

The Leading Solution for your system



PT Denusa Sejahtera designing and working in the cleanroom systems, components and equipment for various industrial applications such as pharmaceutical, food, automotive, manufacturing and public service buildings with good quality and guaranteed.

We are able to do that relates to HVAC and Cleanroom in accordance with industry standards.

We provide materials for HVAC systems such as Air conditioning, Dehumidifiers, Boilers, Building Automation, Controls, Energy Saving, HVAC Equipment, Textile Duct, Grilles, Registers, diffusers, Indoor Air Quality, Plumbing, Radiant, Refrigeration, Tools, Wire / Cable, Product venting, Zonning, Booth System.

In cleanroom systems we also supply Modular Cleanrooms, Laminar Flow Clean Benches, Cleanroom Entry Systems, Cleanroom Components, Cleanroom Furniture, Fume Hoods and Wet Power stations, Inflow Dust Containment Cabinets.

Our Customer

Industry
Pharmaceutical | Manufacturing | Food

Community Service
Hospital | Market | Building

PT DENUSA SEJAHTERA

Jl. Raya Fachrudin No.5 Lantai 7 A1
The Boulevard Office and Apartement
Jakarta Pusat 10250 - Indonesia
Tel & Fax : 62 - 21 - 31991440
Info : denusa.sejahtera@gmail.com

HVAC Applications

COMFORT APPLICATIONS

- ⊙ Residences
- ⊙ Retail Facilities
- ⊙ Commercial and Public Buildings
- ⊙ Places of Assembly
- ⊙ Hotels, Motels, and Dormitories
- ⊙ Educational Facilities
- ⊙ Health Care Facilities
- ⊙ Justice Facilities
- ⊙ Automobiles and Mass Transit
- ⊙ Aircraft
- ⊙ Ships

INDUSTRIAL APPLICATIONS

- ⊙ Industrial Air Conditioning
- ⊙ Enclosed Vehicular Facilities
- ⊙ Laboratories
- ⊙ Engine Test Facilities
- ⊙ Clean Spaces
- ⊙ Data Processing and Electronic Office Areas
- ⊙ Printing Plants
- ⊙ Textile Processing Plants
- ⊙ Photographic Material Facilities
- ⊙ Museums, Galleries, Archives, and Libraries
- ⊙ Environmental Control for Animals and Plants
- ⊙ Drying and Storing Selected Farm Crops and Paper Product Facilities
- ⊙ Power Plants
- ⊙ Nuclear Facilities
- ⊙ Mine Air Conditioning and Ventilation
- ⊙ Industrial Drying Systems
- ⊙ Ventilation of the Industrial Environment
- ⊙ Industrial Local Exhaust Systems
- ⊙ Kitchen Ventilation

ENERGY-RELATED APPLICATIONS

- ⊙ Geothermal Energy
- ⊙ Solar Energy Use
- ⊙ Thermal Storage

BUILDING OPERATIONS AND MANAGEMENT

- ⊙ Energy Use and Management
- ⊙ Owning and Operating Costs
- ⊙ Testing, Adjusting, and Balancing
- ⊙ Operation and Maintenance Management
- ⊙ Computer Applications
- ⊙ Building Energy Monitoring
- ⊙ Supervisory Control Strategies and Optimization
- ⊙ HVAC Commissioning

GENERAL APPLICATIONS

- ⊙ Building Envelopes
- ⊙ Building Air Intake and Exhaust Design
- ⊙ Control of Gaseous Indoor Air Contaminants
- ⊙ Design and Application of Controls
- ⊙ Sound and Vibration Control
- ⊙ Water Treatment
- ⊙ Service Water Heating
- ⊙ Snow Melting and Freeze Protection
- ⊙ Evaporative Cooling
- ⊙ Fire and Smoke Management
- ⊙ Radiant Heating and Cooling
- ⊙ Seismic and Wind Restraint
- ⊙ Electrical Considerations
- ⊙ Room Air Distribution
- ⊙ Integrated Building Design
- ⊙ Chemical, Biological, Radiological, and Explosive Incidents

HVAC systems maintain desired environmental conditions in space. In almost every application, the HVAC system is categorized by the method used to produce, deliver, and control heating, ventilation, and air conditioning in the AC.

Some of the common problems in the industrial world is really needed to be addressed specifically to avoid mistakes. Those issues are as follows:

- ⊙ Temperature
- ⊙ Humidity
- ⊙ Airflow
- ⊙ Water and Air Quality
- ⊙ Air Changes
- ⊙ Water needs in accordance with the speed
- ⊙ Room Pressure
- ⊙ Capacity requirements, from the analysis of the load calculation
- ⊙ Heating Requirements
- ⊙ Security
- ⊙ Budget costs
- ⊙ Operating costs, including energy costs and power
- ⊙ Cost of care
- ⊙ Reliability
- ⊙ Flexibility
- ⊙ Continuity of design
- ⊙ Acoustics and vibration
- ⊙ Mold and mildew prevention

Our Products



We provide for some needs of industry :

- ⊙ Dehumidifier
- ⊙ Air Distribution
- ⊙ Health Care Facilities
- ⊙ Textile Duct
- ⊙ HVAC Accesories
- ⊙ Air Shower
- ⊙ Modular Cleanroom
- ⊙ Laminar Flow Clean Bench
- ⊙ Cleanroom Entry System
- ⊙ Cleanroom Components
- ⊙ Cleanroom Furniture
- ⊙ Fume Hood
- ⊙ Wet Power station
- ⊙ Inflow Dust Containment Cabinet
- ⊙ Booth System
- ⊙ Kitchen Commercial



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Dehumidifier

Desiccant Based Dehumidifying



Description

The desiccant rotor is the “heart” of our dehumidifiers. The performance of a dehumidifier is dependent upon the choice of the rotor type, rotor size, rotor revolutions, rotor quality and of the quality of the gaskets separating the independent air flows.

The rotor itself is important for the dehumidifier performance but also how its used. The general mechanical and electrical design of the dehumidifier are important elements, too.

Data of the rotor performance is an essential ingredient for the on going development of the rotor capacity. The research and development of this capacity and lower energy consumption is an on going process.

The rotors used in Cotes dehumidifiers are placed at an extremely high level within this development process. Based upon our reseach, we believe that our desiccant rotors are the very best available on the market today.

