4,5    | 4,7    |
| Heating capacity        | kW          | 106                  | 131    | 156    | 182    | 201    | 238    | 261    | 337    |
| Evaporator              | n.          | 1                    |        |        |        |        |        |        |        |
| Circuits                | n.          | 1                    |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 14,9                 | 18,4   | 21,8   | 25,8   | 28,4   | 33,5   | 36,6   | 47,8   |
| Pressure drop           | kPa         | 58                   | 53     | 65     | 57     | 53     | 54     | 64     | 59     |
| Water cooled condenser  | n.          | 1                    |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 18,2                 | 22,5   | 26,8   | 31,3   | 34,6   | 40,9   | 44,9   | 58     |
| Pressure drop           | kPa         | 23                   | 27     | 30     | 32     | 32     | 26     | 23     | 24     |
| Model PWH               |             | 91 Ka                | 111 Ka | 131 Ka | 151 Ka | 171 Ka | 211 Ka | 241 Ka | 271 Ka |
| Cooling capacity        | kW          | 74,5                 | 92,4   | 109    | 129    | 142    | 168    | 184    | 239    |
| Nominal input power     | kW          | 23,1                 | 28,6   | 35,4   | 38,9   | 43,9   | 51,4   | 57,3   | 70,5   |
| COP                     |             | 3,22                 | 3,23   | 3,8    | 3,32   | 3,23   | 3,27   | 3,21   | 3,39   |
| Heating capacity        | kW          | 97,6                 | 121    | 144    | 168    | 186    | 219    | 241    | 310    |
| Evaporator              | n.          | 1                    |        |        |        |        |        |        |        |
| Circuits                | n.          | 1                    |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 12,8                 | 15,9   | 18,7   | 22,2   | 24,4   | 28,9   | 31,6   | 41,1   |
| Pressure drop           | kPa         | 43                   | 39     | 48     | 42     | 39     | 40     | 48     | 44     |
| Water cooled condenser  | n.          | 1                    |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 16,8                 | 20,8   | 24,8   | 28,9   | 32     | 37,7   | 41,5   | 53,3   |
| Pressure drop           | kPa         | 20                   | 23     | 25     | 27     | 27     | 22     | 20     | 20     |
| Screw compressors       | n.          | 1                    |        |        |        |        |        |        |        |
| Standard capacity steps | n.          | 3                    |        |        |        |        |        |        |        |
| Sound pressure level    | dB(A)       | 68                   | 74     | 74     | 74     | 75     | 76     | 77     | 79     |
| Dimensions              |             |                      |        |        |        |        |        |        |        |
| Length                  | mm          | 2.430                | 2.430  | 2.430  | 2.430  | 2.430  | 3.350  | 3.350  | 3.350  |
| Width                   | mm          | 800                  | 800    | 800    | 800    | 800    | 800    | 800    | 800    |
| Height                  | mm          | 1.525                | 1.525  | 1.525  | 1.525  | 1.525  | 1.525  | 1.525  | 1.525  |
| Transport weight        | kg          | 674                  | 683    | 1.113  | 1.187  | 1.187  | 1.254  | 1.264  | 1.707  |
| Power supply            | V / ph / Hz | 400 / 3 / 50 + N + T |        |        |        |        |        |        |        |

