

Review of diploma thesis
DESIGN OF AIR-CONDITIONING SYSTEM FOR AN OFFICE BUILDING
no. 1-EE-2014
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Diploma thesis deals with design of air conditioning system for office building. Purpose of diploma thesis is find how big is different between two buildings placed in two different climates. Following this purpose is design done in free different conditions: 1. for Czech climate data with Czech standard building envelope, 2. for Algiers climate data with Czech standard building envelope and 3. for Algiers climate data with Algiers standard building envelope. In beginning of thesis is mentioned definition for heat gains / losses calculation respective basic how to do calculation. Second part of thesis is focused to exact calculation procedure for given building.

Formal comments

- All work has a lot of problems (mistakes) with text format which should correspond with diploma thesis standard. For example page 16, 17, 38, 45, 46, 52 and etc.
- Thesis has little bit chaotic organization in terms of subchapters, which have missing numbers. This should lead for better orientation in thesis.
- In part “Symbols”, are symbols not sorted by alphabet, capital / standard letter, indices and Greek alphabet.
- In all text is number of mistakes with keeping same text format and size.
- Neither picture in thesis has no number with corresponding number in text.
- In thesis is big amount of equations, unfortunately neither one have number with corresponding number in text. Descriptions of equations have somewhere missing units.
- On page 16 is equation for solar declination by Cooper. This source is missing in list of sources / references.
- On Page 30 and 31 is used same paragraph.
- On Page 38 and 18 is used same paragraph. Then on page 38 is table of solar intensity values where author above comments, that all values are for certain time of day. But this time of day including number of day and number of month from year are missing.
- Author use for all 3 designs same text including same mistakes and only change values for corresponding type of design and some small differences – pages 36 – 73.
- On pages 74 and 75 are show pictures with should be final aim of thesis. Unfortunately I feel that format and style of pictures are not good for diploma thesis – mainly last one.
- List of sources / references is very chaotic, not follow recommended standard and not present all used sources in thesis. Mainly using copy of links from internet browser is strongly not professional.
- As well as list of references is part of appendixes little bit chaotic and not use same format for all tables and etc.
- On the end of thesis are show pictures of piping distribution design. These pictures are hard to read and miss all necessities of piping design. These pictures are print screens from drawing software. Because thesis miss detail piping drawing and mention that I expected that on DVD will be files with all drawings in pdf or dwg for better understanding, but those files also miss.

Substantive comments

- On page 11, author mention that design and calculation of heat gains and losses must follow some methods. But not mention which methods and standards follow for own design.
- On page 17 is equation for transmissivity. In Czech standard ČSN 730548 are mentioned little bit different values (if author used Czech standard)
- On page 38 is table of solar intensity values, where author above comments, that all values are for certain time of day. But this time of day including number of day and number of month from year are missing
- On page 49, 60 and 72 is table of piping diameters, which not correspond with standard production. Than should author use standard diameter of piping and do new recalculation to check exact air velocity in piping for next calculations.

Questions for author

- 1) Why is not mentioned in calculation of heat gains accumulation of heat gains from solar radiation through windows to indoor walls and floors?
- 2) On page 24 is equation of heat gain through window by radiation. How should be this equation in correct format to calculate shading on windows?

Overall evaluation

Author find probably expected conclusion in his thesis, where compared 3 types of air-conditioning design for given office building. Thesis has lot of mistakes / problems from formal site and presentation quality. From site of air-condition design seems to be this thesis without problems. From diploma thesis I would expect little bit more details and deeper assessments.

My evaluation of thesis is

D (Satisfactory)

In Prague, 29. 12. 2014

Ing. Marek Begeni