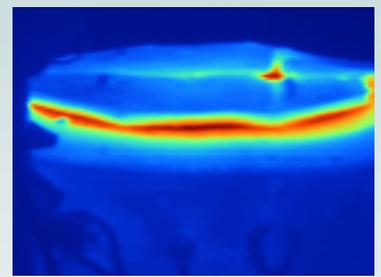


METALCASTING E-SMARRT

Energy-Saving Melting and Revert Reduction Technology



Benchmarking of Melting Operations helps Die Casters Improve Energy Efficiency

Melting efficiency is an important part of aluminum die casting operations. Die casters need to make informed decisions when selecting melting equipment to maximize operating efficiencies. The capital cost of new melting equipment with higher efficiency can be recovered relatively quickly when it replaces old melting equipment with lower efficiency. However energy efficiency is not the only factor in optimizing melting operations, as melt losses and metal quality are also very important. Selection of melting equipment has to take into consideration the specific conditions at each die casting facility, such as available floor space, average quantity of metal used, as well as the ability to supply more metal during peaks in demand.



SUCCESS STORY

Problem: There was a lack of reliable data of energy use and melt losses for aluminum melting furnaces within the die casting industry.

Solution: Case Western Reserve University, partnering with the Cast Metals Coalition (CMC) on E-SMARRT and in cooperation with the North American Die Casting Association (NADCA) and their members, worked to benchmark the energy efficiency of a wide range of aluminum melting and holding furnaces. Shown above (from left to right) are three of the benchmarked furnaces - reverberatory, stack, and induction furnaces.

Benefits: Based on the detailed benchmarking work, workshops were conducted on melting efficiency through the coordination of NADCA. An average of fifty people attended each workshop at various locations across the United States, including Empire Die Casting (Macedonia, OH), Edelbrock (Hemet, CA), Nematik Die Casting (Sylacauga, AL), Ryobi Die Casting (Shelbyville, IN), and Mercury Marine (Fond du Lac, WI). Methods for approaching the theoretical aluminum melting energy of 500 BTU/lb were covered in detail.

“As Energy Efficiency Team Leader, I found the Workshops and benchmarking information generated by the CWRU project very useful in evaluating our own melting operation and making improvements.”

Mike Evans, Gibbs Die Casting



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