

OPPONENT'S EVALUATION OF THE DIPLOMA THESIS

Student: MANH HA NGUYEN

Opponent: Assoc. prof. Jiří Hirš

Study program: Engineering Informatics
Study discipline: Integrated Systems in Buildings
Academic year: 2015/2016

Thesis topic: Solution of HVAC System in Clean Spaces in Hospitals

Evaluation of the thesis:

Diploma thesis does not solve the full depth of the solved task. Building physics at work solves only the thermal properties of structures and does not deal with humidity, building acoustics, lighting, indoor environmental quality and energy efficiency.

For solving the thesis diplomat chose appropriate methods. Conceptual solution is weaker.

Thesis topic is timely and interesting. The student did his thesis slightly below average. Contribution of diploma student I see in studying American standards for clean spaces and hospitals.

- Comments of the thesis, errors and mistakes in the technical report
 - Page 10, 1. Paragraph, Very simplified requirement for air velocity and false sentence: *“pressure inside hospital must be greater than outside”*
 - Page 32, Fig. 2, poor quality of the picture and without mentioning the source
 - Page 44, point 7., after preheater should be second heater.
 - Page 48, point 10., recommended minimum duct velocity is not 12.7 m/s
 - Page 49, point 1., where you find the numbers (12.7 m/s, 7.62)?
 - Page 50, chapter 4.5.2, point 1., requirements for the distances are strange
 - Page 51, chapter 5.1, Are the values of thermal transmittance according to ČSN 73 0540 obligatory? What about requirements for nZEB?
 - Page 51, chapter 5.2, “partial recirculation of room air is appropriate and this allows for optimal energy utilization” is not valid for all rooms.
 - Page 54, chapter 6, in the small clinic is no bathroom or washroom?
 - Page 55, table 4, WC is not heated?
 - Page 66, last sentence below: -15°C is not average temperature outside
 - Page 68, Fig. 8, is not clear, where is exterior and where interior, what is the component on the left side.
 - Page 72, 74, Fig. 10, 11, no description of blue points on diagrams
 - Page 80, chapter 8.3, is not piping system, but duct system
 - Page 80, Fig. 15, which duct branch is basic for sizing?
 - Page 94, Fig. 23, is missing description of sensors.



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- Questions relating to the defence of the thesis
 1. Do you think about principle “room in room” for reduction heat load and losses in clean rooms in hospital and to improve conditions for control system?
 2. What is the relation between air temperature and air humidity?
 3. How to protect the heating exchangers in HVAC units against freeze?
- Conclusion

The present thesis fulfils the basic features of the task and the formal requirements for this type of final qualifying work. The above comments indicate a lower quality of diploma thesis. Master student has demonstrated the ability to solve basic parts of of the assigned task with the use of theoretical knowledge.

Overall evaluation of the thesis:

The Opponent shall grant a mark according to the ECTS classification scale:

A – Excellent, B – Very Good, C – Good, D – Satisfactory, E – Sufficient , F – Insufficient

An “F” grade also means "I do not recommend the thesis for defence."

I recommend this thesis to be defended and suggest the following evaluation:

D - Satisfactory

In the case of an evaluation grade of “F – Insufficient”, please supply the main shortages and reasons for this assessment.

Date: 1.6.2016

Thesis Opponent's Signature: