

# All Air Knives Are Not Created Equal

## Paxton Air Knives Deliver Targeted Drying to Ensure Label Adhesion at Beverage Bottling Plant



Original Blower + Air Knife

Last year Air McClure, an air products representative based in Rocky River, Ohio faced a challenge in serving one of its long-term clients. The client, a bottling plant for a household name Fortune 500 American food and beverage company, was experiencing product rejection due to labels failing to adhere to bottles.

The Facility Manager at the bottling plant sought Air McClure's expert assistance in resolving the issue which was slowing production while at the same time wasting energy on the production line. Bottles exited a cleaning tunnel wet, then required fast, efficient, targeted drying before the application of brand labels.

When Air McClure Vice President Scott McClure visited the facility, he quickly spotted the problem. "At the time," McClure recalls, "they were using an old, inefficient blower coupled with a low pressure high flow air knife that did not reflect the current advances in air technology. In addition, some of what they were using was an in-house gerry-rigged version of what was needed." McClure notes, "The customer was using a 15hp centrifugal fan powering a 145" long air knife with a 1/8" gap. Based on the motor amperage, we determined the blower to be producing approximately 2000 CFM @ 27" H2O, in other words, very high flow rate at very low pressure."

The bottling plant needed a system capable of delivering sufficient mechanical power to thoroughly dry the bottles. "I knew Paxton's Air Knives would be an important part of the solution" McClure notes. "My company's history of working with Paxton has often involved replacing obsolete equipment with Paxton's newer, more efficient technology."

After closely inspecting the production line and sizing the system, McClure determined that the application would require a specially designed Paxton Air Knife with a properly sized blower.

Paxton Application Engineer Steve Prows consulted with McClure on designing an air delivery system to meet the bottling plant's needs. Prows states, "For label adhesion, the surface of the bottle must be substantially moisture free. Using the wide gap air knife with low pressure and high flow rates, the system



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was relying on drying or evaporation of the water and it was not getting the job done. But what they needed was an air delivery system that sheared the water from the surface of the bottle, rather than merely drying the surface.” With the narrow gaps incorporated in Paxton air knives, it is able to deliver high mechanical air power by utilizing higher pressure, with a lower, but sufficient volumetric flow rate. This more efficient transmission of mechanical power results in higher air knife output power and high air velocity to efficiently shear the water from the surface, leaving it dry and ready for labeling.



Paxton Air Knife

The Paxton air knife is also designed to maximize efficiency. The shape of the air knife, combined with the higher pressure achieved by a Paxton blower as compared to a centrifugal fan, minimizes the loss of power before air delivery. The high flow rate and low pressure of the air coming from the centrifugal fan gives high frictional losses and a high pressure drop through the pipe, resulting in significantly reduced power at the air knife outlet and efficiencies of only 70%, when compared to a Paxton system which is typically greater than 90% efficient.

The air knife solution McClure and Paxton delivered has earned high praise from the bottling plant Facilities Manager. “The client reported that after the installation of the air knives, they get 50% better drying at their top line speed,” McClure notes. “Before, they had to add secondary drying systems such as compressed air knives, adding significantly to production expense due to the high cost of compressed air.”

“This is a situation where, with the change-over to the Paxton air knife and by drawing on the combined engineering expertise of our company and Paxton, we were able to take what had been an urgent issue for the client and eliminate the problem entirely.”



For more information on Air Knives, [click here](#) or scan this QR code with your smart phone.



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