



AHU Dehumidifiers

Engineered DHUs

DEWPRO Series



SAGAR AIR PVT. LTD.

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| www.sagarair.com



AHU Integrated Desiccant Units

| Hyderabad, Telangana

Introduction

AHU integrated Dehumidifiers

Sagar Air, is one of the prominent HVAC manufacturers for three decades. The company has a wide array of expertise in manufacturing quality dehumidifiers since its inception.

The Double Skin construction usually consists of PUF insulation sandwiched between the outer and inner panels. This construction results in low thermal heat leakage, low noise, and sturdy construction of the unit. Our Units are available in various orientations, sizes, and selections suiting various critical and non-critical applications.

The desiccant rotor wheel is imported from Sweden which is eco-friendly and efficient.



APPLICATIONS



Pharma Formulations



Food Industry



Warehouses



Cold Storages



Chemical Industry



Packaging Industry

INTRODUCING

dewpro SERIES

AHU Integrated Desiccant Units

ENGINEERED DEHUMIDIFIERS

FEATURES



Robust aluminium construction with PUF Panelling



Imported Rotor Wheel for High Performance



Easy User Interface with Datalogging & Maintenance Alarms



Tailor-made as per your requirement with integrated AHU



Seamless design for easy maintenance of Filters & Rotor Wheel



Quick after-sales support and easy maintenance

LIST OF FEATURES



45 mm Aluminium Pentapost Construction with 42+/-5% mm tk RPUF insulation Thermal Break Profile



AMCA Certified High efficiency plug fans are used with variable speed control as per the required duty (NICOTRA / KRUGER / ROSENBERG)



High quality, Ecofriendly imported Desiccant Rotor Wheel is used for high moisture adsorption (PROFLUTE SWEDEN / ROTOR SOURCE USA / EQVT)



Fully automatic 7 Inch touchscreen HMI screen with inbuilt fault alarms, maintenance reminders and safety interlocks - MITSUBISHI



VFDs for Process and Reactivation Fan Motors-DELTA Make (OPTIONAL)



Imported Control Panel Enclosure IP67 rating - (RITTAL / EQVT)



High quality SS 304 Fin type Heaters for faster heating



Phase Failure Protection circuit and double safety thermostats

dewproX
AHU Integrated Desiccant units



Construction Features

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Casing

SAGAR AIR Air Handlers are of modular construction which utilizes extruded aluminum Penta-post construction for superior rigidity.

All Panels are CNC Laser cut and are secured to the unit framework tightly with gaskets in place ensuring better air-tight casing construction.

The Panels are double skin construction with **PUF insulation** Polyurethane foam insulation of 40kg/m³ density

The double skin construction benefits in two major ways : Firstly, it provides high thermal insulation to the AHU. Secondly, This construction ensures that the insulation is not in contact with the air stream thus, improving IAQ of the conditioned space.

The Panels are offered in two thicknesses-25 mm and 50 mm chosen as per your requirement and the criticality of the application. The outer panel and inner panel of the double skin casing can be offered in a variety of materials and thicknesses - Galvanised Iron, Aluminium, and Stainless Steel as per your requirement.

The outer panel is usually made of a Pre-Painted GI sheet which has an excellent finish and is corrosion-free. The Inner panel is GI plain.

The base frames are made out of Galvanised steel sheets with heavy-duty steel joints. The joints are equipped with lifting holes for easy loading and unloading of the unit. Especially, for Larger units, parallel hot-dip galvanized channel frames can be offered.



Aluminium Sections



Corners



Aluminium Pentapost
construction

Smart Dehumidifiers

DEWPRO Series



Blower noise is the most dominant component of the unit which generates noise. The fans must be correctly sized and selected to operate at its peak efficiencies. undersized blowers shall result in higher noise levels due to increased tip-speed and higher velocities while over-sized blowers can generate higher sound levels than allowable due to its motor-drive set.

