

# Modeling of the Process of Three Dimensional Metal Casting

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**Abstract:** *This paper describes designs of metal castings, produced with the help of 3D technologies. Methods for materials 3D processing are related to the additive method of manufacturing, which is associated with the third industrial revolution, characterized by the resource saving ecological production. The examples of frame cellular castings are shown, which inherit structures of nature with the optimal combination of materials consumption, strength and attractive appearance. The described 3D technologies expand the existing range of metal products. Use of 3D printers reduces the technogenic impact on the environment, saving up to 90% of the starting material, in contrast to the current "subtractive production". Among the new foundry processes, at the Physico-Technological Institute of Metals and Alloys (Kyiv, Ukraine) there have been patented 3D technologies of sand products molding by means of the deformation of loose materials as well as obtaining sand shell molds for one-time patterns.*

**Keywords** – 3D technology, castings engineering, computer simulation, cellular castings, 3D printer, additive manufacturing.