Some Studies on Advanced CMT Welded Aluminium Alloy with Mild Steel Dissimilar Joints

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Abstract

Joining of aluminium with low carbon steel is a major challenging process in automotive industries because of its unalike mechanical, metallurgical and thermal properties. In day today life, the automotive industries are giving more significant importance to reduce the weight of the vehicles to increase their performance and efficiency. **The Cold Metal Transfer (CMT)** welding process is a new advanced metal joining process which is used to joint various similar and dissimilar metal without any major defects such as porous, cracks and worm holes. Also, this process enhancing the strength of ferrous and Non-ferrous dissimilar joints which is very much useful for large scale manufacturing industries to increase theirs profit. So far, in this research work it is planned to identify the changes of mechanical and metallurgical properties during the joining of AA6061 grade Aluminium alloy with AISI-1020 grade low carbon steel dissimilar joints by Advanced CMT welding process. And also, the integrity of the joints were analysed using Optical Microscopy, Scanning Electron Microscopy, Transmission Electron Microscopy and with Energy Dispersive X-Ray Analysis (EDAX).

Keywords: CMT welding process, AA6061 grade Aluminium, **Tensile properties, Fracture surface, and dissimilar joint.**