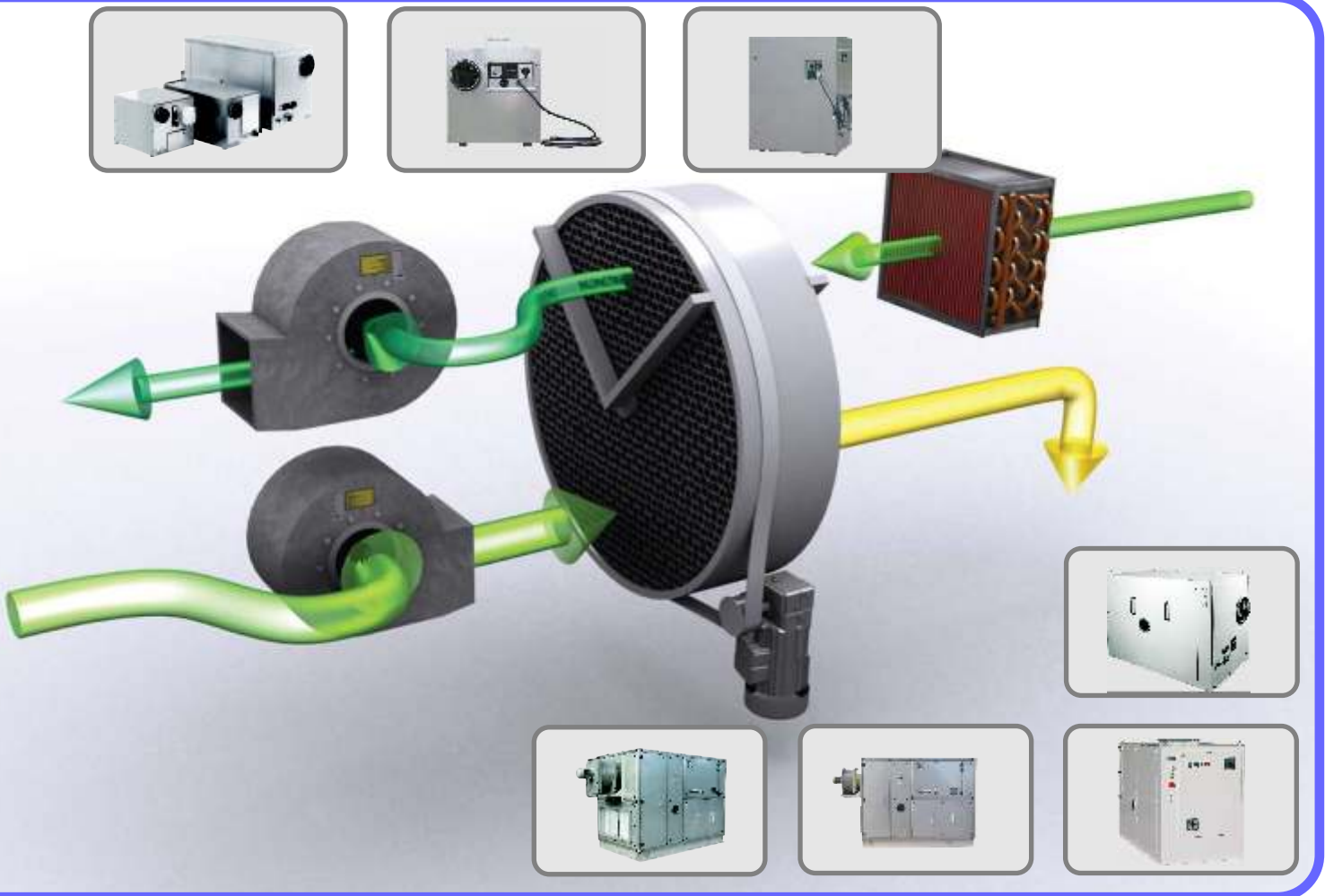
References

Power stations
Dry air storage
Dry air production room
Water works
Corrosion protection
Process air drying

Water damage, food
Water Works
Renting companies
Dry air storage
Object dehumidification
Water power plants

Pump stations
Cargo on ships
Food and candy industry
Pharmaceutical industry
Off shore installations
Process air drying

Spray drying process
Dehumidification systems
Ice rinks
Cargo on ships
Corrosion protection
Shipyards

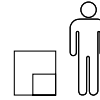


Dehumidifier

Desiccant Based Dehumidifying



TYPE
CR100
- CR1200



References
Power stations
Dry air storage
Dry air production room
Water works
Corrosion protection
Process air drying



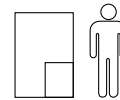
TYPE
CR120B
- CR400B



References
Water damage, food
Water Works
Renting companies
Dry air storage
Object dehumidification



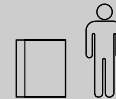
TYPE
CR110LK
- CR900LK



References
Water Works
Pump stations
Water power plants
Dry air storage



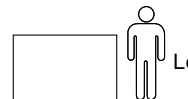
TYPE
CR1500
- CR2500



References
Power stations
Cargo on ships
Water works
Food and candy industry
Pharmaceutical industry



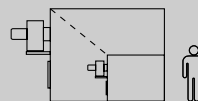
TYPE
CR2400T
- CR5000T



References
Dry air storage
Breweries
Water works
Low temperature applications (+3C -+5C)
Curling arena



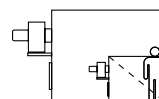
TYPE
CRP2000
- CRP30000



References
Food and Candy industry
Off shore installations
Pharmaceutical industry
Process air drying
Spray drying process
Dehumidification systems



TYPE
CRT3000
- CRT25000



References
Ice rinks
Cargo on ships
Dry air storage
Power stations
Corrosion protection
Shipyards
Off shore installations

Solutions retain moisture

Rotor Dehumidifier



DESICCANT ROTORS

Description

The desiccant rotor is the “heart” of our dehumidifiers. The performance of a dehumidifier is dependent upon the choice of the rotor type, rotor size, rotor revolutions, rotor quality and of the quality of the gaskets separating the independent air flows.

The rotor itself is important for the dehumidifier performance but also how its used. The general mechanical and electrical design of the dehumidifier are important elements, too.

Data of the rotor performance is an essential ingredient for the on going development of the rotor capacity. The research and development of this capacity and lower energy consumption is an on going process.

The rotors used in Cotes dehumidifiers are placed at an extremely high level within this development process. Based upon our reseach, we believe that our desiccant rotors are the very best available on the market today.

Rotor types

PPS silica gel rotor, for general use. This is our standard rotor.

PPM molecular sieve rotor, for very low dew points.

PPH hygienic rotor, especially for clean room applications.

LiCl lithiumchlorid rotor, for special and limited use only.

Rotor design (PPS)

The rotor uses silica gel which from a special patented manufacturing process, is bound to a fibre glass structure. The silica gel itself is the “glue” binding the structure together, in this way a content of 82% silica gel is achieved.

Remaining components are fibre glass 16%, acrylic surface coating 2%. The physical size of the micro-pores are manufactured for performing high water adsorption as well as deep drying.

Rotor Longevity

It is Important that clean filters of right quality are always used. Clean air, without oil vapours, exhaust gases from diesel engines or acids will extend the lifetime of the desiccant rotor to more than 10 years. After this period the desiccant rotor may still maintain 90% of its original moisture removal capacity

Health & Safety

The silica gel is bounded to the fibre glass and will not delaminate. The fibre glass strand is larger than than 7 microns and is nonrespirable. The strand is not considered to cause any harm to the human body. Silica gel and the acrylic surface coating have no known toxic properties.



References

- Corrosion protection
- Ice rinks
- Cargo on ships
- Pharmaceutical industry
- Food and candy industry
- Dry air storage

Solution of Humidity

Principle of operation



Rotor structure close up

The active adsorbent within the desiccant rotor has a micropore structure affording an unbelievably large internal surface.

Water molecules from the moisture laden incoming process air are attracted by the forces from the desiccant rotor micropores. The result of this being that the air is dried to a optimum level. In practice the moisture laden process air is passed through the rotor and exits the rotor as dry process air.

The water molecules being adsorbed within the rotors silica gel micropores. The evaporation of these water molecules by heat within the regeneration sector cause a carry over of temperature to the dried process air. The adsorbed water is removed from the rotor by a heated airflow. This heated air, known as the regeneration air, affords the required energy for the regeneration process. This process expells the moisture from the rotors silica gel micropores.

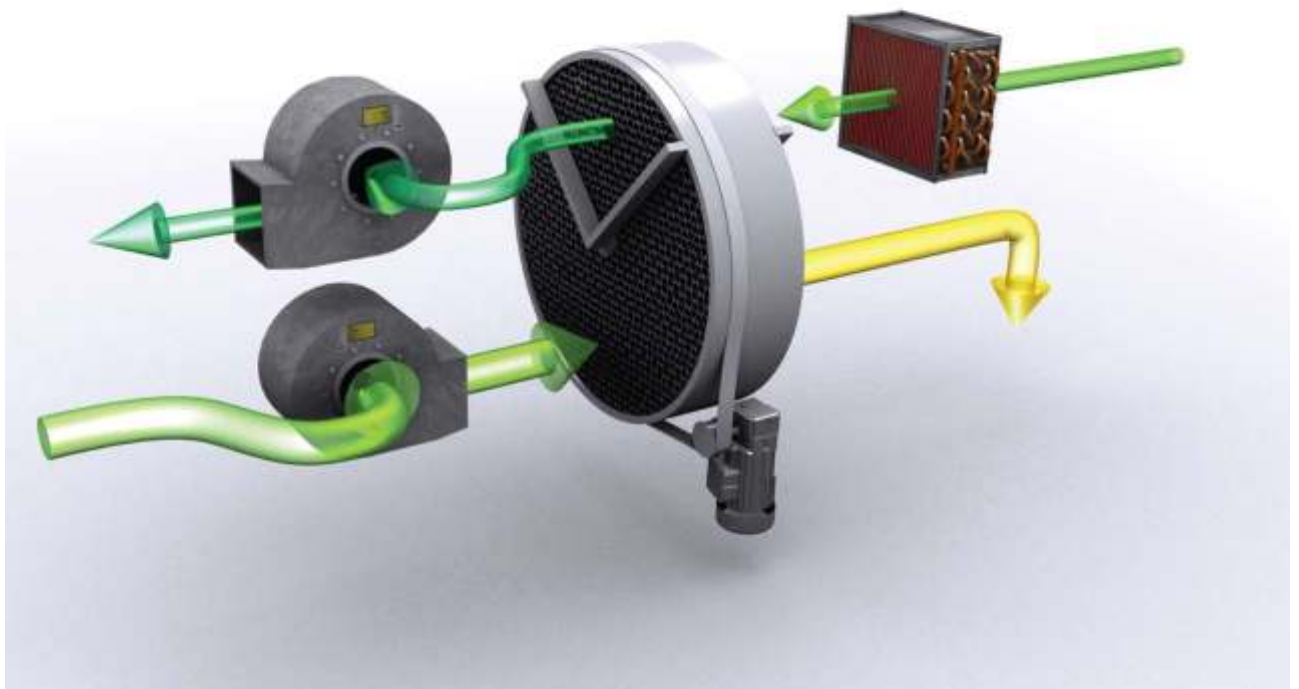
It's in the air ...

... quality does indeed
make a difference!

The process to perform a continuous drying and regenerating process consists of the following. The desiccant rotor revolves between 6 and 16 rotations per hour. The rotor is channeled by opposing air fows.

The rotor is designed with many narrow parallel channels, being laden with micropores of silica gel. This combined with the separation of the air fows by gaskets and seals, allows the process to be highly efficient.

The principle of the operation above is a simple and effective way of adsorption and regeneration. Based upon our knowledge of the properties of the desiccant rotor, we are able to optimize the process for different applications. This can be utilised by increasing the delta X for deeper drying. Increasing the moisture removal capacity in kg/h. Installing a purge sector, connecting pre or post cooling coils and heat exchangers.



Dehumidifier



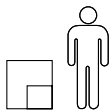
TYPE CR100 - CR1200

Description

Desiccant dehumidifiers in the CR range, with air flows from 100 to 1200 m³/h, consists of 9 models, all designed for general purposes, e.g. room air dehumidification and process drying.

Features

- Cabinet manufactured in stainless steel
- High capacity at normal temperatures and %RH
- Particularly good capacity at lower temperatures and low %RH
- Deep drying at nominal or reduced air flow
- Pressure available for external dry air and reg. air ducts
- Complete dehumidifiers, ready for connection to ductwork and power supply on site
- Stepless control of the electric heater on the bigger models (controller / SSR relays)
- High performance desiccant rotor of silica gel, washable
- Separated process- and regeneration air flow, 2 fans, efficient gaskets
- Easy access for internal cleaning and for service



TYPE
CR100
- CR1200



HVAC SYSTEM
DEHUMIDIFIER
CLEANROOM
MANUFACTURING
GENERAL CONTRACTOR

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make a difference!

