

3M Cumberland - Air Compressors

Challenge

The 3M Cumberland facility manufactures floor pads, soft-edge foam masking tape, superabrasives, and fine abrasives (lapping films and microfinishing films).

3M Cumberland has adopted corporate environmental targets to reduce energy consumption, waste, and air emissions, and also has the latitude to go beyond corporate targets. One area for a quick payback seemed to be in replacing old air compressors that were running inefficiently with more efficient air compressors.

Strategy

3M has both an energy team and a sustainability team. Prior to upgrading technology for providing compressed air, an audit was done of any air leaks in the plant and these were all sealed. 3M then looked to replace the old air compressors with newer, more efficient ones. The old system consisted of two 150-hp compressors, each with a capacity of moving 500 cfm of air. The facility also has a 100 hp back-up compressor rated at 350 cfm which can be incorporated into the need for compressed air. Because of the way the plant was configured, one large 150 HP and one 75 HP compressor ran together the majority of the time. The 150 hp compressors were replaced by two 90-hp variable speed compressors (technology changes in compressor meant that the 90 hp compressors could still move 500 cfm). In addition, the system for moving air around the plant was revised so that only one compressor could provide air for the entire building, meaning that two compressors would run only in times of high demand.

The compressors and installation cost \$168,000, including modifications to the duct work.

Results

The new compressors, coupled with the new usage strategy (running one compressor at a time), led to energy savings of \$3500 per month (40% savings). The return on investment turned out to be about 2.9 years. In addition, air pressure within the plant was lower from about 104 to 94 psi without noticeable impact

Keith Seelig, Manufacturing Engineer, 3M Cumberland: kseelig@mmm.com

Steve Schleppegrell, Control Systems Engineer, 3M Cumberland: swschleppegrell@mmm.com