Case Study

# Coating Systems Impressed with AERCO's Solutions

| | |
|---|---|
| Customer | **Coating Systems Inc.** |
| Location | **Lowell, Massachusetts** |
| Industry | **Industrial** |
| AERCO Product Installed | **KC 1000** |

## What the Client Needed

Coating Systems, Inc., located in Lowell, Mass., is a mid-sized, high-tech metal finishing company, specializing in coating mechanical components for the electronics industry. In the finishing process, metal pieces are submerged in water-based solutions maintained at elevated temperatures (100°F - 195°F) to clean and prepare the surfaces as well as to electrolytically apply the coatings. When the 6,000 square-foot facility was built in 1993, an 850,000 BTU atmospheric boiler was installed to heat the water pumped through heat exchangers to maintain the various baths.

By the spring of 1995, Coating Systems, Inc. needed to augment its production capacity in order to keep up with demand. Expanding the process included constructing additional space within the facility with large industrial vats and heat exchangers. This 4,000 square-foot addition required installing a new boiler to meet the additional hot water demand. Arthur Sacco, president of Coating Systems, Inc., contacted his local gas company because he had learned of a special program that helps companies like his install energy efficient boilers. The Demand-Side Management program, created by the Commonwealth of Massachusetts, is designed to help gas companies improve efficiency and conserve fuel by providing energy grants to their commercial customers for the purchase and installation of fuel-efficiency products.

## AERCO's Solution

Sacco's gas company suggested he call engineer Bruce Norian, president of Norian/Siani Engineering, Inc., Newton Upper Falls, Mass., to advise him of the best boiler for his needs. Sacco was prepared to install another atmospheric-type boiler, until Norian recommended an AERCO boiler. Norian appraised the situation at the plant and realized the company required a boiler capacity of about 1 million BTUs – the actual size of an AERCO KC1000 unit.

"Not only was the AERCO boiler the proper fit, it also has a high turn-down ratio," said Norian. "Most boilers work at either 0% or 100% output. AERCO's output modulates between 72,000 BTUs and 1 million BTUs. For Coating Systems' process a modulating system is desirable because the heat load changes constantly depending on how many baths need heating, how hot each bath has to be and actual radiant heat loss."
"I thought I had to use a steam boiler because it kept the water as hot as it could be," said Sacco. "But I learned that you don't need to worry about that with the AERCO boilers, because they are more efficient especially at lower temperatures." Lower system temperatures in the AERCO units ensure that the AERCO boilers will always be condensing, thus running at peak efficiency.

Unlike other brands, AERCO's thermal efficiency actually increases with decreasing loads resulting in the lowest possible energy consumption. The effect is an inverse efficiency curve. AERCO's boilers are designed to precisely modulate energy input and match it to the load continuously, thereby reducing energy losses and maximizing overall system efficiencies.

"In addition, the best you can do with an atmospheric boiler is 81% efficiency," said Norian. "AERCO units run at 93-99% efficiency while maintaining precise temperature control of ±2ºF regardless of load variation."
Shortly after the AERCO unit was installed, the original steam boiler broke down. "The exhaust fans were kept on all night, creating a negative pressure that caused cold air to be sucked down the venting stack, freezing the heat exchanger and completely shutting down my business," said Sacco. "This would never have happened with the AERCO boiler because of its sealed combustion feature."

The AERCO boiler's compactness was also a plus. "Out boiler room is only about 200 square feet – enough space to house at least two AERCO units," added Sacco. In addition, the AERCO units have a lower maintenance cost when compared to steam boilers. Steam boilers must be thoroughly cleaned every six months. Required maintenance on the AERCO units is limited to periodic replacement of the flame rod and spark igniter which takes less than 15 minutes.

## Return on Investment

In the end, Sacco's gas company paid for 65% of the total cost of the AERCO boiler because it met all the energy efficiency specifications. Sacco installed a second AERCO boiler to run in tandem with the first AERCO boiler to include heating Coating Systems' new automatic lines currently being built within a 7,000 square-foot addition.