

## A REVIEW ON METAL ADDITIVE MANUFACTURING PROCESSES

Darshan P Shetty<sup>1</sup>, Rayappa Shrinivas Mahale<sup>2</sup>, Dr Shamanth V<sup>3</sup>, Dr Sharath P C<sup>4</sup>, Dr R Shashanka<sup>5</sup>

<sup>1</sup>Production Engineer, Metal Print India, Chennai, Tamil Nadu.

<sup>2</sup>Research Scholar, School of Mechanical Engineering, REVA University, Bengaluru, Karnataka.

<sup>3</sup>Associate Professor, School of Mechanical Engineering, REVA University, Bengaluru, Karnataka.

<sup>4</sup>Assistant Professor, Department of Metallurgical and Materials Engineering, JAIN Deemed to be University, Bengaluru, Karnataka.

<sup>5</sup>Assistant Professor, Department of Metallurgical and Materials Engineering, BARTIN University, Turkey.

### ABSTRACT

Additive Manufacturing (AM) is an appropriate name to describe the technologies that build 3D objects by adding layer-upon-layer of material, hence the name additive, whether the material is plastic, metal, concrete, exclusive materials such as ceramics, carbon fibre or even human tissues. Common AM technologies use a 3D Slicing software (to slice the 3D model into layers), machine equipment and layering material. Once a CAD model is designed, the Slicing software reads data from the CAD file and converts it into G-codes. When we run this G-code in the AM System, the machine adds successive layers of liquid, powder or filaments in a layer-upon-layer fashion to produce a 3D object. Rapid prototyping (RP) is one of the fastest growing automated manufacturing technologies with the capacity to go directly from CAD models to finished components. Metal additive manufacturing processes are subdivided into Powder Bed Fusion (PBF) and Direct Energy Deposition (DED). The metal additive manufacturing system may also be categorized in terms of type of material, energy source, build volume, etc. This review paper describes the importance of metal additive manufacturing and also gives clear insights about Selective Laser Melting, Selective Laser Sintering, Direct Metal Deposition and Laser Metal Deposition processes.

**Keywords:** Metal Additive Manufacturing, Selective Laser Melting, Selective Laser Sintering, Direct Metal Deposition, Laser Metal Deposition.

