Improving Powder Coating Quality and Efficiency

Keeping small parts up to Class A automotive standards used to be an expensive proposition for Michigan-based Reliance Finishing. Then the company replaced compressed air guns with a Paxton Ionized Air Solution, improving line efficiency while cutting costs.

Reliance Finishing provides powder coating, liquid coating and Plastisol coating services. The family-owned company, in business since 1954, serves clients in a wide range of industries including interior and exterior automotive; appliance parts; medical, and office furniture.

At their Grand Rapids, Michigan facility, Reliance Finishing coats millions of parts per year. The parts they paint range in size from 1 - 36 inches, and from ten cents to $15 per part. The surfaces on the parts they produce for their automotive customers must meet Class A automotive standards.

The Challenge

Class A automotive standards require that parts maintain a high level of efficiency and quality. Small parts cannot harbor any particulate matter which would detract from the necessary smoothness of their surfaces. Reliance Finishing ensures this level of quality both by post-production hand inspection of each part. Previously, Reliance's rigorous quality-control procedures also included using a compressed air gun to blow off dust and particulate matter before the coating process .

However, this method of cleaning small parts was both expensive and inefficient. One full time employee (FTE) was employed to aim the ionizing air gun at each part before it received coating. Yet many parts still had to be discarded upon post-production inspection since they did not meet Class A standards for smooth surfaces.

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The Solution

The high usage rate of the air guns resulting in one of these pieces of equipment breaking. Reliance Finishing asked Michigan Air Solutions to replace the broken equipment. But the people at Michigan Air Solutions, a Paxton distributor, offered a better idea. They suggested that Reliance replace the compressed air guns with Paxton's Ionized Air System.

How the Solution Was Implemented

Two blower-driven Paxton Ionized Air Knives were mounted at the entrance to the powder coating tunnel, with the blower itself positioned a few feet away in an enclosure to protect the blower from dust while reducing the noise level. By using two 24" air knives, and positioning them vertically on either side of the entrance to the tunnel, the Paxton ionized air contacts the entire length of the rack of parts from both sides, to ensure all surfaces are cleaned. Additionally, the dual ionizing air knives effectively clean parts of all sizes, by eliminating static and removing the dirt and dust adhering to the parts. With the previous compressed air ionizing gun procedure, it was difficult and left to human skill to ensure that the ionized air contacted all parts and all surfaces. The Paxton system does a better job of preparing the parts to receive coating.

The system installed at the Reliance Finishing plant includes :

- 7.5 hp Paxton high efficiency centrifugal blower
- 2 x 24" Ionizing air knives
- Variable frequency drive
- Sound dampening blower enclosure
- Mounting brackets, couplings, hoses, etc.

The installation of the system was relatively straightforward for the Reliance team. They did decide to install a vertical rail to stabilize the parts rack just before the air knives and tunnel entrance, to maximize contact with the ionized air.

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Measuring Success

The installation of the Paxton Ionizing System immediately resulted in a rapid immediate return on investment (ROI) through the elimination of one FTE formerly responsible for hand-blowing parts using the compressed air guns.

Additionally, the Paxton system improved the overall quality of parts produced. Reliance measured a 1.5% reduction in part defects. This means an annual savings of 75,000-100,000 parts. At $0.10/part (the lowest cost of any of the parts produced at the plant), this means the client achieved ROI within 1 year of installation, based on parts alone.

The Paxton system also resulted in a significant energy savings for Reliance Finishing. Ostensibly, the compressed air ionizing gun and the 7.5 hp Paxton blower have the same electricity usage, when the blower is operated at full power. But because the Paxton Ionized Air system provides substantially improved air power and ionizing strength, Reliance Finishing was able to throttle the blower back using a variable frequency drive. This means they use only 30 – 40% of the energy previously required by the compressed air hand held gun, resulting in an energy savings of 4 hp or 3 kW.

Ongoing Success and Client Comments

Pat Cell, General Manager of Reliance Finishing, was skeptical of the new system at first. As he now tells us, “I didn’t think it could be done.” But Paxton’s technology quickly won him over. Cell recalls that the Paxton Ionizing Air System was “a piece of cake” to install. When we asked for his feedback on how Paxton’s technology has helped his company, Cell told us that he was favorably impressed that “the noise is minimal, and the velocity of air is incredible.” He also tells us that his employees appreciate the easy maintenance of the system, including the fact that they have only had to change the air filter and the washable metal pre-filter. In summary, Cell says the Paxton system “does what it is supposed to do. It is nice when a product does what they told you it would.”

For more information on the Ionized Air System, ***click here*** or scan this QR code with your smart phone.

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