

LEVERAGING RENTAL FOR PNEUMATIC CONVEYING APPLICATIONS

Pneumatic conveying applications are critical to many facilities – when you can't move material you can't make or sell your product. Because of a historical lack of availability of specialized rental blowers and compressors for pneumatic conveying, plants often either accepted the production outage or rented a more readily available 2 stage oil-free rotary screw compressor designed for 90-150 PSIG plant air service that is very inefficient at the reduced pressures needed for pneumatic conveying. Misapplying one of these plant air machines can result in an energy cost of 3-10 times greater than the appropriately applied positive displacement blower / single-stage oil-free rotary screw compressor that is designed for pneumatic conveying applications – not to mention considerably higher rental rates and a larger footprint.

A few case studies are presented where facilities sustained their production by renting positive displacement blowers / single-stage oil-free rotary screw compressors specifically built for positive pressure or vacuum pneumatic conveying applications.

Case study 1 (Food & Beverage) – Purchased the wrong machine

A bakery purchased a blower to offload trucks based on a design criteria of 800cfm at up to 14.5 PSIG. Under these conditions, it was taking up to 4 hours to offload a truck. Further review revealed that a higher pressure was required to speed up the offload process. A single-stage oil-free rotary screw rental compressor capable of 1000cfm at 29 PSIG with an onboard VFD was rented to validate the ideal compressor capability needed for the permanent installation. It was determined that at ~800cfm and 17 PSIG they could reduce truck offload time to 1.5 hours. The bakery continued to utilize the rental machine to reduce offload times while the new machine was ordered and installed.



Result

AERZEN RENTAL

Specializing in temporary oil-free blower and compressor solutions under 50 PSIG

Aerzen Rental supplies 100% oil-free air solutions specializing in emergency response and long term capital avoidance. Aerzen Rental provides best-in-class packages engineered for aggressive rental environments with on board VFDs, remote monitoring, and outdoor builds with sound attenuating enclosure as standard. From rental units for immediate deployment in the event of a production failure or shortfall, to operational leasing and contracting, Aerzen Rental is your expert partner.

Company

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Case study 2 (Minerals Processing) - Mississippi River shutdown caused a need to shift production to other facilities

Historical flooding hit the Mississippi River in the Spring of 2019 and barge traffic was suspended. Some facilities were unable to move material in, or product out and could not meet their contractual supply commitments. One plant creatively shifted production into another facility that was not impacted by the flooding; however, they lacked the infrastructure to offload the additional volume of rail cars at that facility. The plant rented a positive displacement blower with an onboard VFD capable of 500 to 2100cfm at 9.8 PSIG for just a few months to allow them to continue moving material and increase throughput.



Case study 3 (Cement) - Airend failure

A cement plant utilizing a single-stage oil-free rotary screw compressor to deliver 2000 cfm at 25 PSIG to move raw material to the pre-heater tower experienced an unanticipated airend failure. With no redundancy installed, the plant faced an outage while the airend was being repaired. The plant rented a single-stage oil-free rotary screw compressor with an onboard VFD that matched the performance of their failed machine and allowed production to continue for several weeks until the airend was returned and reinstalled.



Case Study 4 (Ship Unloading) - Vacuum system for off-loading experienced a major rotor failure

A ship was pulling into port with 8000 tons of aluminum to be offloaded, but the offloading vacuum system had experienced a major failure that would take 3-4 weeks to resolve. The ship needed to be offloaded within the planned time interval. The needs were quantified at ~16,000cfm at ~14 inHg vacuum. The facility brought in six rented positive displacement blowers setup for vacuum operation and completed the offload in the timeframe needed.



Case Study 5 (Plastics) - Flow of product not meeting expectation with current blower

The plant utilizes a fixed-speed blower in a closed-loop Nitrogen system to maintain the integrity of the PET granules being conveyed. They were not satisfied with the flow of the product and wanted to explore the effects of different flow rates. The plant rented a blower with an onboard VFD capable of closed-loop service between ~600cfm to ~1500cfm and up to 14.5 PSIG discharge pressure. This allowed them to prove that there would be a benefit in upgrading their blower system.



In all five cases, the customer rented machines ideally suited for their applications and the total cost of the rental was minuscule compared to the cost of a production interruption and at a fraction of the total rental cost associated with renting the wrong machine. Plants can rent equipment that is designed for peak efficiency in a wide range of pneumatic conveying applications and should never accept an extended outage or the wrong type of rental equipment. In addition, rental machines are a great way to experiment with the effects of varying flow on a process.

