

AFIM[®] DRY

3500, 5000, 10K

Industrial
Dehumidifiers



*Dehumidifying capacity at
20°C with 60% RH
30 - 70 kg/h*

*Dry airflow
3.500 – 10.000 m³/h*

- Suitable for heavy industrial environments
- No hindrance of filter pollution by constant volume control
- Low maintenance costs by filters with up to 5 times higher dust holding capacity
- Suitable in the food and pharma industry and storage applications
- 50% More energy efficient then market standards (in combination with Heat Recovery Unit)
- Full insulated housing
- Original Dutch design including option to 5 years warranty extension



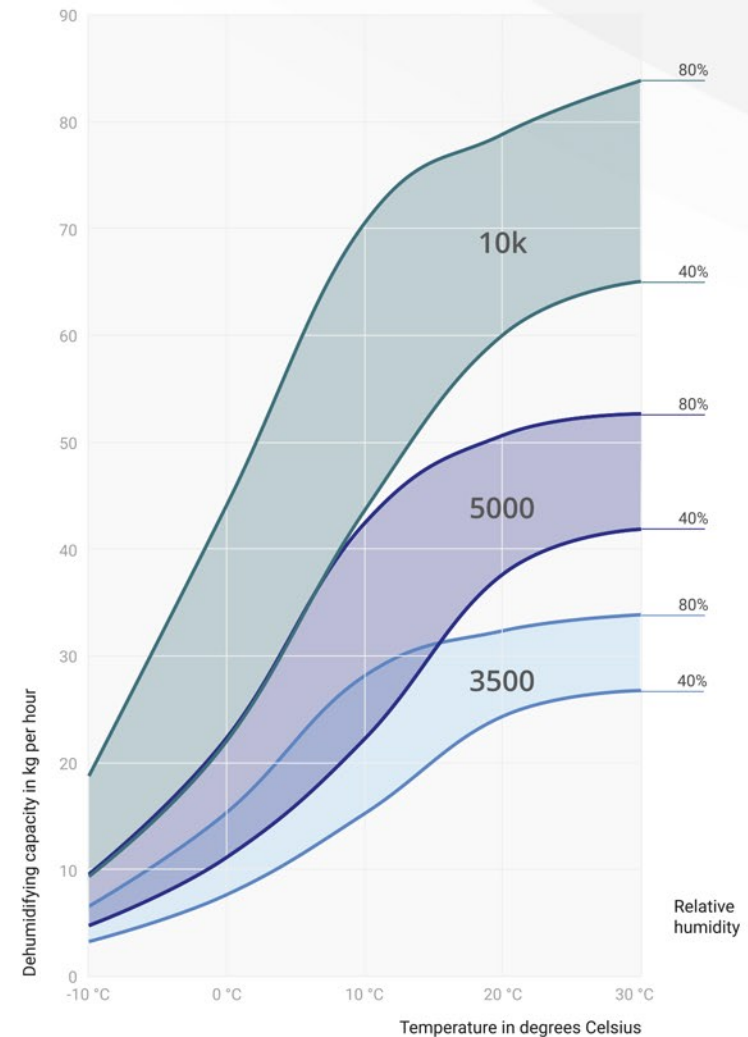
All standard:

- ☑ PLC including graphical user interface
- ☑ High flexibility due to Integrated EC-fan technology with 100% speed controlled volume flow rate
- ☑ Suitable for very low dew points (up to -60°C dp)
- ☑ Onboard analog controller (suitable for 0-10 Volt)
- ☑ Onboard 2-step controller (suitable for 0-100% heater capacity)
- ☑ Multiple programmable digital calendar clocks
- ☑ Adjustable automatic restart function
- ☑ Filter alarm
- ☑ Rotor rotation guard
- ☑ Digital alarm history including time and date stamp
- ☑ Several operating hours counters (individually for each main component inside the unit)

Optional:

- ☑ Stainless steel housing
- ☑ Online assistance
- ☑ Online monitoring

AFIM Dry - Dehumidification Capacity



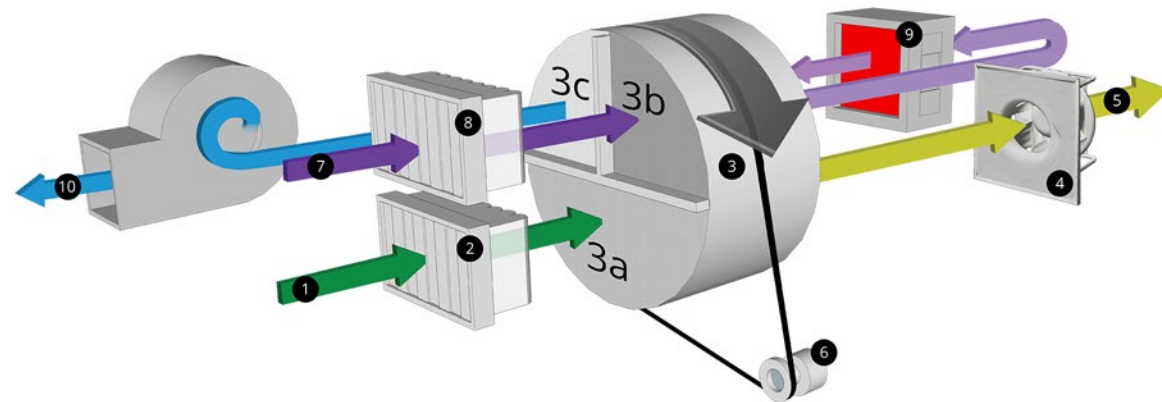
Industrial desiccant dehumidifier - Principles of operation

The process-air (1) is being sucked into the dehumidifier and blown through industrial bag filters (2). To guarantee a stable and continuous operation, these filters have a minimum overcapacity of 30%. After the process-air has been filtered, it continues through the process section of the rotor (3a). The surface of this rotor (3) is covered with small air channels that flow all the way through. These small channels contain a high amount of silica gel (>82% of the total surface). Because of the rotor's unique composition, the moisture in the processed air is being adsorbed by the silica gel. When the process-air leaves the rotor, it's completely dry. The process-air is pushed through the rotor due to negative pressure. This negative pressure is created by an industrial and energy efficient EC-fan (4). The dry air (5) is then expelled from the dehumidifier and ready for use. The rotor is continuously spun around slowly by the rotor motor (6). This way the rotor is always ready to pick up moisture.

The advantages of an industrial desiccant dehumidifier include that the drying process is continuous. The process is never interrupted by, for example: defrosting/de-icing. Furthermore, extreme low moisture levels can be reached with an industrial dehumidifier.

The regeneration-air (7) is being sucked into the dehumidifier and blown through industrial bag filters (8). To guarantee a stable and continuous operation, these filters have a minimum overcapacity of 30%. After the regeneration-air has been filtered, it continues through the heat recovery section of the rotor (3b). The heat recovery section recovers a minimum of 30% of the heat. That heat is being re-used for pre-heating the regeneration-air of the dehumidifier. After passing through the heat recovery section, the air is heated to over 100°C by the internal heater (9). The heated regeneration-air passes through the regeneration section of the rotor (3c). When the regeneration-air passes through the rotor, the air absorbs all the moisture contained by the rotor. The regeneration-air, also known as "wet air", is then expelled out of the dehumidifier (10).

- 1 Process-air
- 2 Filter class by ISO 16890: ePM1 50%
- 3 Rotor
- 4 Process fan (EC fan)
- 5 Dry air
- 6 Rotor motor
- 7 Regeneration-air
- 8 Filter class by ISO 16890: ePM1 50%
- 9 Heater
- 10 Wet air



Industrial desiccant dehumidifier - Energy saving with AFIM® Heat Recovery Unit

Compared to standard desiccant dehumidifiers, the AFIM® Dry is equipped with an internal and adjustable heat recovery. In addition to this internal heat recovery, the thickness and diameter of the rotor are designed to dehumidify to very low dew points (up to -60°C dp). This high dehumidification capacity of the silica gel rotor of the AFIM® Dry makes it possible to dry the process air very quickly and efficiently with a low heater capacity. Thanks to the (optional) internal moisture meter, the control of the air dryer will automatically adjust the heater power to the demand. As a result, no more energy is used than necessary for the drying process.