Applications

This range of dehumidifiers has a variety of applications, among others:

- Dry air storage in general: Humidity control in un heated storerooms/storage buildings
- Internal corrosion protection of machinery parts, bridges etc. with dry air
- Cold stores and freezers: Reduction of ice on evaporators, at doors, on ceilings and on goods
- Protection of electronics and electrical installations
- Process and production rooms with low %RH in the pharmaceutical and food industries.
- Water work buildings (including open top filters)

The company policy of making quality products has resulted in dehumidifiers characterized by high reliability, low maintenance costs, maintainability and high capacity. Furthermore, these adsorption dehumidifiers are characterized by high capacity at low temperatures and additional room heating is normally not necessary.

Controls

All Cotes humidity controls, DR10, DA20, DH24, DCC, can be used for the CR dehumidifiers. The choice depends on the degree of accuracy needed and external user information.

COTES

References

Power stations
Dry air storage
Dry air production room
Water works
Corrosion protection
Process air drying

Dehumidifier



TYPE CR120B - CR400B

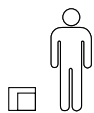
Description

The CR-B desiccant dehumidifiers consist of 5 small dehumidifiers designed for temporary tasks such as drying-out buildings, but can be used in stationary installations, too.

The operating principle is adsorption and the rotor is silica gel as standard.

Features

- Cabinet manufactured in stainless steel
- Low weight and small dimensions compared to capacity
- Handles for easy carrying and piling
- High capacity, at low temperatures as well
- Deep drying at reduced process air flow
- Pressure available for external connected ductwork
- Power supply: 230V, 1N+PE
- Hygrostat connection with built-on connector
- Easy access for internal cleaning and for service
- High performance desiccant rotor of silica gel, washable



TYPE
CR120B
- CR400B



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Applications

This range of dehumidifiers is designed for drying-out buildings, new buildings as well as water-damaged buildings. Furthermore, they are used for room air dehumidification, dry air storage, water works and pump stations.

The company policy of making quality products has resulted in dehumidifiers characterized by high reliability, low maintenance costs, maintainability and high capacity. Furthermore, these adsorption dehumidifiers are characterized by high capacity at low temperatures and additional room heating is normally not necessary.

Controls

All Cotes humidity controls, DR10, DA20, DH24, DCC, can be used for the CR-B dehumidifiers. The choice depends on the degree of accuracy needed and external user information.

COTES

References

Water damage, food
Water Works
Renting companies
Dry air storage
Object dehumidification

Dehumidifier



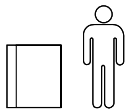
TYPE CR1500 - CR2500

Description

CR desiccant dehumidifiers, with nominal air flows 1500, 2000 and 2500 m³/h, are designed for general purposes, e.g. room air dehumidification and process drying.

Features

- Cabinet in galvanized steel, painted RAL7047
- High capacity at normal temperatures and %RH
- Particularly good capacity at lower temperatures and low %RH
- Deep drying at nominal or reduced air flow
- Filter cassettes can be replaced without dismantling the connected ducts
- Pressure available for external dry air and reg. air ducts
- Built-in fans for reduced sound level
- Complete dehumidifiers, ready for connection to ductwork and power supply on site
- Stepless control of the electric heater (controller / SSR relays)
- High performance desiccant rotor of silica gel, washable
- Separated air flows for process air and for reg. air, two fans, efficient gaskets
- Easy access for internal cleaning and for service



TYPE
CR1500
- CR2500



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Applications

This range of dehumidifiers has a variety of applications, among others:

- Dry air storage in general: Humidity control in unheated storage buildings
- Internal corrosion protection of machinery parts, bridges etc. with dry air
- Cold stores and freezers: Reduction of ice on evaporators, at doors, on ceilings and on goods
- Protection of electronics and electrical installations
- Process and production rooms with low %RH in the pharmaceutical and food industries
- Water work buildings (including open top filters)
- Ice rinks

The company policy of making quality products has resulted in dehumidifiers characterized by high reliability, low maintenance costs, maintainability and high capacity. Furthermore, these adsorption dehumidifiers are characterized by high capacity at low temperatures and additional room heating is normally not necessary.

Controls

All Cotes humidity controls, DR10, DA20, DH24, DCC, can be used for the CR dehumidifiers. The choice depends on the degree of accuracy needed and external user information.

COTES

References

Power stations
Cargo on ships
Water works

Food and candy industry
Pharmaceutical industry

Dehumidifier



TYPE CR110LK - CR900LK

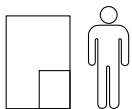
Description

Desiccant dehumidifiers in the CR-LK range are designed for stationary installations like dehumidification of dry air storage, water work buildings and pump stations – particularly intended for rooms where it is not possible to install normal reg.air ducts.

CR-LK is “the condense dehumidifier” with the properties of an adsorption dehumidifier.

Features

- Cabinet manufactured in stainless steel
- Closed reg.air fow circuit, air/air heat exchanger, air cooling
- Functions as a condense dehumidifier, but with the properties of an adsorption dehumidifier
- High capacity at normal operation conditions, temperature, %RH
- Deep drying at nominal or reduced process air fow
- All the energy supplied contributes as room heating
- Simple installation, only a hose needed for outlet of condensed water
- Pressure available for dry air distribution through connected ductwork
- Hygrostat connection



TYPE
CR110LK
- CR900LK



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Applications

This range of dehumidifiers is used when connection of reg.air ducts is difficult, mostly in buildings far below ground or in mountains, e.g. water works, pump stations, water power stations, storerooms situated like this.

The company policy of making quality products has resulted in dehumidifiers characterized by high reliability, low maintenance costs, maintainability and high capacity. Furthermore, these adsorption dehumidifiers are characterized by high capacity at low temperatures and additional room heating is normally not necessary.

Controls

All Cotes humidity controls, DR10, DA20, DH24, DCC, can be used for the CR-LK dehumidifiers. The choice depends on the degree of accuracy needed and external user information.

COTES

References
Water Works
Pump stations
Water power plants
Dry air storage

Dehumidifier



TYPE CR2400T - CR5000T

Description

Desiccant dehumidifiers in the CR-T range consists of four models, designed for room air dehumidification. The chosen proportion between rotor dimension, air capacity and connected load, results in dehumidifiers with very high energy efficiency. This design has considerable advantages, particularly at low temperature and low %RH.

