

TFT
DRY AIR SOLUTIONS



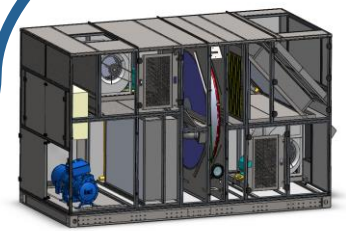

Climate to perform

1974

1979

1982

2014



tecnofrigo TUSCANY s.r.l.

Munters

TFT DRY AIR SOLUTIONS

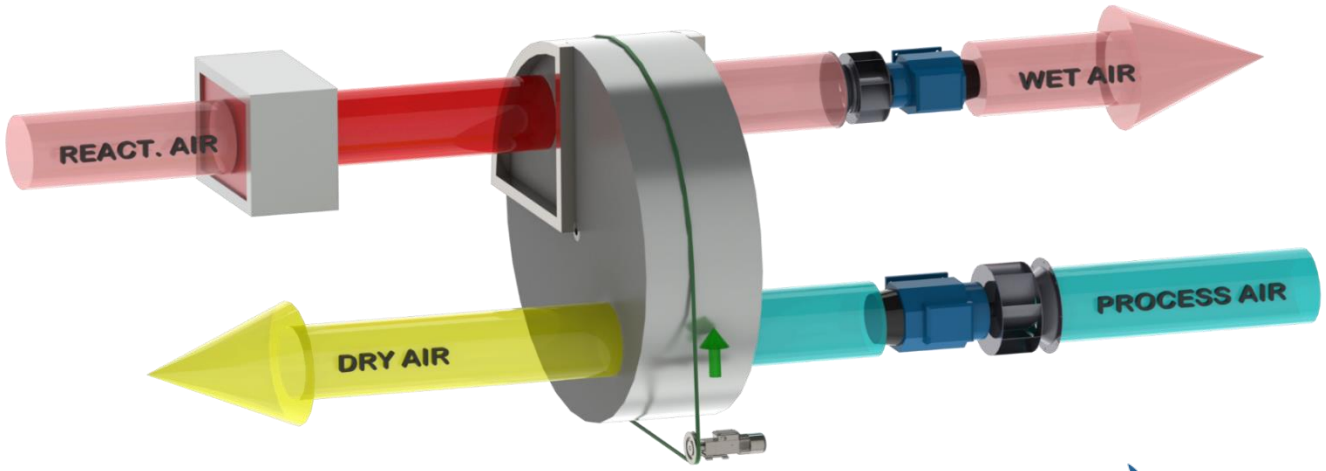
TFT DRY AIR SOLUTIONS

AIRDRY

Adsorption Dehumidifiers

DESICCANT ROTOR TECHNOLOGY

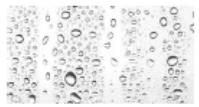
The dehumidifier works with two air streams (process and reactivation air) and uses a honeycomb adsorbent rotor which rotates at a low speed of around 8 rph. The casing is divided into two sectors named process zone and regeneration zone. Process air is led in the process zone to contact the rotating honeycomb rotor. While it passes through the honeycomb channels, water vapor is adsorbed and it becomes dry air to be supplied. Sometimes later, the honeycomb rotor having got wet due to moisture adsorption enters the regeneration zone by rotation. The rotor is reactivation by hot air passing through honeycomb channel and turns again to the process zone. Process air is dried in the rotor between -30°C and +40°C, the regeneration air is beaten by an internal coil up to about 100°C.



TFT
DRY AIR SOLUTIONS

GLOBAL SOLUTIONS FOR MODERN INDUSTRY

CORROSION



CONDENSATION

ICE

IGROSCOPIA

FUNGUS AND MOLD

BACTERIA

BAD SMELLS

HUMIDITY CONTROLLED

FOOD

PHARMACEUTICAL

CHEMICALS

STORAGE

AUTOMOTIVE

ELECTRONICS

POWER

OIL&GAS

PUBLIC AND CIVIL BUILDINGS

RAW MATERIALS AND RECYCLABLE

DEFENCE

TFT
DRY AIR SOLUTIONS

AIRDRY

Adsorption Dehumidifiers

TFT
DRY AIR SOLUTIONS

Our Suppliers

Power and productivity for a better world™ ABB

eliwell by Schneider Electric

GENERAL FILTER GROUP | Air quality experts

CAREL Technology & Evolution

ZIEHL-ABEGG

ebmpapst

frascold®

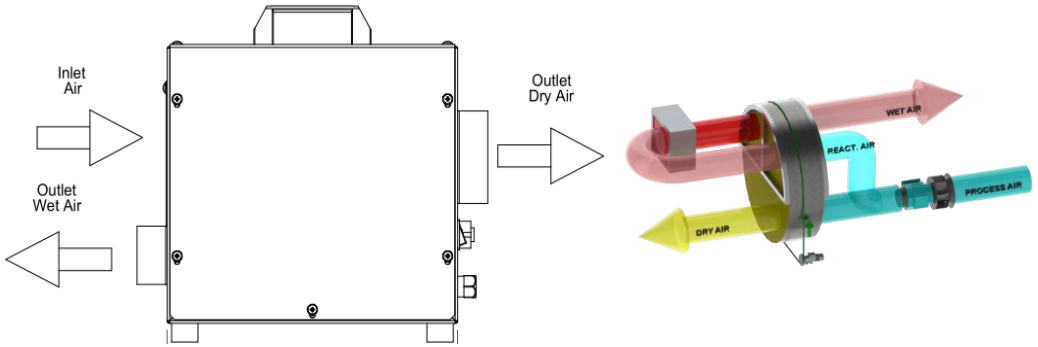
SIEMENS

TFT DRY AIR SOLUTIONS

ADS 150/300E

Air Flow
150/300 m3/h

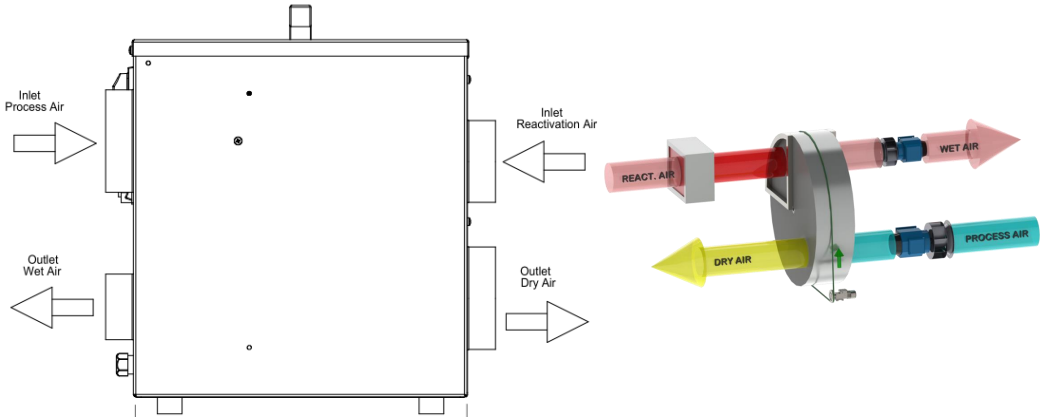
Dehumidifying Capability
0,57/1,1 Kg/h at 20°C - 60%

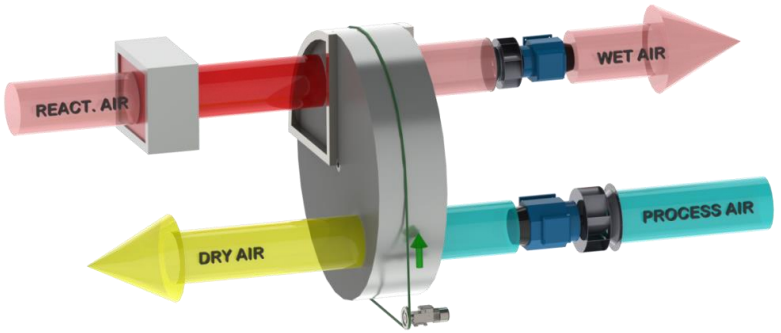


AD 150/300/450/600E

Air Flow
150/600 m3/h

Dehumidifying Capability
0,65/3,4 Kg/h at 20°C - 60%

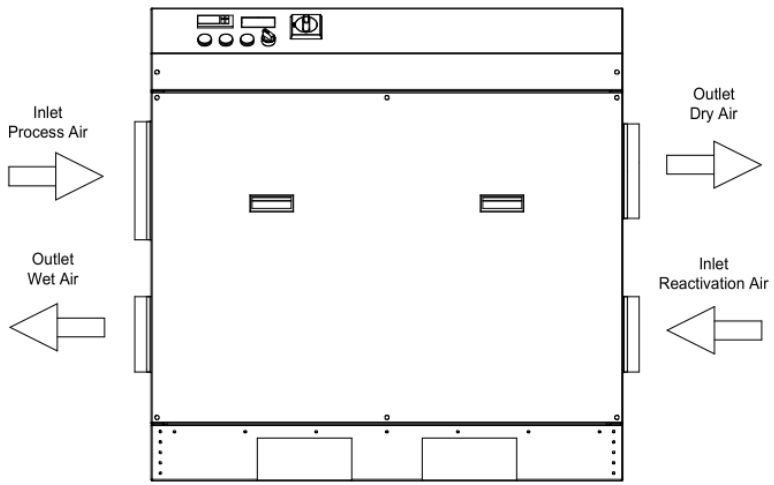




AD 800E/1100TE

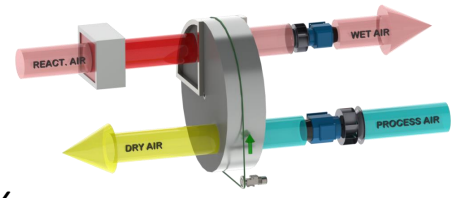
Air Flow
800/1100 m3/h

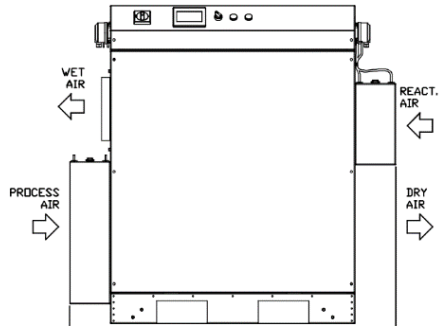
Dehumidifying Capability
4,8/5,0 Kg/h at 20°C - 60%