During the drying process, the moisture is drained from the rotor via the regeneration air duct. By applying the AFIM® Dry in combination with the specially developed AFIM® Heat Recovery Unit, approximately 75% of the energy is recovered from the regeneration air duct. As a result, the internal heaters of the dehumidifier will reach the set temperature faster, which means that energy consumption will be considerably reduced.

See the table below with the comparison of various desiccant dehumidifiers, including calculation example with financial savings on an annual basis.

ENERGY SAVINGS	A++	A+	B	C
	AFIM® Dry + Heat Recovery Unit	AFIM® Dry standard	Market standard + internal heat recovery	Market standard
A1 Air flow	3500 m3/h	3500 m3/h	3500 m3/h	3500 m3/h
A2 Dehumidification capacity	30 kg/h	30 kg/h	25 kg/h	19.2 kg/h
A3 Available heater power (maximum)	31.5 kW	31.5 kW	30 kW	26 kW
A4 Required heater power (for 19.2 kg/h)	13.0 kW	20.2 kW	23 kW	26 kW
A5 Efficiency	0.68 kW / kg	1.05 kW / kg	1.20 kW / kg	1.35 kW / kg
B1 Energy savings	50% Energy savings compared to "Market standard"	22% Energy savings compared to "Market standard"	11% Energy savings compared to "Market standard"	0% Energy savings compared to "Market standard"
B2 Energy consumption (at 80% activated per year with 19.2 kg / hour) ¹	90,824 kWh / year	141,281 kWh / year	161,464 kWh / year	182,208 kWh / year
B3 Cost savings per year (in relation to a "Market standard" dehumidifier) ²	€ 18,277.-	€ 8,185.-	€ 4,149.-	€ 0.-

Based on conditions at 20°C and 60% RH
¹ Based on 80% of the time activated per year with a capacity of 19.2 kg/hr
² Based on an energy price of € 0.20 / kWh and at constant dehumidification capacity

Industrial adsorption dehumidifier – Energy savings with AFIM® Heat Recovery Unit

The AFIM® Dry is characterized by very high efficiency compared to other "market standard" alternatives. By applying the AFIM® Dry, the energy gain can be as much as 50% of the total energy consumption per year in combination with the AFIM® Heat Recovery Unit.

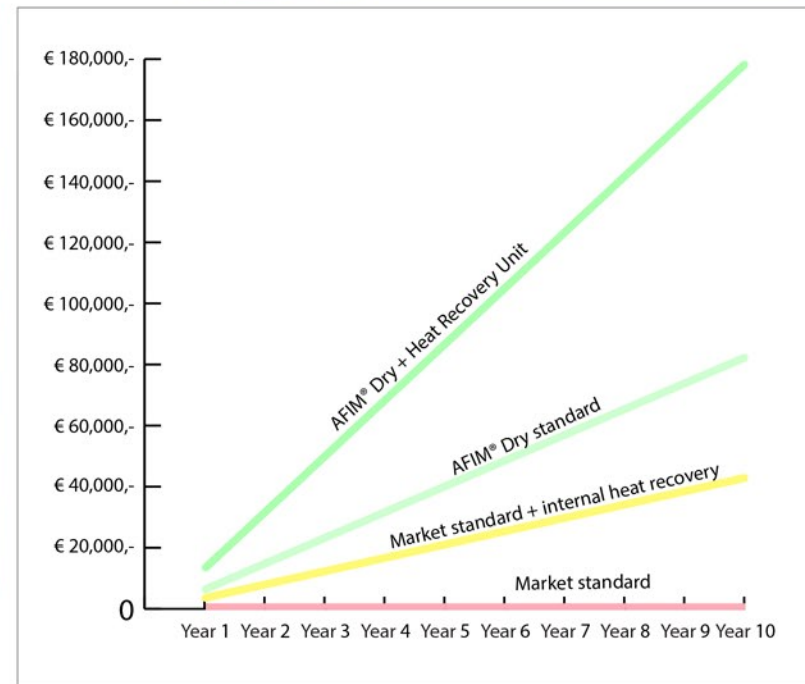
The AFIM® Heat Recovery Unit uses no energy and is completely maintenance-free when using the filters we offer.