Features

- Cabinet manufactured in galvanized steel, painted RAL7047
- High capacity, kg/h, at normal temperature and %RH
- Economic operation, in particular at low temperatures and low %RH
- Filter cassettes can be replaced without removal of connected ducting
- Pressure available for external dry air and regeneration air ducts
- Built-in fans for reduced sound level
- Complete dehumidifier, ready for connection to ductwork and power supply at site
- Stepless control of electric heater (controller/SSR relays)
- High performance desiccant rotor of silica gel, washable
- Separate process- and regeneration air flow, 2 fans, efficient gaskets
- Easy access for internal maintenance and service



TYPE
CR2400T
- CR5000T



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Applications

This range of dehumidifiers has a variety of applications, among others:

- Dry air storage in general: Humidity control in unheated storage buildings
- Internal corrosion protection of machinery parts, bridges, etc. with dry air
- Cold stores and freezers: Reduction of ice on evaporators, at doors, on ceilings and on goods
- Protection of electronics and electrical installations
- Production and storage rooms with low %RH in the pharmaceutical and the food industries
- Water works (including open top filters)
- Ice rinks

The company policy of making quality products has resulted in dehumidifiers characterized by high reliability, low maintenance costs, maintainability and high capacity. Furthermore, these adsorption dehumidifiers are characterized by high capacity at low temperatures and additional room heating is normally not necessary.

Controls

All Cotes humidity controls, DR10, DA20, DH24, DCC, can be used for the CR dehumidifiers. The choice depends on the degree of accuracy needed and external user information.

COTES

References

Dry air storage
Breweries
Water works
Low temperature applications (+3C -+5C)
Curling arena

Dehumidifier



TYPE CRP2000 - CRP30000

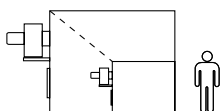
Description

The CRP desiccant dehumidifier range is designed for process air drying, i.e. process plants demanding a steady low dew point in the dry air as well as reliable and smooth operation without breakdown.

To be able to meet these standards, components of particularly high quality are used in the CRP dehumidifiers, which make this range our flagship.

Features

- Cabinet manufactured in stainless steel
- Deep drying at nominal process air flow
- Optimizing of data for the specific process
- External pressure for process air flow adapted to the existing installation
- Cabinet with insulated inlet plenum for process air
- Pocket filters for process air inlet are standard
- Stepless temperature control ensures constant reg. air temperature
- Stepless capacity control by DCC and adjustment of electrical components (accessories)
- High performance desiccant rotor of silica gel, alternatively molsiev or LiCl
- Efficient rotor gaskets with long durability
- Service doors in front of all internal components
- Operation and service only from one side of the cabinet
- Regeneration by electricity, steam or gas



TYPE
CRP2000
- CRP30000



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Applications

The dehumidifier is used alone or as part of a bigger air treatment system to ensure a constant low dew point in the dry air. Processes using fresh air often need a deeper drying than the dehumidifier can accomplish by itself. In such cases, the dehumidifier is combined with a pre-cooler and a post-cooler, either separate AHU modules or delivered as a complete unit. This way, both humidity- and temperature control are obtained.

The company policy of making quality products has resulted in dehumidifiers characterized by high reliability, low maintenance costs, maintainability and high capacity. Furthermore, these adsorption dehumidifiers are characterized by high capacity at low temperatures and additional room heating is normally not necessary.

Controls

All Cotes humidity controls, DR10, DA20, DH24, DCC, can be used for the CRP dehumidifiers. The choice depends on the degree of accuracy needed and external user information.

Together with the DCC control, the dehumidifier can be delivered with stepless capacity control preparing the dehumidifier for control signal 0-10V or 4-20 mA (accessories).

COTES

References

Food and Candy industry
Off shore installations
Pharmaceutical industry
Process air drying
Spray drying process
Dehumidification systems

Dehumidifier



TYPE CRT3000 - CRT25000

Description

Desiccant dehumidifiers in the CRT range, are bigger dehumidifiers designed for room air dehumidification and in a quality that matches the CRP range – our flagship.

The chosen proportion between rotor dimension, air flows and connected load, results in dehumidifiers with very high energy efficiency.

The advantages of this design are considerable, particularly at low temperatures and low %RH.

Features

- Cabinet manufactured in stainless steel
- High capacity kg/h at normal temperatures and %RH
- Economic operation, in particular at low temperatures and low %RH
- External pressure for process air adapted to the existing installation
- Cabinet with insulated inlet plenum for process air
- Pocket filters for process air inlet are standard
- Stepless temperature control ensures constant reg. air temperature
- Stepless capacity control by using our DCC control and by adjusting the electrical components (accessories)
- High performance desiccant rotor of silica gel, alternatively molsiev or LiCl
- Efficient rotor gaskets with long durability
- Service doors in front of all internal components
- Operation and service from one side of the cabinet
- Regeneration by electricity, steam or gas



HVAC SYSTEM
DEHUMIDIFIER
CLEANROOM
MANUFACTURING
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It's in the air ...

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Applications

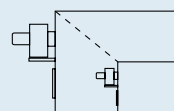
This range of dehumidifiers has a variety of applications, among others:

- Dry air storage in general: Humidity control in un heated storage buildings
- Internal corrosion protection of machinery parts, bridges etc. with dry air
- Cold stores and freezers: Reduction of ice on evaporators, at doors, on ceilings and on goods
- Process and production rooms with low %RH in the pharmaceutical and the food industries.
- Water work buildings (including open top filters)
- Ships, protection of cargo
- Shipyards, at sandblasting and painting.
- Ice rinks

Controls

All Cotes humidity controls, DR10, DA20, DH24, DCC, can be used for the CRT dehumidifiers. The choice depends on the degree of accuracy needed and external user information.

Together with the DCC controller, the dehumidifier can be delivered with stepless capacity control preparing the dehumidifier for control signal 0-10V and 4-20 mA (accessory).



TYPE
CRT3000
- CRT25000

COTES

References

- Ice rinks
- Cargo on ships
- Dry air storage
- Power stations
- Corrosion protection
- Shipyards
- Off shore installations

Air Distribution

Textile Based Ventilation



Textile Duct replacing traditional air ducts, air valves, diffusers and insulation.

The solutions of Textile Duct are based on advanced technical calculations ensuring that the result lives up to expectations. The ducts are easy to install and may be moved if the production layout should change.

Textile Duct require only a minimum of maintenance which contributes to minimizing the number of unnecessary interruptions in production.



