SONIC AIR SYSTEMS



← CASE STUDY ARCHIVE

Revolutionized Pre-Powder Coating Process with Sonic Reciprocating Multi-Nozzle Manifolds



Overview

AGCO, a leading global agricultural equipment manufacturer, faced challenges on their existing 6 ft (1.83m) wide x 8 ft (2.4m) high monorail shot blast tunnel and monorail wash line before entering the pre-powder coating process for their large and complex farm machinery components. They needed effective methods for both shot blast blow-off debris removal and a more thorough washer & rinse water blow-off prior to entering the pre-heat zone in preparation for powder coating. Not only were the existing compressed air nozzle headers consuming huge volumes of compressed air, and the compressor energy consumption having a major impact on the daily power cost, but the shot blast blow-off and surface water drying still required excessive manual labor to complete each blow-off process. Additionally, the shot carry-over into the wash and rinse water tanks requires hours of downtime per week to shovel sludge from the sump tanks.

Solution

In the shot blast zone, Sonic has positioned an assortment of stationary air nozzles for the largest shot and debris pockets, together with multiple nozzle manifolds for wider coverage areas to address AGCO’s shot blast cabinet challenges. Sonic’s compact 50Hp (37kw) centrifugal blower emits 38,000 FPM (11,582 MPM) air velocity, blasting all of the nooks and crannies of an assortment of steel parts so that air would blast the shot and debris away before parts continued on into the wash and rinse water zone.

The next step is the paint line water blow-off zone, where Sonic’s automated reciprocating multi-nozzle air manifolds provide a sweeping air blast from both sides at the exit of the monorail wash tunnel using two 8 ft (2.4m) tall nozzle manifolds with multiple high-velocity air cannons. Each air manifold cycles up and down to cover every inch of AGCO’s product range. With 38,000 FPM (11,582 MPM) air velocities, this second 50 HP (37 kW) Sonic high-speed blower produces outlet air temperatures of 40°F (22°C) above the ambient factory temperature, which strips up to 90% of the surface water, including from pockets and blind holes in parts, before entering the heated drying/pre-coat zone.

Result

The implementation of Sonic's stationary air nozzles and nozzle arrays has yielded remarkable results for AGCO. The shot and debris carry-over into the washer was reduced by an impressive 98%, minimizing the labor required for cleaning the wash and rinse sumps. Moreover, the vertical reciprocating nozzle manifolds in the drying phase eliminated water-related defects previously observed after the powder coating process. AGCO experienced labor savings, significant power reductions compared to compressed air usage, and a reduced rate of powder coat reworks. This dual Sonic centrifugal blower and nozzle installation produced an overall ROI estimated to be less than 6 months. Sonic’s Air Knife and Air Nozzle Systems deliver effective parts drying for monorail wash line, paint line water blow-off, and pre-oven blow-off systems for parts finishing operations.

KEY TAKEAWAYS

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