AD 1000/1500/2000/2500/3100T

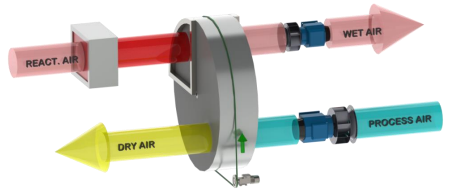
Air Flow
1000/3100 m3/h
Dehumidifying Capability
8,8/18,9 Kg/h at 20°C - 60%

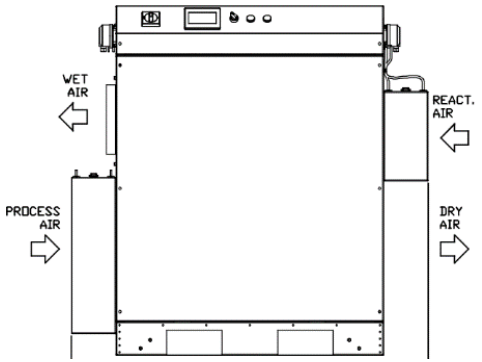




AD 3000/3500/4500TE/4000/5000

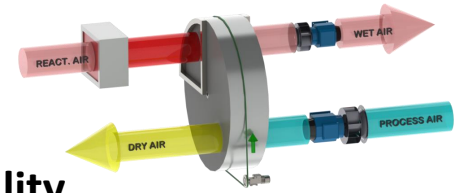
Air Flow
3000/5000 m3/h
Dehumidifying Capability
23,0/37,2 Kg/h at 20°C - 60%

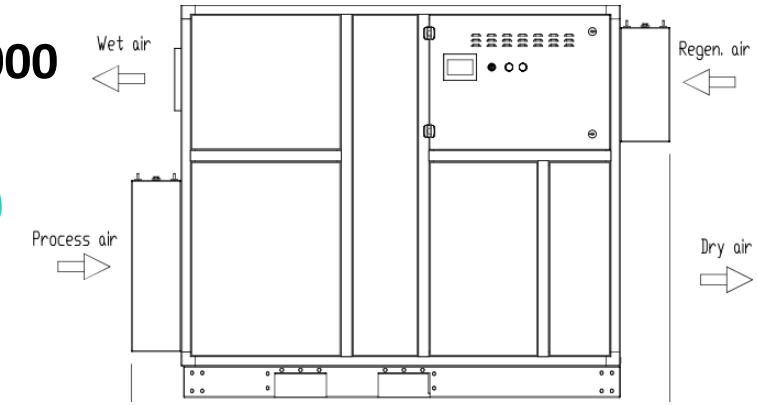


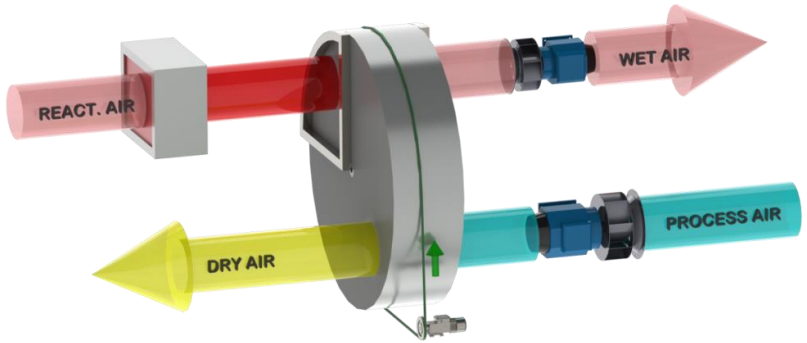


AD 7000/9000/11000/13000/19000/25000

Air Flow
7000/25000 m3/h
Dehumidifying Capability
52,9/162,0 Kg/h at 20°C - 60%



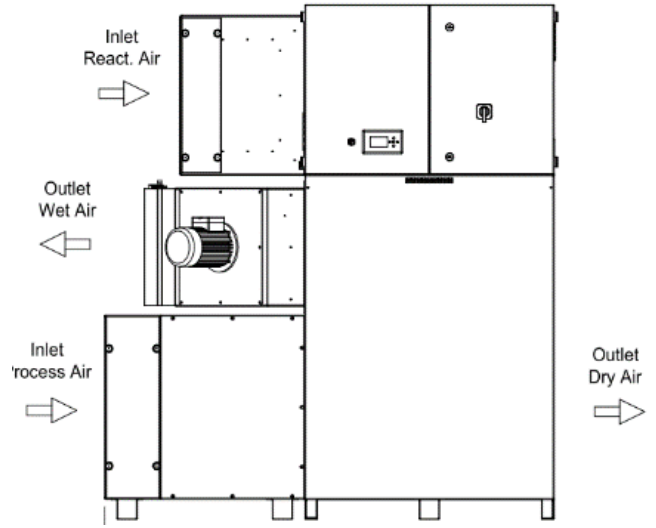




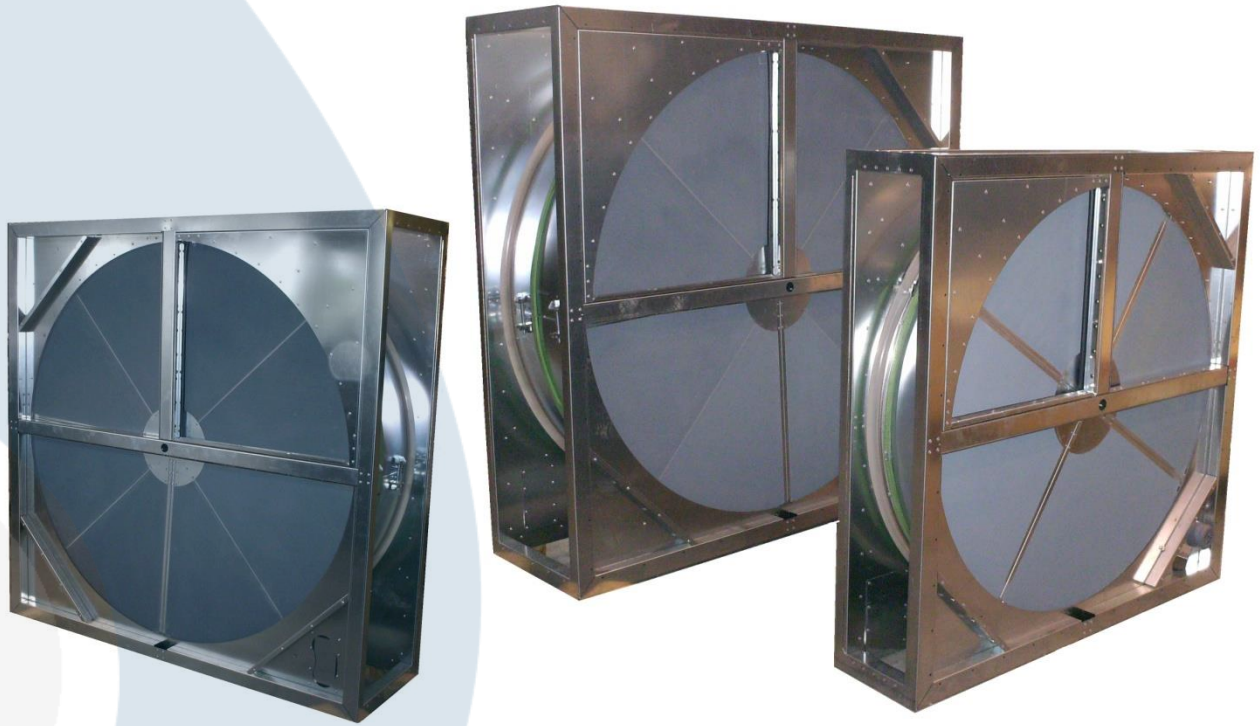
ADP 2000/3500/5000/6500/8000/9500

Air Flow
2000/9500 m3/h

Dehumidifying Capability
18,6/77,1 Kg/h at 20°C - 60%



ROTOR CASSETTES



Rotors range

Thickness
200 / 400 mm

Diameters
On request

Structure
Galvanized steel or stainless steel

Origin
Sweden

ADS 150 ÷ AD 600

Case : External SS, Total SS, Yard version
Regeneration : Electrical
PLC : NO
Treatments : NO

AD 800 ÷ AD 1100

Case : Painted, External SS, Total SS, Yard version, Mirror
Regeneration : Electrical, Steam
PLC : Smart, Advanced
Treatments : Pre/Post Heating/Cooling just on AD1100T

AD 1000 ÷ AD 25000

Case : Painted, External SS, Total SS, Yard version, Mirror
Regeneration : Electrical, Steam, Mixed, Gas
PLC : Advanced
Treatments : Pre/Post Heating/Cooling

