## **Abstract**

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Investment Casting Process - A Study of Additive Manufacturing Technologies in the field of Engineering Design

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Category: Manufacturing Engineering

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The aspired of this study was to explain systematically to various casting paths of the most excellent obtainable evidence of Additive manufacturing (AM) technology and how rapid investment casting is revolutionize the meadow of casting. The intention of this methodical review is to explore the capability and usefulness of Additive Manufacturing (AM) to afford a successful solution for production of investment casting. The database which are used for research investigations like Google Scholar, Research Gate, Mendeley & Science Direct, etc. The unadventurous method of Investment Casting should be less effective in conditions of cost and time to develop rather than novel hard tooling wax patterns for low volume production. To conquer this particular problem, we have introduced additive manufacturing for creation patterns of investment casting. The paper reviews the exact applications of rapid prototyping in the meadow of casting. After applying the inclusion criteria this study concluded that using Additive manufacturing in investment casting in place of the unadventurous method is more costeffective and time-efficient.

**Keywords:** Additive Manufacturing, Rapid Investment Casting, Sintering, Rapid Prototyping

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## **References:**

- 1. Wang J, Sama SR, Lynch PC, Manogharan G. Design and topology optimization of 3D-printed wax patterns for rapid investment casting. In 2019.
- 2. Altaf K, Rani AMA, Woldemichael DE, Lemma TA, Jian CZ, Fiqri MH. Application of additive manufacturing/3D printing technologies and investment casting for prototype

- development of polycrystalline diamond compact (PDC) drill bit body. ARPN J Eng Appl Sci. 2016;
- 3. Almaghariz ES, Conner BP, Lenner L, Gullapalli R, Manogharan GP, Lamoncha B, et al. Quantifying the role of part design complexity in using 3d sand printing for molds and cores. Int J Met. 2016;
- 4. Mendonsa C, Shenoy VD. Additive manufacturing technique in pattern making for metal casting using fused filament fabrication printer. J Basic Appl Eng Res. 2014;
- 5. Safaeian D, Vaezi M. Investment casting of gas turbine blade by used of rapid technologies. Aust J Basic Appl Sci. 2009;
- 6. Kang J wu, Ma Q xian. The role and impact of 3D printing technologies in casting. China Foundry. 2017;
- 7. Rajic A, Desnica E, Palinkas I, Nedelcu D, Vulicevic LL. 3D printing technology with plastic materials for hip implant master patterns manufacturing. Mater Plast. 2019;
- 8. Roussel N, Spangenberg J, Wallevik J, Wolfs R. Numerical simulations of concrete processing: From standard formative casting to additive manufacturing. Cement and Concrete Research. 2020.
- 9. Wong K V., Hernandez A. A Review of Additive Manufacturing. ISRN Mech Eng. 2012;
- 10. Lee CW, Chua CK, Cheah CM, Tan LH, Feng C. Rapid investment casting: Direct and indirect approaches via fused deposition modelling. Int J Adv Manuf Technol. 2004;