

New Aluminum Melter Cuts Energy Consumption 80% for Outboard Marine

Waukegan, IL - Outboard Marine Corporation (OMC) has seen dramatic savings in its die casting operations since installing a new aluminum melting furnace at its Waukegan, Illinois facility in July of 1998.

With 64 die casting machines in the plant, OMC melts 30 million pounds of aluminum per year, making parts exclusively for its Evinrude and Johnson brands of outboard engines. The Waukegan plant is one of six OMC engine factories.

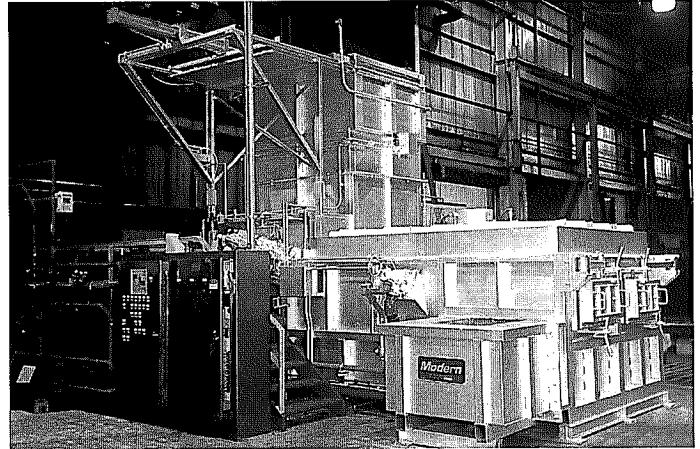
The new AL5000 Jet Melter, manufactured by Modern Equipment Co. of Port Washington, Wisconsin, melts 5,000 pounds of aluminum per hour, replacing a gas-fired reverberatory furnace of approximately the same capacity.

"The Jet Melter has met all the expectations we had, and all the claims Modern made prior to our buying it," said die cast operations manager, Joseph Thomas.

Jet Melter Does the Work of Two Furnaces

Two key areas of interest to OMC were reduced energy consumption and melt loss. As Thomas explained, "Typical melt loss for a reverberatory furnace runs around seven percent, but we were losing more than that because we had an additional furnace to melt steel and brass inserts out of the castings. We actually had two furnaces doing the work this one furnace is doing."

Modern Equipment guaranteed a melt loss of just 1.5%, Thomas said, and "We're recording results even better than that, 1.4% compared to 6% to 7% before." With today's cost of aluminum, the savings are substantial.



The AL5000 Jet Melter melts 5000 lbs. of aluminum per hour.

As for energy consumption, Thomas said it's been cut from about 5,000 Btu/lb with the reverb furnace to about 1,000 Btu/lb with the Jet Melter, a reduction of 80%. Ed Shilling, foreman of the melting operation added that the furnace used for reclaiming inserts was "a real gas hog," consuming around 10,000 BTUs per pound. With the Jet Melter doing both the aluminum melting and insert reclamation at about 1,000 BTUs per pound, Shilling said, "We're extremely happy with that."

As a pioneer and leading developer of stack melter technology, Modern Equipment has nearly 20 years of research, design and manufacturing experience, and has installed more stack furnaces than any other North American manufacturer. The company also offers a variety of custom engineering services and a full complement of after-sale support.

OMC looked at several technologies and a lot of manufacturers, but none was able to match Modern's performance guarantee. Thomas said the Jet Melter's stack technology was preferable for other reasons as well.

Producing engines from two to 300 horsepower, the

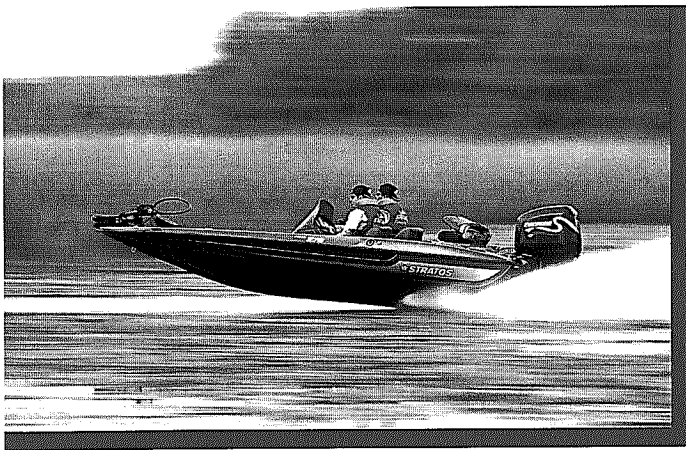


plant operates many low-volume runs on a just-in-time delivery basis. "Stack melter technology is very, very good for that," Thomas said. "The smaller, high-output furnace provides a lot of flexibility that you don't have with larger furnaces." For example, the Jet Melter uses a 12,000-lb holding furnace compared to an 80,000-lb holder for the reverb unit.

Dry Hearth Reduces Safety Hazards and Cleaning Costs

The Jet Melter incorporates a dry hearth, which melts the aluminum long before it gets to the molten bath, Thomas said, "So there's virtually no danger of a wet ingot causing an explosion hazard."

Driving the moisture out of the ingots also drives out the lubricants and impurities, resulting in lower levels of oxides in the furnace, and lower cleaning costs. The workers clean the Jet Melter just once per shift. The job takes them about 15 minutes and uses just 20 pounds of flux compared to as much as 200 pounds with the reverb furnace.



Outboard Marine Corporation is a leading supplier of engines for the marine industry.

"We figure our cost savings in reduced flux usage will be in the neighborhood of \$26,000 a year," Shilling said. As he explained, the cleaning procedure also used to include running nitrogen through the metal, but that's no longer necessary due to the cleaner melt.

The new furnace also provides a quieter, cooler working environment. Thomas described the reverb furnace as "a very violent atmosphere." He said, "It's like jet engines above the melt. You can open the door on the Jet Melter and it's very calm and quiet. You can see metal trickling down into the bath because the metal is melted up in the stack with gases that normally went out the ceiling."

Each furnace is tailored to the type of die casting operation, and OMC had a few minor modifications made to its unit. The furnace incorporates a pump-well on the side of the unit because the plant uses a transfer ladle instead of tap outs. As a result, the opening that's exposed to the atmosphere is only about four square feet, versus about 48 square feet with a reverb furnace. That cuts the furnace's heat losses and keeps the melt department cooler.

The Jet Melter eliminates a lot of the physical labor associated with other melters, including pushing the bath around, shoveling flux and skimming out the furnace. OMC also purchased an optional automatic loader for the furnace. "The furnace loads itself and our people are really happy with it," said Thomas.



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