Essentially the casing of the unit acts as a sound reducer along with thermal insulation. Below listed are the sound reduction levels achieved from Glasswool and PUF for a 50mm panel

Sound Reduction (dB) for various materials : 50 mm panel, 1.0 mm inner and 1 mm outer

| Octave Band | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Hz |
|-------------|-----|-----|-----|------|------|------|------|----|
| Glass Wool | 9 | 20 | 25 | 30 | 34 | 36 | 41 | dB |
| PUF | 8 | 14 | 11 | 12 | 20 | 35 | 38 | dB |

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Safety Devices

The units are installed with various electrical and mechanical safety interlocks ensuring maintenance and electrical safety of the units. Here is the list of Safety devices in place :

- Fan mesh, Motor cover
- Fully Automatic PLC Panel with Alarms and Safety Cutoffs
- Phase Failure protection
- Door Limit Switches
- Double linked Safety Thermostats
- Safety Isolator Switches
- Motor Protection Circuits
- View Glass to view the status of the rotor wheel
- Nylon Caps to cover projected screws
- Air Flow Switch
- CTs (optional)



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Fan Section

The AHUs are powered by a variety of blowers depending upon the size, orientation, duty and application. Centrifugal Fans DWDI/SWSI, BC.FC.Radial, Axial Flow, Plug Fans, Mixed Flow Fans/ EC Fans etc. All the fans are AMCA certified. All the fan impellers are statically and dynamically balanced according to ISO 1940 and AMCA 204 G2.5 standards.

The fans are designed in accordance with AMCA standards. The Impellers for Forward- Curved fans are Galvanised Steel Sheets while Backward Inclined / Airfoil blade impellers are made of cold-rolled steel sheet with the polyester coat. The shafts are manufactured from C45 grade carbon steel and then coated with anti-corrosion after assembly.

The VFDs are selected for 150% of the maximum motor kilo-watt of the Blower. The V-belts are sturdy, anti-static, and oil resistant.

The selected bearings are either deep groove ball bearing type with adapter sleeves or else a spherical bearing type for various applications. Heavy-Duty bearings are available on request for continuous duty.

The Fan-motor assemblies are mounted on Extruded aluminum CBF (Common Base Frame) which is in turn mounted on spring vibration isolators

Flexible Connectors between the fan outlet and unit for vibration isolation are standard with the unit. Additionally, Fire retardant fabric is available as an option.



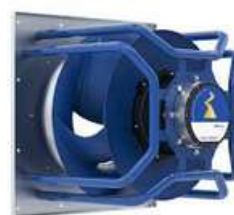
Plug Fan



Forward Curved
DIDW Fan



Backward Curved
DIDW Fan



EC Fan



VFDs for Speed
regulation



Common Base
Frame Assembly

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Motor and its accessories

All the electric motors encased in the units are branded and conform to IEC standards of operation. Usually, Squirrel Cage AC Induction motors with Class F insulation are used. Motors conform to IEC 34, IEC 72, BS3979, BS 5000 standards and CE marked.

A wide range of motor efficiencies are available starting from IE1 being standard, IE2 higher efficiency and IE3 being premium efficiency. Flameproof motors can also be offered as an option.

The motors can also be plugged into a Variable Frequency Drive to control its speed. Usually, speed must be varied within 40 % to 100 % of the total speed of the motor.

Please refer Motor Ratings and Cable Sizing at the end of the brochure.



Squirrel Cage TEFC AC induction Motors



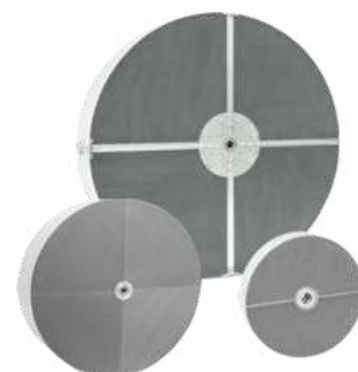
VFDs for Speed regulation



Rotor Wheel Section

Third-generation imported desiccant rotors are used in our dehumidifiers. The designed silica gel rotors are well known as market-leading products and are widely recognized for outstanding performance in most applications and environments.

The rotors we use have higher contents of active silica gel than any other rotor in its market segment. Its patented formula ensures improved dehumidification performance and energy efficiency. As a result, our dehumidifier offers more dehumidification for less running cost than a unit equipped with another rotor of the same dimensions.



