

CHEMICAL PROCESSING

VSD Stands For VERY SIGNIFICANT DIVIDEND

Tailoring motor speed to the task offers a variety of important benefits

By Seán Ottewell, Editor at Large

Steam Generator

Figure 1. VSDs play an important role in increasing energy efficiency and decreasing CO₂ emissions from this generator at Ludwigshafen. Source: BASF.

PARTICULAR NEED

Reduced energy consumption and improved production performance, of course, appeal to all processors. However, plastics manufacturing is one sector in which such gains are especially crucial because companies are really struggling to maintain plant profitability in the face of rising energy costs, says Scott Barlow, vice president of Integrated Control Technologies, Carrollton, Tex., a distributor and authorized service provider for Yaskawa Industrial Drives, Waukegan, Ill.

“For most plastic extrusion manufacturing facilities, approximately 30% of the energy consumed can be attributed to extruder motors. If the line is more than five years old, it is more than likely that a direct current (DC) motor is being used as the extruder motor. Today, the majority of extruder machinery manufacturers are installing alternating current (AC) vector motors and drives on their extruders instead of DC systems. There are multiple reasons that they are making this change, but the biggest reasons are lower costs and better performance of the AC alternative,” he explains.

Barlow cites the results achieved at one

U.S. plastic sheet manufacturer that decided to replace a DC motor and drive system used on its primary extruder with a 500-hp AC vector motor and drive. The line has three extruders with its own service from the power company, so a power quality meter and analysis of the utility’s bill enabled easy verification of the retrofit’s impact.

“The retrofit was performed between billing cycles. The billing cycle prior to the retrofit showed an overall power factor of 0.49 with a peak power of 371 kW. After the retrofit, the bill showed a power factor improvement to 0.86 and the peak power was reduced to 360 kW. It is clear that the retrofit had an impact on the peak kW, which demonstrates an energy efficiency improvement, as well as a power factor improvement.”

“The energy saving in this application was estimated at \$2,500 a month, equating to \$30,000/year. Combined with the maintenance costs associated with the DC motor, the estimated return on investment for this application was 1.4 years,” he notes.

For its part, Yaskawa has just added the A1000 range of VSDs to its portfolio. The com-



Figure 2. The new A1000 series of drives boasts twice the calculated design life of previous generation products. Source: Yaskawa.

pany claims the A1000 is robust, flexible and user-friendly, and provides twice the calculated design life of previous generations (Figure 2).

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