

I. IDENTIFICATION DATA

Title:	Waste gasification technology
Author:	Rahim Jalilov
Type of thesis:	Master
Faculty/department:	Faculty of Mechanical Engineering
Department:	Department of Process Engineering
Supervisor:	assoc. prof. Ing. Lukáš Krátký, Ph.D.
Supervisor's place of employment:	FME CTU in Prague, Department of Process Engineering

II. EVALUATION CRITERIONS

Diploma thesis assignment	Average
<i>Difficulty evaluation of the diploma thesis assignment.</i>	
The main aim of the thesis was to prepare a techno-economic study of model waste gasification technology, i.e. to design PFD chart, to perform an economic study of investment and productions costs, and payback. This topic was, therefore, a typical job for mechanical engineering, so its difficulty was average.	

Fulfilment of thesis's assignment	Fulfilled
<i>Evaluate, whether the proposed final work fulfils the assignment. Comment where appropriate, points of reference that were not fully met, or if the work is extended compared to the assignment. If the assignment is also not completely fulfilled, try to assess the importance, impact and possibly cause various deficiencies.</i>	
The main tasks of this thesis were to discuss the potential of waste processing by gasification; to summarize current knowledge about gasification (technical set up and scale, process parameters); to perform a techno-economic study of selected technology set up to evaluate its economic potential, i.e. design PFD scheme, do mass and energy balances and prepare an economic analysis of the technology, sensitivity analysis included; and finally to discuss the possibility of syngas utilization as a raw material to produce chemicals and advanced biofuels. The tasks of the thesis were fulfilled.	

Activity and independence during thesis's processing	B—very good
<i>Evaluate whether the student was active during thesis's processing, whether he respected specific deadlines, if his solution was continuously consulted and whether he was sufficiently prepared for consultations. Consider the student's ability to work independently and creatively.</i>	
The author's approach was enormously active. He was always ready for consultations and he successfully fulfils all tasks given by supervisor for next meetings. Nevertheless, a stronger support of supervisor was needed during consultations for mass and energy balancing than normally expected and needed.	

Professional level	C—good
<i>Assess the expertise level of the thesis, using knowledge gained from the study of scientific literature, documentation and utilization of data obtained from practice.</i>	
The professional level of the text itself and all the performed process calculations have a standard level. There is not so strong review of waste gasification and also information about syngas to chemicals as demanded, all due to time press to submit the thesis in time. PFD has a standard basic level. There are still some unclear calculations that were not clarified to me. Heat regeneration was not demanded due to timing.	

Formal and language level	A—Excellent
<i>Assess formal correctness in the bibliography, the typographical and linguistic aspects of the thesis.</i>	
The thesis contains all the necessary formal requirements.	

Bibliography**C–good**

Comment the student's activity during the acquisition and use of learning materials to solve thesis. Characterize the selection of sources. Assess whether the student made use of all relevant sources. Verify that adopted information is properly distinguished from student's results and considerations, whether citation forms correspond with ethics, whether bibliographic citations are complete and finally whether all citation is in accordance with the practices and standards.

The author used 28 references in the text, Wikipedia including. Citations in the manuscript and their format listed in the bibliography are not in accordance with the European Copyright Act No. 121/2000 and even with all the citation practices.

Other comments

Comment the level achieved major results of the final work, e.g. the level of theoretical results, or the functional level of technical solutions, publication outlets, experimental skills, etc.

No comments

III. FINAL EVALUATION AND PROPOSAL OF CLASSIFICATION

Summarize aspects of the thesis that most influenced your final evaluation.

Master thesis of Mr Jalilov was pioneering. There is no techno-economic evaluation of waste gasification technology. So based on the review, its potential was evaluated designing model wood chips gasification technology. Based on his own proposal he has designed PFD scheme, he has performed mass and energy balances, evaluated an economic analysis of the technology, sensitivity analysis included. Discussion of the possibility syngas to chemicals and advanced biofuels was outlined.

The results of the master thesis are very interesting for future visions in lignocellulosic waste conversion technologies based on gasification. Nevertheless, there is a rough review of waste gasification, information about syngas to chemicals was shallowly mentioned, there are still some unclear calculations that were not clarified to me during consultations, the bibliography is not according to standards. All these imperfections were caused by time press to submit the thesis in time.

Mr Jalilov was proved by such a thesis that he has skills of a mechanical engineer. Based on its quality and student's level during the preparation of the thesis, I undersigned Lukas Kratky, I evaluate it as the supervisor by the grade

C – good.

Date: 13.6.2018

Signature: assoc. prof. Ing. Lukáš Krátký, Ph.D.