Benefits of Textile Duct ventilation ducts:

- Efficient and uniform air distribution.
- No draught - well-suited for energy-efficient zone ventilation (displacement).
- Free of condensation - no insulation required.
- Lightweight textile ducts that may be fitted to any type of ceiling.
- Wide range of products offers high flexibility in choice of solution.
- Easy to maintain - no growth of microorganisms.
- Custom colours ensure that the ducts can be tailored to any architectural design.
- Well-suited for retrofitting within existing production facilities.

Solution of Air Distribution

Textile Based Ventilation



Solution of Insulation Ducting

Pe Foam Based Insulation

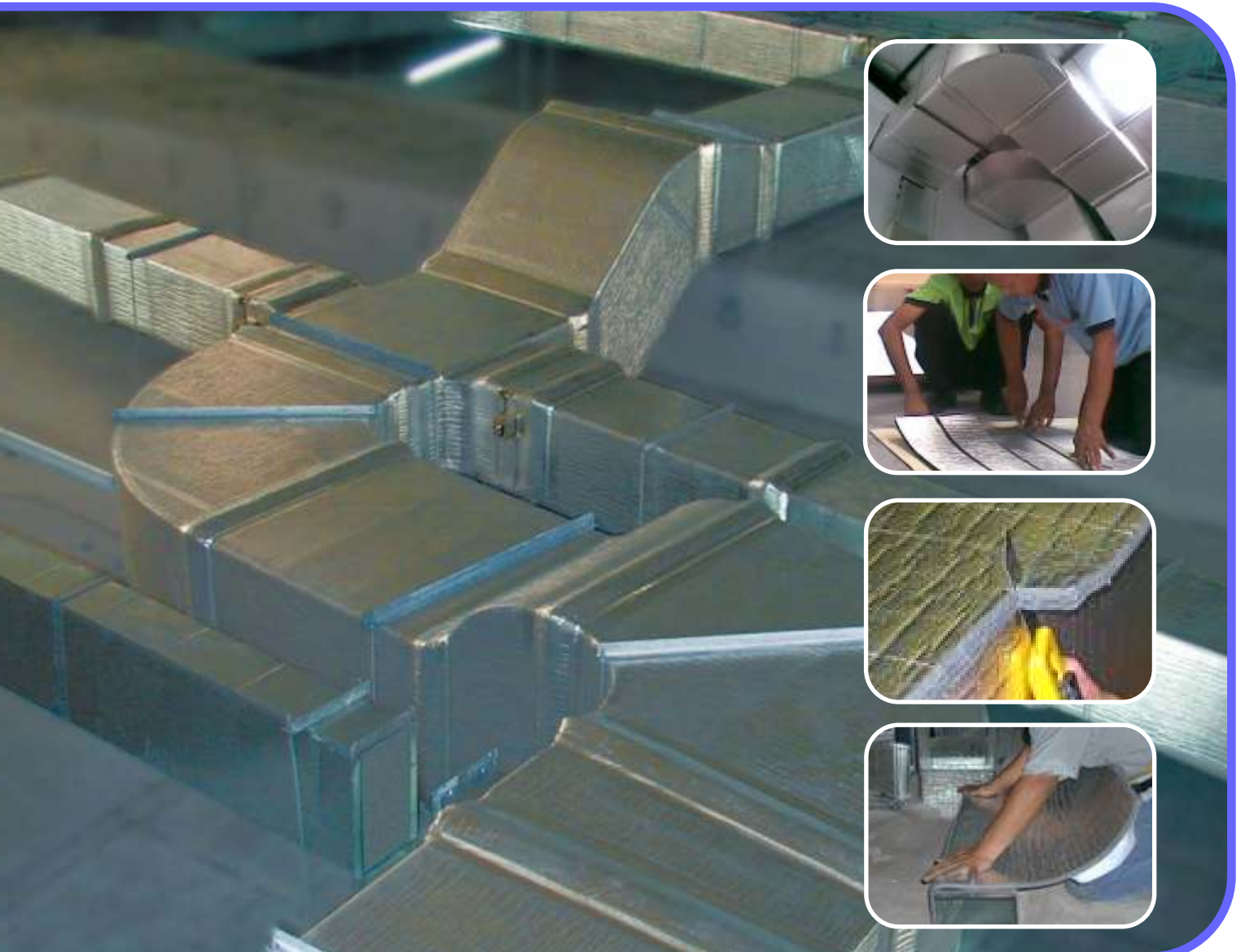


Insulation Ducting

Technology is used to coat the surface of the foam with aluminum foil and adhesive materials. Low thermal conductivity in the channel is very good insulation to inhibit heat, non-hygroscopic characteristics which makes items partitioned into consistent and solid. This is effective for preventing evaporation caused by drastic temperature changes. Toilon foam insulation are in wide temperature range, ie $-80^{\circ}\text{C} \sim 100^{\circ}\text{C}$.

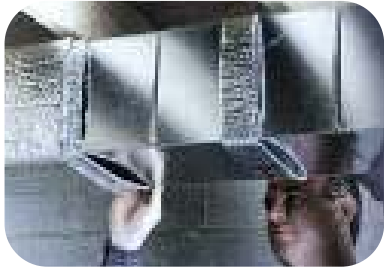
Benefits of Insulation Ducting

- Absorption Excellent heat insulation and shock
- Environmentally friendly
- The process of making an easy
- Resistant to weather and chemicals - Bending and high endurance



Solution of Insulation Ducting

Pe Foam Based Insulation



CLASSIFICATION	PE FOAM	GLASS WOOL	STYROFOAM / SANDWICH PANEL
Material	Foaming polyethylene non-toxic	Melting glass is mixed with resin scrapped	foaming polystyrene
Density (g/cm3)	0029-35	0.024/32	0015-20
Absorption (g/cm3)	0.01%	8%	0.8%
Power Conduction heat (kcal / mhroC at 20oC)	34	42	76
Estimated Life Cycle (Iron Panel)	15-20 Years	5-7 Years	10-12 Years
Isolation	Excellent & Stable	Excellent	Excellent
Heat Resistance	110oC	400oC	below 90oC
Anti-Condensation	Excellent	problem	Dew on lap
Waterproof	Excellent	problem	-
Sound absorption	Excellent	good	Does not absorb sound
Vibration absorption	Excellent	-	-
Ant Chemistry	strong	strong	Protected by iron bar
Anti-fungal	strong	Propagative	-
shrinkage	non	problem	non
Pollution / Toxic	non	Cancerogenic	Toxic gases in fire
color	Light Green / Blue	-	-

Thickness	Size
8-mm	20m X 1000mm rolls
10-mm	20m X 1000mm rolls
12-mm	20m X 1000mm rolls
15-mm	20m X 1000mm rolls
20-mm	20m X 1000mm rolls
25-mm	15m X 1000mm rolls

Solution of Cleanroom

Modular Cleanroom



Cleanroom solutions

Design, installation and accreditation of modular cleanrooms. The various structures are intended for organisations that need to adapt a non clean area to a cleanroom environment that achieve the relevant quality standard to an acceptable time frame and budget !

