

## COMPRESSED AIR EFFICIENCY AT A GLANCE

### PROGRAM OVERVIEW

Tacoma Power offers cash incentives and technical expertise to lower your compressed air system's operating costs and improve its reliability.

**INCENTIVES:** 20 cents per first-year kilowatt-hour saved, up to 70 percent of the approved project cost.

**ELIGIBILITY:** Incentives available for commercial/industrial operations in the Tacoma Power service area.

### PROJECT OVERVIEW

#### BRADKEN-TACOMA FOUNDRY GOALS

- Reduce energy consumption
- Reduce energy costs
- Eliminate low-pressure conditions during high demand

#### EQUIPMENT INSTALLED

- Two 350-horsepower variable-speed rotary screw compressors
- Two 300-horsepower fixed-speed rotary screw compressors
- Two 3,250-CFM cycling dryers
- Two 2,500-gallon air receiver storage tanks
- 200 feet of new compressed air piping

#### FINANCIAL ANALYSIS

Annual kWh savings: 3,148,285

Total project cost: \$765,719

**Financial incentive from Tacoma Power: \$536,003**

Net customer cost: \$229,716

**Projected annual cost savings: \$130,072**

#### PAYBACK PERIOD

- 1.8 years



**Rick Barelo**

Plant Engineer, Bradken-Tacoma Foundry

Case study

# Compressed Air Efficiency

"This project was the highlight of my career. It isn't often a guy can hand his bosses a check for more than \$500,000 to improve efficiency."

—Rick Barelo, plant engineer

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# Equipment upgrades lead to unprecedented efficiency and savings for Bradken

## LARGE INCENTIVES FROM TACOMA POWER DRIVE CHANGES YIELDING BIG RETURNS

Much like casting metals helps global industries get work done, Bradken-Tacoma Foundry understands the importance of energy efficiency to the foundry business and its community. At Bradken, saving energy means saving money, and both help their business and others' thrive.

Bradken's Tacoma Foundry has a history of industrial roots and a tradition of rebirth. The company reinvents itself through global economic change, and its employees stay for the long haul. Those strengths allow the company to create wins for itself and Tacoma Power, which needs companies like Bradken to reduce their environmental footprint.

After Tacoma Power offered the company more than \$500,000 in incentives to help pay for new energy-efficient air compressors and cycling dryers, Bradken invested in new efficient equipment rather than rebuild old models to maximize energy efficiency and financial savings. That investment paid off more than expected—especially in the heart of Plant Engineer Rick Barello, who began his career at Bradken after college.

"It makes sense to save energy; it saves costs. Making this project happen was the highlight of my 40-year career," Barello said. "It isn't often a guy can hand his bosses a check for more than \$500,000 to improve efficiency."

Air compressor upgrades alone help improve efficiency by providing adequate pressure during periods of high demand to ensure that the more than 130 tons of sand necessary to produce metal castings daily can move quickly from silos to other facilities. New compressors more than double the cubic feet of compressed air that can transport sand, saving 2.91 million kilowatt-hours (kWh) of energy; that equals more than \$121,000 in annual savings for Bradken.

### POSITIVE CHANGE TAKES THOUGHT AND TIME

Bradken worked closely with experts at Tacoma Power and Rogers Machinery Co. through a two-year audit. A demand-side assessment examined system leaks and identified other items needing repair before upgrades could occur. Repairs help maximize energy efficiency and savings after equipment installation, and data from the assessment helps right-size new equipment to ensure it can do the work, but not be made so large that it wastes energy.

"Compressed air can be as low as 10 percent energy efficient. That means for every kilowatt you put into compressing air, you may only get about 100 watts (10 percent) of work out of it," said Keil Drescher, account executive at Tacoma Power. "That being said, you want to make sure it's efficient because it's an energy hog."

Two of the four new compressors at Bradken operate regularly and use variable-frequency drives to maintain the required airflow during operation. The other two serve as backup and operate only during high demand to maximize efficiency. The foundry once averaged 2.6 cubic feet of air per kilowatt but now gets 5.2 cubic feet per kilowatt, maximizing efficiency and decreasing the amount of time it takes to do its job.

Two new cycling dryers replace non-cycling dryers. This allows another 235,000 kWh in annual energy savings. Cycling dryers shut off and reduce operation when not needed.

To ensure the compressed air system maintains stable pressures and handles short air demand spikes, two air receiver storage tanks were installed. In addition, new steel piping more directly serves the pneumatic conveying system. This helps maintain stable air pressures during this critical process.



New variable-speed compressor reduces power input and airflow output to improve efficiency.



### GARY JOHNSON – DEDICATED TO CONSERVATION

Gary Johnson, a Tacoma Power mechanical engineer, helped Bradken-Tacoma Foundry obtain a large cash incentive for improving its compressed air system's efficiency. He's worked as an energy engineer for Tacoma power for 22 years, helping utility customers reduce their energy costs and providing education on efficient energy use.

"I get a whole lot of satisfaction from this job, because not only am I helping customers reduce their energy expenses, I

also get a chance to develop long-term customer relationships that help promote both energy efficiency and good customer service," Johnson said.

Johnson has been involved in all areas of energy efficiency, from research and program design to field work for residential, commercial and industrial facilities.

## Power Programs

As you plan energy-efficiency upgrades to your business, start by taking advantage of Tacoma Power's rebates and incentives.

- WALK-THROUGH ENERGY AUDIT
- ENERGY BILL PROFILE
- CUSTOM RETROFIT
- BRIGHT REBATES

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