

Pioneering grain refiner could change the industry, reveals trial with major casthouse

A trial into pioneering grain refiner Optifine has shown that it can cut defects by improving melt quality by up to 70% and bring casthouse grain refinement costs down by half.

MQP, which is celebrating 20 years in innovative casthouse solutions, conducted the research to demonstrate Optifine's extremely high efficiency and ability to reduce particle count in the liquid metal.

Using LiMCA, the research was conducted at a major casthouse that regularly uses Optifine in the manufacture of aluminium billets and slabs for sectors including foil, extrusions, aerospace and automotive.

Two TiBor grain refiners were compared in the trial, a standard 5:0.2 @ 1.2kg/t and Optifine @ 0.3kg/t in a 3xxx series alloy. The casthouse used a tube filter and LiMCA samples were taken over many casts at different stages in the life of the filter.

MQP chairman John Courtenay said: "The addition of grain refiners into Al alloys, for all casting types, is a very well-established practice. However, the solution to alleviating defects during casting is often 'just add more'. We believe this should be kept to a minimum, without adversely affecting the casting process.

"By trialling Optifine, we now have evidence that it can achieve the required level of grain refinement whilst using a lower addition rate and that this reduces the number of particles that potentially cause defects by up to 70% compared with standard TiBAl grain refiners (see graph)

"Further benefits are less coil changes each week, less transportation around the casthouse and lower warehouse inventory, added John.

"This trial shows very graphically that the reduction in particle count was directly related to the reduction in the addition of grain refiner rod, and by highlighting this new evidence, we hope to promote positive changes within the industry."



Comparison of LiMCA readings - AA3xxx alloy