## R134a - 1 circuit

| Model RWH               |             | 321 Ka               | 361 Ka | 421 Ka | 481 Ka | 541 Ka | 621 Ka | 721 Ka | 771 Ka |
|-------------------------|-------------|----------------------|--------|--------|--------|--------|--------|--------|--------|
| Cooling capacity        | kW          | 311                  | 352    | 411    | 476    | 534    | 589    | 667    | 718    |
| Nominal input power     | kW          | 65,8                 | 75,2   | 86     | 98,6   | 114    | 125    | 144    | 154    |
| EER                     |             | 4,73                 | 4,68   | 4,78   | 4,83   | 4,68   | 4,71   | 4,63   | 4,66   |
| Heating capacity        | kW          | 377                  | 427    | 497    | 575    | 648    | 713    | 811    | 871    |
| Evaporator              | n.          | 1                    |        |        |        |        |        |        |        |
| Circuits                | n.          | 1                    |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 53,5                 | 60,5   | 70,7   | 81,9   | 91,8   | 101,3  | 114,8  | 123,5  |
| Pressure drop           | kPa         | 57                   | 47     | 48     | 58     | 59     | 60     | 48     | 58     |
| Water cooled condenser  | n.          | 1                    |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 64,8                 | 73,4   | 85,5   | 98,9   | 111,5  | 122,6  | 139,3  | 149,8  |
| Pressure drop           | kPa         | 30                   | 32     | 30     | 30     | 30     | 29     | 60     | 46     |
| Model PWH               |             | 321 Ka               | 361 Ka | 421 Ka | 481 Ka | 541 Ka | 621 Ka | 721 Ka | 771 Ka |
| Cooling capacity        | kW          | 267                  | 303    | 353    | 409    | 459    | 506    | 573    | 617    |
| Nominal input power     | kW          | 79                   | 90     | 103    | 118    | 137    | 150    | 173    | 184    |
| COP                     |             | 3,38                 | 3,37   | 3,43   | 3,47   | 3,35   | 3,37   | 3,31   | 3,35   |
| Heating capacity        | kW          | 346                  | 393    | 456    | 528    | 596    | 656    | 746    | 801    |
| Evaporator              | n.          | 1                    |        |        |        |        |        |        |        |
| Circuits                | n.          | 1                    |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 45,9                 | 52,1   | 60,7   | 70,3   | 78,9   | 87     | 98,6   | 106,2  |
| Pressure drop           | kPa         | 42                   | 35     | 35     | 43     | 44     | 44     | 51     | 39     |
| Water cooled condenser  | n.          | 1                    |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 59,5                 | 67,6   | 78,4   | 90,8   | 102,5  | 112,8  | 128,2  | 137,9  |
| Pressure drop           | kPa         | 26                   | 27     | 26     | 25     | 25     | 24     | 51     | 39     |
| Screw compressors       | n.          | 1                    |        |        |        |        |        |        |        |
| Standard capacity steps | n.          | 3                    |        |        |        |        |        |        |        |
| Sound pressure level    | dB(A)       | 80                   | 81     | 81     | 82     | 83     | 84     | 83     | 84     |
| Dimensions              |             |                      |        |        |        |        |        |        |        |
| Length                  | mm          | 3.350                | 3.350  | 3.700  | 3.700  | 3.700  | 3.700  | 3.700  | 3.700  |
| Width                   | mm          | 800                  | 800    | 1.200  | 1.200  | 1.200  | 1.200  | 1.200  | 1.200  |
| Height                  | mm          | 1.525                | 1.525  | 1.890  | 1.890  | 1.890  | 1.890  | 1.890  | 1.890  |
| Transport weight        | kg          | 1.732                | 1.755  | 2.845  | 3.010  | 3.133  | 3.196  | 3.324  | 3.573  |
| Power supply            | V / ph / Hz | 400 / 3 / 50 + N + T |        |        |        |        |        |        |        |

RWH: Operating conditions: evaporator water temperature 7/12°C; condenser water temperature 30/35°C.

PWH: Operating conditions: evaporator water temperature 7/12°C; condenser water temperature 40/45°C.

Sound pressure level at 1 m in open field (ISO 3744).

Unit weight including oil and refrigerant charge.

Above data are not binding and subject to variation without prior notice.