ADP 2000 ÷ ADP 9500

Case : Painted, External SS, Total SS, Yard version
Regeneration : Electrical, Steam, Mixed, Gas
PLC : Advanced
Treatments : Pre/Post Heating/Cooling

ACCESSORIES

ADS 150 ÷ AD 600

No PLC – the only possible control is by Humidistat + RH Probe
ADK-W + ADK-H1 (or H2 or H3)
or
ADK-M (or ADK-MH1 or ADK-MH2)

AD 800 ÷ AD 1100

ALFP-ALFR
ADK-H1-H2-H3
HDWP – HABS
AF20-AF40 or PDAF
VFP – VFR (Only for AD1100)

AD 1000 ÷ AD 25000

ALFP-ALFR
H1-H2-H3
HDWP – HABS
AF20-AF40 or PDAF
VFP - VFR

ADP 2000 ÷ ADP 9500

ALFP-ALFR
H1-H2-H3
HDWP – HABS
AF20-AF40 or PDAF
VFP - VFR

Remote electronic wall humidistat

ADK-W

PLC Standard

ADK-ALFP/ALFR

ADK-W.../X.../HW... (*)
Pre-Cooling/Heating

ADK-ST1

ADK-PW.../PHW.../PHE... (*)
Post-Cooling/Heating

ADK-M

ADK-MH1/MH2

ADK-H1

ADK-H2

ADK-H3

ADK-HDWP

ADK-HABS

ADK-ST2

ADK-ST1	Temperature probe with cable (NTC)
ADK-ST2	Temperature probe for duct (NTC)

(*) Acqua / Water - Gas ED / Gas DX - Elettrico / Electric - Vapore / Steam

ADK-M	Mechanical humidistat for duct range 30-100% 1 step
ADK-MH1/MH2	Mechanical humidistat for duct/wall range 10-100% 1 or 2 steps
ADK-H1	Probe duct RH% + Temp. range 0-100% / -30°/70°C
ADK-H2	Probe duct RH% + Temp. range 10-90% / NTC
ADK-H3	Probe wall RH% + Temp. Range 10-90% / NTC
ADK-HDWP	Probe duct DewPoint range -60°/20°C
ADKHABS	Probe duct Absolute Humidity range 0/40 g/Kg
ADK-ALFP/ALFR	Process/Rigeneration Filter alarm

REGENERATION

ADS 150 ÷ AD 600

Electric: PTC (self-regulated)

AD 800 ÷ AD 1100

Electric: PTC (self-regulated)
Steam: 2 way valve with a modulating actuator acting on the flow rate of the steam.

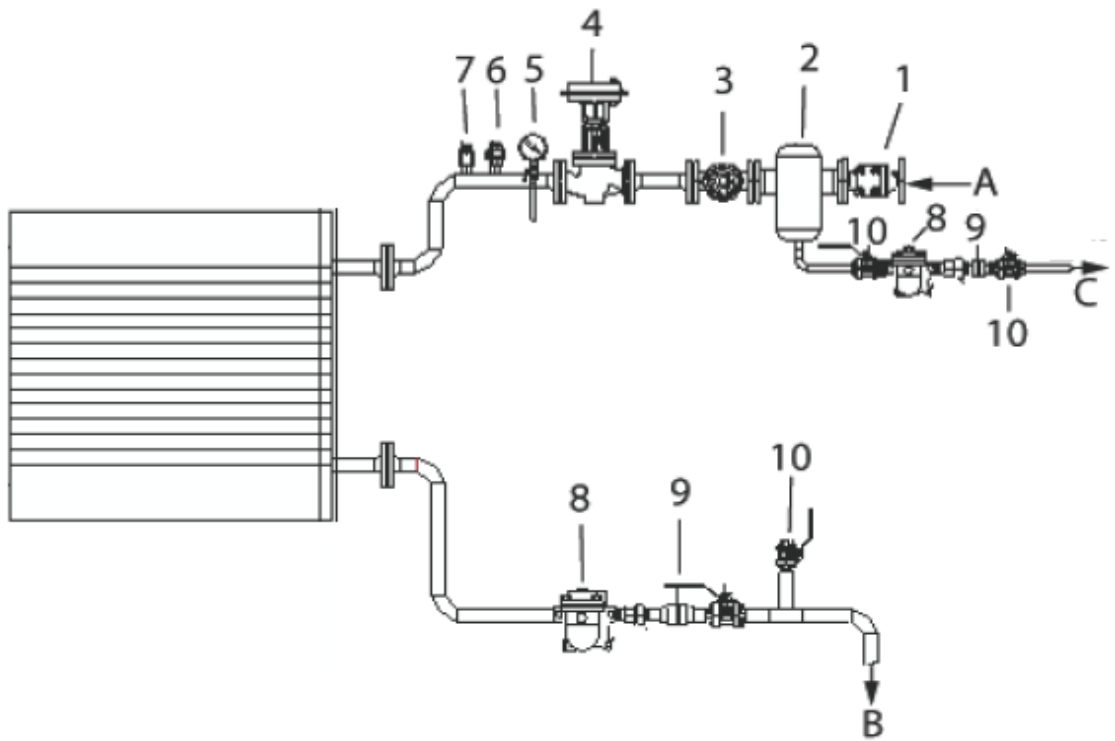
AD 1000 ÷ AD 25000

Electric: Wire resistance regulated by step (Optionally Proportional by PWM)
Steam: 2 way valve with a modulating actuator acting on the flow rate of the steam.

ADP 2000 ÷ ADP 9500

Electric: Wire resistance (Proportional by PWM)
Steam: 2 way valve with a modulating actuator acting on the flow rate of the steam
Gas with line burners

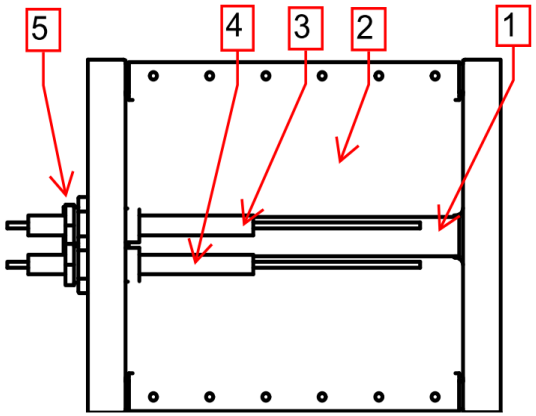
STEAM REGENERATION – Suggested configuration



A. Steam source
B. Dehumidifier return
C. Drain condensate return
1. Filter steam
2. Droplet separator
3. Poppet valve
4. Steam valve (supplied disassembled)
5. Manometer
6. Thermal deaerator
7. Vacuum breaker condensation
8. Condensate drain (body floating)
9. Modulation check valve
10. Ball valve (stop)

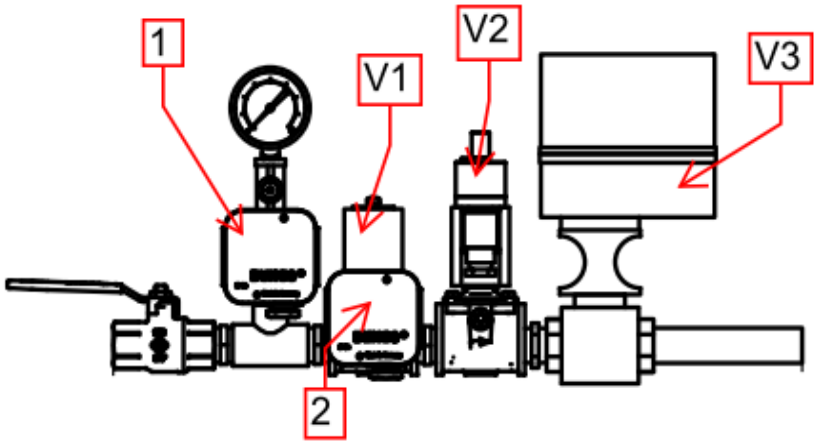
GAS REGENERATION

Gas burner



1. Gas burner head
2. Mixing plates
3. Spark ignition device
4. Flame detection electrode
5. Connection plugs

Gas ramp



1. Maximum pressure switch
2. Minimum pressure switch

V1. Valve for gas passage (Security)

V2. Gas passage valve and pressure regulation

V3. Proportional gas passage regulation valve (controlled by PLC to modulate the flame)

Burner safety control unit

01 Burner flame signal:
Value range: 0–25 µA.

02 Burner switch-off threshold
(not on BCU 370..U1):
Value range: 1–20 µA.

03 Last fault signal.

04 Air monitoring during pre-purge:
0 = No monitoring,
1 = Monitoring.

05 Air monitoring during operation:
0 = No monitoring,
1 = Monitoring.

06 Pre-purge:
0 = Quick start,
1 = On each start-up.

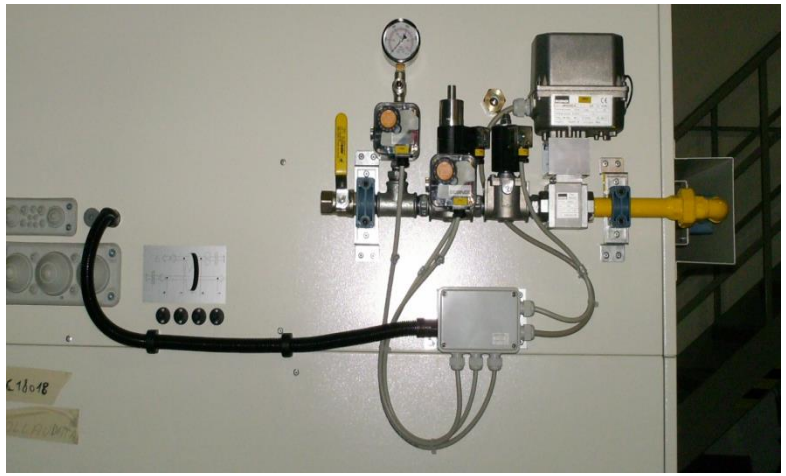
07 Burner start-up attempts:
1 = One start-up attempt,
2 = Two start-up attempts,
3 = Three start-up attempts,
4 = Four start-up attempts.

