

STATEMENT

From Assoc. Prof. Dr. Vladimir Monov

Member of the jury accordin to order № 187/31.10.2018

from the director of IICT—BAS

ABOUT

dissertation for gaining educational “PhD” title in science

Author of the dissertation: **mag. eng. Veneta Hristova Yosifova**

Topic of the dissertation: **„Methods and means for observing the energy efficiency of buildings and constructions “**

Educational discipline: **5. “Technical sciences“**

Profesional division: **5.2. „ Electronic, Electrical engineering and Automation“**

Supervisor: **Prof. Dr. Eng. Dimitar Karastoyanov,**

Dissertation overview

The dissertation contain 131 pages and includes 4 chapters, Conclusion and Results commercialization plan. The list of refferences has 67 literature sources, and with separate numeration eight more titles are reffered. The list of publications over the dissertation contain six publications. 6 scientifically-applied contributions are formulated in the dissertation. A declaration for originality of the experimental results is enclosed to the dissertation.

The autoreferate has 44 pages and exactly reffers to the conditioned goals, the experimental results and the scientifically-applied contributions in the dissertation.

Actuality of the problem solved in the dissertation in scientific and scientifically-applicated matter

The dissertation’s subject refers to examination of the energy efficiency of buildings from different type (home, industrial, offices etc.), the environmental impact and the development of modern and innovative means and approaches for increasing. A lot of factors are analysed, that defines and affect the enrgy efficiency and helps in building’s sertification according to their characteristics. A detailed analysis is made over the modern building’s instruments for determining heat-loses technical characteristics, energy use and new construction techniques and materials. The outlined problems, conserning energy efficiency increasing are subject of active scientific and scientifically-applied researches on local and international scale, which undoubtedly defines the actual matter of the

dissertation's topic and the usefulness of the outcoming scientifically-applied results and practical solutions.

Problem understanding and literature interpretation degree

In chapter 1 of the dissertation a detailed overview, analysis and systematisation are made, concerning factors for building's and construction's energy efficiency. Factors that affect negatively over the energy efficiency like moisture, condensation, chemical and physical elements are examined and the means for their control and prevention. The building's impact over the climate changes is examined. In chapter 2 are examined the most widely used tools for determining energy efficiency, the properties and parameters of insulation materials, energy efficient lightning, heating and cooling systems. The presented material shows deep understanding of subject's matter and the actual problems in its area, as well as the potential opportunities for their solving. Based on that the goal and the tasks of the dissertation are formulated.

Appropriateness between the goal and tasks and the achieved results

The methodology of the researches includes analysis of existing methods and means for defining the energy efficiency, the examination of material's and building's installation energy characteristics, the application and improvement of modern techniques for reducing heat-losses and increasing the energy efficiency in all building's components. The research methodology entirely responds to the modern tendencies and practices for increasing the energy efficiency. The gained results show that the PhD student has successfully applied an examination approach in achieving useful results with scientifically-applied and practical contribution.

Dissertation's scientifically-applied contributions

I accept and positively evaluate the scientifically-applied contributions that are formulated in the dissertation and the autoreferate. They can be summarized as follows:

- A lot of different factors are systematized that define the energy consumption and the energy efficiency of home and industrial buildings and constructions. The energy characteristics of modern building materials, constructions, installations and equipment are defined.
- A model and methodology for increasing the energy efficiency of typified office premises in standard office building is developed. The methodology is conformed to the climate conditions, market diversity and economical situation and can be applied in many existing buildings on local level.
- Experiments in real conditions are made, which are used as a basis for analysis and comparison between old and innovative heating methods.

- Series of experiments are made in different places — the University of Architecture, Civil Engineering and Geodesy, newly build office building and IICT — BAS building. As a result a hidden defects are revealed, that decrease the energy efficiency and a possible solutions are proposed.

A good attestation for the practical applicability of the results obtained in the dissertation is the proposed plan for their commercialization.

Assessment of the publications within the dissertation paper

Six publications are made over the dissertation with the PhD student participation, four of which are individual work and two are co-authorship. This propotion undoubtedly demonstrate student's ability for individual scientific and researching activity. All publications are published within the educational period. Generally they describe dissertation's main parts and the main experimental results. Beacause of the publication the disertation's solutions has been popularised within the area's scientific community.

Notes, advices and comments

The disertation is worked out in detail and is a complete scientific and research work. The author has accomplished systematic examination of the problem and has poposed original scientifically-applied results and useful practical solutions. The achieved results respond to the desired goal: observation of building's and facilities energy efficiency and suggesting new methods and means for its increasing.

I have some redaction and technical notes over the dissertation copy which I recieved.

- The dissertation's text is not well formatted, without right alignment; a paragraph from page 16 is copied in page 3 of the table of contents.

- The list of refferences is not well formated, it contains double numerated titles and according to the formal requirements it has to be titeled " Bibliography", not "References".

- A lot of the sentances start with quotation numbering, which doesn't match the approved quotation forms.

The notes above have formal character and doesn't reflect the value of the dissertation's contributions. My advise for the PhD student is to continue her researching and publishing work and to pursue a practical realisation of the proposed metodology for increasing the energy efficiency.

CONSLUSION

I highly evaluate the work done and dissertation's results. The dissertation meets the requirements of ЗРАСРБ, the regulations of its application and the specific requirements for gaining scientific titles and academic degree in IICT— BAS. Based on that, I propose to the honorable jury to

grant mag. eng. Veneta Hristova Yosifova with educational and academic title “ Doctor” in Discipline:
5. Technical sciences, Division: 5.2. Electronic, Electrical engineering and Automation, Scientific
Area: 02.21.07 “Automated systems for information processing and management”.

Sofia,

20.11.2018

