

Melt Refining of Wrought Aluminium Alloy Al-Mg-Si with Increased Fraction of External Scrap

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In the recent study, the effectiveness of melt refining and cleaning processing using RFI technology were investigated in relation of different charge's compositions and different recycling contents. Serial batches of aluminium wrought alloys series Al-Mg-Si modified with Zr, were study on several recycle rate recipes of dedicated alloy were treated with flux mixture by rotary flux injection (RFI) technology. Efficiency of inclusions, alkali metals removal, by various charge content, using different proportions of secondary raw materials and primary aluminium were observed and also correlation to the final mechanical properties of final product were introduced.

Input charges were consisting with more than 50% of recycling content (RC) and 80% total secondary composition and remain of primary aluminium ingots. RFI injection process parameters were applied with constant parameters to achieved repeatability; uniform flux feeding distribution and same contact reaction time by optimal set-up of flux injection parameters. Samples for the quantitative and qualitative determination of melt cleanliness were taken using the PODFA method. Investigations and content of non-metallic inclusions were determined using light, scanning electron microscopy and optical emission spectroscopy.