Silica Gel Rotor Wheels

Integrated Dehumidifier DEWPRO Series

The desiccant rotor wheels are housed in a cassette structure which is fully fabricated in-house as per our requirement. The cassette casing is made of thick Pre-Painted Galvanised Iron which is straightened and spurred to obtain flat sealing surfaces. Moreover, The wheel is sealed properly with imported Teflon coated silicone rubber to avoid intermixing of airflows. This whole cassette is then fixed into the DAHU cabinet along with the bed drive motor.

Options :

- Cassette can be offered in fully SS304 Construction
- Removable Cassette can be offered with Aluminium profile construction
- Bed Motor self tensioner system can be offered



Rotor Cassette with imported
Seals



Filters

A Variety of Filters can be equipped depending upon the application. Considering the requirements, the following are the kinds of filters/Filtration devices to be put to use :

- 1) Pre-Filters - Metallic / Synthetic
- 2) Fine Filters



Pre-Filters

Washable Pre-Filters are used in industrial and kitchen ventilation applications. These Filters have excellent dust holding capacities with ultra low air leakages. These Pre-Filters can be Metallic or Synthetic.

In case of Metallic Filters, The frame is made of Al/GI/SS with media sandwiched under multiple flat metal mesh layers. The Filters are offered in various sizes.

In Case of Synthetic Filters, The frame is again either made of GI/Al or SS materials while media is of synthetic non-woven fabric completely sealed at the edges. These are cost-effective compared to Metallic Filters

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Metallic Pre-Filter

Specifications :

- Type : Box type
- Frame : GI/SS/Al
- Filter Media : Synthetic Non-Woven
- Sealed : Epoxy/Foam
- Eff : 90% down to 10 micron



Synthetic Pre-Filter

Specifications :

- Type : Flange Type
- Frame : GI/SS/Al
- Filter Media : Synthetic Non-Woven
- Sealed : Epoxy/Foam
- Eff : 90% down to 10 micron



Fine Filters

Fine-Filters differ from Pre-Filters in terms of arrestance efficiency i.e. Less than 10 microns arrestance. The media used in these filters is either HDPE or non-woven high temperature fabric. These filters are usually demanded in pharmaceutical and speciality applications. These are also called as Micro-Vee filters. Usually, These filters are preceded by Pre-Filters.

Specifications :

- Type : Flange Type
- Frame : GI/SS/Al Anodised
- Adhesive : Epoxy based adhesive
- Gasket : Sponge rubber / PU neoprene
- Media : 100% micro-glass fiber
- Eff for HEPA : 99.99% down to 0.3 micron
- Eff for ULPA : 99.9995% down to 0.12 micron



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MERV Rating Filter Table

| MERV Rating | REMOVAL EFFICIENCY OF AVERAGE PARTICLE SIZE | | | Typical Particles | Filter Type |
|-------------|---|----------------|--------------|---|--|
| | 0.3-1.0 micron | 1.0-3.0 micron | 3.0-10micron | | |
| 1 | - | - | ≤20% | > 10 microns (Dust Mites, Pollen, Lint) | Washable Metal Mesh Filter |
| 2 | - | - | ≤20% | | |
| 3 | - | - | ≤20% | | |
| 4 | - | - | ≤20% | | |
| 5 | - | - | 20%-35% | 3.0 - 10 microns (Cement Dust, Mold Spores, Respiratory Droplets) | Polyester Filter, Pleated Filter |
| 6 | - | - | 35%-50% | | |
| 7 | - | - | 50%-70% | | |
| 8 | - | - | >70% | | |
| 9 | - | ≤50% | >85% | 1.0 - 3.0 microns (Smog, Bacteria, Droplet Nuclei, Aerosols) | Cartridge Filter, Pleated Filter |
| 10 | - | 50%-65% | >85% | | |
| 11 | - | 65%-80% | >85% | | |
| 12 | - | > 80% | >90% | | |
| 13 | ≤75% | >90% | >90% | 0.3 to 1.0 micron (Tobacco, Kitchen Smoke, Soot, Bacteria, Air Dust) | Pleated Filter, H10-H12 HEPA |
| 14 | 75%-85% | >90% | >90% | | |
| 15 | 85%-95% | >90% | >90% | | |
| 16 | >95% | >95% | >95% | | |
| 17 | - | >99.97% | - | <0.3 micron (Viruses, Superfine Dust) | H13-H14 HEPA, True HEPA, ULPA |
| 18 | - | >99.99% | - | | |
| 19 | - | >99.999% | - | | |
| 20 | - | >99.999% | - | | |

