



## EcoDry – Economic Dehumidification with Free Re-heating.

A combination of common chilled water and DX cooling technology allows to reach 5.4 g/kg dry air without any electric heater requirement.

# EcoDry – Economic Dehumidification with Free Re-heating

Dehumidifiers produce comfortable air conditions with humidity around 5.4 g/kg. This can be reached with a combination of common chilled water (e.g. 7/12 °C) and DX cooling technology with free re-heating in an extremely economical way.

## Key Advantages of EcoDry

### **No electric heater required**

Energy savings as opposed to conventional systems realized by applying common chilled water on usual temperature levels and free re-heating at the same time. Best COP numbers of up to 5.2 can be achieved and no external heating energy is necessary.

### **Ready for installation**

Neither tubing nor charging of refrigerant is necessary on site. The dehumidifiers are delivered with complete compressor controls and fully parameterized. Only the power supply and dehumidification signal are required. The unit delivers fault signals. The robatherm dehumidifiers can be integrated in any external control system.

### **Customizable**

Several unit sizes from 10 - 50 kW DX cooling capacity are available. Airflow and pressure can be adjusted, additional components such as filters or mixing chambers can be added up to individual needs.

### **High robatherm standard**

Advanced casing technology with outstanding characteristics T2 and TB1 according to EN 1886 in order to reduce the risk of condensation.

## Mode of Operation of EcoDry

### **Description**

Dehumidifiers with free re-heating consist of:

- Cooling coil (with chilled water) section.
- DX cooling coil, a re-heater (condenser), a compressor and all necessary accessories. Coils and compressors are interconnected by tubes and the set is completely factory charged with R407C. The section is wired to a fully parameterized controller which is assembled in a control cabinet.
- Fan section.
- Attendant components like filter section or mixing section with dampers and flexible connectors.

The unit sections can be customized to adapt the dehumidifier exactly to individual conditions and needs.