## R134a - 2 circuits

| Model RWH               |             | 182 Ka               | 222 Ka | 252 Ka | 292 Ka | 332 Ka | 412 Ka | 472 Ka | 542 Ka | 642 Ka | 732 Ka |
|-------------------------|-------------|----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cooling capacity        | kW          | 174                  | 213    | 254    | 301    | 330    | 385    | 427    | 560    | 622    | 702    |
| Nominal input power     | kW          | 38,4                 | 47,8   | 58,9   | 64,6   | 73,1   | 85,6   | 96     | 118    | 132    | 150    |
| EER                     |             | 4,53                 | 4,46   | 4,31   | 4,66   | 4,51   | 4,50   | 4,45   | 4,74   | 4,71   | 4,68   |
| Heating capacity        | kW          | 213                  | 261    | 313    | 366    | 403    | 470    | 522    | 677    | 753    | 852    |
| Evaporator              | n.          | 1                    |        |        |        |        |        |        |        |        |        |
| Circuits                | n.          | 2                    |        |        |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 29,9                 | 36,6   | 43,7   | 51,8   | 56,8   | 66,2   | 73,4   | 96,3   | 107    | 120,7  |
| Pressure drop           | kPa         | 48                   | 64     | 50     | 54     | 42     | 56     | 51     | 54     | 40     | 56     |
| Water cooled condenser  | n.          | 2                    |        |        |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 36,6                 | 44,9   | 53,8   | 63     | 69,3   | 80,8   | 89,8   | 116,4  | 129,5  | 146,5  |
| Pressure drop           | kPa         | 18                   | 27     | 23     | 21     | 26     | 25     | 23     | 24     | 30     | 32     |
| Model PWH               |             | 182 Ka               | 222 Ka | 252 Ka | 292 Ka | 332 Ka | 412 Ka | 472 Ka | 542 Ka | 642 Ka | 732 Ka |
| Cooling capacity        | kW          | 150                  | 184    | 218    | 259    | 284    | 331    | 367    | 481    | 535    | 603    |
| Nominal input power     | kW          | 46,1                 | 57,3   | 70,7   | 77,5   | 87,8   | 103    | 115    | 141    | 158    | 180    |
| COP                     |             | 3,25                 | 3,21   | 3,8    | 3,34   | 3,23   | 3,21   | 3,19   | 3,41   | 3,39   | 3,35   |
| Heating capacity        | kW          | 196                  | 241    | 289    | 337    | 371    | 434    | 482    | 623    | 692    | 784    |
| Evaporator              | n.          | 1                    |        |        |        |        |        |        |        |        |        |
| Circuits                | n.          | 2                    |        |        |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 25,8                 | 31,6   | 37,5   | 44,5   | 48,8   | 56,9   | 63,1   | 82,7   | 92     | 103,7  |
| Pressure drop           | kPa         | 35                   | 48     | 37     | 40     | 31     | 42     | 38     | 40     | 30     | 41     |
| Water cooled condenser  | n.          | 2                    |        |        |        |        |        |        |        |        |        |
| Water flow              | m³/h        | 33,7                 | 41,5   | 49,7   | 58     | 63,8   | 74,6   | 82,9   | 107,2  | 119    | 134,8  |
| Pressure drop           | kPa         | 15                   | 23     | 20     | 18     | 22     | 21     | 20     | 21     | 26     | 27     |
| Screw compressors       | n.          | 2                    |        |        |        |        |        |        |        |        |        |
| Standard capacity steps | n.          | 6                    |        |        |        |        |        |        |        |        |        |
| Sound pressure level    | dB(A)       | 71                   | 77     | 77     | 77     | 78     | 79     | 80     | 82     | 83     | 84     |
| Dimensions              |             |                      |        |        |        |        |        |        |        |        |        |
| Length                  | mm          | 3.750                | 3.750  | 3.860  | 3.860  | 3.860  | 3.860  | 3.860  | 3.900  | 3.900  | 3.900  |
| Width                   | mm          | 750                  | 750    | 900    | 900    | 900    | 900    | 900    | 1.000  | 1.000  | 1.000  |
| Height                  | mm          | 1.710                | 1.710  | 1.790  | 1.790  | 1.790  | 1.790  | 1.790  | 1.990  | 2.030  | 2.030  |
| Transport weight        | kg          | 1.255                | 1.261  | 1.807  | 1.851  | 1.863  | 2.386  | 2.414  | 3.329  | 3.516  | 3.556  |
| Power supply            | V / ph / Hz | 400 / 3 / 50 + N + T |        |        |        |        |        |        |        |        |        |

