SA KLIMA &
FUGTTEKNIK

AIRDRY

Adsorption Dehumidifiers

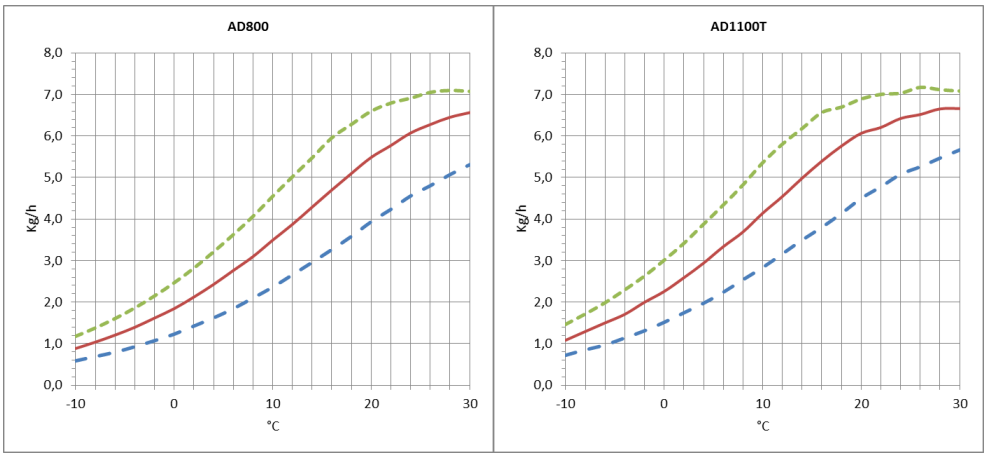
AD 800÷1100

TFT
DRY AIR SOLUTIONS

TECHNICAL DATA			
MODEL	**AD**	**800**	**1100T**
Performances			
Dehumidification Capacity *	Kg/h	4,8	5,0
Fans			
Process air flow	m^3/h	800	1100
Static pressure	Pa	200	300
Fan nominal power	KW	0,25	0,37
Reactivation air flow	m^3/h	250	250
Static pressure	Pa	180	180
Fan nominal power	KW	0,085	0,085
Drive Motor			
Nominal power	VA	11	11
Regeneration			
Regeneration type		Electric	Electric
Installed power	KW	6,6	6,6
Regeneration type		Steam	Steam
Power output heating	KW	-	-
Steam consuption at 6Bar(a)	Kg/h	-	-
Temperature rise in the heating coil	°C	100	100
Electrical characteristics			
Power supply	Volt/Ph/Hz	400/3/50 ±5%	400/3/50 ±5%
Maximum power absorbed standard units	KW	7,0	7,1
Maximum current absorbed standard units	A	11,2	11,6
Noise level			
Sound pressure **	dB (A)	65	66
Sound power **	dB (A)	93	94

** Conditions at 20°C 60% RH*
*** Sound pressure level calculated in free field, 10 meters from unit, direction factor Q = 2, according to ISO 9614*

DEHUMIDIFICATION CAPACITY
Approximate capacity in Kg / h with different relative humidity values of inlet process air (RH%).



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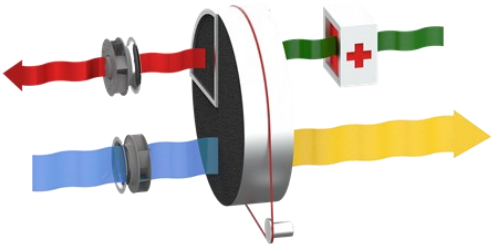
PRINCIPLE OF OPERATION



The dehumidifier operates with 2 airflows. The main airflow, the PROCESS AIR is what is dehumidified and a second, smaller, airflow is used to regenerate the rotor material. Two high efficiency fan and motor assemblies inside the machine create these separate airflows in opposite directions through the rotor. The PROCESS AIR is taken trough the dehumidification rotor and moisture is taken up by the desiccant material bonded to the rotor structure. Mainly Silica Gel is used, which is a hygroscopic material capable of holding many times its weight in moisture, but always as a vapour and with no free water. As it passes through the rotor, the moisture in the air is absorbed by the Silica Gel and sent from the machine as a dry air stream for onward processing, or direct to a conditioned room as required.
This dehumidification process is reliable between extremes of temperature, from as low as -30°C and as high as +40°C.
During the process the rotor is turned very slowly by a small motor and reduction gearbox, driving a belt with friction contact direct to the rotor surface.
The separate REGENERATION AIR stream is taken through the dehumidifier in the opposite direction, through a heater bank where the temperature is raised typically by +100°C above ambient. This heating increases the capacity of the air to hold moisture and as a result of the vapour pressure differentials between this air stream and the rotor surface, moisture is given back to the regeneration air stream and passed out of the building as a vapour.
The rotor is then ready to absorb more moisture as it is turned and the whole process can continue.

STRUCTURE

The dehumidifier casework is made from painted galvanized steel insulated sandwich panels as standard, or in AISI304 stainless steel if required by the process. The top panel is removeable for maintenance and access to electrical components whilst access to internal components is through the front. Connections for the airflows to and from the dehumidifier would typically be in standard galvanised spiral ducting.

FANS

Fans are directly coupled to single-phase or three-phase motors rated at IP55, ISO F, class B. They are accessible for maintenance by removing a second internal panel so that in operation risk of injury is mitigated. The fans can be controlled by an optional frequency converter to control rotation speed and match performance with specific requirements. As standard, the process fan is set at fixed speed, but it can be configured to run at variable speeds from an external signal, or pressure sensor.

