

Application Report

AR-141

Eclipse Minnox® low-emission burners and new ThermJet high-velocity burners fire up productivity at Edelbrock Foundry

Edelbrock Foundry of San Jacinto, California, is a supplier for manufacturers of hydraulic pumps and intake manifolds for automotive and watercraft aftermarket nationwide. The aluminum parts are sand cast at Edelbrock's 70,000-square-foot foundry.

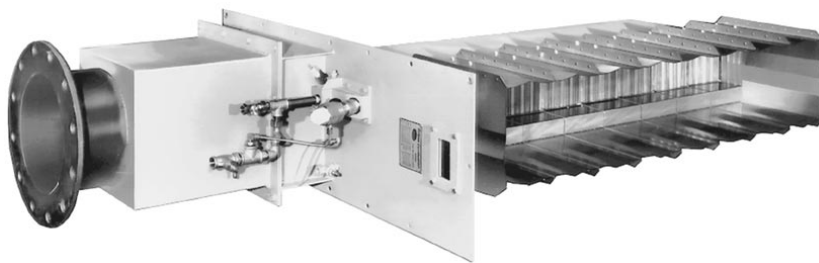
Spurred by growing market demand, Ron Webb, Edelbrock's executive vice president, sought to increase the foundry's production capacity – an increase that would require the addition of another sand casting line, including a new melting furnace and aging oven. To design and build the ovens, Webb turned to Thomas Lake, president of Pyro Industrial Systems. The Riverside, California, firm specializes in the custom design and manufacture of industrial heat treating ovens for OEMs and processors in the ceramics, aerospace, metal casting and other industries.

of Wirth Gas Equipment, Eclipse's sales representative in Southern California. After analyzing Edelbrock's process requirements, the two recommended Eclipse ThermJet high-velocity burners for the aluminum melting furnace, and the Eclipse Minnox® burner for the aging oven.

For aluminum melting, Eclipse ThermJet burners provide high velocity

Edelbrock's new aluminum melting furnace is designed to operate at temperatures of 1300 to 1330° F, with a high limit of 2000° F. Pyro equipped the furnace's two separate chambers with a total of four ThermJet high-velocity burners, fueled by natural gas. Two burners fire the furnace's melting chamber; the other two fire the furnace's molten aluminum holding chamber.

Roughton specified ThermJet burners because they have the highest operating velocity of any velocity burner available today. The burners produce an intense and steady stream of hot gases that thoroughly penetrate the load to deliver precise, uniform temperatures throughout for consistent melting. With their wide turndown range and excellent excess air capabilities, ThermJet burners are effective in maintaining the somewhat lower



systems have set a new world standard for NOx and CO emissions. The systems are guaranteed to emit less than 20 ppm NOx and less than 50 ppm CO (at 3% O₂).

Eclipse Combustion burners for both the melting and aging applications. He worked closely with Allan Roughton

temperature range required in the holding chamber.

In addition to high velocity, another important factor in selecting the melting oven burners was the ThermJet's low NOx emissions. Located in California's South Coast Air Quality Management District, Edelbrock complies with the toughest emissions regulations in the U.S. A distinct advantage of Eclipse ThermJet burners is their extremely low emissions rate. In fact, comparison tests have shown ThermJet burners to exceed all competitive high velocity burner models in low emissions.

When it comes to installation, ThermJet burners "ergonomic" design makes life simpler and easier for heating system designers and installers. ThermJet's exclusive integrated gas and air orifices, with air and gas line access from any side, streamline furnace design, installation and maintenance by eliminating complex piping configurations. Of course, all Eclipse burners come complete with burner and tube, piping, valves, controls and specified add-ons.

For aging ovens, the Eclipse Minnox® burner offers the world's lowest NOx emissions

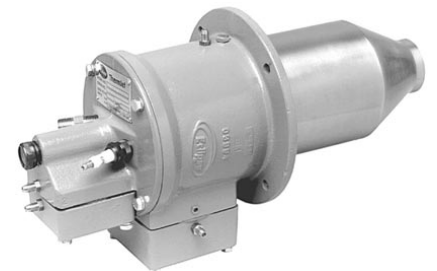
For Edelbrock's new aging oven, low NOx emissions and increased production capacity were the factors driving burner selection. The aging process is an after-molding heat treatment that tempers the aluminum castings. Finished aluminum castings are placed in baskets, then into the new oven – which measures 25' wide, 20' deep and 8' high and holds

approximately 40 baskets per cycle. The aging oven operates at 900° F, on a five-hour cycle, five days a week.

To provide the direct-fired air heating needed for efficient aging, Eclipse Minnox burners were specified. The patented Minnox burner design utilizes a premixed gas/air mixture with excess air, resulting in a cooler flame temperature (1200° F) which produces an extremely low NOx discharge from the burner head. At the same time, the Minnox provides the efficient heat distribution and uniformity required for optimum productivity.

According to Thomas Lake of Pyro Industrial, typical older style burners have NOx emissions that may range from 45 to 80 ppm. Edelbrock's new Eclipse Minnox burners are guaranteed to produce less than 20 ppm – exceeding all state, regional, national and international NOx emission standards, and meeting Edelbrock's goal to remain well below their allowed limit on NOx emissions.

Manufacturers and processors who are concerned about compliance with environmental regulations will be interested to know the Eclipse Minnox burner system is proven to be the lowest emissions burner of its kind in the world today. Laboratory tests and initial field installations have recorded NOx emissions of less than 4 ppm. For its valuable achievement in environmental technology, the Minnox has been awarded the prestigious DSM (Dutch) Environmental Technology Award.



Four Eclipse ThermJet high-velocity burners provide uniform temperatures throughout Edelbrock's two-chamber aluminum melting furnace.

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