Efficient Dehumidifiers

DEWPRO Series



Standard Accessories for DAHU

- **Service Doors**
 - Access doors are provided for ease of access to the blower, motor, and pump maintenance.
- **Marine Lamp**
 - High vision bulk-head lamps are provided for better visibility during servicing and maintenance.
- **View Glass**
 - Across the fan section and tank, a View glass is provided to check the Air Washer operation.
- **Door Limit Switches**
 - Quality limit switches are provided across all the access doors to ensure safety against moving parts or risk of shock in the unit



**Standard
Accessories**

Operating Limits of the Dehumidifier

| Parameter | DEWPRO-E Series |
|--------------------------------------|-------------------------------------|
| Temperature Range for Process intake | 3°C to 50°C |
| RH range for Process Intake | No restrictions |
| Temperature Range for React. Intake | -8°C to 50°C |
| RH range for React.Intake | No restrictions |
| Exposure to Sunlight and Rain | *Please contact SAGARAIR for advice |
| Operating Temperature range onsite | 3°C to 50°C |
| RH range on site to be installed | Not Greater than 90% RH |

Customised Dehumidifiers

DEWPRO Series



Control Options

DEWPRO Series dehumidifiers are offered in three control options :

- [ELC] - Electrical Control
- [DEWFUNC] - 3.5 Inch Display PLC Control
- [DEWEX] - Fully automated 7 inch touchscreen display with PLC

| Function | Electrical | DewFunc | DewEX |
|--|--|---|---|
| Unit ON/OFF <ul style="list-style-type: none"> • Manual • Remote via external digital signal | yes no | yes yes | yes yes |
| Drying Control <ul style="list-style-type: none"> • Digital via external hygro-stat • Proportional Analog Control via PID • Analog via optional external sensor | yes yes no | yes yes no | yes yes yes(1) |
| Filter Status <ul style="list-style-type: none"> • Process Filter Choke alarm • Reactivation Filter Choke alarm | no no | no no | yes(2) yes(3) |
| Pre/Post Treatment Coils <ul style="list-style-type: none"> • Control of Pre/Post Cooling Coils • Control of Steam Valve / HWC Valve | no no | yes yes | yes (Prop) yes (Prop) |
| Features <ul style="list-style-type: none"> • Process Fan VFD Control • Maintenance Notifications • BMS Integration • Rotor failure detection • kWh Meter • Basic LED diagram display • Standard PLC+HMI with probe values | Independent no no no no yes no | Independent yes yes yes no no yes | Integrated(4) yes yes yes yes(5) no yes |

Standard Features across all variants

- Bi-connected series thermostat safety cutoff mechanism
- High Temperature alerts
- Reactivation pressure low indications
- Automatic Heater management

Notes* :

- [1] - requires optional P-Out sensor
- [2] - requires additional P-Filter pressure switch
- [3] - requires additional R-Filter pressure switch
- [4] - requires optional analog block for the PLC
- [5] - requires optional watt-meter plugin for PLC

