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## Experimental and numerical analysis of heat on the tensile properties of layered aluminium parts made by composite metal foil manufacturing

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This paper presents an experimental and numerical analysis of the effect of heat on the tensile properties of layered aluminium 1050 metal foil parts made by a new additive manufacturing process known as composite metal foil manufacturing. A brief introduction of the process has been presented alongside a depiction of the different steps involved in product development. The process is a mix of overlaid item fabrication and brazing methods. It has indicated great promise by diminishing the constraints identified with customary machining strategies including cost, speed, material determinations and more. It can deliver high quality metal and composite parts without the utilization of additional hardware or apparatus. In this paper, a three dimensional finite element model has been developed to contemplate the effect of heat on the tensile properties of 200 micron thick aluminium 1050 metal foils. The effect of thermal stress and strain has been analyzed by carrying out transient thermal analysis on the heated plates used to join the nine 200 micron thick metal foils using a special brazing paste. A standard tensile test at ambient temperature has been carried out on the resulting layered dog-bone specimen to analyze the effect of heat on the individual layers of metal. The investigations have been precisely designed to assess the effect of heat provided amid the brazing operation to join the metal thwarts together as a layered structure and regardless of whether it assumes a part in affecting the tensile properties of the final product when contrasted with solid aluminium 1050 dog-bone specimen of the same measurements.

### Biography

Javaid Butt is currently pursuing his PhD from Anglia Ruskin University in the field of Additive Manufacturing. He has published 2 research papers in reputed journals and presented 2 research papers at international conferences. He has won best presentation and best poster awards at a number of intra-university conferences.

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