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(51) International classification :B33Y0010000000, B29C0064118000, B33Y0080000000, B33Y0070000000, B22C0009080000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD Address of Applicant :Dhanbad - 826004, Jharkhand, India Dhanbad ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Vivek Bajpai Address of Applicant :Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- ----- 2)Prince Anand Address of Applicant :Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- ----- 3)Rajesh Sahoo Address of Applicant :Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- -----
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(57) Abstract :

The invention relates to a method of hybrid metal rapid manufacturing by fused filament fabrication and sand casting (300) to produce geometrically complex metallic parts and components. The model (100) of complex patterns are developed using 3D design software to be utilized for pattern fabrication. The hybrid casting (300) operation utilizes expendable patterns (200) prepared by fused filament fabrication technique using thermoplastic monomer material. The removal of pattern during sand mould preparation can be avoided before the sand casting. The operational feasibility and potential shows effective execution at variable sprue positions and molten metal pouring time delay with achievement of thin parts in hollow pattern projections of 5 mm diameter.

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