

## I. IDENTIFICATION DATA

<b>Title:</b>	Post-combustion CCS technology using ammonia scrubbing for supercritical 660 MWe power plant unit
<b>Author:</b>	Ondrej CERNY
<b>Type of thesis:</b>	Master thesis
<b>Faculty/department:</b>	Faculty of Mechanical Engineering
<b>Department:</b>	Department of Power Engineering
<b>Supervisor:</b>	Monika VITVAROVA, Ing.
<b>Supervisor's place of employment:</b>	FME CTU in Prague, Department of Power Engineering

## II. EVALUATION CRITERIONS

<b>Diploma thesis assignment</b>	<b>More Challenging</b>
<i>Difficuly evaluation of the diploma thesis assignment.</i>	
<p>The thesis topic is focused on a comprehensive and coherent analysis of the integration of technology capture CO<sub>2</sub> from flue gas using ammonia scrubbing for supercritical power plant unit with power output of 660 MWe. The thesis solves one of the very current issues across the global community, namely reducing the impact of carbon footprint on environment as defined in the plan signed under the Paris Agreement in 2016. The thesis deals not only with the assessment of CCS technology integration into the power plant, but also with the impact of new BATs as well as with the evaluation on power plant economy. The student was only partly based on the knowledge gained in his Master's degree in the elaboration of his thesis and I therefore consider thesis assignment as more challenging.</p>	
<b>Fulfilment of thesis's assignment</b>	<b>Fulfilled</b>
<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 assignment. If the assignment is also not completely fulfilled, try to assess the importance, impact and possibly cause various deficiencies.</i>	
The student has completed all the points and goals of the assignment.	
<b>Activity and independence during thesis's processing</b>	<b>C-Good</b>
<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>	
<p>At the beginning of the study, the student was adhered to agreed deadlines, but their frequency was not sufficient, taking into account the need of solved analyses which was reflected especially in the final elaboration of the planned analyses or their processing into the final version of thesis. The student was able to work both independently and creatively, but in certain cases, especially in the first phase of creating his own sub-models within the gProms software platform (gCCS), this ability was lower and partly resulted in time delays in the final Master Thesis processing (but not significantly) manifested in the formal and linguistic level of thesis (eg in the description of the integration of the heat recovery system for the ammonia scrubbing option, etc.).</p>	
<b>Professional level</b>	<b>C-Good</b>
<i>Assess the expertise level of thesis, using knowledge gained from the study of scientific literature, documentation and utilization of data obtained from practice.</i>	
<p>The professional level of thesis corresponds to standard master's / diploma thesis at the Dpt. of Power Engineering , FME CTU in Prague. The student was able to acquire relatively good knowledge of the literature (see the processing of search section) and then use these documents/information in their own work (in the creation of models in the software platforms - gCCS and Cycle-Tempo, etc.) Due to the time constraint, It would not be a</p>	

possible to go into the depth of the solution and make other interesting analyses that have emerged as part of the first results. Unfortunately, the resulting processing of work in certain chapters shows some inaccuracies, e.g. in the description of the analysed variants, better graphic processing of outputs (e.g. graphs instead of tables) and non-clarification (inaccurate expression) of the output specification in the introduction and conclusions of the work, which unfortunately partially degrades relatively high quality thesis.

## Formal and language level

**C-Good**

*Assess formal correctness in the bibliography, the typographical and linguistic aspects of thesis.*

The diploma thesis was written in English. The language page is at an average level, partly due to the fact that the English language is not the native language of the student and partly due to the timing of the Master thesis final processing. Unfortunately, it is necessary to say that there are minor deficiencies (misspellings, missing specifications) that otherwise degrade the very solid work.

## Bibliography

**B-Very 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 are correspond with ethics, whether bibliographic citations are complete and finally whether all citation are in accordance with the practices and standards.*

The student has used correct bibliography and has correctly quoted within the thesis.

## 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.*

Student inconsistency within a period of solving the thesis had resulted in some minor deficiencies in the training and language level of the Master thesis.

## III. FINAL EVALUATION AND PROPOSAL OF CLASSIFICATION

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

*The student has developed a comprehensive solution for the CCS technology (ammonia scrubbing) integration into the supercritical power plant with 660 MWe power output. Student worked on a very interesting topic using the basic knowledge gained through his studies in the Master's study programme and used new software platform gCCS and Cycle-Tempo. The elaborated thesis is corresponded with the standards of Master's thesis at the Dpt. of Power Engineering, FME CTU in Prague. The unstableness of the student during the period of his thesis's solution resulted in a certain amount of time in the final elaboration of his thesis which led to a certain reduction of the resulting (more specific - within the professional (accuracy of the description of the analysed variants, graphical processing of conclusions - eg graphs, etc.) and language levels (misspellings, missing table parameter labels, etc.). Despite these comments, I recommend this thesis for the defense.*

I evaluate this Master's thesis by classification grade **C – good**.

Date: 18.6.2016

Signature: 