## R134a - 2 & 3 circuits

| Model RWH               |             | 842 Ka               | 972 Ka | 1092 Ka | 1232 Ka | 1442 Ka | 1542 Ka | 1633 Ka | 1793 Ka | 2163 Ka | 2313 Ka |  |
|-------------------------|-------------|----------------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| Cooling capacity        | kW          | 815                  | 947    | 1.069   | 1.173   | 1.341   | 1.434   | 1.592   | 1.746   | 2.015   | 2.154   |  |
| Nominal input power     | kW          | 172                  | 197    | 228     | 250     | 288     | 307     | 342     | 374     | 431     | 461     |  |
| EER                     |             | 4,74                 | 4,81   | 4,69    | 4,69    | 4,66    | 4,67    | 4,65    | 4,67    | 4,67    | 4,67    |  |
| Heating capacity        | kW          | 987                  | 1.144  | 1.297   | 1.423   | 1.629   | 1.741   | 1.934   | 2.121   | 2.446   | 2.615   |  |
| Evaporator              | n.          | 1                    |        |         |         |         |         |         |         |         |         |  |
| Circuits                | n.          | 2                    |        |         |         |         | 3       |         |         |         |         |  |
| Water flow              | m³/h        | 140,2                | 162,9  | 183,9   | 201,8   | 230,8   | 246,6   | 273,8   | 300,3   | 346,7   | 370,8   |  |
| Pressure drop           | kPa         | 44                   | 45     | 87      | 50      | 55      | 62      | 47      | 57      | 55      | 62      |  |
| Water cooled condenser  | n.          | 2                    |        |         |         |         | 3       |         |         |         |         |  |
| Water flow              | m³/h        | 169,8                | 196,8  | 223,1   | 244,8   | 280,1   | 299,5   | 332,6   | 364,8   | 421,2   | 450     |  |
| Pressure drop           | kPa         | 30                   | 30     | 30      | 28      | 61      | 46      | 29      | 28      | 61      | 46      |  |
| Model PWH               |             | 842 Ka               | 972 Ka | 1092 Ka | 1232 Ka | 1442 Ka | 1542 Ka | 1633 Ka | 1793 Ka | 2163 Ka | 2313 Ka |  |
| Cooling capacity        | kW          | 701                  | 814    | 920     | 1.009   | 1.153   | 1.233   | 1.369   | 1.502   | 1.733   | 1.853   |  |
| Nominal input power     | kW          | 206                  | 237    | 274     | 299     | 345     | 368     | 410     | 449     | 518     | 553     |  |
| COP                     |             | 3,40                 | 3,43   | 3,36    | 3,37    | 3,34    | 3,35    | 3,34    | 3,34    | 3,34    | 3,35    |  |
| Heating capacity        | kW          | 907                  | 1.051  | 1.193   | 1.308   | 1.499   | 1.602   | 1.779   | 1.951   | 2.251   | 2.405   |  |
| Evaporator              | n.          | 1                    |        |         |         |         |         |         |         |         |         |  |
| Circuits                | n.          | 2                    |        |         |         |         | 3       |         |         |         |         |  |
| Water flow              | m³/h        | 120,6                | 140    | 158,2   | 173,5   | 198,4   | 212,1   | 235,5   | 258,3   | 298,1   | 318,6   |  |
| Pressure drop           | kPa         | 33                   | 33     | 64      | 37      | 51      | 39      | 38      | 44      | 41      | 46      |  |
| Water cooled condenser  | n.          | 2                    |        |         |         |         | 3       |         |         |         |         |  |
| Water flow              | m³/h        | 156                  | 180,8  | 205,2   | 225     | 257,8   | 275,4   | 306     | 335,6   | 388,8   | 414     |  |
| Pressure drop           | kPa         | 25                   | 25     | 25      | 24      | 51      | 39      | 40      | 42      | 51      | 39      |  |
| Screw compressors       | n.          | 2                    |        |         |         |         | 3       |         |         |         |         |  |
| Standard capacity steps | n.          | 6                    |        |         |         |         |         |         |         |         |         |  |
| Sound pressure level    | dB(A)       | 84                   | 85     | 86      | 87      | 86      | 87      | 88      | 89      | 88      | 89      |  |
| Dimensions              |             |                      |        |         |         |         |         |         |         |         |         |  |
| Length                  | mm          | 5.300                | 5.300  | 5.300   | 5.300   | 5.300   | 5.300   | 5.100   | 5.100   | 5.100   | 5.100   |  |
| Width                   | mm          | 1.300                | 1.300  | 1.300   | 1.300   | 1.300   | 1.300   | 2.400   | 2.400   | 2.400   | 2.400   |  |
| Height                  | mm          | 2.430                | 2.430  | 2.430   | 2.430   | 2.430   | 2.430   | 2.480   | 2.480   | 2.480   | 2.480   |  |
| Transport weight        | kg          | 5.327                | 5.522  | 5.757   | 5.898   | 6.392   | 6.521   | 8.860   | 9.077   | 9.855   | 10.049  |  |
| Power supply            | V / ph / Hz | 400 / 3 / 50 + N + T |        |         |         |         |         |         |         |         |         |  |

RWH: Operating conditions: evaporator water temperature 7/12°C; condenser water temperature 30/35°C.  
PWH: Operating conditions: evaporator water temperature 7/12°C; condenser water temperature 40/45°C.  
Sound pressure level at 1 m in open field (ISO 3744).  
Unit weight including oil and refrigerant charge.  
Above data are not binding and subject to variation without prior notice.

## R407C - 1 circuit

| Model RWH               |                   | 131 K                | 161 K | 191 K | 211 K | 241 K | 301 K | 341 K | 391 K | 531 K | 611 K | 691 K | 731 K | 831 K |
|-------------------------|-------------------|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Cooling capacity        | kW                | 116                  | 145   | 169   | 196   | 224   | 281   | 323   | 371   | 487   | 554   | 635   | 723   | 815   |
| Nominal input power     | kW                | 32,2                 | 39,9  | 46,7  | 54    | 60,8  | 73,3  | 84,1  | 94,5  | 125   | 143   | 161   | 184   | 205   |
| EER                     |                   | 3,60                 | 3,60  | 3,6   | 3,6   | 3,7   | 3,8   | 3,8   | 3,9   | 3,9   | 3,9   | 3,9   | 3,9   | 4     |
| Heating capacity        | kW                | 149                  | 185   | 216   | 250   | 285   | 355   | 407   | 465   | 611   | 698   | 795   | 910   | 1.020 |
| Evaporator              | n.                | 1                    |       |       |       |       |       |       |       |       |       |       |       |       |
| Circuits                | n.                | 1                    |       |       |       |       |       |       |       |       |       |       |       |       |
| Water flow              | m <sup>3</sup> /h | 20                   | 24,9  | 29,1  | 33,7  | 38,5  | 48,3  | 55,6  | 63,8  | 83,8  | 95,3  | 109,2 | 124,9 | 140,2 |
| Pressure drop           | kPa               | 61                   | 67    | 58    | 52    | 41    | 71    | 71    | 71    | 52    | 68    | 69    | 72    | 55    |
| Water cooled condenser  | n.                | 1                    |       |       |       |       |       |       |       |       |       |       |       |       |
| Water flow              | m <sup>3</sup> /h | 25,6                 | 31,8  | 37,2  | 43    | 49    | 61,1  | 70    | 80    | 105,1 | 120,1 | 136,7 | 156,5 | 175,4 |
| Pressure drop           | kPa               | 80                   | 85    | 85    | 87    | 89    | 77    | 80    | 78    | 82    | 81    | 79    | 84    | 80    |
| Model PWH               |                   | 131 K                | 161 K | 191 K | 211 K | 241 K | 301 K | 341 K | 391 K | 531 K | 611 K | 691 K | 731 K | 831 K |
| Cooling capacity        | kW                | 100,1                | 125   | 146   | 169   | 193   | 242   | 278   | 319   | 419   | 477   | 546   | 625   | 701   |
| Nominal input power     | kW                | 39                   | 48,3  | 56,5  | 65,3  | 73,5  | 88,7  | 102   | 114   | 151   | 173   | 194   | 222   | 248   |
| COP                     |                   | 2,60                 | 2,59  | 2,58  | 2,59  | 2,62  | 2,73  | 2,72  | 2,80  | 2,77  | 2,76  | 2,81  | 2,81  | 2,83  |
| Heating capacity        | kW                | 139                  | 173   | 202   | 234   | 266   | 331   | 379   | 433   | 569   | 650   | 740   | 847   | 949   |
| Evaporator              | n.                | 1                    |       |       |       |       |       |       |       |       |       |       |       |       |
| Circuits                | n.                | 1                    |       |       |       |       |       |       |       |       |       |       |       |       |
| Water flow              | m <sup>3</sup> /h | 17,2                 | 21,5  | 25,1  | 29,1  | 33,2  | 41,6  | 47,8  | 54,9  | 72,1  | 82    | 93,9  | 107,5 | 120,6 |
| Pressure drop           | kPa               | 45                   | 50    | 43    | 38    | 30    | 53    | 52    | 53    | 39    | 50    | 51    | 52    | 41    |
| Water cooled condenser  | n.                | 1                    |       |       |       |       |       |       |       |       |       |       |       |       |
| Water flow              | m <sup>3</sup> /h | 23,9                 | 29,8  | 34,7  | 40,2  | 45,8  | 56,9  | 65,2  | 74,5  | 97,9  | 111,8 | 127,3 | 145,7 | 163,2 |
| Pressure drop           | kPa               | 71                   | 75    | 74    | 76    | 77    | 67    | 70    | 67    | 71    | 71    | 68    | 53    | 69    |
| Screw compressors       | n.                | 1                    |       |       |       |       |       |       |       |       |       |       |       |       |
| Standard capacity steps | n.                | 3                    |       |       |       |       |       |       |       |       |       |       |       |       |
| Sound pressure level    | dB(A)             | 70                   | 76    | 76    | 76    | 77    | 77    | 80    | 81    | 82    | 83    | 84    | 85    | 87    |
| Dimensions              |                   |                      |       |       |       |       |       |       |       |       |       |       |       |       |
| Length                  | mm                | 2.430                | 2.430 | 2.430 | 2.430 | 2.430 | 3.310 | 3.310 | 3.340 | 3.700 | 3.700 | 3.700 | 3.700 | 3.700 |
| Width                   | mm                | 800                  | 800   | 800   | 850   | 850   | 800   | 800   | 850   | 1.300 | 1.300 | 1.300 | 1.300 | 1.300 |
| Height                  | mm                | 1.525                | 1.525 | 1.525 | 1.610 | 1.610 | 1.525 | 1.525 | 1.610 | 1.900 | 1.900 | 1.900 | 1.900 | 1.900 |
| Transport weight        | kg                | 909                  | 926   | 1.168 | 1.265 | 1.288 | 1.688 | 1.716 | 1.900 | 3.464 | 3.503 | 3.696 | 3.898 | 3.979 |
| Power supply            | V / ph / Hz       | 400 / 3 / 50 + N + T |       |       |       |       |       |       |       |       |       |       |       |       |

## R407C - 2 circuits

| Model RWH               |                   | 252 K                | 312 K | 372 K | 422 K | 472 K | 592 K | 672 K | 772 K |
|-------------------------|-------------------|----------------------|-------|-------|-------|-------|-------|-------|-------|
| Cooling capacity        | kW                | 241                  | 291   | 342   | 394   | 453   | 561   | 642   | 743   |
| Nominal input power     | kW                | 64                   | 79,8  | 92,4  | 108   | 120   | 147   | 168   | 189   |
| EER                     |                   | 3,76                 | 3,65  | 3,70  | 3,65  | 3,78  | 3,82  | 3,82  | 3,93  |
| Heating capacity        | kW                | 306                  | 371   | 435   | 502   | 573   | 708   | 810   | 932   |
| Evaporator              | n.                | 1                    |       |       |       |       |       |       |       |
| Circuits                | n.                | 2                    |       |       |       |       |       |       |       |
| Water flow              | m <sup>3</sup> /h | 41,5                 | 50,1  | 58,8  | 67,8  | 77,9  | 96,5  | 110,4 | 127,8 |
| Pressure drop           | kPa               | 62                   | 71    | 66    | 61    | 49    | 70    | 71    | 46    |
| Water cooled condenser  | n.                | 2                    |       |       |       |       |       |       |       |
| Water flow              | m <sup>3</sup> /h | 52,6                 | 63,8  | 74,8  | 86,3  | 98,6  | 121,8 | 139,3 | 160,3 |
| Pressure drop           | kPa               | 69                   | 79    | 71    | 79    | 75    | 77    | 80    | 78    |
| Model PWH               |                   | 252 K                | 312 K | 372 K | 422 K | 472 K | 592 K | 672 K | 772 K |
| Cooling capacity        | kW                | 208                  | 250   | 294   | 339   | 390   | 483   | 552   | 639   |
| Nominal input power     | kW                | 77,5                 | 96,6  | 112   | 130   | 146   | 177   | 203   | 229   |
| COP                     |                   | 2,68                 | 2,59  | 2,62  | 2,61  | 2,67  | 2,73  | 2,72  | 2,79  |
| Heating capacity        | kW                | 285                  | 347   | 406   | 469   | 535   | 660   | 755   | 868   |
| Evaporator              | n.                | 1                    |       |       |       |       |       |       |       |
| Circuits                | n.                | 2                    |       |       |       |       |       |       |       |
| Water flow              | m <sup>3</sup> /h | 35,8                 | 43    | 50,6  | 58,3  | 67,1  | 83,1  | 94,9  | 109,9 |
| Pressure drop           | kPa               | 46                   | 52    | 49    | 45    | 36    | 51    | 52    | 34    |
| Water cooled condenser  | n.                | 2                    |       |       |       |       |       |       |       |
| Water flow              | m <sup>3</sup> /h | 49                   | 59,7  | 69,8  | 80,7  | 92    | 113,5 | 129,9 | 149,3 |
| Pressure drop           | kPa               | 60                   | 69    | 62    | 69    | 65    | 67    | 69    | 68    |
| Screw compressors       | n.                | 2                    |       |       |       |       |       |       |       |
| Standard capacity steps | n.                | 6                    |       |       |       |       |       |       |       |
| Sound pressure level    | dB(A)             | 73                   | 79    | 79    | 79    | 80    | 80    | 83    | 84    |
| Dimensions              |                   |                      |       |       |       |       |       |       |       |
| Length                  | mm                | 3.750                | 3.750 | 3.860 | 3.860 | 3.860 | 3.900 | 3.900 | 3.900 |
| Width                   | mm                | 750                  | 750   | 900   | 900   | 900   | 100   | 1.000 | 1.000 |
| Height                  | mm                | 1.790                | 1.790 | 1.790 | 1.790 | 1.790 | 1.990 | 1.990 | 1.990 |
| Transport weight        | kg                | 1.828                | 1.838 | 2.348 | 2.376 | 2.425 | 3.376 | 3.426 | 3.895 |
| Power supply            | V / ph / Hz       | 400 / 3 / 50 + N + T |       |       |       |       |       |       |       |

RWH: Operating conditions: evaporator water temperature 7/12°C; condenser water temperature 30/35°C.  
PWH: Operating conditions: evaporator water temperature 7/12°C; condenser water temperature 40/45°C.  
Sound pressure level at 1 m in open field (ISO 3744).  
Unit weight including oil and refrigerant charge.  
Above data are not binding and subject to variation without prior notice.

