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CASE STUDY: PCC STRUCTURALS

Variable Speed Drive Air Compressor Helps PCC Save Energy

PCC Structurals, a global metal casting foundry, has a 72,000-square-foot facility in Carson City, Nevada, that makes air and vacuum investment cast components for aerospace, energy and commercial applications. PCC is just one of many manufacturing facilities throughout Nevada that uses compressed air in its manufacturing process.

Ten to 20 years ago it was a common practice to size motors, including air compressors, larger than necessary to ensure that the capacity needed would be available. Oversized air compressors that operate long hours can be a large energy drain. Even if an air compressor is not at the end of its useful life, retrofitting the equipment with a properly sized variable speed drive (VSD) can help it “ramp up” more efficiently as the air requirements increase.

PCC recognized the benefit of retrofitting existing compressed air equipment and installed VSDs at its Carson City facility. This project allowed PCC to reduce the overall horsepower from 175 to 150, and qualify for an NV Energy rebate.

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Project Summary

A VSD system controls the rotational speed of an alternating current electric motor by controlling the frequency of the electrical power supplied to the motor. Basically, a VSD installed on an air compressor allows the air supplied to better match the air required. This system will save more than 525,000 kWh annually.

Energy-saving Equipment

PCC replaced standard 125-horsepower and 50-horsepower air compressors with VSD 75-horsepower and standard 75-horsepower air compressors. Once the 75-horsepower VSD air compressor operates at or above about 80% capacity, air compressor operation switches to the standard 75-horsepower air compressor. The VSD air compressor ramps up or down as air requirements change, so less energy is wasted.

Project Results

Building Type: Manufacturing

Project Type: Retrofit

Measures: VSD compressors

Incentive: $31,232

Projected Annual kWh Savings: 528,860