The additive manufacturing technology and its implications on the contemporary industrial design

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Abstract
There is no doubt that industrial design is one of the most important modern fields in our time. Not only because it is related to all the products surrounding us, but because it is also related to modern sciences and technologies, which are, themselves, embodied in the appearance of products or reflected on them. From this point of view, the idea of this research sets off to put a light on the most important technology that has recently emerged, which is the additive manufacturing technology, which is also known as the third industrial revolution. The aim of the research was to raise questions about the potential of this revolutionary new technology and how it can be reflected on the different fields of the contemporary industrial design. Moreover, this research dealt with the latest developments in modern technology and studied its benefits for a renewed and vital field, which is industrial design. Therefore, the objectives of this study were to determine the direct and indirect implications of the additive manufacturing technology and the aspects in which it could be effective for contemporary industrial design. While using the latest references and resources on the additive manufacturing technology, the research was based on the descriptive approach and the exhibition of few examples and actual results. The additive technology and its production stages were reviewed and compared with the production processes of the numerical control technology, CNC. Both technologies use computer programs and implementation mechanism, however, CNC technology is based on the method of subtraction rather than addition. Moreover, the advantages and areas of application of the manufacturing technology were intensively reviewed through the following key areas: Speed of production, Cost savings, Green manufacturing, Meeting the demands, Freedom of design, Less product’s weight, Accomplished sales, Fewer component parts of the product. The researcher used the latest references and resources of the additive manufacturing technology, while reviewing some of its effective products in order to reach the conclusions that additive manufacturing technology is reflected within the industrial design in several aspects; below are some examples: The designer: Has more freedom of design with less limitations which in turn opens the door to creativity and innovation and leads to a wider range of ideas. It also helps the designer overcome previous obstacles, which can assist in the formation of more imaginative and creative designs. The products: Have prolonged shelf life and can be modified or maintained while in use. This is due to the possibility to reprint any part of the product when required. Are more accurate, reliable and highly efficient. In addition to this they are very durable as they are made from a single module, instead of multiple component pieces assembled together. Are known to have higher ergonomic properties, for example the components are light in weight, while the design and assembly are more flexible. The end user: Benefits from a variety of offered products and choices which can be tailored depending on the demands of the end user. Marketing: Having fewer production steps and stages help in reducing the required infrastructure, resulting in less complex and more cost-effective manufacturing facilities. Reducing production costs in turn reduces the prices of products to an acceptable level, there by contributing to the spread and promotion of potential products among a wider demographic of users. Enabling the products and the manufacturing process to encourage investors’ interest, by providing real samples of different types and sizes. Getting ahead of competing companies due to minimized design time, analysis, manufacturing and costs.

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Additive Manufacturing, Industrial Design, Digital Manufacturing