ROTOR

The dehumidifier has a rotor made of desiccant material. The rotor has an alveolar structure made of heat-resistant corrugated sheets containing the silica gel desiccant material, which creates a high number of axial fluid threads and at the same time a high absorption surface in a small volume. The rotor is constructed to withstand saturated air without being damaged, so it can be coupled with a pre-cooling coil. Furthermore, the rotor is not damaged if the process or regeneration fan should stop due to a fault during operation. The rotor is non-combustible and non-flammable).

TRANSMISSION SYSTEM

A belt drive system is used to turn the rotor. This movement is typically between 6 and 12 rph, and uses a powerful direct drive motor and reduction gearbox, operating on a belt with frictional contact with the outer rim of the rotor drum. A belt tensioning system is used to maintain correct belt tension and avoid slip. The rotation of the rotor is visible by removal of the front access panel so correct operation can be determined. The rotor is suspended on ball bearings around a central steel shaft.

REGENERATION AIR HEATING COIL

Electrical. The electric regeneration battery has self-regulating PTC elements, with modulating power system to increase the efficiency of the dehumidifier field and save energy. As an option it is possible to mount steel elements with star connection and divided into 1, 2 or more sequencing step-step adjustment units for power modulation and, on request, a continuous modulation (PWM) with proportional power control to increase the efficiency of the dehumidifier field and save energy**.** .

FILTERS

The dehumidifier has two separate G4 filters: one on the process air inlet and the other on the high temperature regeneration air inlet. On request, higher grade filters can be supplied.

PLC CONTROL WITH DISPLAY TERMINAL

All standard units are provided with PLC control. The PLC controls the following functions: regeneration temperature regulation, thermal protection, regeneration cool down timing, component start sequence, alarm resets, RH or dewpoint control (dependant on control required) and control of pre and post-cooling or heating. The user interface display can be positioned remotely. Il The PLC is set for external moisture control steps and accepts analog signals from moisture sensors.

ELECTRICAL PANEL

The electric panel is made in compliance with European regulations 73/23 and 89/336. Access to the electrical panel is from the top after the panel is removed. All units include the following components as standard: mains switch, magneto thermal switches (for fan and electric resistance protection), fan relays, gearmotor relays and electric resistance relays (if any). The panel is also equipped with a terminal block with clean contacts for remote ON-OFF control and clean contact for general alarm.

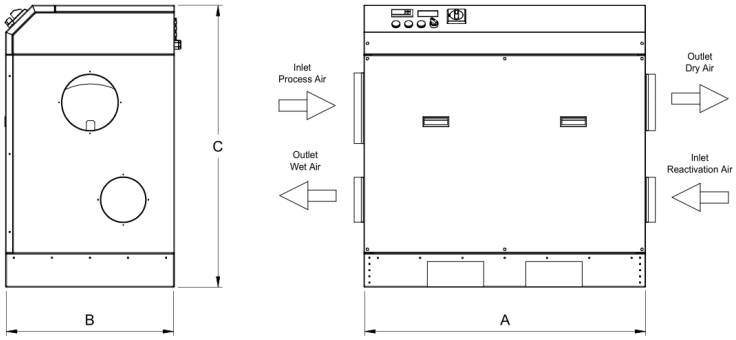
VERSIONS

AD…	Standard
AD…/TX	Version with external satin stainless steel frame 304
AD…/TTX	Version with steel frame completely inox304 interior and exterior satin
AD…/STC	Construction version, with pivoting wheels
AD…/M	Handed version (Process and Regeneration airflows are reversed)

Model AD	Code	800	1100T
Painted steel frame		●	●
Satin stainless steel frame 304	TX	○	○
Frame totally stainless steel304 and satin finish outside	TTX	○	○
Construction site version with pivoting wheels	STC	○	○
Frame Handed version	M	○	○
Filters G4 process and reactivation		●	●
Filters F5, F7, F9		-	-
Recovery regeneration heat	RCFX	○	○
Purge area for low Dew Point	LDP	-	-
Pre-cooling water coil	W	○	○
Post-cooling water coil	PW	○	○
Post-heating water coil	PHW	○	○
Proportional 3way-valve for pre/post-treatments (supply only)	3WSF	○	○
Proportional 3way-val. for pre/post-treatments (with assembly)	3WCM	○	○
PLC electronic control and touch-screen display		●	●
Remote terminal	TR	○	○
Different power supply voltage		○	○
Proportional control PWM regenerationheaters	PWM	-	-
Proportional 2way-valve for steam regeneration	2VS	-	-
Process fan inverter (VFD)	VFP	○	○
Regeneration fan inverter (VFD)	VFR	-	-
Process filter alarm	ALFP	○	○
Regeneration filter alarm	ALFR	○	○
Circular spigot connections for processes/regeneration	CP	●	●
Temperature sensor / RH%, Absolute Humidity, DewPoint	ST / H	○	○
Serial RS485 ModBus Interface		-	-
TCP-IP ModBus Interface		-	-
Other protocols and other accessories on request		-	-

● *standard*, ○ *optional*, – *Not available*.

Dimensions



Model	AD	800	1100T
A	mm	1000	1000
B	mm	600	600
C	mm	1000	1000
Empty weight	Kg	145	150
Connections			
Process air inlet	mm	Ø 250	Ø 250
Dry air outlet	mm	Ø 200	Ø 200
Reactivation air inlet	mm	Ø 160	Ø 160
Wet air outlet	mm	Ø 160	Ø 160

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