08 Behaviour in the event of flame failure during operation:
0 = Fault lock-out,
1 = Restart.

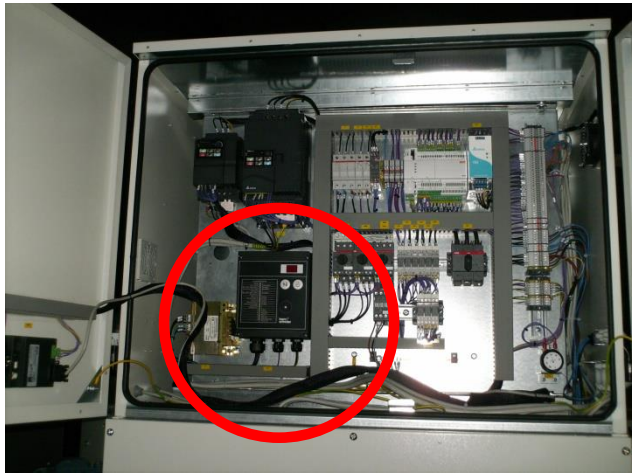
09 Safety time during operation t_{SB}
(1, 2 s).

GAS REGENERATION

Gas burner



Gas ramp



Burner safety control unit

AirDry Smart

⌃⌃	Increase a value, go to next page.
⌄⌄	Decrease a value, go to previous page.
esc	Exit without saving setting, returns to the previous level. Press for 3 seconds to RESET alarm.
set	Confirm value/exit and save new settings. Move to next level (open folder, subfolder, parameter, value, alarms). Access to Status Menu.
esc + set	[Prg] press esc + set simultaneously. Access to Programming Menu.

AirDry Smart

	General alarm (fixed = active alarm, flashing = reset alarm)
	Unit running (fixed = manual running, flashing = automatic running)
ABC	Advanced function (fixed = absolute humidity or DewPoint value read by the probe, flashing = absolute humidity or DewPoint value calculated)
	Pre-cooling and/or Post-cooling treatment
	Pre-heating and/or Post-heating treatment
R	Reactivation fan (flashing, it indicates the post-cooling reactivation)
P	Process fan

AirDry Smart

Setting: To enter the FACTORY parameters, simultaneously press the ESC + SET.

To access all the parameters, enter password FACTORY, using the UP and DW search for the parameter "PASS", and press SET to enter the password value (USER = 22 - FACTORY = ask the service center), and press SET to confirm. Always with the UP and DW select the parameter "Par", press SET and look for the desired menu.

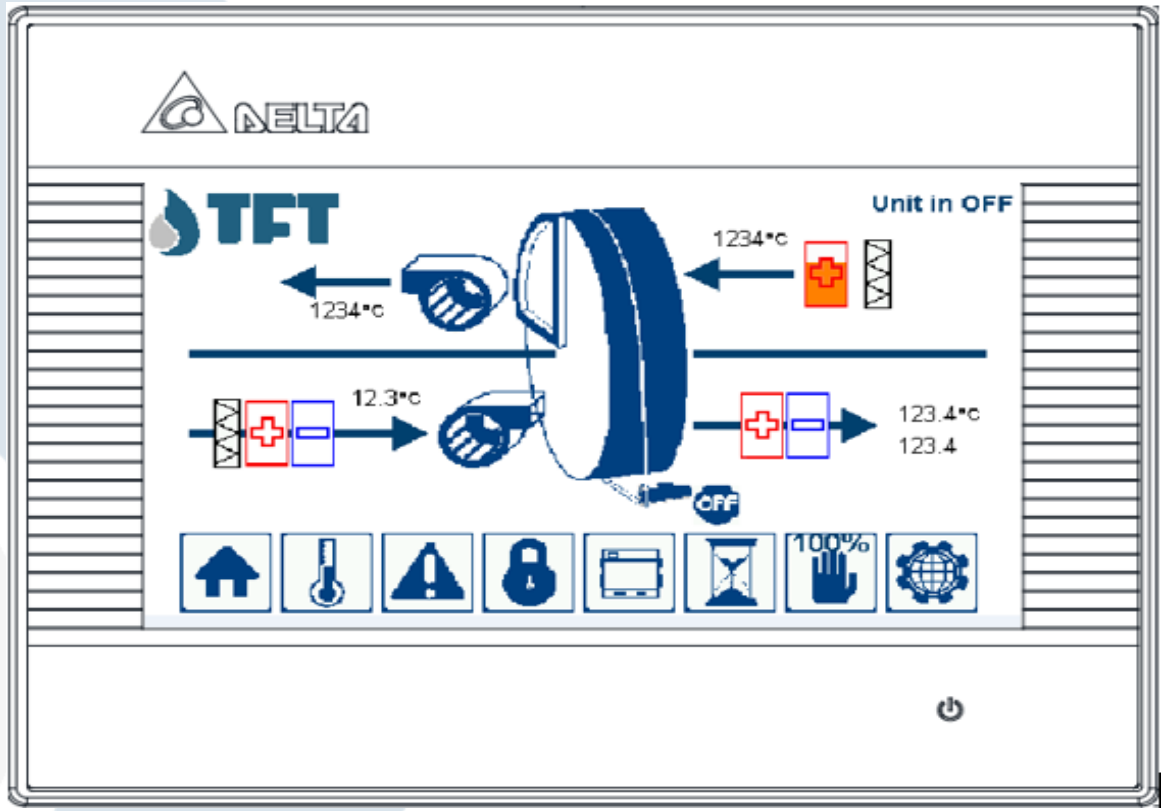
AirDry Smart

Alarms:

Press SET to access the alarms folder and see the type of alarm; with UP and DW look for the word "AL", press SET to display the initials of alarms occurred, with the UP and DW you can scroll and see all alarms (if present).
To return back to the initial display press repeatedly the ESC key.

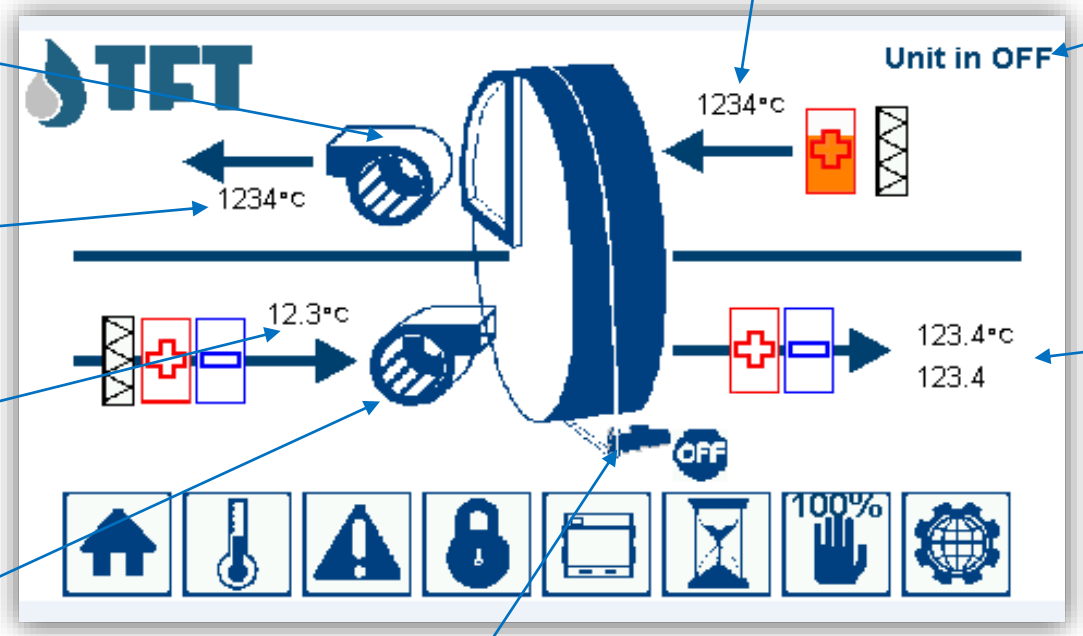
To RESET alarms, press the ESC key for about 3 seconds or put the AUTO-0-MAN selector on "0" and bring it back to its previous position.

AirDry Advanced



	Go to Home Page.
	Main Set-Point Settings (User).
	Active alarms and historical alarms display.
	Super User or Factory setting.
	Unit state depending on configuration.
	Working time display (Service).
100%	Set the regeneration control mode to manual [100%] or automatic [AUTO].
	Program information and language change.

