

METAL FABRICATION EVALUATION THROUGH ADDITIVE MANUFACTURING PROCESS OF INDIRECT METAL LASER SINTERING

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Abstract: This paper reports on an analysis of quality metal parts fabrication through Additive Manufacturing (AM) specifically use an Indirect Metal Laser Sintering (IMLS) technique. According to results from the case studies conducted, it show that the orientation selection was the most important aspect to consider for achieving optimum surface finish and surface layer characteristics of metal parts by IMLS process. Although the orientation was adequately achieved, it is still difficult to prolong their dimensional accuracy. There were indicated in the advance structures of many IMLS metal parts that have complex geometry, overhanging features and a thin section in the design. The fabricated by IMLS process using 3D Systems machine of those advance structures mentioned above have a tendency to deform and growth crack appear notably during the furnace infiltration/sintering stage. As results, less than 10% the distortion/deformation contribute during SLS fabrication, otherwise more than 10% of distortion/deformation happened during furnace infiltration/sintering. This paper approach was demonstrated by minimising distortion/deformation which can avoid growth of cracks and will be anticipated high quality manufacture metal parts can be produced through IMLS process.