COST SAVINGS PER YEAR (compared to market standard)

	A++	A+	B	C
	AFIM® Dry + Heat Recovery Unit	AFIM® Dry standard	Market standard + internal heat recovery	Market standard
Year 1	€ 18,277.-	€ 8,185.-	€ 4,149.-	€ 0.-
Year 2	€ 36,554.-	€ 16,370.-	€ 8,298.-	€ 0.-
Year 3	€ 54,831.-	€ 24,555.-	€ 12,447.-	€ 0.-
Year 4	€ 73,108.-	€ 32,740.-	€ 16,596.-	€ 0.-
Year 5	€ 91,385.-	€ 40,925.-	€ 20,745.-	€ 0.-
Year 6	€ 109,662.-	€ 49,110.-	€ 24,894.-	€ 0.-
Year 7	€ 127,939.-	€ 57,295.-	€ 29,043.-	€ 0.-
Year 8	€ 146,216.-	€ 65,480.-	€ 33,192.-	€ 0.-
Year 9	€ 164,493.-	€ 73,665.-	€ 37,341.-	€ 0.-
Year 10	€ 182,770.-	€ 81,850.-	€ 41,490.-	€ 0.-

Based on conditions at 20°C and 60% RH
Based on 80% of the time activated per year with a capacity of 19.2 kg/hr
Based on an energy price of € 0.20 / kWh and at constant dehumidification capacity



Dehumidifier model	3500	5000	10K
Nominal capacity ¹	30 kg/h	50 kg/h	70 kg/h
Dry air flow ²	3500 m ³ /h	5000 m ³ /h	10000 m ³ /h
Static pressure at disposal	500 Pa	500 Pa	500 Pa
Wet air flow ²	1100 m ³ /h	1600 m ³ /h	2700 m ³ /h
Static pressure at disposal	1000 Pa	1000 Pa	1000 Pa
Heater power	31.5 kW	49.5 kW	76.5 kW
Maximum electric consumption	36 kW	56 kW	92.7 kW
Supply fuse 3x400 V, 50 Hz	63 A	100 A	160 A
Weight ³	805 kg	815 kg	1395 kg

¹ Valid for inlet conditions 20°C / 60% RH.

² Volume flow for density 1.20 kg/m³.

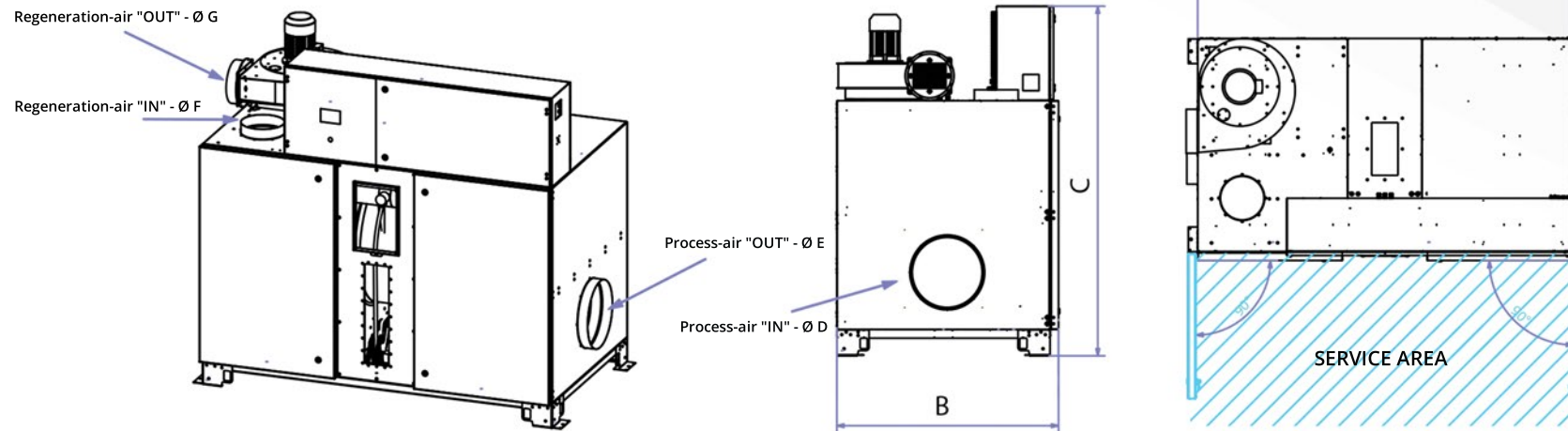
³ Including full insulation.

Model	3500	5000	10K
A	2130	2130	2620
B	1270	1370	1765
C	1990	2090	2085
D	Ø 400	Ø 500	Ø 630
E	Ø 400	Ø 500	Ø 630
F	Ø 250	Ø 315	Ø 400
G	Ø 250	Ø 315	Ø 400

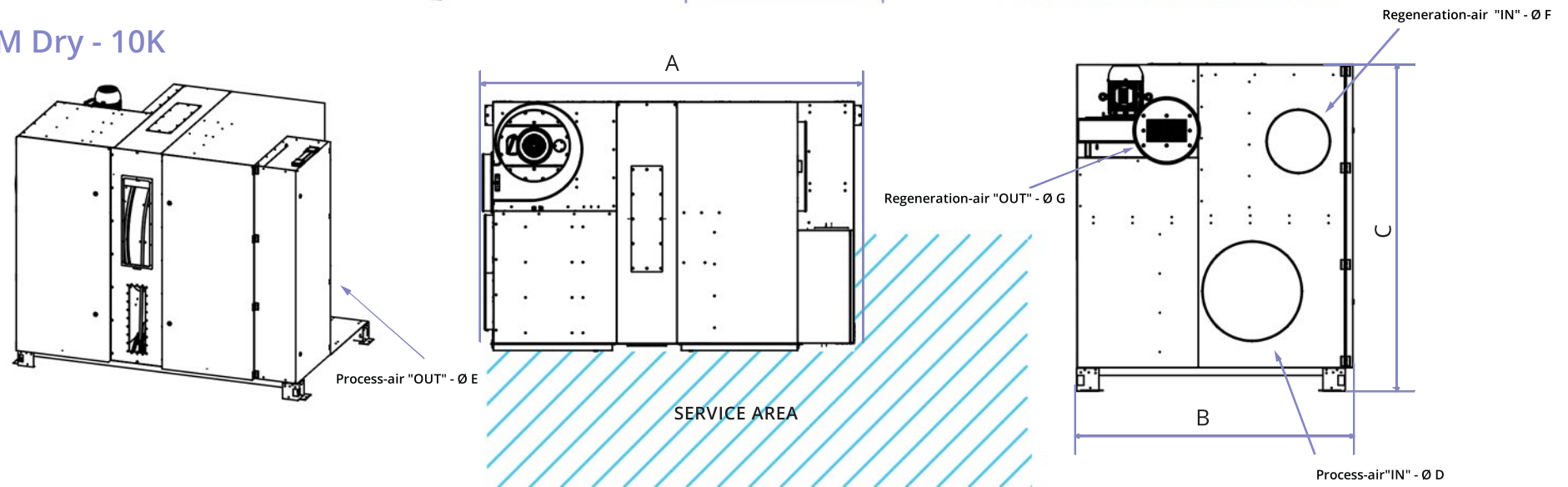
All sizes are in millimeters.