## R407C - 2 & 3 circuits

| Model RWH               |                   | 1062 K               | 1222 K | 1392 K | 1462 K | 1652 K | 1993 K | 2203 K | 2493 K |  |
|-------------------------|-------------------|----------------------|--------|--------|--------|--------|--------|--------|--------|--|
| Cooling capacity        | kW                | 970                  | 1.116  | 1.271  | 1.432  | 1.632  | 1.915  | 2.161  | 2.440  |  |
| Nominal input power     | kW                | 245                  | 287    | 321    | 366    | 411    | 482    | 550    | 616    |  |
| EER                     |                   | 3,96                 | 3,89   | 3,96   | 3,91   | 3,97   | 3,97   | 3,93   | 3,96   |  |
| Heating capacity        | kW                | 1.215                | 1.403  | 1.592  | 1.798  | 2.043  | 2.397  | 2.711  | 3.056  |  |
| Evaporator              | n.                | 1                    |        |        |        |        |        |        |        |  |
| Circuits                | n.                | 2                    |        |        |        |        | 3      |        |        |  |
| Water flow              | m <sup>3</sup> /h | 166,8                | 192    | 218,6  | 246,3  | 280,7  | 329,4  | 371,7  | 419,7  |  |
| Pressure drop           | kPa               | 52                   | 36     | 64     | 44     | 87     | 68     | 87     | 36     |  |
| Water cooled condenser  | n.                | 2                    |        |        |        |        | 3      |        |        |  |
| Water flow              | m <sup>3</sup> /h | 209                  | 241,3  | 273,8  | 309,3  | 351,4  | 412,3  | 466,3  | 525,6  |  |
| Pressure drop           | kPa               | 70                   | 82     | 79     | 82     | 80     | 80     | 83     | 80     |  |
| Model PWH               |                   | 1062 K               | 1222 K | 1392 K | 1462 K | 1652 K | 1993 K | 2203 K | 2493 K |  |
| Cooling capacity        | kW                | 835                  | 960    | 1.093  | 1.231  | 1.404  | 1.647  | 1.858  | 2.098  |  |
| Nominal input power     | kW                | 297                  | 347    | 389    | 443    | 497    | 583    | 665    | 745    |  |
| COP                     |                   | 2,81                 | 2,77   | 2,81   | 2,78   | 2,82   | 2,82   | 2,79   | 2,82   |  |
| Heating capacity        | kW                | 1.131                | 1.307  | 1.482  | 1.674  | 1.901  | 2.231  | 2.524  | 2.843  |  |
| Evaporator              | n.                | 1                    |        |        |        |        |        |        |        |  |
| Circuits                | n.                | 2                    |        |        |        |        | 3      |        |        |  |
| Water flow              | m <sup>3</sup> /h | 143,6                | 165,1  | 188    | 211,7  | 241,5  | 283,3  | 319,7  | 360,9  |  |
| Pressure drop           | kPa               | 39                   | 26     | 47     | 33     | 65     | 50     | 64     | 26     |  |
| Water cooled condenser  | n.                | 2                    |        |        |        |        | 3      |        |        |  |
| Water flow              | m <sup>3</sup> /h | 194,5                | 224,8  | 254,9  | 287,9  | 327    | 383,7  | 434,1  | 489    |  |
| Pressure drop           | kPa               | 61                   | 72     | 68     | 71     | 69     | 69     | 72     | 69     |  |
| Screw compressors       | n.                | 2                    |        |        |        |        | 3      |        |        |  |
| Standard capacity steps | n.                | 6                    |        |        |        |        | 9      |        |        |  |
| Sound pressure level    | dB(A)             | 85                   | 86     | 87     | 88     | 90     | 89     | 90     | 92     |  |
| Dimensions              |                   |                      |        |        |        |        |        |        |        |  |
| Length                  | mm                | 5.200                | 5.200  | 5.200  | 5.200  | 5.200  | 5.200  | 5.200  | 5.200  |  |
| Width                   | mm                | 1.300                | 1.300  | 1.300  | 1.300  | 1.300  | 2.000  | 2.000  | 2.000  |  |
| Height                  | mm                | 2.370                | 2.370  | 2.370  | 2.370  | 2.370  | 2.370  | 2.370  | 2.370  |  |
| Transport weight        | kg                | 6.026                | 6.104  | 6.483  | 7.006  | 7.184  | 9.834  | 10.195 | 10.523 |  |
| Power supply            | V / ph / Hz       | 400 / 3 / 50 + N + T |        |        |        |        |        |        |        |  |

RWH: Operating conditions: evaporator water temperature 7/12°C; condenser water temperature 30/35°C.

PWH: Operating conditions: evaporator water temperature 7/12°C; condenser water temperature 40/45°C.

Sound pressure level at 1 m in open field (ISO 3744).

Unit weight including oil and refrigerant charge.

Above data are not binding and subject to variation without prior notice.

## References

- University Clinic – Bonn (Germany)
- University of Catania (Italy)
- Palazzo Lega delle Cooperative – Roma (Italy)
- Hospital of Sesto S. Giovanni (Italy)
- Volda Hospital (Norway)
- Musée de Cholet – Nantes (France)
- Volkswagen production facilities – Wolfsburg (Germany)
- BMW production facilities – Beijing (China)
- BASF production facilities – Ludwigshafen (Germany)
- Colgate Palmolive production facilities (Poland)
- Zuegg factory – Moscow (Russia)
- Galaxy Shopping Mall – New Delhi (India)
- Shopping Mall “Il Borgo” – Asti (Italy)
- Fiera del Mare – Genova (Italy)
- Casinò Municipale – Campione d’Italia (Italy)



**A - Amperometer:** Electrical device for measuring the intensity of electrical current absorbed by the unit.

**AE** - Electrical power supply different from standard: mainly, 230V triphase, 460V triphase. Frequency 50/60 Hz.

**CA - Condensers suitable for seawater:** made in cupro-nichel or titanium, to be selected on request, suitable for working with seawater.