AirDry Advanced



Regeneration temperature indication

Unit operation mode indication

Regeneration fan status indication

Indication of wet air temperature

Pre-treatment temperature indication (if enabled)

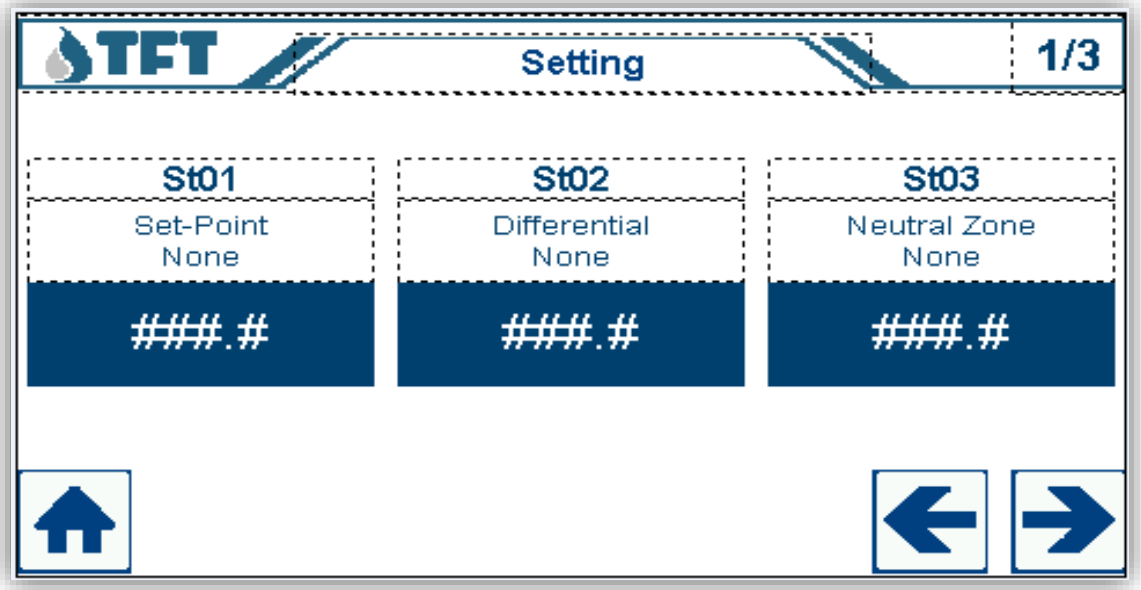
Process fan status indication

Post-treatment temperature and humidity indication (if enabled)

Rotor gearmotor status

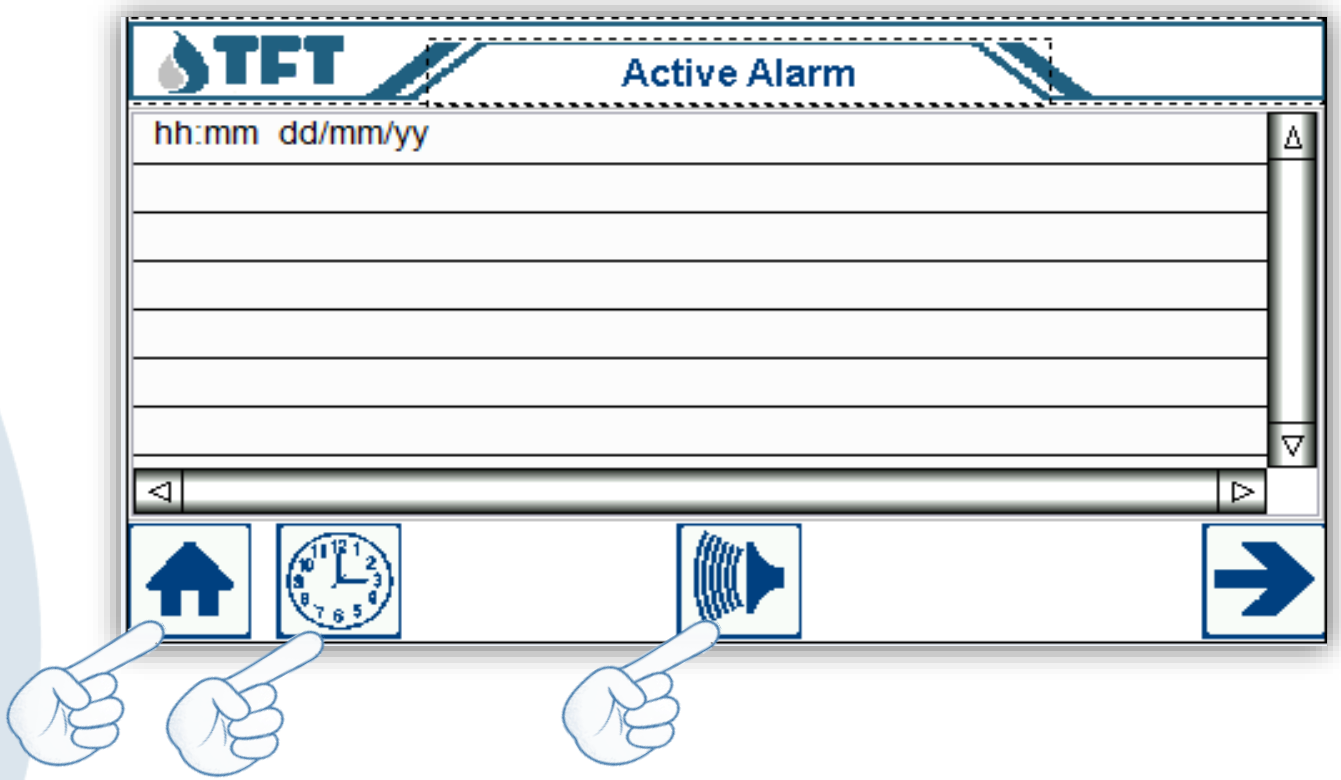
Buttons to access the setting pages

AirDry Advanced



AirDry Advanced

Alarms:

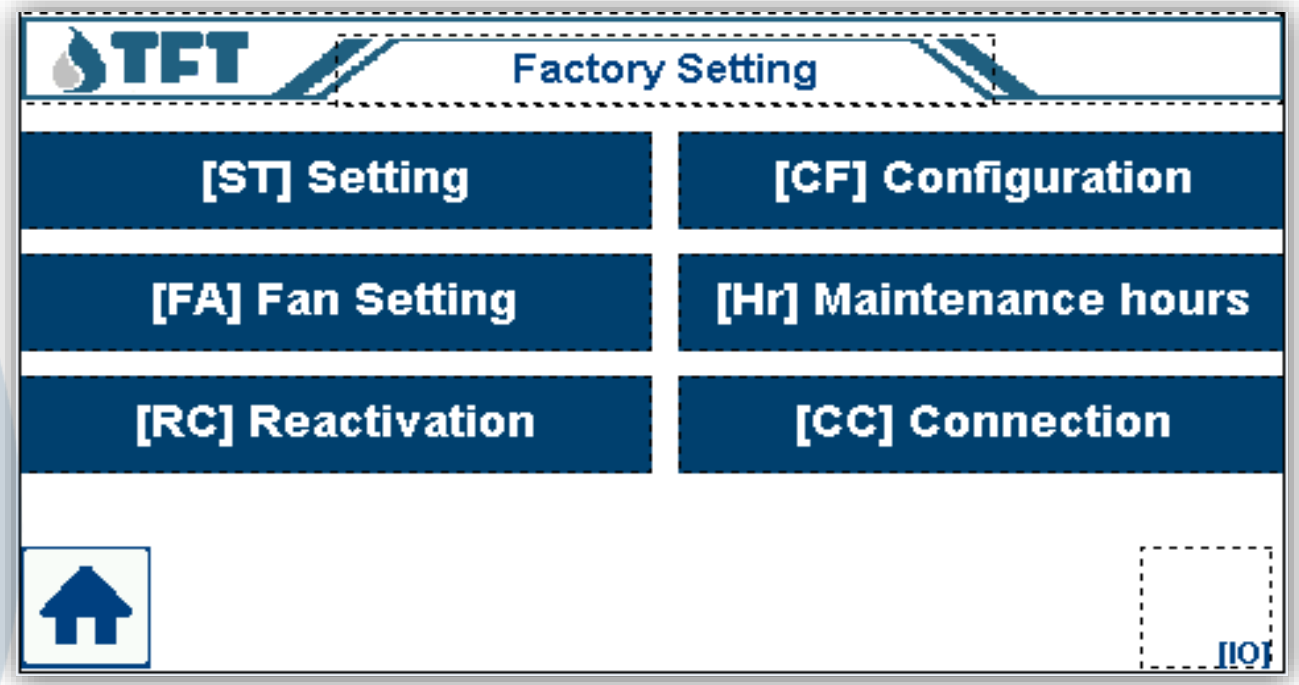


Press the key  to set the correct system date and time.

Press the key  to reset active alarms.

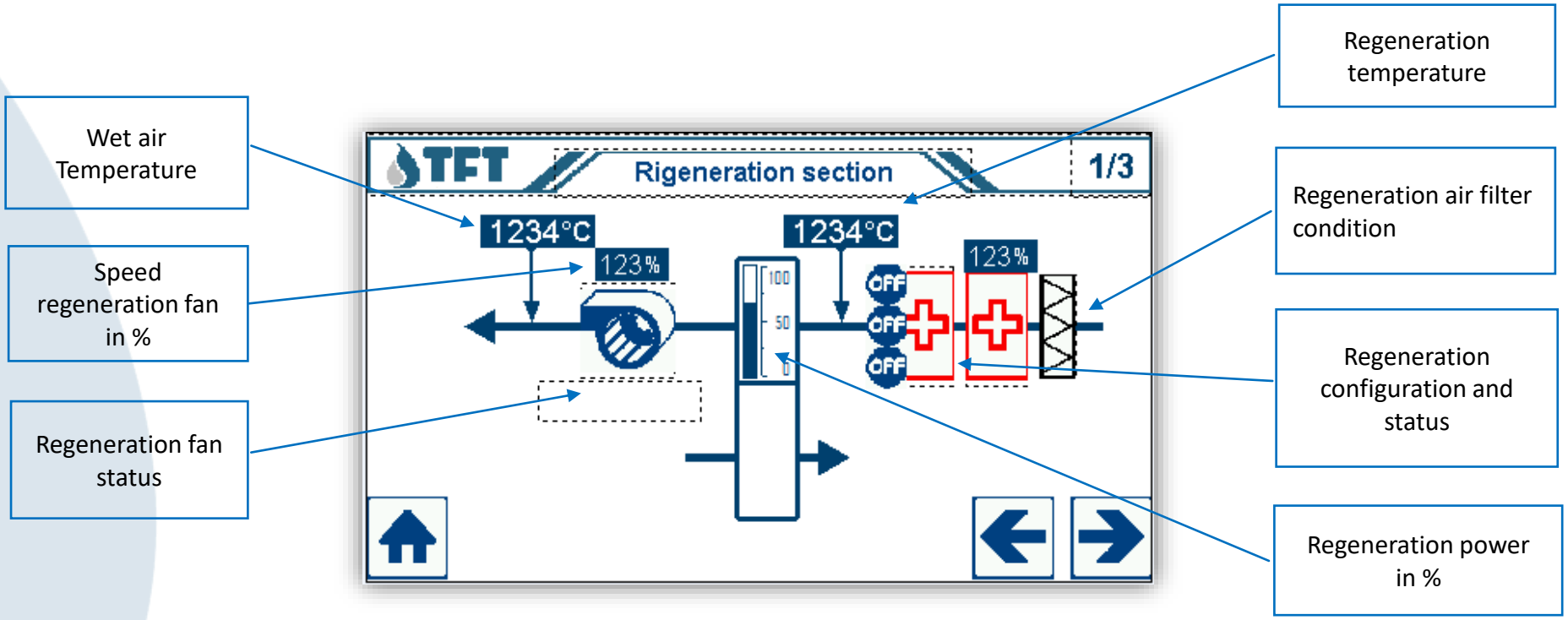
Press the key  to return to the main menu.

AirDry Advanced



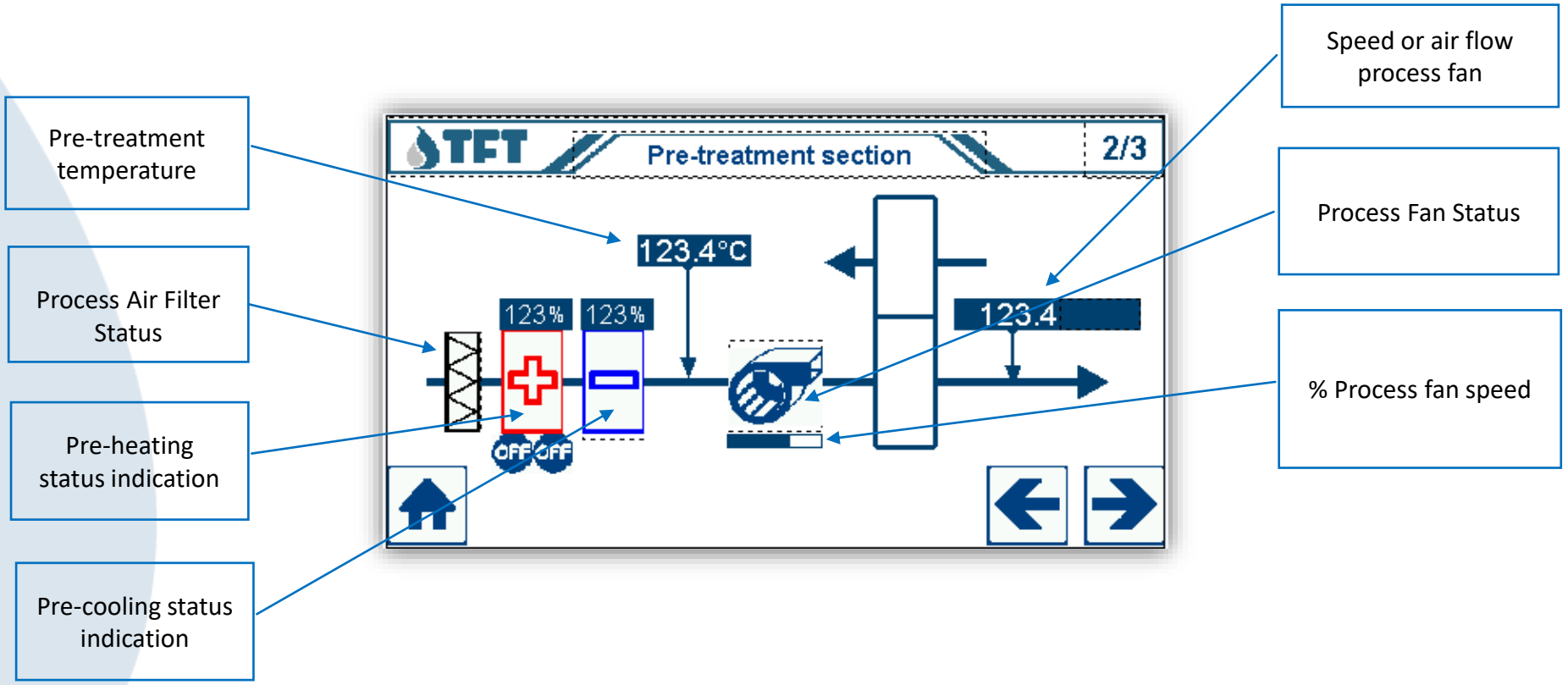
AirDry Advanced

Regeneration:



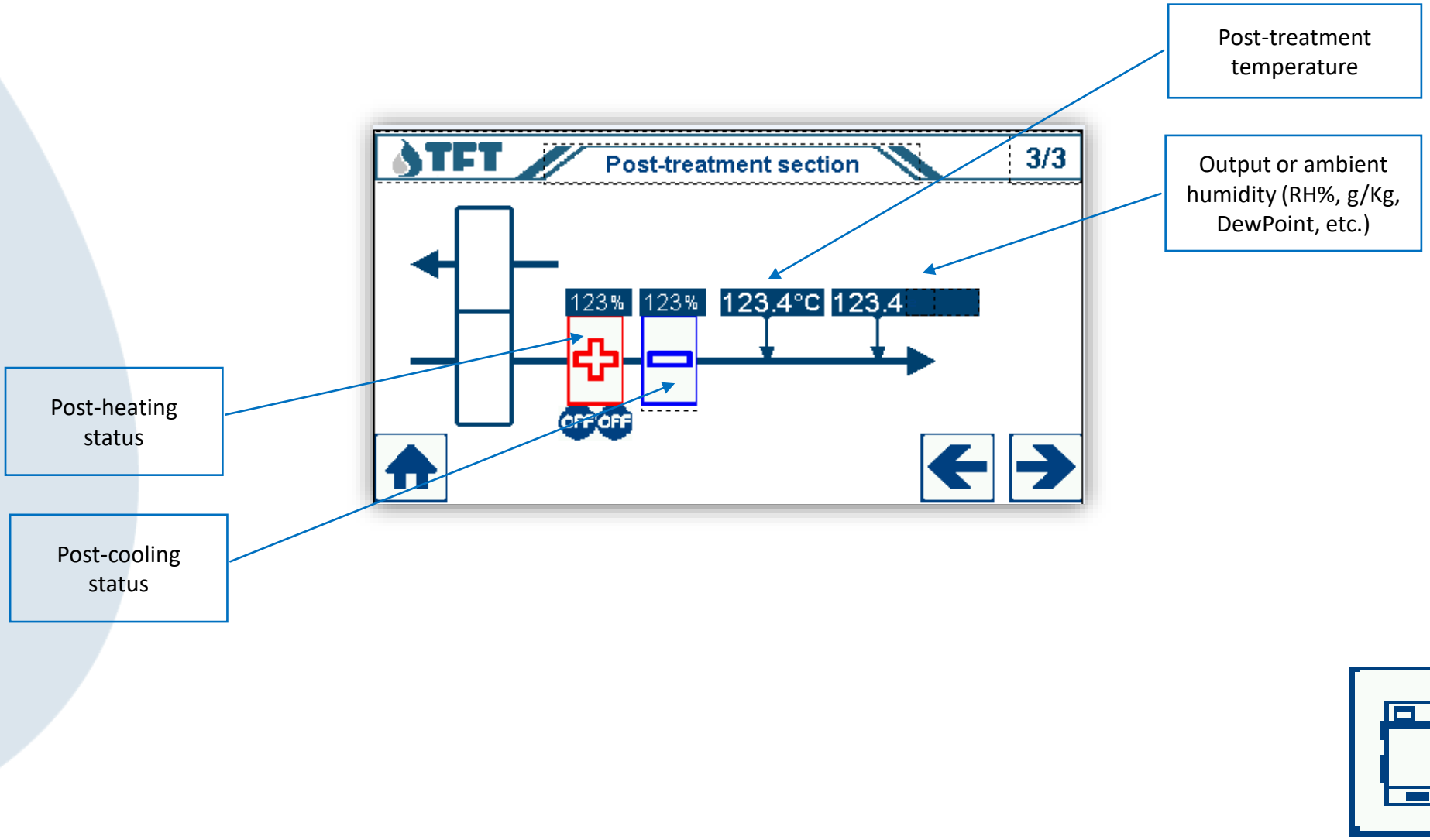
AirDry Advanced

Pre-treatment air:

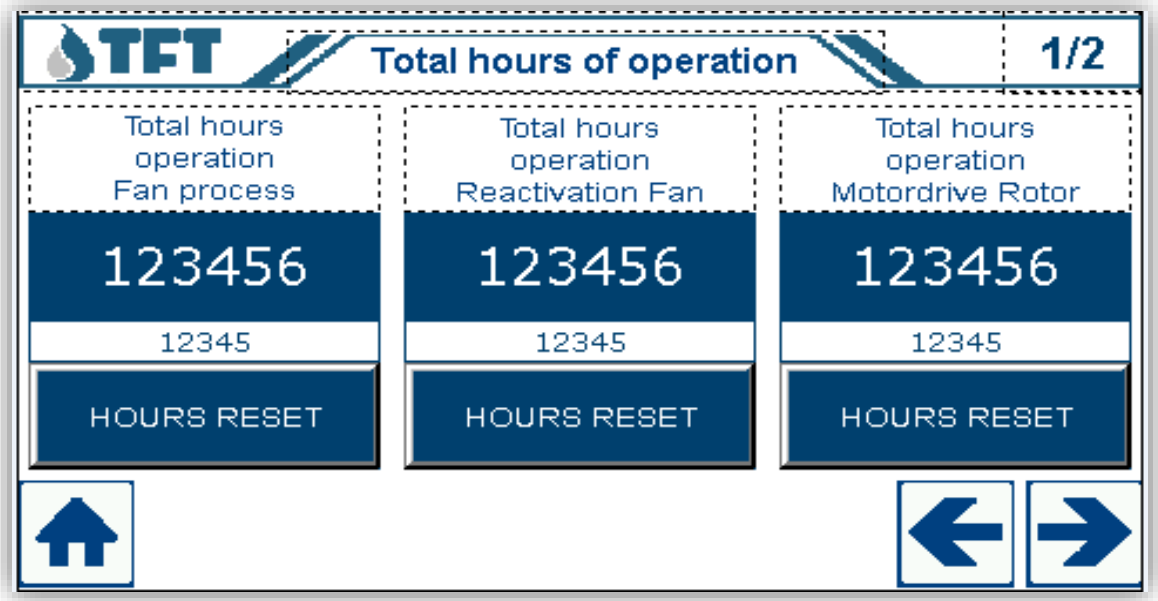


AirDry Advanced

Post-treatment air:



AirDry Advanced



AirDry Advanced

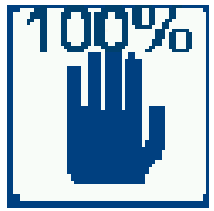
Possibility of operation

The mode selector on the outside of the dehumidifier allows the following modes:

0 dehumidifier stopped

LOC Starting dehumidifier from local control

REM Dehumidifier starting from remote control



Dehumidifier in operation continuously (power 100%)

Dehumidifier controller by a humidistat or by an external signal

Machine for Cold Room

Room dimension: 4800 m³

Initial conditions

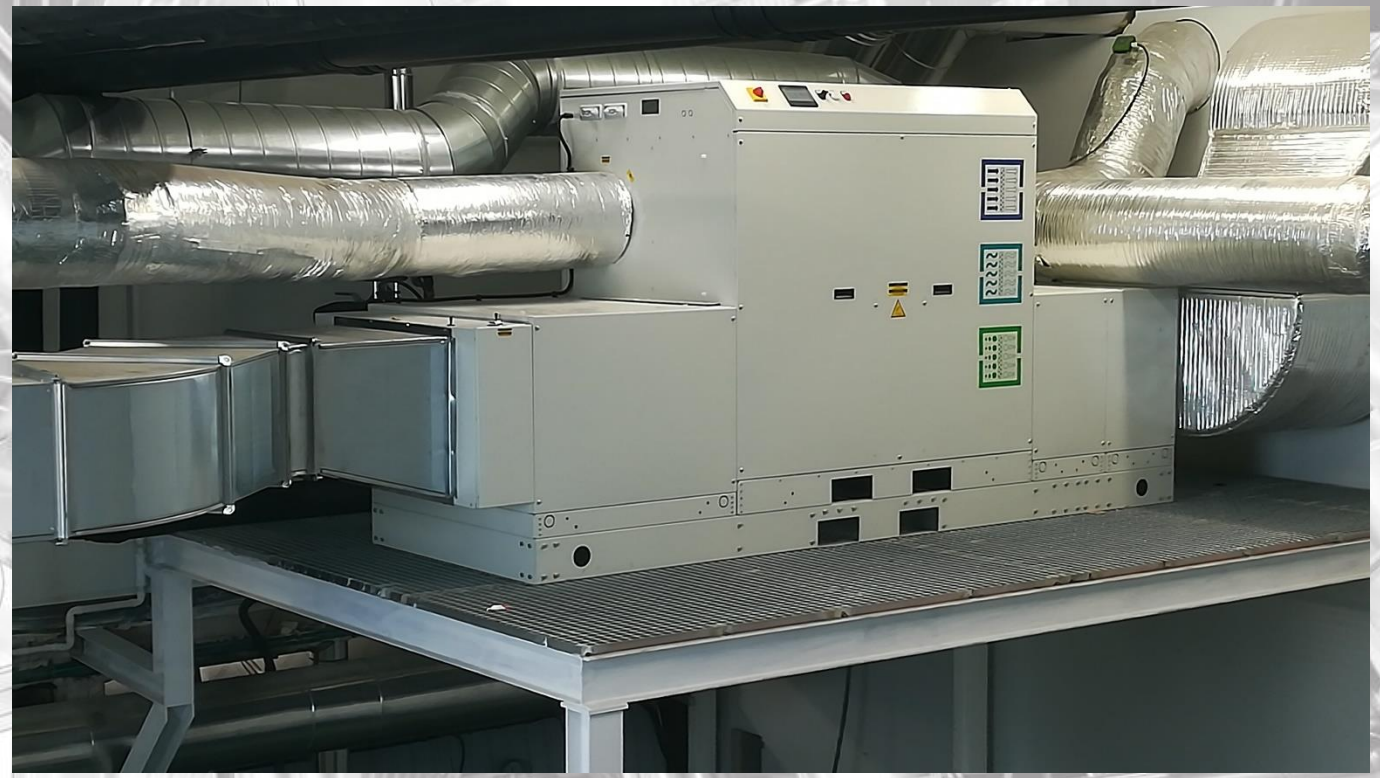
Room Temperature: 2°C

Relative Humidity: 100%

Final conditions

Room Temperature: 2°C

Relative Humidity: 20%



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TFT DRY AIR SOLUTIONS

Project Name

Unit Model: AD5000

Technical data

Dry air flow [m3/h]	Wet air flow [m3/h]	Power Supply [kW]
5000	1600	57,5

Altitude in meters: 0

Same condition Air Process

Wet Air: 60 °C; 33.2 g/Kg; 26.5 RH%

Reactivation Air: 35.0 °C; 60.0 RH%; 21.44 g/Kg

Set Point: 120°C / 130°C

Regeneration Power: 42.7 kW

Process Air: 2.0 °C; 100.0 RH%; 4.36 g/Kg

Dry Air: 17.4 °C; 0.76 g/Kg; 6.2 RH%; -18.1 °C dp

Reduced airflow

Capacity: 21.6 Kg/h

NOTE! If the absolute humidity in the dry air is below 1 g/Kg, please contact TFT for further advice.

Calculation

At 2°C – 100% RH we have 4,4 gr/kg of moisture

At 2°C – 20% RH we have 0,87 gr/kg of moisture

(4,5-0,87)*4800*1,2 = 20,91 Kg/h of dehum. Capacity

Selected Unit: AD5000E

TFT DRY AIR SOLUTIONS

Dryer Unit for Tannery

Room dimension: 1800 m³

Final conditions

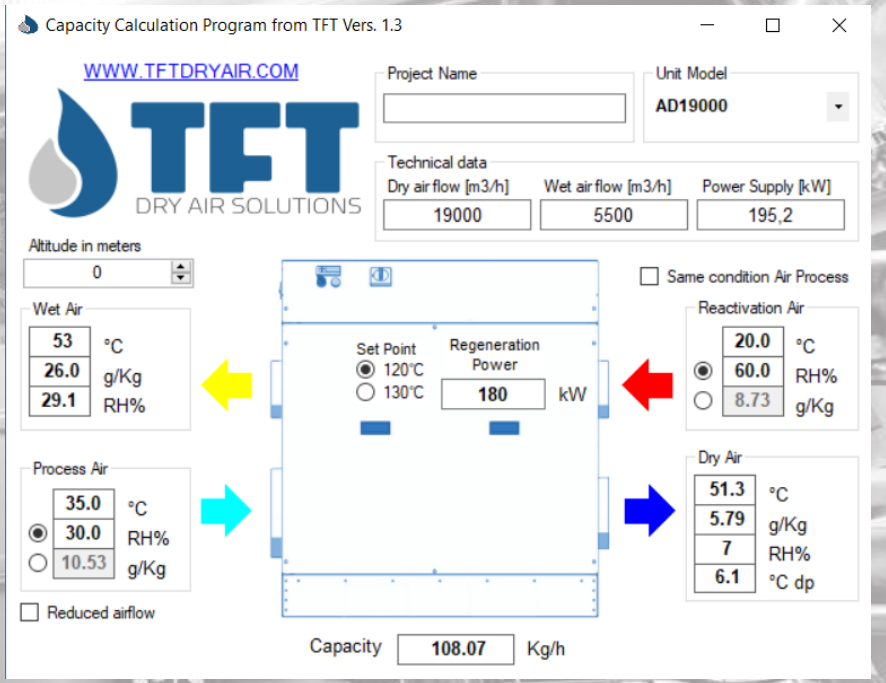
Room Temperature: 35°C

Relative Humidity: 30%

Accuracy: ± 5% (10 recycles/h)

Dehumidification capacity: 100 kg/h

Selected Unit: AD19000E



TFT DRY AIR SOLUTIONS

Pharmaceutical Unit for Blistering Room

Room dimension: 150 m³

Initial conditions

Room Temperature: 25°C

Relative Humidity: 50%

Final conditions

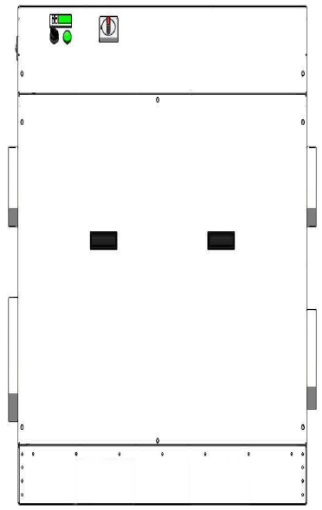
Relative Humidity: < 20%

Selected Unit: AD800E

Calculation result:

Wet Air:	
Temperature	53 °C
Relative Humidity	28.5 %
Absolute Humidity	25.5 g/Kg

Regeneration Air:	
Temperature	20.0 °C
Relative Humidity	60.0 %
Absolute Humidity	8.73 g/Kg



Process Air:	
Temperature	25.0 °C
Relative Humidity	50.0 %
Absolute Humidity	9.88 g/Kg

Capacity: 4.77 Kg/h

Dry Air:	
Temperature	41.2 °C
Relative Humidity	10 %
Absolute Humidity	4.91 g/Kg
DewPoint	3.7 °C

TFT DRY AIR SOLUTIONS

CUSTOMIZED SOLUTIONS

<u>Machine to test automotive filters</u>
Heating capacity: 13.3 kW
Air inlet (dry bulb): -6°C
Air flow rate: 5000 m^3/h
Air outlet (dry bulb): 19.5°C

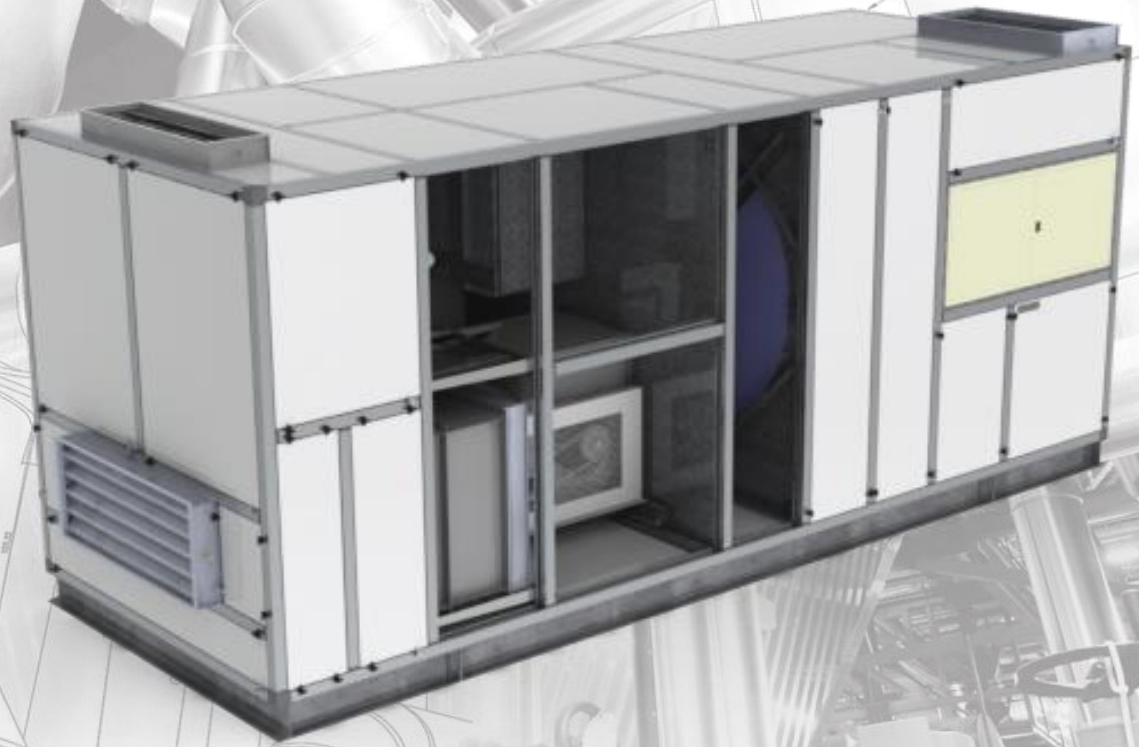
CUSTOMIZED SOLUTIONS

Rolls-Royce

<u>Machine to produce wax molds for turbines</u>
Heating capacity: 11.1 kW
Air inlet: 21°C db
Air flow rate: 4000 CMH
Air outlet : 12.9°C db

TFT
DRY AIR SOLUTIONS

CUSTOMIZED SOLUTIONS



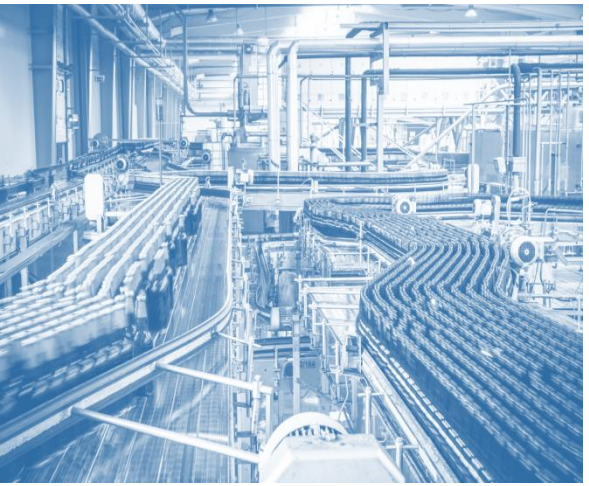
Machine to produce lithium-ion cells

Heating capacity: 140 kW
T. Air in: 33°C
Airflow: 9810 m^3/h
T. Air out: 13°C

RH air inlet: 18%
RH air outlet: 9.33%

Our Customers

FOOD INDUSTRIES



Nestlé

Good Food, Good Life

FERRERO

Amadori

Passione di Famiglia

1878 CITTERIO MILANO

CITTERIO

FERRARINI

TFT DRY AIR SOLUTIONS

Our Customers

PHARMACEUTICAL INDUSTRIES

Baxter

ANGELINI

Pfizer

NOVARTIS

TFT
DRY AIR SOLUTIONS

Our Customers

CHEMICAL INDUSTRIES

GE Oil & Gas

AnsaldoBreda
a Finmeccanica Company

PRYSMIAN
CABLES & SYSTEMS

PERINI NAVI GROUP

LITHOPS
BATTERIES

Whirlpool

Enel

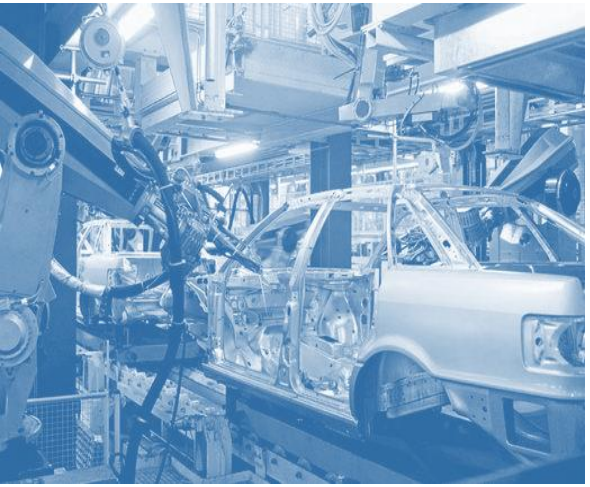
HERMÈS
PARIS

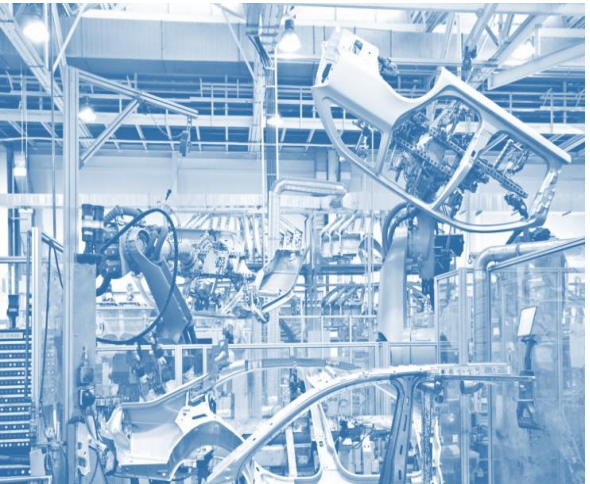
ecco LEATHER

TFT
DRY AIR SOLUTIONS

Our Customers

AUTOMOTIVE





Ferrari

Rolls-Royce

LAMBORGHINI

SAINT-GOBAIN

PILKINGTON

Sangalli Group
Glass all around us

PIAGGIO®

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TFT
DRY AIR SOLUTIONS



Thank you