Inovative Methodology for Hot Tears Analysis in the Aluminum Castings

Marek Brůna
Department of Technological Engineering, Faculty of Mechanical Engineering, Žilina University in Žilina, Slovak Republic. Europe. Email: Rapture.marko@gmail.com

Hot tears represents serious defects, which are in most cases considered as unacceptable and may even result in disposal of final casting. The cause hot tear initiation is mainly a combination of several mechanisms (incorrect mold construction, chemical composition of used alloy, purity of used alloy, casting process conditions etc.). Basic principles of hot tears initialization can be considered relatively clarified, but a comprehensive and coherent view is still missing. The goal of proposed project was to design a coherent system to analyze emerging hot tears in the aluminum castings. The proposed mechanism is based on a number of concepts - a combination of "dog bone" and "T-section" tests. During the experiments will be possible to record the temperature at critical points, a tensile force in shrinking casting and by using heat-resistant glass placed above the heat node will be possible to directly observe the tears. Initial experiments will focus on verifying the functionality of the apparatus, the aim will be to analyze the impact of the solidification interval on hot tears.

Keywords: Hot tear, Aluminium alloy, Solidification interval

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