Efficient Dehumidifiers

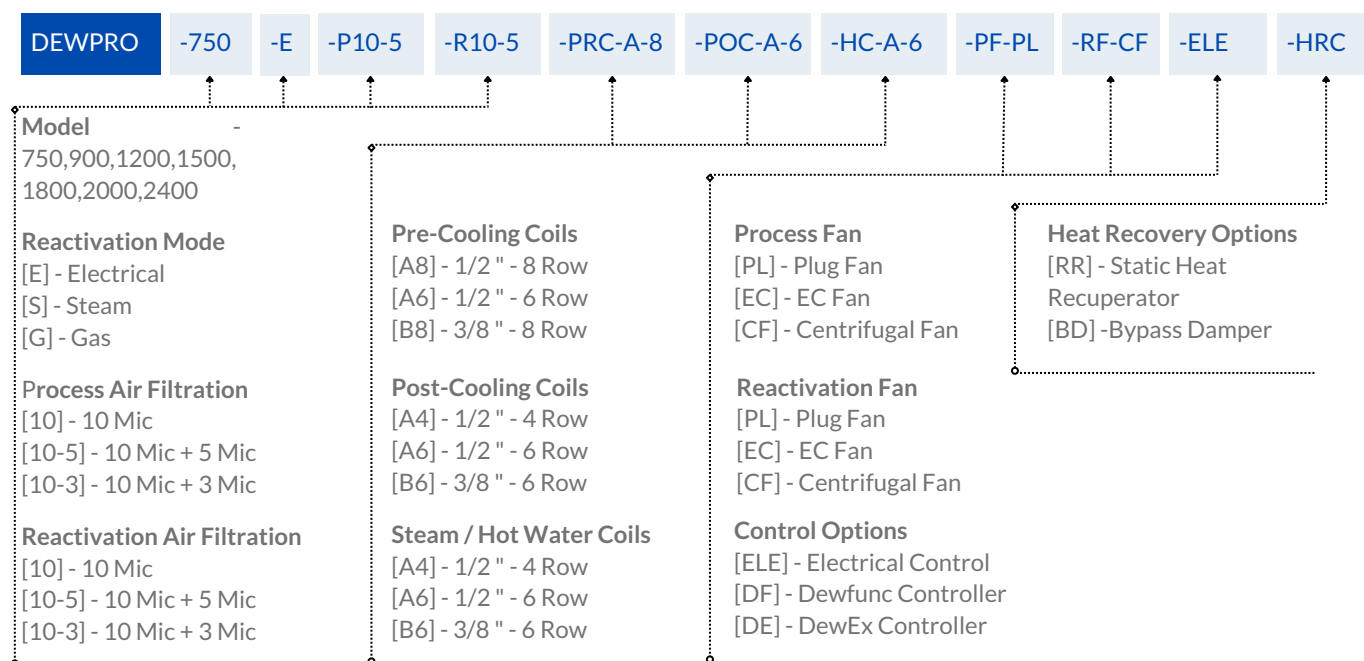
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Functions provided by DEWEX Controller

-  Easy monitoring & control of Reactivation heater temperature
-  Monitoring of RH and Temperature in RA Duct / Room
-  Precise control of Heater Banks using PID control
-  Run/stop/trip status of Process Motor, Reactivation Motor, Gear Motor.
-  Alarm notifications for any faults / failures
-  On/Off status of Steam Valve and Pre-Cooling/Post Cooling Coil



