

AUTHOR'S COMMENTS ON AVAILABLE MATERIALS

The purpose of this text

The purpose of this text is to briefly introduce the background to the publication of the materials that, like this text, are available in the repository [HERE](#). It is also and especially the purpose to briefly introduce and comment on each of the published materials.

Innovation of CTU courses reflecting the future needs of the industry

Between 2014 and 2020, I had the opportunity to regularly participate in projects at the Faculty of Mechanical Engineering of the CTU in Prague. These projects focused on innovations in educational courses that reflect the future needs of the industry. These were always one-year projects supported by an internal grant from the faculty/university. The output was the creation of teaching materials, equipment, etc. As an employee of the Institute of Management and Economics of Enterprise, I participated in the projects in various positions, either as a student researcher or, for example, as a team leader (and main researcher) or project manager. Since there were many projects, I wanted to present the materials from at least one of them. For this purpose, I chose a project from 2015 that focused on Additive Manufacturing.

Additive Manufacturing – 2015

There are several reasons why I chose the project from 2015 on the topic of additive manufacturing: the interestingness of the project and the topic, the quality and quantity of the outputs produced, and the time spent. I even remember how I made a trip to Berlin, Germany, to study selected foreign literature from the library. In the Czech Republic, the necessary literature was available in the libraries only in a very limited number (probably mainly due to the very high prices) and procuring further selected books through the international interlibrary borrowing service could be expected to be problematic in view of the time available.

Several departments of the faculty participated in the project, and various outputs were produced, such as the principles of additive technologies, additive materials, or machine design. Within the materials prepared by the Institute of Management and Economics of Enterprise, I have created several outputs, which are presented and commented below (all materials except one (number 4) are in the Czech language):

1. [Economic efficiency of additive manufacturing – presentation](#): The presentation is no longer the one that was produced in 2015, as the content has been updated and modified. The presentation tries to use mainly visual aspects and works with pictures accompanied by verbal comments. The main point is to show the importance of the economic side. To wherever and in what context the economic aspect, the economic efficiency, can be seen. For example, the fact that a product made with additive technology will be more expensive than a product made with traditional technology does not necessarily mean that the product is not worthwhile for the customer. The resulting savings may finally be realised in the more economical operation of the product itself (p. 23/24-24/25 - air filters, blower components, TV holders, etc.).
2. [Additive manufacturing process – text](#): The individual steps of the additive manufacturing process are presented. Their definition is important for the purpose of



- costing, which is then presented for the building stage of the component (product) in material 4.
3. **[Economic evaluation – pictures](#)**: Example of a CTU CarTech formula steering mast. This is the component (product) for which the costing is presented in Material 4.
 4. **[Economic evaluation – article](#)**: This material is the only one in English. It is not directly from the project. This article was prepared within another project, but is based on materials from 2015. The article presents in a successful form the problem of costing for the stage of preparation of the building and the building itself of the component (product) produced by additive technology.
 5. **[Economic evaluation – model](#)**: This material presents the MS Excel costing model used in Material 4. It also includes a sensitivity analysis.
 6. **[Future development and its barriers – text](#)**: As the title suggests, the material tries to show the expected directions of development and trends where this area could go, including the barriers that limit its faster development. The content has not been updated since 2016, but I am convinced that it is still relevant in many ways. It also provides an interesting opportunity to look back and evaluate real developments in relation to the predictions contained in the material.
 7. **[Methodology for selecting the suitable technology – text](#)**: This is an output that was created outside the project in my free time. The material presents the problem of selecting a suitable additive technology using multi-criteria evaluation under uncertainty and demonstrates it with an example (taken from abroad, not my own).

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