

## **MP3 Retrofit Air Compressor Controls Project**

To date, this project has lowered the cost of operation and improved the reliability and maintainability of our air compressor infrastructure.

We now have five of our eight air compressors retrofit using the AMP 500 system with Allen Bradley controls. Several months of data has been collected from these units. We have been able to document a significant improvement in our air compressor efficiency.

We have immediately seen a 10% - 15% improvement in our low end loading efficiency. We are now able to run the compressors at a minimum of 10%-18% IGV rather than the previous 25%.

### **This translates to a new low limit current as follows:**

99 to 80 Amps on the C-40 units = 23% improvement

156 to 132 Amps on the EE C-70 = 18%

153 to 118 Amps on the LL C-70 = 29%

127 to 103 Amps on the LL Joy = 23%

Less air is now being expelled in bleed off mode on second and third shift because of this much increased operational range. Conservatively, it can be calculated that we are operating at approximately 20 Amps less for 10 hours/day. This is a savings of 144 KW per hour per machine that is in bleed off. This equates to  $144\text{KW} \times 10 \text{ hrs/day} \times 365 \text{ days/yr} \times \$0.20077/\text{kwh} = \$11,977$  per machine annually. We typically run three units during the week and two on weekends. The savings calculates to nearly \$30,000 per year.

With the final phase of the project we will now begin to coordinate the compressor controls into a load sharing system. This will allow us to dynamically control all the compressors and take advantage of the newly increased reliability and operating range on all the units.

Further, this will facilitate the ability to automatically load and unload compressors. This complete system control and enhanced reliability will allow us to reduce overall system pressure and additional cost savings will be realized.

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