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## ADDITIVE MANUFACTURING FOR THE AIRCRAFT INDUSTRY

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The article gives an overview of additive manufacturing and the benefits of its application. It also provides information on how and when additive manufacturing can be rationally introduced into production.

The purpose of this work is to establish how additive manufacturing (AM) can be most efficiently applied to reduce the cost and time required to create new components and to what extent AM is applicable in modern manufacturing [1].

In this study we analyze the characteristics of modern 3D printers, the cost of such devices and the material to be printed. It is important to note that the statistics of some advanced enterprises have been reviewed in terms of technologies they use in manufacturing.

The result of our study is that AM is not cost-effective today both in the production and development of simple components. This is because the cost of a 3D metal printer is still very high and the cost of the building material is even higher. This leads to the fact that the production of components becomes very expensive compared to their production in the traditional way. However, the potential time savings are much greater. Manufacturing the final product with a 3D metal printer can reduce the lead time by up to 85 %. This is because the printer produces a component in one step and therefore does not get stuck between different manufacturing processes. At the same time, many companies produce aircraft cabin parts by the additive method from plastic or metal because they are lighter and stronger (ventilation grilles, tray tables). In any case, replacing metal parts with plastic ones in the aircraft industry is simply unimaginable. The use of AM in the design process can affect the quality of the final product at the end, since the design can be changed during the design process without being sent to production. One of the most important factors is the ability to learn. If a company intends to implement additive manufacturing, its technicians must study Design for Additive Manufacturing (DFAM) and become proficient with 3D printers [2].

To sum up the results of the study, we can say that the production of the simplest parts for the aircraft by the use of the additive method will be the most cost-effective one, but for several good reasons, the main of which is the high cost, the mass use of AM is not yet the most rational solution. With the increasing adoption of additive technologies, 3D printers and building materials are going to become cheaper. Over time, printing of simple components on a 3D-printer will be cheaper than manufacturing of the same parts by the use of the traditional method.

### References

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