В.Н. Гейнц
Научный руководитель: ст. преподаватель О.А. Фролова
Муромский институт (филиал) федерального государственного бюджетного образовательного учреждения высшего образования «Владимирский государственный университет имени Александра Григорьевича и Николая Григорьевича Столетовых»
Владимирская обл., г. Муром, ул. Орловская, д. 23
E-mail: vik-vika_95@mail.ru

3D-Printing: History and Future

Since the beginning of a new millennium, the concept "3D" has become a part of our life. First of all, we connect 3D with motion picture art, photography and animation. But we could hardly find a person who hasn't heard about 3D-printing.

The technology of 3D-printing exists for a long time. In 1984, “Charles Hull” company developed a technology of three-dimensional printing to reproduce objects with the help of digital data, and two years later, it gave it a name and patented a technology of stereolithography.

Later, in 1991, “Helisys” company developed and put on the market a technology for production of multilayer objects, and a year later, in 1992, the first system of selective laser accustomed to soldering was produced by “DTM” company.

In 1993, “Solidscape” company started mass production of printers on a inkjet basis which were capable to make small details with an ideal surface at rather small expenses. But the peak of its popularity is the 21st century. In 2005, “Z Corp” company developed the first 3D printer “Spectrum Z510”, capable to print in colour, and in two years time, the first printer capable to reproduce 50% of its own accessories appeared.[1]

3D-printing is the construction of a real object on the pattern of a 3D computer model. The process of printing is a set of repeating cycles connected to creation of three-dimensional models, plotting a layer of materials, relocation of a home screen down the level of a ready layer and deleting waste from its surface on a desktop (elevator) of the printer.

Application of the three-dimensional printing is a great alternative to traditional methods of prototyping and to small-scale production. 3D-printing gives a chance to output volume information, that is to create three-dimensional physical objects. At the moment, the equipment of this class can work with photopolymeric pitches, different types of plastic thread, ceramic powder and metalclay.

In 2012, the organization "Defense Distributed" announced its plans to develop the operating plastic gun which any person will be able to download and print with the help of the 3D-printer". In May 2013, they finished its development, and soon afterwards the US State Department demanded to delete instructions from the company website.

2014 was a breakthrough in building when concrete blocks were made using 3D-printing. During this year, the Shanghai company "WinSun" announced construction of ten 3D-printed houses built in 24 hours time, and later, printed a five-storey building and a mansion.

The first testing of a large 3D-printer was conducted in the University of South California. This machine was capable to print a building with a total area of 250 sq.m in a day. In October 2015, the Russian company “SPETSAVIA Ltd” presented its developments and industrial samples of 3D construction at the Machine-Tool Construction Exhibition (Krokus-Expo).[2]

To sum up, we may say that nowadays the opportunities and spheres of the 3D printing permanently are constantly growing. The technology seems to be able to produce any object that we could imagine. 3D technologies allow to completely exclude manual work as well as paper drawings and calculations – the program allows to see a model in all foreshortenings on the screen and eliminate the revealed defects before it has been made. It also allows to create a model in several hours time . In addition, the possibility of errors is practically excluded.

Литература

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