Unlike other clean rooms on the market, this clean enclosure comes supplied in self-assembly kit form with either softwall panels or rigid panels, HEPA or ULPA ceiling, Filter units, clear acrylic ceiling and powder coated or stainless steel frame. On request we support onsite installation and accreditation.

Accessories include lights, benches, and temperature control.

Modular

Cleanrooms modular cleanroom concept provides an economical, versatile solution to clean manufacturing requirements in various areas of operation including plastics processing, medical device assembly, food manufacture, aerospace, electronics and many other industries.

Enclosures are designed around each application and can be portable, expandable, and easy to assemble/disassemble. These cleanroom units are available in for small localised areas of just a few square meters to larger cells of up to 20 square meters. The units are able to connect together forming one large area or if the soft wall is left in place an additional gowning up area can be added.



Up to 7m single span, for maximum flexibility



Heights up to 5m, for maximum flexibility



Small room example: 1.8m x 1.8m x 2.1m high, class 7 with hardwall and softwall option.



Solution of Cleanroom

Air Shower



Introduction

Air Showers are self contained chambers installed at entrances to cleanrooms and other controlled environments. They minimize particulate matter entering or exiting the clean space. Personnel and materials entering or exiting the controlled environment are “scrubbed” by high velocity HEPA-filtered air jets with velocities of 20-22m/s (4000-4300fpm). Contaminated air is then drawn through the base within the unit, filtered and recirculated.

Cleanroom Applications: The greatest source of particulate contamination in a cleanroom is the operator. Air showers are installed between change areas and the cleanroom. The air shower enhances cleanroom operating protocol by serving as a reminder to all operators that they are entering a controlled environment. Personnel therefore develop the habit of gowning up properly before entering the air shower.

Pharmaceutical and Lab Animal

Research Applications: Air showers keep pharmaceutical production and lab animal breeding areas clean and also minimize egress of hazardous substances and allergens from the controlled environment.

Main Features

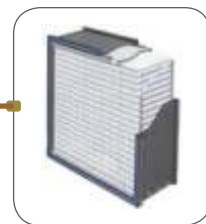
- ☑ High velocity shower jets in excess of 20 m/s ensure efficient scrubbing action to remove particulate matter.
- ☑ Operating modes can be programmed in the field.
- ☑ Microprocessor controller supervises all functions.
- ☑ Mini-pleated HEPA filtration achieves > 99.99% typical efficiency at 0.3 micron particles.
- ☑ A disposable pre-filter with 85% arrestance extends the life of the main filter.
- ☑ An emergency stop button is mounted on both sides of the shower.
- ☑ Indicator lights mounted on both sides of the air shower exterior regulate traffic flow in and out of the cleanroom.
- ☑ Permanently lubricated direct drive centrifugal blowers are used in conjunction with stainless steel air nozzles.



Solution of Cleanroom AirShower



Light Indicator and Emergency Switch
Indicator lamps indicate if doors are locked or unlocked, thereby regulating the flow of personnel in and out of the air shower. Emergency buttons mounted on both external faces of the shower unlocks all doors instantly.



HEPA Filtration System
HEPA filter(s) provide 99.99% typical efficiency for particle sizes of 0.1 to 0.3 microns.



Light Diffuser
Diffusers ensure even and uniform lighting throughout the chamber.



Stainless Steel Nozzles
An array of stainless steel nozzles direct high-velocity jets within the chamber.



High Performance Blower System
German made ebm-papst® permanently lubricated, centrifugal motor/blowers with external rotor designs. Motors selected for energy efficiency, compact design, and flat profile. Completely integrated assembly optimizes motor cooling. All rotating parts balanced for smooth, quiet, vibration-free operation.

Door
Heavy-duty, durable aluminium framed door assemblies are constructed with glass windows permitting visibility.





