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3D PRINTING TECHNOLOGY IN THE PRODUCTION OF DESIGNER SHOES

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Application of additive technologies at footwear production at nowadays is not only fashionable tendency, but also reasonable modernization of production. In professional sport footwear production 3D-print allows us to decrease technologic costs and realize the most complicated ideas for increased convenience and quality of product, and for decreasing its weight. Also volume print is irreplaceable at modeling and production of exclusive design styles.

3D print is a way to receive a model by layer gluing powder (gypsum composite). At the shoes industry given technology can be used to create pads, soles, heels and casting molds. Also this method can be used for printing the complex design solution model, that is hard to create by ordinary ways.

The model production process consists of two stages:

1 Stage. Processing a three-dimensional digital model. At the special program it is divided into layers and oriented as needed on the printer's desktop. Special support structures are created under the overhanging elements, which will be deleted after print. Also at this stage print options are set, such as wall thickness and fill percentage. The rigidity of the future model depends on these values. These values may be different for different purposes of the product.

2 Stage. Product creation by extrusion and applying micro drops of molten thermoplastic with the formation of consecutive edges.

The advantages of this technology are: new models prototypes, completely done footwear without divided elements and use of glue and seams, individual orthopedic insoles for sports, therapeutic and prophylactic shoes, divided details - thermoplastic polyurethane soles, heels of exclusive shape, protective lining and decorative elements, outrageous designer shoes for fashion shows of theatrical productions and futuristic films, etc.

Advantages of the products made of polyurethane: created models will have extreme flexibility, completed product design may be solid or mesh, this is what is now popular with athletes, material is light and durable, so legs will be less tired in such shoes.

3D-print technology allows to manufacture production, produced by the clients individual order, what will let to reduce inventory levels in supply chains. As a result, the demand for rental of warehouse space may decrease. In the fashion industry, retail trade may disappear or the stores will in fact become showrooms or showcases for displaying models of the current season, with the possibility of selling a digital model of the product you like which will be loaded into a 3D printer.

Existing methods of printing on 3D printers allow you to print a huge amount of different materials, with different frames and levels of detail. The fast-prototyping technology is bravely moving forward, allowing us to embody a variety of ideas quickly and with minimal cost. But different types of models will need different methods of printing and materials to use. It depends on the purpose of the model, the degree of details and the type of loads that the model will undergo during operation.

REFERENCES:

1. Лысич, М. Н., Шабанов М. Л., Качурин, А. А. Обзор современных технологий 3Д печати // Современные наукоемкие технологии. – 2015. – № 6. – С. 26-30.

2. Коваленко Р.В. Современные полимерные материалы и технологии 3D печати / Р.В. Коваленко // Вестник Казанского технологического университета. – 2015. – Т. 18, № 1. – С. 263-266.

3. Bolgar, C. Additive manufacturers lead a design revolution [Электронныйресурс] // Perspectives 3ds. . – Режим доступа: http://perspectives.3ds.com/tag/additive-manufacturing/