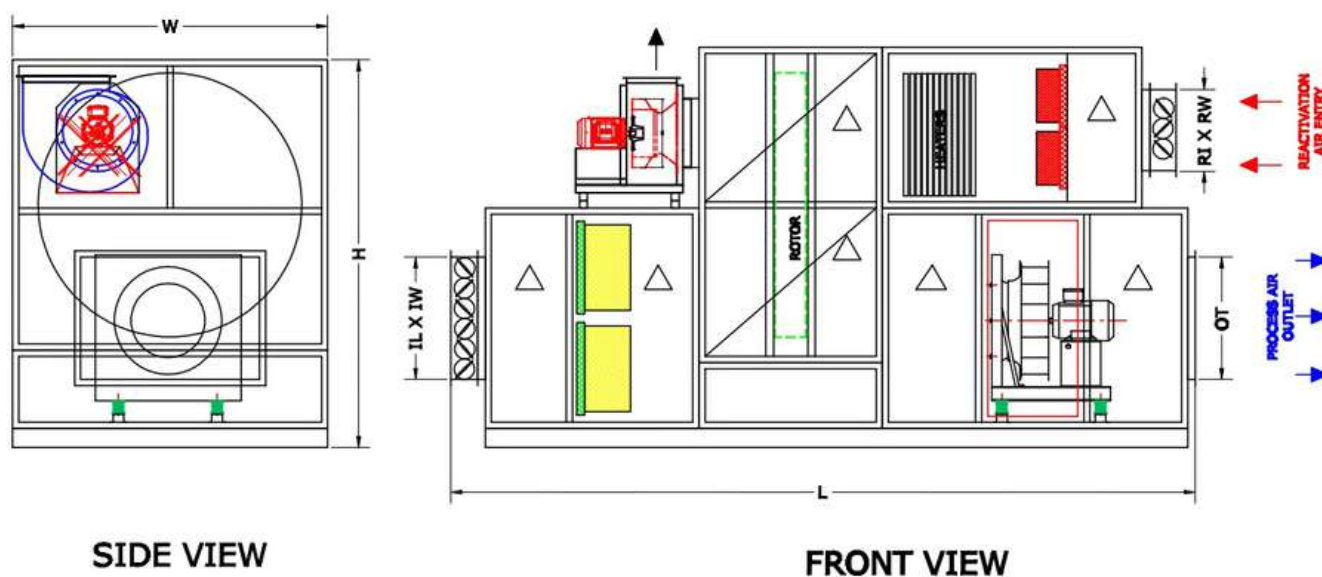
Name Coding



Customised Dehumidifiers

DEWPRO Series

Technical Table for Standard DEWPRO-E Units



DEWPRO-E SERIES

| Performance* | 750E | 900E | 1200E | 1500E | 2000E | 2400E |
|--------------------------|-------|-------|--------|--------|--------|--------|
| Drying Capacity (kg/hr) | 50.3 | 64.5 | 77.8 | 103.6 | 126.8 | 154.5 |
| Dry Air flow (CMH) | 7,500 | 9,000 | 12,000 | 15,000 | 20,000 | 24,000 |
| Dry Air Pressure (mm WC) | 65 | 64 | 67 | 69 | 67 | 70 |
| Wet Air flow (CMH) | 2,500 | 3,000 | 4,000 | 5,000 | 6,667 | 8,000 |
| Wet Air Pressure (mm WC) | 85 | 87 | 89 | 84 | 85 | 84 |
| Heater Power (kW) | 81 | 99 | 126 | 156 | 216 | 255 |
| Total Power (kW) | 89 | 109 | 138 | 174 | 230 | 275 |

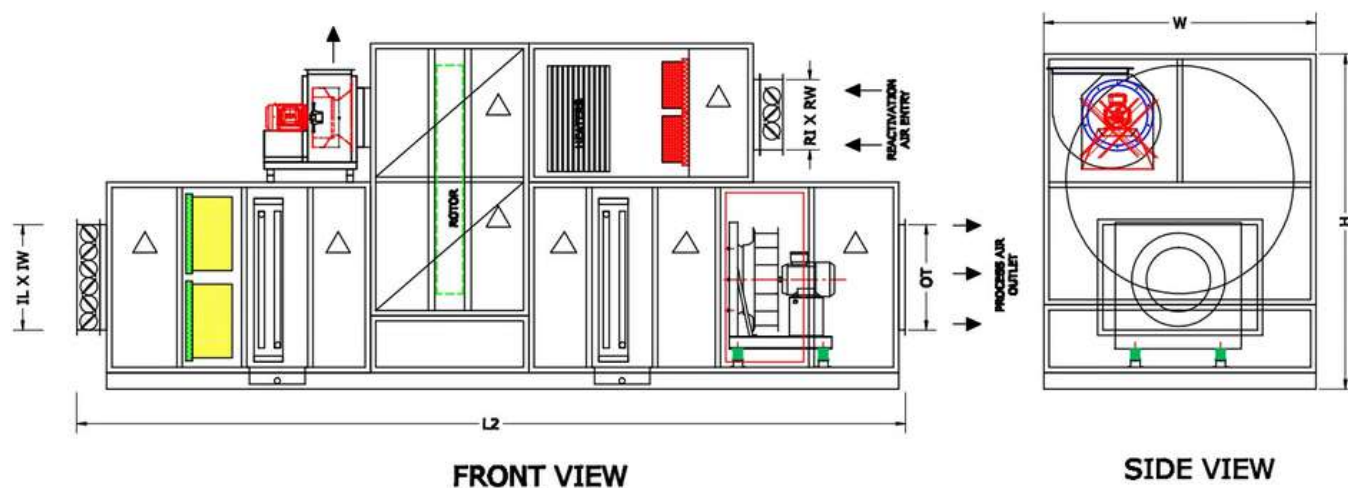
*Note : Technical specifications are subject to change without prior notice

*Inlet Conditions : 25°C @ 60% RH

Efficient Dehumidifiers

DEWPRO Series

Technical Table for Customised DEWPRO-EPP Units



DEWPRO SERIES WITH Fresh Air Pre-Cooling Coil, Post Cooling Coil

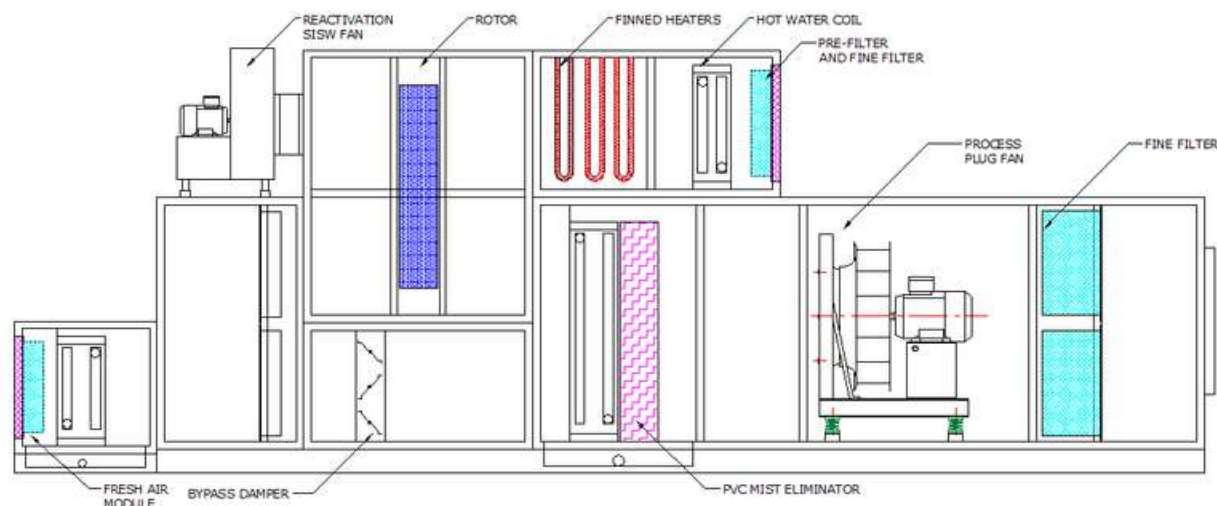
| Performance* | 750-FHE | 900-FHE | 1200-FHE | 1500-FHE | 2000-FHE | 2400-FHE |
|---------------------------------------|--------------------|--------------------|---------------------|---------------------|--------------------|----------------------|
| Drying Capacity (kg/hr) | 52.5 | 67.5 | 81.2 | 105.6 | 131.2 | 159.6 |
| Dry Air flow (CMH) | 7,500 | 9,000 | 12,000 | 15,000 | 20,000 | 24,000 |
| Dry Air Pressure (mm WC) | 66 | 65.5 | 64.3 | 65 | 64 | 67 |
| Wet Air flow (CMH) | 2,500 | 3,000 | 4,000 | 5,000 | 6,667 | 8,000 |
| Wet Air Pressure (mm WC) | 82.6 | 84.1 | 83 | 85 | 84.6 | 86.5 |
| Heater Power (kW) | 81 | 99 | 126 | 156 | 216 | 255 |
| Fresh Air intake (CMH) | 750 | 900 | 1,200 | 1,500 | 2,000 | 2,400 |
| Pre-Cooling Coil Post Cooling Coil | 38.4 TR 35.1 TR | 47.5 TR 42.2 TR | 61.5 TR 56.16 TR | 76.8 TR 70.21 TR | 103 TR 93.62 TR | 124.3 TR 112.2 TR |