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AFIM Dry - 3500/5000



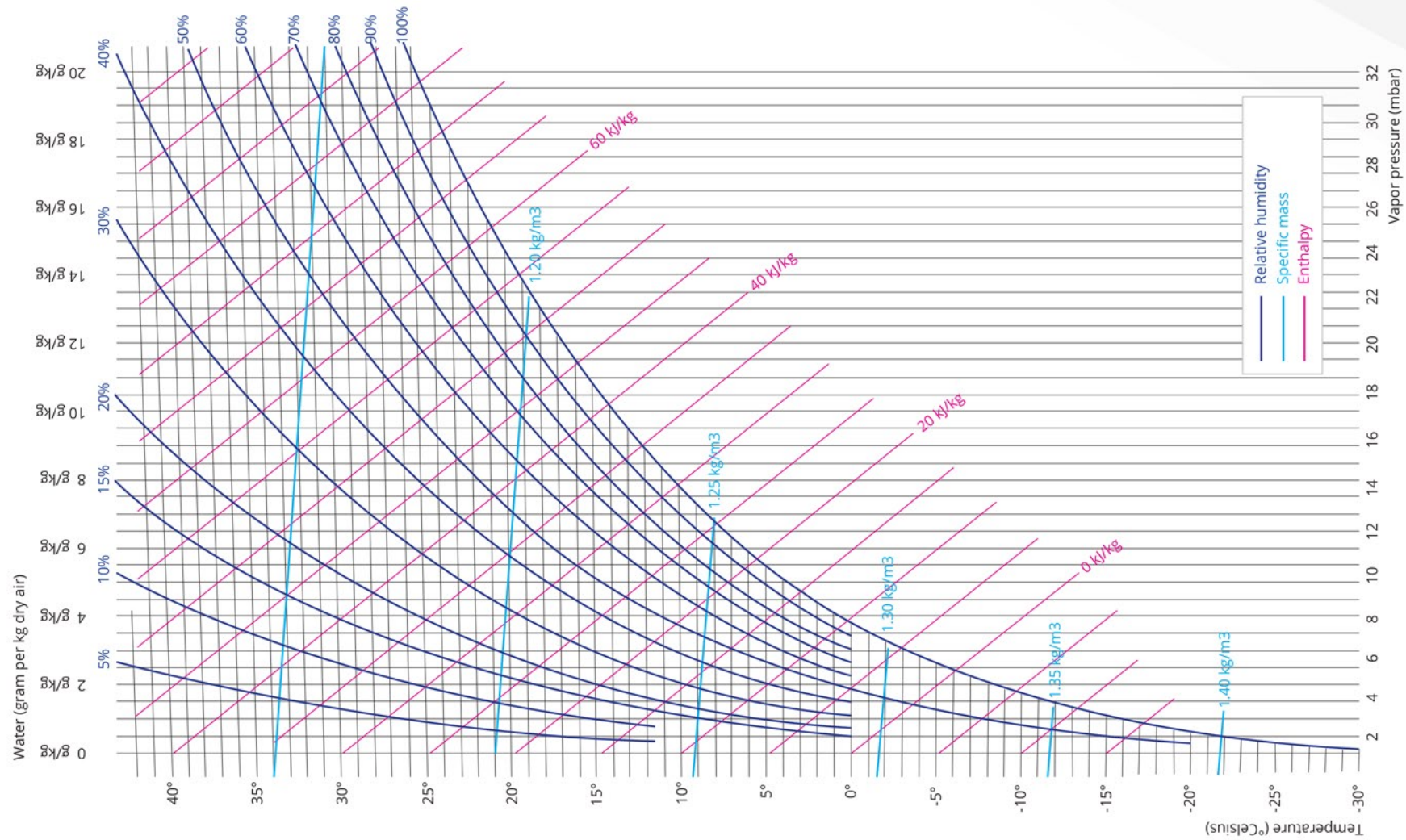
AFIM Dry - 10K



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Mollier diagram





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AFIM® Dehumidifiers are sold, installed and maintained by:

