

ADDITIVE TECHNOLOGIES IN THE MODERN WORLD

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Today, additive technologies are being actively implemented not only in the aerospace industry, but also in medicine, jewelry, construction, automotive industry and other equally important areas.

The aerospace industry is currently a very important industry in our world. Additive technologies are rapidly developing in this industry, thanks to their methods of producing lightweight, but very durable materials, which is of no small importance in such a serious industry. The first project in this industry was implemented at the Tikhvin Carriage Works. Thanks to 3D printers, elements of foundry models were produced, such equipment gave great guarantees of high quality printing of these models. At the moment, 3D printers operate on the basis of technologies invented by Charles Hull in 1983, he invented the first 3D printer. He came up with a device that could print a small plastic cup in a new way - layer-by-layer deposition using ultraviolet radiation.

It is also known that in our time, additive technologies are used not only for the development of various parts, but are also in demand in medicine. 3D printing is used to produce artificial human skin, dental implants, study the effects of drugs on tumors, and print organs susceptible to cancer. New printers are helping to produce hearing aids, drug capsules, and orthopedic prostheses.

As for jewelry production, additive technologies make it possible to create unique models of jewelry with geometry of any complexity. Thanks to the latest technologies in this industry, 3D printers allow for the creation of individual items in a short period of time due to precise printing, as well as prototypes of jewelry in serial production for the manufacture of casting molds. 3D printed master models help to create jewelry that does not require finishing, this speeds up the process and saves consumables for creating molds. It is also possible to adjust the product, instead of making additional parts. After creation, the master

can print products from wax or polymers, cover with plaster and in this way get a ready-made mold for casting the final product by completely melting the wax from the hardened plaster [1].

The use of additive technologies in construction significantly simplifies the creation of various objects using 3D printing technologies. The unique technology allows you to build houses with various architectural forms or create individual parts that can become an element of the next object. Usually, concrete, metal or plastic are used for printing. I would like to note that special solutions are used for printers that become strong, but do not harden in the printer and do not allow the solution to spread under the pressure of the layers. After that, the product must dry in a special drying chamber or in the fresh air. Under natural conditions, the parts dry quite quickly, after which they are ready for further use. This technology can significantly reduce the cost of materials and the impact of human activity.

Additive technologies have long been in demand in the automotive industry. They are used to produce parts such as bumpers, pedals, clamps, bearings, engine housings and much more, as well as spare parts for vintage cars that have been discontinued. They open up opportunities to create unique designs for designers of our time. One printer that creates a multifunctional part can replace several workers at once, significantly reducing the speed of work. Complex structure parts that are difficult to recreate using conventional methods are printed quickly and with high quality. For example, BMW is actively developing the field of 3D printing, having opened an additive manufacturing center in Munich. More than 100 thousand components of layer-by-layer fusion and more complex metal production methods are manufactured there annually. Their range includes: small plastic fasteners, high-precision metal chassis elements, rare parts for cars. BMW became one of the first companies to print a batch of several thousand metal parts on a 3D printer [2].

References

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