*Note : Technical specifications are subject to change without prior notice

*Inlet Conditions : 25°C @ 60% RH

Customised Dehumidifiers DEWPRO Series

Technical Table for Customised DEWPRO-X Units



DEWPRO SERIES WITH Fresh Air Pre-Cooling Coil, Post Cooling Coil and Hot Water Coil

| Performance* | 750-XHE | 900-XHE | 1200-XHE | 1500-XHE | 2000-XHE | 2400-XHE |
|--------------------------|----------|---------|----------|----------|----------|----------|
| Drying Capacity (kg/hr) | 53.2 | 66.2 | 82.3 | 106.5 | 132.1 | 163.2 |
| Dry Air flow (CMH) | 7,500 | 9,000 | 12,000 | 15,000 | 20,000 | 24,000 |
| Dry Air Pressure (mm WC) | 65 | 64 | 67 | 69 | 67 | 70 |
| Wet Air flow (CMH) | 2,500 | 3,000 | 4,000 | 5,000 | 6,667 | 8,000 |
| Wet Air Pressure (mm WC) | 85 | 87 | 89 | 84 | 85 | 84 |
| Heater Power (kW) | 81 | 99 | 126 | 156 | 216 | 255 |
| Fresh Air intake (CMH) | 750 | 900 | 1,200 | 1,500 | 2,000 | 2,400 |
| FA Pre-Cooling Coil | 3.84 TR | 4.61 TR | 6.12 TR | 7.68 TR | 10.21 TR | 12.23 TR |
| Post Cooling Coil | 35.1 TR | 42.2 TR | 56.16 TR | 70.21 TR | 93.62 TR | 112.2 TR |
| Hot Water Coil | 10.85 TR | 13.1 TR | 17.36 TR | 21.6 TR | 28.92 TR | 34.71 TR |

*Note : Technical specifications are subject to change without prior notice

*Inlet Conditions : 25°C @ 60% RH

Efficient Dehumidifiers

DEWPRO Series

Dimensions of DEWPRO Series

750E - 900E

| 750E-900E | L | W | H | OT | L2 | IL X IW | RI X RW |
|-----------|------|------|------|-----|------|---------------|--------------|
| Minimum | 4400 | 1625 | 2250 | 800 | 4750 | 950 X 1100 | 650 X 700 |
| Maximum | 6750 | | 2500 | | 4900 | | |

1200E - 1500E

| 1200E-1500E | L | W | H | OT | L2 | IL X IW | RI X RW |
|-------------|------|------|------|------|------|---------------|--------------|
| Minimum | 4675 | 1900 | 2990 | 1025 | 4750 | 820 X 1500 | 700 X 890 |
| Maximum | 6850 | | 2990 | | 7050 | | |

2000E - 2400E

| 2000E - 2400E | L | W | H | OT | L2 | IL X IW | RI X RW |
|---------------|------|------|------|------|------|---------------|---------------|
| Minimum | 4550 | 2300 | 3350 | 1225 | 4880 | 950 X 1900 | 875 X 1325 |
| Maximum | 6850 | | 3450 | | 7050 | | |

Optional Field Components

IComponents



Process Out Temperature & RH Sensor (0-10V)

- Accuracy 3%, RH% range - 0 to 99% , Temp Range : 0°C to 50°C



Dewpoint Sensor (4-20mA) for Duct

- Output : 4-20 mA



Differential Pressure Switch for Process/Reactivation Filters

- Measuring Range : 5 to 50 mm of WC



Differential Pressure Transmitter for Process Plug Fans

- Output : 0-10 VDC , Measuring Range : 5 to 100 mm of WC



Regulating Valve & Proportional Actuator for Pre/Post-Cooling / Hot Water Coils



Reactivation Out Temperature Sensor PT100

- Output : 0-10 VDC , Measuring Range : 0°C to 200°C



Brands We trust

Customised Dehumidifiers DEWPRO Series



Our Partial Clientele



"PIONEERS" IN HVAC SINCE 30 YEARS

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