

# Dry air offers a bright future for steel

## Steel storage Humidity control

### Munters humidity control provides:

- Pristine metal quality
- Rust and corrosion prevention
- Year-round climate control
- Reduced metal oxidation
- Energy-efficient storage
- No CFCs or HCFCs

*Users of bright steel have found out the hard way that steel's tendency to rust leads to a wide range of problems, most of which are costly.*

*Before it is used in the manufacturing process, steel is often stored for a long time, and pre-storage treatment is required to prevent the atmosphere from reaching the surface of the steel.*

Most of the methods used to inhibit rusting rely upon a barrier between the steel and the air in the form of grease, oil, or special films. The removal and reapplication of rust inhibitors is typical in the production process, which has obvious implications for labour and time costs.

Prior to use, equally time-consuming procedures are generally required to remove the protective oil before use. The solvent employed to remove the protective oil is toxic, which creates a safety hazard in the workplace.

When the steel is housed in a moderately closed environment, it is more convenient to control the environment in that space so that the steel doesn't rust in the first place.

Studies on rusting of bright steel have shown a clear correlation between the humidity of the air and the degree of rusting experienced. If there is more moisture in the air; corrosion and sweating are more likely to occur as the moisture settles on the steel in the form of condensation. If the steel is slightly colder than the dewpoint of the air in the storage area, these problems will be prevented.

With coils of steel, the process may be exacerbated by warm moist air being wound into the coils. If the steel then cools during storage or transportation, the surfaces will become coated in condensation within the coils.



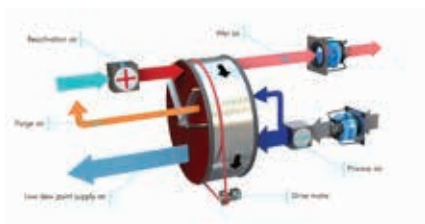
Controlling the humidity is therefore a very effective way of inhibiting rust formation. And when done right it can be very economical too!

Any humidity control method involves taking moisture from the air and putting it somewhere else. Refrigeration-based dehumidifiers and air conditioners do this by passing air over a cold surface, causing moisture to condense and drain away.

But these systems are expensive to run and inefficient at low temperatures. They require regular defrosting below 10 degrees Celsius and won't operate below 7 degrees Celsius. There are no energy-saving advantages to be gained from these methods since they only use electricity.

A better solution is the use of a desiccant, which is continually and automatically reactivated, so that it keeps on working. This is the basis of the rotary dehumidification technique pioneered by Munters – a technique that is now being used widely in bright steel storage. Desiccant dehumidifiers can utilise many energy sources such as gas, which is far cheaper than electricity.

As well as providing humidity control efficiently, the rotary desiccant dehumidification system is also a cost-effective solution. The reactivation heat is normally generated by an existing heating system, so that capital and operating costs are low. Preheating the incoming reactivation air with the exhaust air can save additional energy. This process alone can reduce energy costs by 25–30%.



Munters Rotor principle

### How do Munters dehumidifiers work?

All Munters sorption dehumidifiers are based on a rotor. The rotor is made of glass fibre (silicagel) with an absorbent material that absorbs moisture effectively. Munters rotors effectively dehumidify at all humidity levels, even at extremely high ones since they absorb moisture efficiently. Two air streams pass, simultaneously, through two sectors of the slowly rotating rotor. One air stream is dehumidified to provide the necessary dry air to maintain the required humidity level.

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