# DEHUMIDIFIERS

DST Seibu Giken

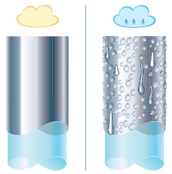
**Seibu Giken DST AB**

- Established 1985, in Sweden
- Has more than 40 representatives around the world
- Has delivered over 60,000 dehumidifiers
- Is a leading international supplier of desiccant dehumidifiers

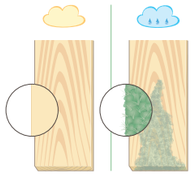
# SEIBU GIKEN DST, DRY AIR SPECIALIST'S

Moisture is something that is everywhere, usually moisture in the air is referred to as relative humidity (RH). Which means that the percentage of moisture in the air is measured in relation to what the maximum possible amount of moisture in the air is, at that temperature. If the air is too humid, it can, for example, reduce the efficiency of production and cause damage to the products.

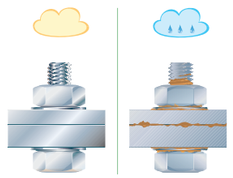
Seibu Giken DST are experts in the field and provide dehumidifiers for all applications. DST dehumidifiers are characterized by high reliability, low power consumption and a service-friendly design. With our help, you will avoid problems that moisture can cause, such as:



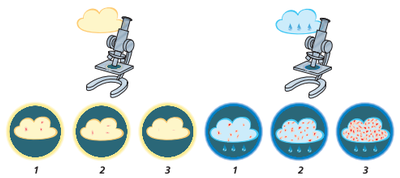

**Condensation**
Prevent condensation on cold surfaces, such as water pipes, by reducing the dew point of the air.




**Mould**
Mould and fungus formation is prevented if the surrounding air is kept below 70%RH.




**Corrosion**
The risk that iron and steel will rust will be considerably reduced if the air that contacts the surface has a relative humidity below 50%RH.




**Bacteria**
If the relative humidity is kept below 50%RH bacteria will not thrive.

# MOISTURE RELATED PROBLEMS
## THAT DEHUMIDIFICATION PREVENTS

### Frost and ice fouling

No ice fouling on products, floors and ceilings. Extend times between defrosting and thereby increase operating time in freezers.

### Condensation

No condensation droplets and subsequent problems with wet products, short circuits in the control devices, repainting and puddles on the floor.

### Hygiene

With a controlled humidity bacteria and mould does not grow. Minimize washing costs and shorten the drying time after washing.

### Sticking

Moisture sensitive products do not stick together, and problems with clogged pneumatic transport and lump formation in silos are removed.

### Corrosion

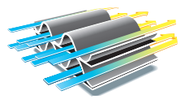
Extend the lifetime of tools, machines and steel structures by protecting untreated steel against corrosion without painting or greasing.

### Various drying times

Constant production without seasonal variations. Shortened drying times, higher product quality and increased production capacity with existing equipment.

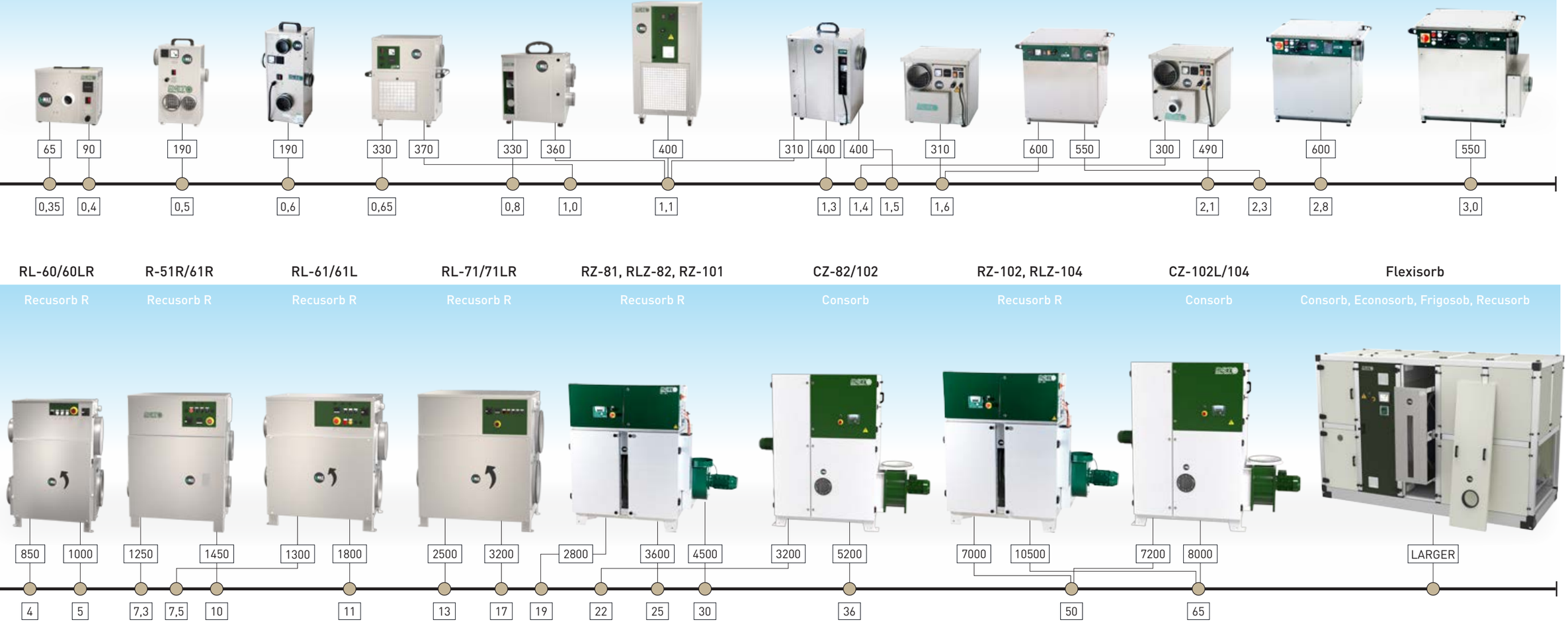
# SILICA GEL ROTOR - THE HEART OF A DST DEHUMIDIFIER


In every DST dehumidifier, there is a D-MAX rotor from Seibu Giken Co. Japan. Who was the first in the world to manufacture silica gel rotors and are since 1984, the world leader in this technology. The rotor's quality is essential for a dehumidifier since it determines the capacity of the dehumidifier and technical lifetime. After 10 years of operation, the D-MAX rotor still retain more than 90% of its original capacity.



Section of a D-MAX rotor from Seibu Giken Co. Due to the number of flutes in the rotor it adsorbs moisture with high efficiency.

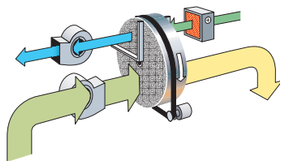
| | CS-5/5L | DR-010B | DC-10 | AQ-30/31 | DR-20B/30D | F-31 | DC-20/30 T10,T16 | DR-31T10 | DR-40 T10, T16 | DC-31 T10,T16 | DR-50R | DC-50R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dehumidification principle: | Consorb CS | Recusorb DR | Consorb | Aquasorb | Recusorb DR | Frigosorb | Consorb | Recusorb DR | Recusorb DR | Consorb | Recusorb DR | Consorb |
| Airflow m³/h: | 65 / 90 | 190 | 190 | 330 / 370 | 330 / 360 | 400 | 310 / 400 / 400 | 310 | 600 / 550 | 300 / 490 | 600 | 550 |
| Capacity kg/h: (20˚C/60%RH) | 0,35 / 0,4 | 0,5 | 0,6 | 0,65 | 0,8 / 1,0 | 1,1 | 1,3 / 1,4 / 1,5 | 1,6 | | 2,1 / 2,3 | 2,8 | 3,0 |



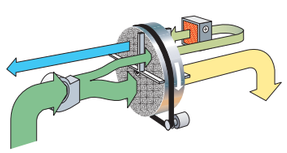
| | RL-60/60LR | R-51R/61R | RL-61/61L | RL-71/71LR | RZ-81, RLZ-82, RZ-101 | CZ-82/102 | RZ-102, RLZ-104 | CZ-102L/104 | Flexisorb |
|---|---|---|---|---|---|---|---|---|---|
| Dehumidification principle: | Recusorb R | Recusorb R | Recusorb R | Recusorb R | Recusorb R | Consorb | Recusorb R | Consorb | Consorb, Econosorb, Frigosob, Recusorb |
| Airflow m³/h: | 850 / 1000 | 1250 / 1450 | 1300 / 1800 | 2500 / 3200 | 2800 / 3600 / 4500 | 3200 / 5200 | 7000 / 10500 | 7200 / 8000 | LARGER |
| Capacity kg/h: (20˚C/60%RH) | 4 / 5 | 7,3 / 7,5 / 10 | 11 | 13 / 17 | 19 / 22 / 25 / 30 | 36 | 50 | 65 | |

In sorption dehumidification, the basic principle is that a rotating rotor in the dehumidifier continuously adsorbs moisture from the process air and through a regeneration cycle the moisture is led out from the rotor and exhausted in different ways, the principle pictures is demonstrating how.

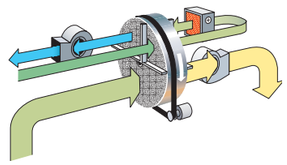
- Incoming moist air.
- Outgoing dry air.
- Outgoing wet air, either passed or condensed out.



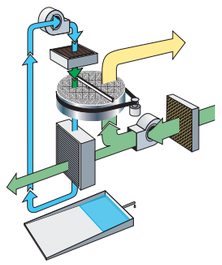
The **Consorb** principle is normally used at low regeneration temperatures, e.g. if you have surplus heat or when dehumidifying very damp air. The Consorb principle is also good when there is a large difference in moisture content between process and regeneration air inlets.



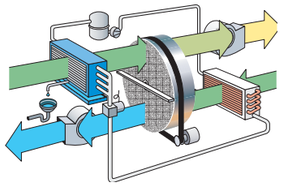
**Recusorb DR** has an internal heat recycling with, one fan produces both the dry airflow and the wet airflow. This makes installation simpler when there is a need for overpressure in the room to be dehumidified. This principle is also suitable for very low dew points.



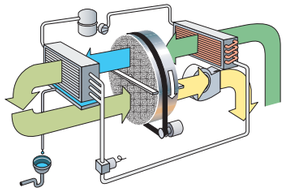
**Recusorb R** has an internal heat recycling. During the rotor's regeneration heat is absorbed, and then recycled in the "purge zone", where incoming air is preheated and partly dehumidified. Energy consumption falls and the dry air becomes both drier and cooler compared to other sorption dehumidifiers.



**Aquasorb** basically functions as a Consorb, but the wet air flow is condensed in an air-cooled condenser instead of being exhausted out. No need for exhausting out wet air from the dehumidified room. All energy put into the unit stays also in the room, which is good for drying applications.



**Econosorb** combines a heat pump with the sorption rotor in a unique way, providing very low energy consumption and a low dry air temperature. Probably the most energy efficient dehumidifier on the market, with approximately 1/4 of the total energy consumption of regular sorption dehumidifiers. Econosorb has both condensation and wet air flow.

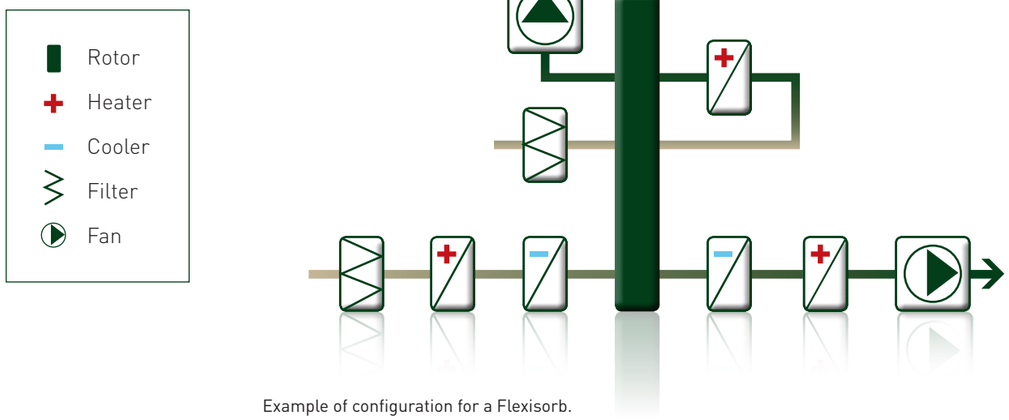


**Frigosorb** is used in applications where it is difficult to remove a wet air flow. Thanks to the heat pump function Frigosorb is very energy efficient, using approximately 1/3 of the total energy consumption of regular sorption dehumidifiers.

# DEHUMIDIFIERS FOR INDUSTRIAL APPLICATIONS

The Flexisorb dehumidifier system can be customized to meet customers' different needs in the process industry. Everything from basic dehumidification to complete climate control is offered. Designed with total flexibility in mind, these high-efficiency industrial dehumidifiers are primarily designed around the desiccant rotor, which is adapted to customers' specifications. Dehumidification is the main purpose of the Flexisorb but pre-and post-treatment can also be included. The Flexisorb system is therefore one of the most versatile air drying systems on the market today.

In the Flexisorb dehumidifiers the Consorb, Econosorb, Frigosorb or Recusorb principles can be used.




Example of configuration for a Flexisorb.

## A Flexisorbs qualities

Flexisorb units are constructed with an anodized aluminium frame. The smooth interior, without thresholds or pockets and with external locks on the doors make the inside easy to wash to maintain good hygiene levels. Stainless steel panels are available as options for dehumidification in demanding environments. All dehumidifiers are tested in the factory to keep the start-up time to a minimum when they are being installed.

# HUMIDITY AND TEMPERATURE CONTROL


PLC C4 with 5.7" graphic touch display. Advanced PLC control with large expansion options.

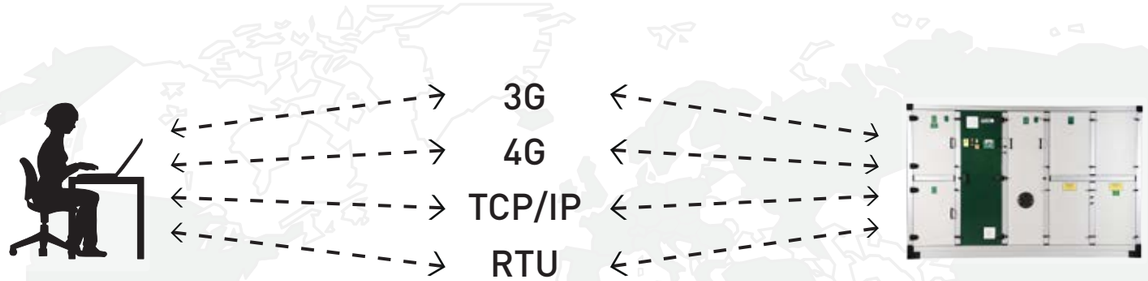
DST can deliver dehumidifiers with complete control systems for both humidity and temperature control. By having integrated control of the output temperature, the total energy consumption is reduced in the air handling process. This is due in part to the optimized controls that regulate the dehumidification process and temperature requirements and in part by setting the right configuration and using fresh air and exhaust air to suite each case. PLC C4 is used for advanced control of our larger dehumidifiers. The features are tailored to fit the customers' requirements and can be set to communicate with higher-level systems with Modbus or BACnet. There is also an option to mirror the PLC's control panel to an external computer via the supplied software. This makes it easy to set the controller values and load operational data remotely and therefore provides a cost-effective control of the process.

Additional control options for all DST dehumidifiers are the EH3 and EH4 controllers. The EH3-T2 humidity controller can control linearly or on/off with the parameters relative humidity, absolute humidity, dew point and temperature, as well as optional communication to a superior system via Modbus. It can also be programmed to keep a surface condensation free with the addition of our surface temperature sensor. For a simple control experience, the EH4 humidistat controller can control the dehumidifier via an RH set-point in one or two steps making this an ideal humidistat for dehumidification only applications.

Humidistat and controller EH3 T2


Humidistat EH4

# COMMUNICATION AND MONITORING



Seibu Giken DST AB has representatives in more than 40 countries worldwide and the subsidiaries:
DST America, DST China and DST Poland.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