**CC - Insulated condensers:** insulation on condensers heads and side (10 mm thickness).

**CF - Soundproofed compressors cabinet with standard material:** Insulation of compressors by a cabinet made of extruded anodized aluminium profiles, with panels in aluminium alloy, coated with soundproofing material and vibration dampers under compressors.

**CFU - Soundproofed compressors cabinet with bituminous rubber coated material:** Insulation of compressors by a cabinet made of extruded anodized aluminium profiles, with panels in aluminium alloy, coated with bituminous rubber soundproofing material and vibration dampers under compressors, mufflers on compressors discharge pipes.

**CS - Compressors inrush counter:** Electromechanical device positioned inside the electrical board, recording the total inrush starts of compressors.

**DQ - Additional box** for connection of power supply cables.

**DS - Star/delta:** electric device of close transition type to reduce the inrush current, complete with short circuit safety by mechanical interlock.

**IE - Fumigated wooden crate packing:** available on request for critical transports, so to assure a suitable protection to the unit.

**IG - Watch card:** Electronic card to program the switch-over and rotation between to units, after a pre-set time.

**IH - RS 485 serial interface:** electronic card to be connected to microprocessor, to allow communication between the units and a Carel supervision system. It is possible to fully control the unit from remote. For connection to other supervision systems, the protocol of the controlled parameters is available on request.

**IM - Seawood packing:** fumigated seawood case and protection bag with hygroscopic salts, suitable for long sea transports.

**IR - Packing with fumigated wooden pallet and transparent film:** minimal packing made of wooden pallet and transparent film wrapped all around the unit.

**LI - Liquid injection:** mechanical device allowing a better cooling of compressors at very high compression level (standard for R407C).

**KS - Lifting kit:** made of belts and brackets to be inserted into the holes present in the unit base-frame. It is used for moving and positioning the unit on site.

**M8-M25 - Modulating capacity control:** by means of some valves installed on compressors, depending on their quantity, the capacity is modulated from 8 to 100%.

**OS - Oil flow safety switch:** in-built in the compressor oil separator, it indicates the eventual decrease of the oil level.

**PA - Rubber-type vibration dampers:** bell-shaped vibration dampers supports for insulating the unit (supplied in kit), made of base and bell in galvanized steel and natural rubber mixture.

**PF - Safety water flow switch:** installed on evaporator, it switches off the unit in case of lack of water flow rate through the evaporator.

**PM - Spring-type vibration dampers:** spring-type vibration dampers support, for insulating the unit (supplied in kit), mainly indicated for installation in difficult and aggressive environments. Made of two steel plates containing a suitable quantity of harmonic steel springs.

**PQ - Remote microprocessor:** remote terminal, allowing to display the temperature and humidity values detected by probes, the alarm digital inputs, the outputs and the remote ON/OFF of the unit, to change and program of the parameters, the sound signal and the display of the present alarms.

**PW - Part-winding:** equipment for step compressors starting, reducing of about 35% the inrush current of each compressor.

**RA - Anti-freeze heater on evaporator:** electrical heater installed on the evaporator, in order to prevent freezing and provided with thermostat.

**RF - Power factor correction system cosfi >0,9:** Electrical device made of suitable condensers for compressors rephasing, ensuring a cosfi value  $\geq 0,9$ , so to reduce the power absorption from the electrical network.

**RH - Shut-off valve on suction side:** they are used to isolate compressors during service operations.

**RL Compressors overload relays:** electromechanical protection devices against compressor's overload.

**RP - Partial heat recovery** (about 20%) of the condensing heat, by means of a refrigerant/water plate exchanger (desuperheater), always in series to the compressors. It is requested when you need to produce sanitary water, by recovering condensing heat capacity.

**RT - Total heat recovery** (100%) of the condensing heat, by means of a refrigerant/water plate exchanger, always in series to the compressors. It is requested when you need to produce sanitary water, by recovering condensing heat capacity, and /or for dehumidification.

**TC - Victaulic joints** and welding coupling for condenser connection to water circuit.

**TE - Electronic thermostatic valve:** it is requested to make a very accurate regulation of the refrigerant flow and to limit variations of cooling capacity and evaporator leaving temperature water during operation in transitions and for a better performance with fixed superheating.

**V - Voltmeter:** Electrical device measuring the electrical tension in the power supply of the unit.

**VB - Brine version:** unit suitable for working with evaporator outlet water temperatures lower than 0°C. A 20 mm evaporator insulation will be provided.

**VS - Solenoid valve:** electromagnetic solenoid valve on each cooling circuit to prevent refrigerant migrations and consequent flooding of compressors.



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