Humidity control for world's largest independent steel trader

Stemcor is the world's largest independent steel trader. Their new steel service store, located in the heart of the deep-sea port of Uusikaupunki, Finland, specializes in flat steel products. The 11,000 m³ Stemcor storage building includes a wide range of steel products that requires humidity control to ensure pristine product quality.

Munters MX2700 in use

The relative humidity (%RH) of the store is managed throughout the year by Munters desiccant dehumidifier type MX2700. An additional challenge was nearby sea and its corrosive, salt-laden air.

The storage building is kept constantly below 50% RH to prevent steel corrosion or metal oxidation. Research has demonstrated that a RH greater than 50% RH greatly accelerates metal oxidation from 100-2000 times greater than oxidation rates at lower humidity levels.

QUICK FACTS

- ✓ Pristine metal quality
- ✓ Prevents rust and corrosion
- ✓ Year-round climate control
- ✓ Reduces metal oxidization
- ✓ Energy-efficient storage
- ✓ No CFCs or HCFCs
- ✓ CS_Stemcor steel storage_en.pdf

Desiccant - the right solution

The effective solution was Munters MX2700 desiccant dehumidifier, which supplies the store with dry air on a four hourly air change, and has a drying capacity of 21kg/hr. The desiccant dehumidified store ensures the relative humidity is controlled constantly throughout the year, irrespective of fluctuating outdoor conditions.

Using dehumidification to store metal materials ensures pristine product quality with less waste. When storing metal products like galvanized steel, cold surfaces can "sweat" causing metal parts to corrode. The thin layer of water vapor molecules that settle on the metal surfaces supply an electrolyte to the corrosion process. With the RH in the store kept below 50%, corrosion is almost impossible, while the corrosion rate explodes at levels above 60% RH.

Heating warehouses reduce the relative humidity by expanding the air, and thus increasing the air's ability to hold water. It is an expensive solution compared to desiccant dehumidification where energy consumption is typically 30-70% less, and the root cause of the corrosive atmosphere (moisture) is removed.

Energy efficient LPG regeneration

Munters MX2700 system was supplied with complete control. The regeneration of Munters drying wheel uses LPG (liquefied petroleum gas) since Stemcor wanted to make use of surplus LPG from the heating system used during steel processing. This matched customer requirements with the most energy efficient solution. Other drying wheel regeneration options include electricity and steam. Munters MX2700 is one of the first liquid - gas reclamation dry-air systems operating in Finland.

Munters service specialists precisely commissioned and ensured correct start-up, and the experienced team helped calculate energy consumption to provide the most energy efficient solution.

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