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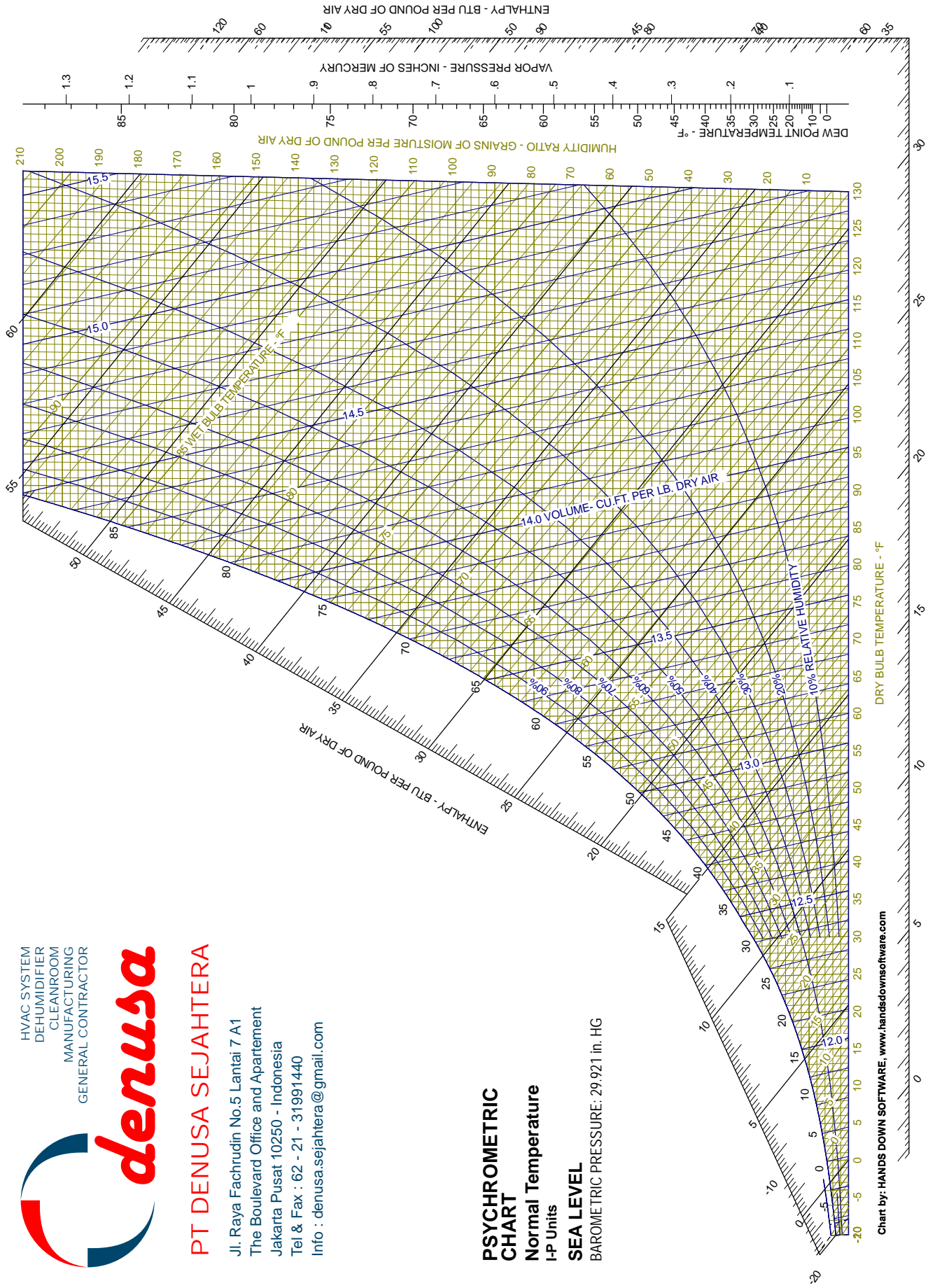
Jl. Raya Fachrudin No.5 Lantai 7 A1
 The Boulevard Office and Apartement
 Jakarta Pusat 10250 - Indonesia
 Tel & Fax : 62 - 21 - 31991440
 Info : denusa.sejahtera@gmail.com

PSYCHROMETRIC CHART

Normal Temperature
 I-P Units

SEA LEVEL

BAROMETRIC PRESSURE: 29.921 in. HG





HVAC SYSTEM
DEHUMIDIFIER
CLEANROOM
MANUFACTURING
GENERAL CONTRACTOR

PT DENUSA SEJAHTERA

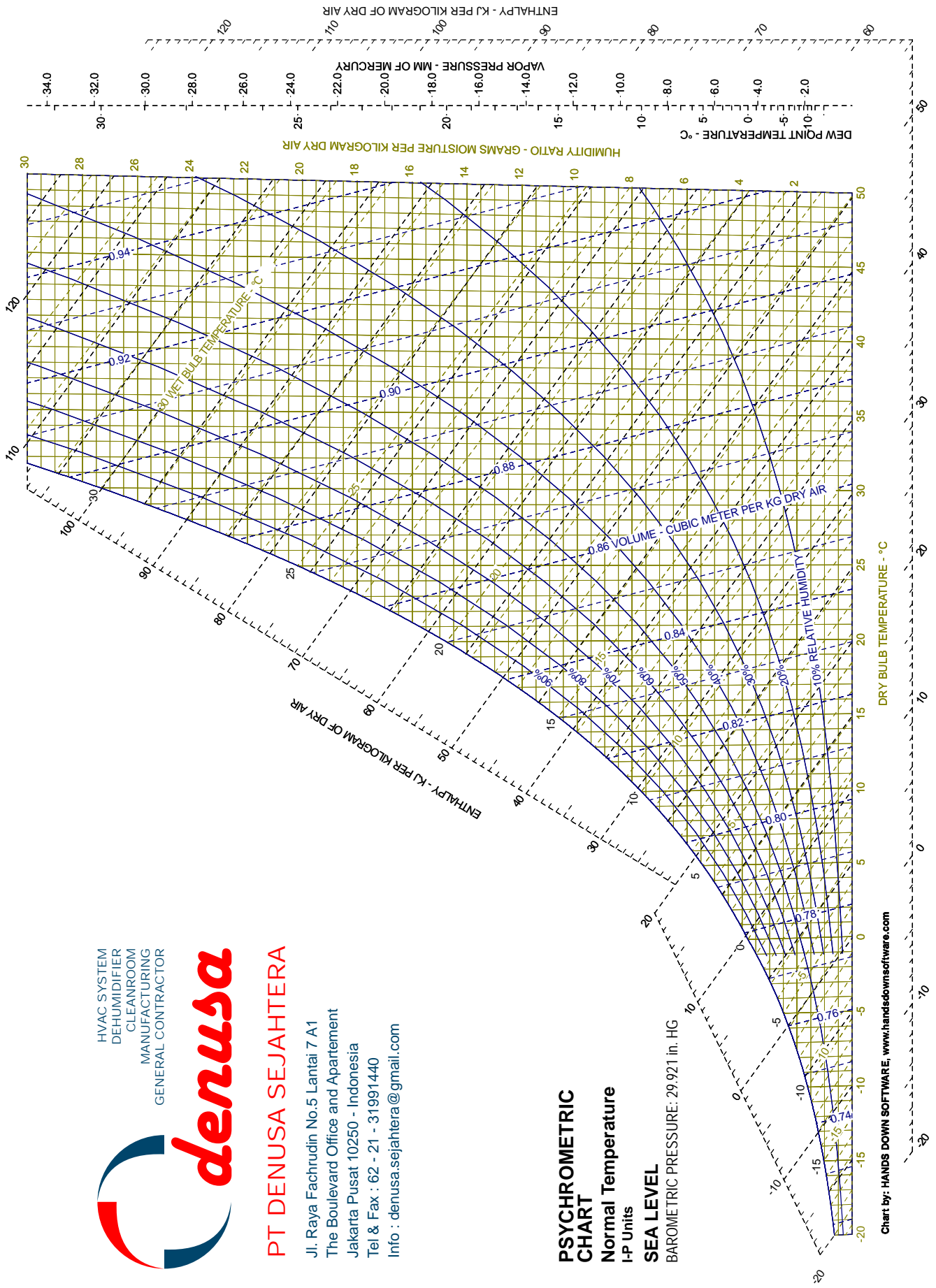
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