

Review of Bachelor Thesis

Student: Martin Hejtmanek, Czech Technical University in Prague, Faculty of Mechanical Engineering
Thesis title: Additive Manufacturing Technologies Utilization in Process Engineering, dated 15.8.2017

This review has been given on the request of Ing. Jiri Moravec, Ph.D., the supervisor of this BT, and Mr. Martin Hejtmanek, the writer of this BT.

Topic and Goals of the Thesis

The topic of the BT is very timely for both industry and study. Although the knowledge about AM is available from many sources, an easy-to-read but on the other hand technically comprehensive compilation, such as this thesis, is useful for many people who want to get the basic information about AM technologies. The first goal mentioned in BT chapter 1.2 has been achieved laudably.

The second goal mentioned in the BT chapter 1.2 concerns the relations between FDM process parameters and mechanical properties of the manufactured part. In the BT chapter 11.1 this goal has been opened more, and even a verbal comparison between parts manufactured with FDM and injection moulding has been given. The experimental part of the thesis gives facts for one FDM system process parameters and part properties to a very good extent. The experimental or source based comparison between FDM and injection moulded part properties would have been good additional information for the reader. The second goal mentioned in BT chapter 1.2 has been achieved very well.

Theory and sources

In this BT a wide and reliable theoretical view of the basic AM technologies has been gathered. The essential information has been presented in a well structured way where the descriptions of the basic AM processes are compact and easy to understand. On the other hand, the reader can also get some useful advanced information as well as a list of advantages and disadvantages of each basic process.

The topic of this BT deals with a quite new and rapidly developing area of technology. Therefore, the sources found in the Internet in other electronic sources often replace the conventional printed sources. In this BT the use of up-to-date sources, both electronic and printed, is in a very good level.

Usefulness of the results

This BT has practical application value in the form of a literal source for people who want to learn basic facts about AM technologies. The document is suitable for both students and industry people who are beginners in this technology field.

The results of the experimental part of the BT give the reader a view over the influence of the basic FDM process parameters on the mechanical properties of the manufactured part. The results of the tests have been evaluated quite well. Although the tests were done with only one commercial FDM system the results are probably generally applicable to other similar systems.

Other notes

The connection between AM and process engineering remains rather low even though the final name of the BT gives the reader another kind of idea and perhaps expectations of more process engineering oriented approach of the topic. The temporary name of the BT (Introduction to Additive Manufacturing Technologies) described the contents of the document better.

The review of the history of AM could have been a bit wider even though it was not in the essential goals of the BT. After reading the facts over the current AM technologies the reader may also look forward to an overview at the future and the development prospects of the AM technologies which is now missing in the document.

Proposal for the grade

My proposal for the grade (scale A – F) of the BT is

B (very good)



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