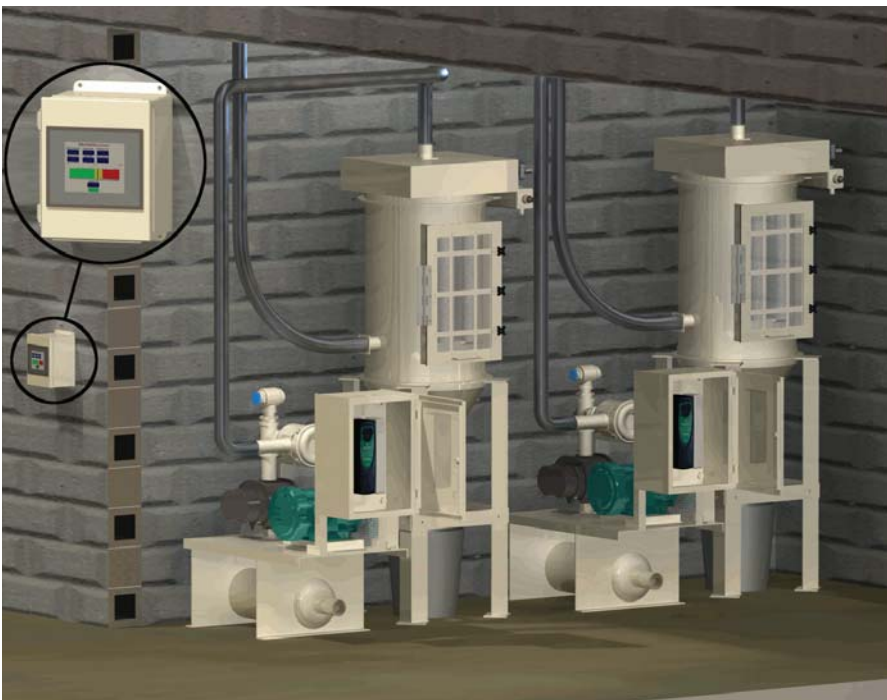




VELOCITY CONTROL SAVES ENERGY AND ELIMINATES ANGEL HAIR



By controlling the velocity of material flow through a material transport system, angel hair – thin, flat strings of material created during the transport process – can be reduced and often eliminated altogether. Advanced Blending Solutions’ innovative Pick-Up Velocity Control system controls the speed of a vacuum pump, based on the inlet pressure at the pump. This allows material to be conveyed at a determined velocity, resulting in significant energy savings as well as eliminating or reducing the formation of angel hair.

Advanced Blending Solutions’ managing director, Mr. Mike Rasner, was initially investigating the improvement in control and energy savings possibilities from using

The problem of ‘angel hair’ has been virtually eliminated, with the bonus of energy saving, in bulk solids conveying thanks to the introduction of variable speed control of vacuum pumps.

Advanced Blending Solutions (www.adv-blend.com) of Michigan offers advanced vacuum conveying, blending gravimetric and control equipment for the plastics industry with the option of high precision velocity control thanks to variable speed AC drives from Emerson Control Techniques.

KEY BENEFITS

- ELIMINATED ANGEL HAIR
- SIGNIFICANT ENERGY SAVINGS
- HIGH PRECISION VELOCITY CONTROL
- REDUCED WEAR & TEAR TO PUMP
- OVERALL REDUCTION IN MAINTENANCE & DOWNTIME

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variable speed drives and experimented with AC drives supplied by Emerson Control Techniques' Minnesota drive center. Further work on how the particle collisions affected material flow resulted in greater understanding of the need to move material at the critical velocity for that material – as vacuum pressure decreases the efficiency of the pump increases resulting in a higher velocity thereby producing a greater number of collisions and a reduction in the efficiency of the convey process. The research showed that a reduced speed actually increased the material flow rate, because of the collision effect, with significant energy savings of typically 30% or more, resulting from this reduced pump speed.

“Our R&D has demonstrated that a different speed is required for different materials, finding and running at this speed is critical for the efficiency of the system and to minimize the formation of angel hair and other forms of material degradation.” says Mr. Mike Rasner. “The reduction in energy usage is a major bonus that differentiates our product, with further cost savings from reduced wear and tear on the pump because of soft starting and stopping and an overall reduction in maintenance and downtime.”

The drive chosen for the ‘VC’ system is the Emerson Control Techniques Commander SK AC drive that is



controlling the speed of vacuum pumps ranging from 3 hp – 125 hp. Depending on the end user’s communications requirements, each drive is fitted with communication modules to provide Ethernet, EtherCAT or analogue communications. The pressure at the inlet of the pump is monitored and fed directly back to the



drive which adjusts the speed of the vacuum pump to maintain a constant material convey velocity. The system, that also incorporates a small color touch-screen operator interface and controller, provides dirty filter alarms, a high vacuum alarm, an hour meter on the pump and vacuum draw pump speed memory, so that the pump will automatically run at the last good speed draw. A single VC series controller can command up to 20 pumps, each with a Commander SK AC drive.

The Commander SK AC drive is ultra-compact as well as offering energy saving and excellent motor control. With on-board intelligence, I/O, Ethernet and fieldbus options, Commander SK offers much more than would be expected from a general-purpose drive. The range spans 0.25kW up to 132kW unit.

The VC system is also a simple low cost option to upgrade obsolete sequence control panels.

Advanced Blending Solutions is a full service manufacturer of blending and material handling systems for the plastics industry and is located in Michigan’s Upper Peninsula. The company manufactures blenders, vacuum receivers, silos, bins, pump packages, smart stands, angel hair traps, vacuum and sequence manifolds, weigh hoppers and other equipment.



For further information please visit www.controltechniques.com



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