Реферат по английскому языку

Today there is no one who has never heard about 3D printing. Every two weeks I find out the news from this branch of science: somebody has printed a house, scientists have printed a prosthesis and so one. Additive manufacturing has captured the interest and imagination of many observers, this technology is believed to be the future of manufacturing. 3D printing does offer some unique and interesting possibilities, but can it transform conventional manufacturing?

3D printing has been around for nearly three decades: early additive manufacturing equipment and materials were developed in the 1980s, but only in the last year has it captured the imagination of millions of people.

3D printing, more properly called additive manufacturing, refers to processes used to create a three-dimensional object in which layers of material are formed under computer control to create an object. Objects can be of almost any shape or geometry and are produced using digital model data from a 3D model or another electronic data source such as an Additive Manufacturing file. 3D printing or AM builds a three-dimensional object from computer-aided design model or AMF file by successively adding material layer by layer.

There are two major advantages of 3D printing compared to traditional material removal processes (machining): you can 3D print complex, intricate designs and produce parts that would be impossible to make in one piece with traditional methods, and 3D printing produces a lot less wasted material. In machining complex geometries from exotic and expensive alloys, it is not uncommon to cut away considerably more than half of the raw material. 3D printing, by layering the material only where it is needed, produces no such waste. For example, a robotic prosthesis which was invented in Oak Ridge National Laboratory. Both the underlying skeleton and skin are made of titanium to make the hand durable and dexterous while also keeping it lightweight. The powerful miniature hydraulics that move the fingers rely on a network of ducts integrated into the prosthesis’s structure—no drilled holes, hoses or couplings required. Is has very complex design that has internal hydraulic tubing that can be run in excess of 3,000 pounds per square inch.There’s no technology today, other than additive manufacturing, that can make that robotic hand.

3D printing is a general-purpose technology that is being used in an extraordinarily wide range of applications—from potentially printing replacement human organs to wings of airplanes and even much of a nuclear weapon. There are some extraordinaire applications of additive manufacturing. Now the technology of additive manufacturing is being used to make food. It may sound weird, but this idea is not just a figment of our imagination, as NASA is currently investing as much as 125,000 dollars in a 3D printing food project. Making food is no different from making devices or machine parts or anything else 3D printed. The idea of printing food was born in Hod Lipson’s laboratory at Columbia University about ten years ago, when somebody tried filling a printer syringe with edible substances.    
3D-printed food will never completely replace our current food system. 3D Systems prints beautiful sugar sculptures, precise geometric shapes that the human hand could never do as perfectly, but printer is unlikely to print a steak or salad anytime soon.

A machine with multiple material canisters lets you print different flavors or colors into the layers, like a rainbow-striped cake or kale-filled chocolate bars. A laser or infrared light on the nozzle serves as a cooking element, so ingredients cook as they’re deposited out of the machine.

Despite all of these advantages, manufacturers still largely think of 3D printing as a way of making prototypes rather than industrial-grade products. The reasons are threefold: slow speeds, inconsistent quality and the difficulty of building complex objects.

3D printing has revolutionized product design engineering (prototyping) and production of complex geometry parts in low volume. But it is not the future of high volume consumer product manufacturing, at least not with today’s technology.