

The Costs Concerning the Manufacturing of Hybrid 3D Printer*

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Abstract

In the last decade, the additive manufacturing 3D printers knew a great development and their used in industry became impetuously necessary. The motive behind the study was the market of cheap 3d printers, knowing that the FDM, DLP and SLA technologies are in continuous growth, realizing more and more versatile, friendly, ecological and sophisticated printers, using different types of new materials, in order to make parts with complex and interesting structures, with special mechanical properties, that can be used in various industries, such as the aerospace industry, automobiles, tooling, architecture or medicine. The manufacturing of cheaper 3D hybrid (multitool) printers has increased, especially for the small companies that realized such kind of 3d printers.

The hybrid 3D printers are realized with interchangeable heads, necessary to manufacture complex parts, permitting multiple types of processing such as 3D printing, CNC cutting, laser engraving or deposition of pasty materials.

The purpose of this paper was to establish the costs necessary to manufacture a cheap hybrid 3D printer prototype with two interchangeable heads, an extruder for FDM process and a CNC head, equipped with a g-code software. All materials necessary for construction for this hybrid 3D printer are cheap and accessible, some electronic components are reused and recovered from different old electronic equipment's and in this case, the 3D hybrid printer manufacture can be considered a model for sustainability of products. In this paper, was realized a comparison concerning the price of the 3D hybrid printer manufactured and other printers existing on the Romanian market.

Keywords: FDM (Fused Deposition Modeling) technology, economic development, 3D hybrid printer, interchangeable heads