

DESICCANT DRYER SYSTEM ELIMINATES OIL & WATER IN COMPRESSED AIR NETWORK OF OVERHEAD CRANES

THE CHALLENGE

An aluminum plant uses overhead cranes to replace anodes in electrolysis posts and to siphon out the aluminum. Within the cranes' compressed air networks, the compressors release oil. In the summertime, in particular, the compressors' coolers couldn't lower the compressed air temperature adequately, creating more oil vapours. The vapours pass through the prefiltration resulting in premature contamination of the desiccant in the air dryer.

Also, the moisture in the air caused rust to form in the pneumatic controls within the compressed air systems and having moisture or water in the air used to extract aluminum is dangerous. Mixing water with molten aluminum will cause an explosive reaction.

THE SOLUTION

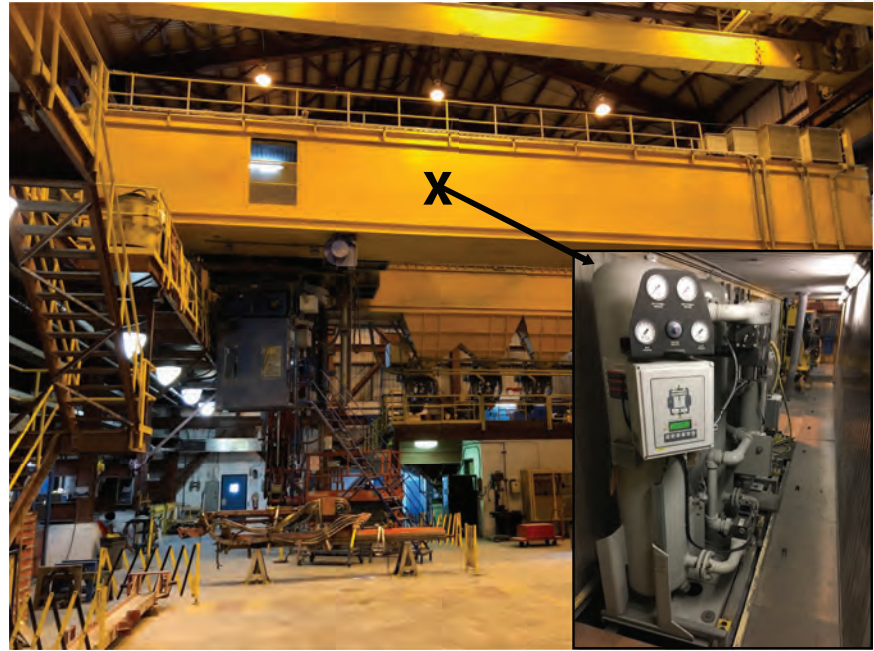
Our application expert offered a Pneumatic Products (PPC) custom-engineered heatless desiccant dryer system to supply a very low dewpoint (-40°F PDP). A dewpoint that low eliminates the formation of rust in piping and prevents freezing problems. A centrifugal separator and oil mist eliminator was installed before the prefilter to capture the bulk of the liquids and particulates to extend the prefilter's life.

Generally, the cranes underwent a month-long maintenance routine every nine months to keep them functioning optimally in the halls. One of the cranes with our air treatment system saw a 78% increase in production time. It spent 16 months in the halls without any breakage, which was a considerable improvement from the average 9 month run with the old treatment system.

THE RESULTS

- ▶ Increased Productivity & Reliability
- ▶ Decreased Downtime
- ▶ Reduced Service & Maintenance Costs
- ▶ Increased Safety

For more information on this solution or if you have a fluid handling challenge of your own - Contact a John Brooks Company Application Expert today!



PRIMARY METALS | ALUMINUM EXTRACTION IMPROVED EFFICIENCY USING A PPC DESICCANT DRYER SYSTEM

TECHNOLOGY UTILIZED

Pneumatic Products (PPC) Heatless Desiccant Compressed Air Dryer Technology
A centrifugal mechanical separator and an oil mist eliminator was installed before the prefilter to capture the bulk of liquids & particulates to extend the prefilter's life.

Desiccant Dryer Specifications:

- ▶ Inlet Flow: 500 scfm
- ▶ Filtration: PCS38001G32 (Coalescing Filter) & PCS36001G32 (After-Filter)
- ▶ Coalescing Filtration: Residual Oil Content of < 0.001 ppmw
- ▶ Particulate Filtration: Absolute Micron Removal Below 0.9µm
- ▶ High Humidity Alarm

HOW DESICCANT DRYER SYSTEMS WORK

- ⊙ **Prefiltration:** To protect the desiccant dryer from liquids, a coalescing filter captures all liquids heading towards the dryer and the prefilter's housing, centrifugal mechanical separator, and oil-mist eliminator flush liquid water and oil out.
- ⊙ **The Desiccant Dryer:** Made of two alternating vessels with activated alumina beads inside acting as the desiccant. One vessel gets the moist air while the other one regenerates. With the regeneration completed, the dryer will repressurize the offline chamber to line pressure to prepare it for drying compressed air. The previously online chamber will be depressurized and begin the regeneration phase of the cycle.
- ⊙ **After-Filter:** The aging desiccant will release fine abrasive dust that we don't want to reach pneumatic instrumentation, valves, etc downstream, so we use a particulates filter called the after-filter to capture all desiccant dust escaping the dryer.