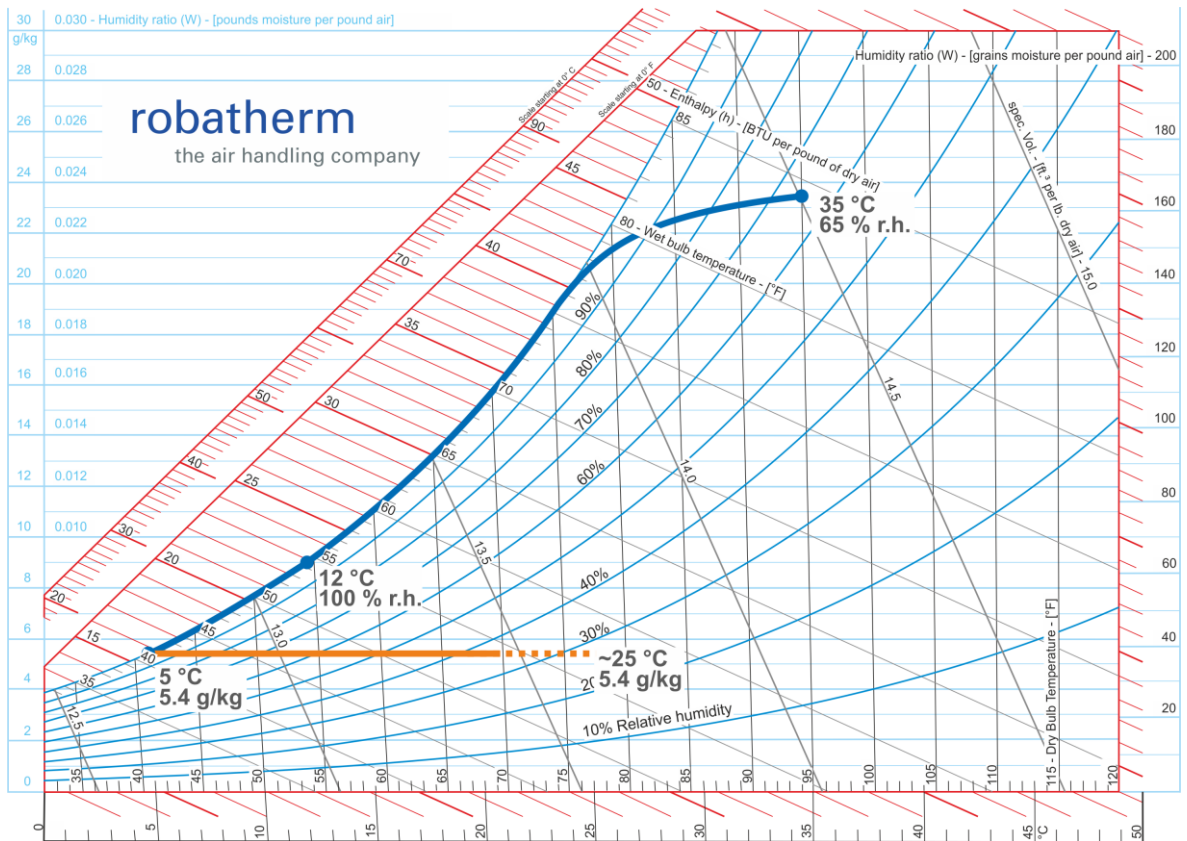
## Function

Warm and humid air runs through a chilled water cooling coil, a DX cooling coil and a re-heating condenser. The first cooling coil is operated with usual chilled water from the building. It cools and dehumidifies the air down to approx 9 g/kg at the same time. The DX cooling coil works as an additional dehumidifier which allows to reach the expected 5.4 g/kg. The condenser is using the gained energy in order to re-heat the air. Neither low temperature chilled water nor any additional re-heating energy is necessary.

## Controls

Dehumidifiers with free re-heating provide control loops in order to achieve the lowest humidity. The integration into an external control system is optionally possible.

## Psychrometric Diagram



## Individual air handling units

How to find your individual unit:

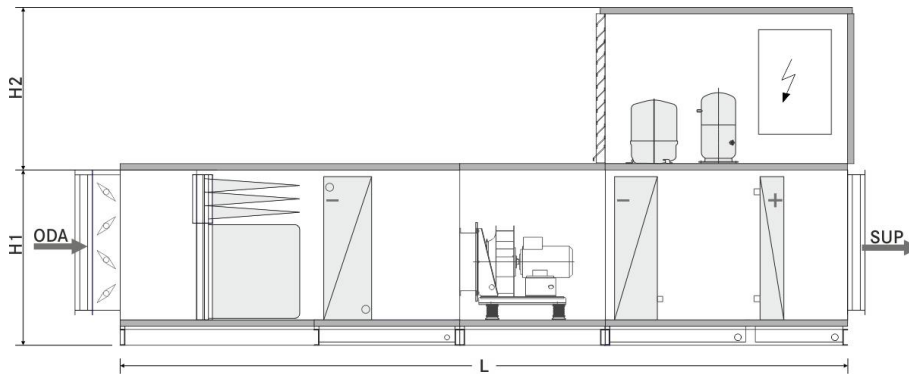
- Select the AHU size according to required airflow and cooling capacity from the table on the next page.
- Define your individual boundary conditions from external pressure to filters and accessories.
- Receive your offer.

## Technical Data

### Range of EcoDry

|                   |                                      | 06/09<br>10 kW | 06/09<br>15 kW | 09/09<br>20 kW | 09/09<br>25 kW | 09/09<br>30 kW | 09/12<br>35 kW | 09/12<br>40 kW | 12/12<br>45 kW | 12/12<br>50 kW | 12/15<br>65 kW |
|-------------------|--------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| AHU               | Max. air flow<br>[m <sup>3</sup> /h] | 1,700          | 2,580          | 3,450          | 4,300          | 5,150          | 6,000          | 6,900          | 7,750          | 8,600          | 11,500         |
|                   | ODA <sup>1)</sup>                    |                |                |                |                |                |                |                |                |                |                |
| ODA <sup>1)</sup> | Temperature<br>[°C]                  | 35             | 35             | 35             | 35             | 35             | 35             | 35             | 35             | 35             | 35             |
|                   | Relative humidity<br>[% r.h.]        | 65             | 65             | 65             | 65             | 65             | 65             | 65             | 65             | 65             | 65             |
| SUP               | Min. humidity<br>[g/kg]              | 5.4            | 5.4            | 5.4            | 5.4            | 5.4            | 5.4            | 5.4            | 5.4            | 5.4            | 5.4            |
| Compressor        | Cooling capacity<br>[kW]             | 9.9            | 15.0           | 20.0           | 25.0           | 29.9           | 34.9           | 40.1           | 45.0           | 50.0           | 66.8           |
|                   | Re-heating<br>capacity [kW]          | 13.4           | 19.3           | 25.2           | 30.3           | 38.3           | 43.2           | 48.5           | 54.0           | 60.5           | 80.9           |
|                   | Electrical<br>capacity [kW]          | 5.1            | 7.0            | 9.3            | 9.9            | 12.2           | 14.0           | 15.6           | 16.8           | 18.2           | 24.2           |
|                   | Amperage [A]                         | 12.0           | 15.0           | 19.0           | 20.0           | 24.0           | 27.0           | 30.0           | 32.0           | 35.0           | 44.0           |
|                   | Condensation<br>temperature [°C]     | 35             | 35             | 35             | 35             | 35             | 35             | 35             | 35             | 35             | 35             |
|                   | Min. evaporation<br>temperature [°C] | 1              | 1              | 1              | 1              | 1              | 1              | 1              | 1              | 1              | 1              |
|                   | COP                                  | 4.0            | 4.2            | 3.8            | 4.2            | 4.3            | 4.1            | 4.8            | 5.1            | 5.2            | 5.2            |

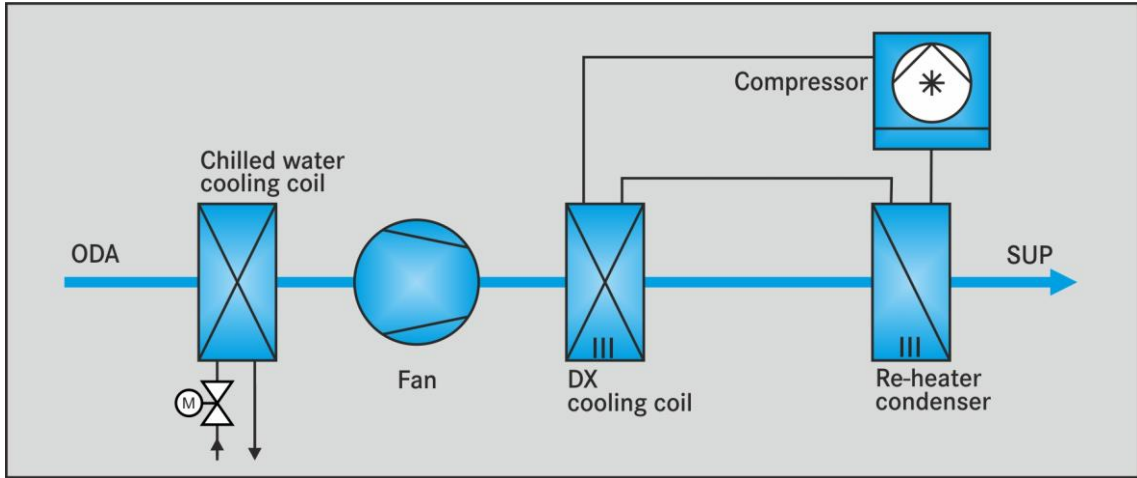
### Unit Sketch and Dimensions



| Type <sup>1)</sup> |                     | Width <sup>1)</sup> | Height <sup>1)</sup> |            |            | Length <sup>1)</sup> |
|--------------------|---------------------|---------------------|----------------------|------------|------------|----------------------|
| RM-Line            | DX capacity<br>[kW] | T<br>[mm]           | H Total<br>[mm]      | H1<br>[mm] | H2<br>[mm] | L Total<br>[mm]      |
| 06/09              | 10                  | 1,000               | 1,830                | 800        | 1,030      | 4,284                |
| 06/09              | 15                  | 1,000               | 1,830                | 800        | 1,030      | 4,284                |
| 09/09              | 20                  | 1,000               | 2,140                | 1,110      | 1,030      | 4,284                |
| 09/09              | 25                  | 1,000               | 2,140                | 1,110      | 1,030      | 4,284                |
| 09/12              | 30                  | 1,300               | 2,140                | 1,110      | 1,030      | 4,284                |
| 09/12              | 35                  | 1,300               | 2,140                | 1,110      | 1,030      | 4,284                |
| 09/12              | 40                  | 1,300               | 2,140                | 1,110      | 1,030      | 4,284                |
| 12/12              | 45                  | 1,300               | 2,450                | 1,420      | 1,030      | 4,284                |
| 12/12              | 50                  | 1,300               | 2,450                | 1,420      | 1,030      | 4,284                |
| 12/15              | 65                  | 1,600               | 2,450                | 1,420      | 1,030      | 4,488                |

<sup>1)</sup> final numbers depend on individual selection.

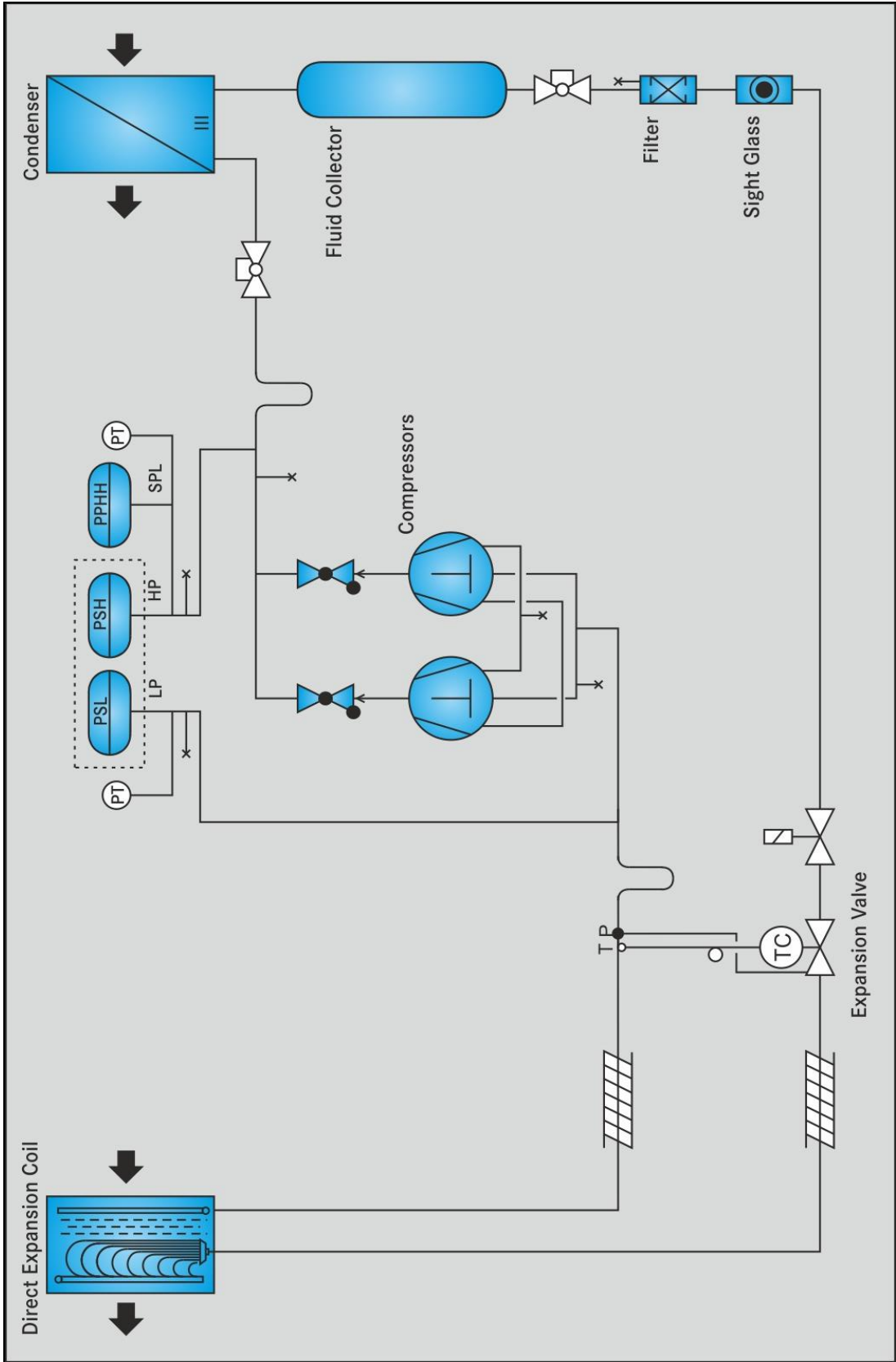
## Scheme



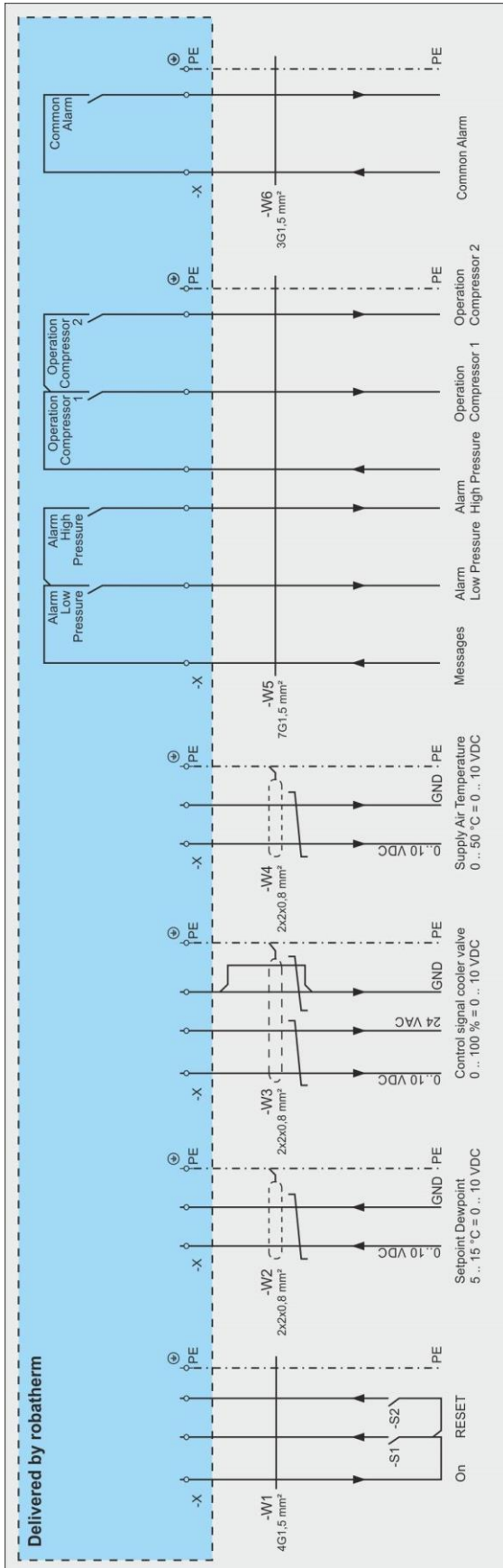
## General Description

|                                  | Description  |
|----------------------------------|--|
| <b>Cooling technology</b>        | <ul style="list-style-type: none"> <li>• Complete refrigerant tubing, charged and tested.</li> <li>• Fully hermetic compressors.</li> <li>• Specially designed for HVAC-applications.</li> </ul>   |
| <b>Control cabinet</b>           | <ul style="list-style-type: none"> <li>• Efficient control technology for dehumidification.</li> <li>• Perfectly balanced control loops.</li> <li>• Modern compact controller.</li> <li>• Fully wired and ready to use.</li> </ul>   |
| <b>Cooling and heating coils</b> | <ul style="list-style-type: none"> <li>• Cu/Al or Cu/Cu or according to your request.</li> <li>• Coils with seamless copper-tubes, high performance fins from aluminum or copper, collectors from copper.</li> <li>• DX cooling coil with multiple injections.</li> </ul>  |
| <b>Casing</b>                    | <ul style="list-style-type: none"> <li>• Thermal Bridging: TB1 according to EN 1886.</li> <li>• Thermal Transmittance: T2 according to EN 1886.</li> <li>• Casing Leakage: L1 (M) according to EN 1886.</li> <li>• All parts made from galvanized steel, unit structure inside.</li> <li>• Thermo panels double skin, made from galvanized steel sheet, with 40 mm insulation. Outside additionally powder coated.</li> <li>• Options completely coated or stainless steel available.</li> <li>• Integrated stainless steel drain pan, sloped to all sides.</li> </ul> |
| <b>Filters</b>                   | <ul style="list-style-type: none"> <li>• Screwed filter wall for filter elements 592 x 592 mm, 287 x 592 mm.</li> <li>• Frames are powder coated, suitable for all filter brands.</li> </ul>   |

# Cooling Scheme



## Transfer Terminal Strip



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