

Licentiate Seminar

Investigation of the Drawbacks in the Aluminum Alloys Casting Process

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Abstract

In this work, different problems in aluminum cast shops were studied.

The first paper studies the inclusions in the ingots. Inclusions negatively influence the mechanical properties and quality of aluminum ingots and billets. In this work, behavior and transportation of inclusions in casting furnaces and billets were investigated as a function of casting practices. Therefore, a macro-etching method has been applied to analyze the distribution of inclusions along billets. The result from inclusion distribution show that holding times in the range from 30 to 60 minutes do not show any significant differences. Also, it is shown that if melt remaining in the furnace after casting is less than about 3000 kg, the inclusion density increases towards the end of the ingots.

In the second paper, problems with reproducibility in sampling for chemical composition were studied. In order to obtain accurate chemical compositions in as-cast billets and ingots the sampling methods for the analysis have to give reproducible results with high precision. However, OES analysis from sampling tests show significant variations in the macro segregation profiles at a given position. The present work examines the influence of main sampling parameters. The results point out the importance of the convection in the mold during solidification, and thus the technique of pouring the melt into the sampling mold. **Read the whole abstract of the two other papers on the website www.miun.se/fscn.**



Supervisor Torbjörn Carlberg
When October 5th 2017, 10:00
Where Mid Sweden University
campus Sundsvall lecture hall O111
Faculty Examiner Prof. Salem Seiffedine Jönköping University
Welcome!