



## THESIS EVALUATION SUPERVISOR EVALUATION

Author name: Pavan Lakkamaneni Madhusudhana Rao

Supervisor: Eng. Miroslav Novak, Ph.D.

Thesis title: The controller for the temperature chamber with Peltier cell

- A. Abstract quality, keywords matching..... Excellent minus (1–)
- B. Research scope and processing ..... Very good (2)
- C. Level of theoretical part ..... Excellent minus (1–)
- D. Appropriateness of the methods ..... Very good (2)
- E. Results elaboration and discussion ..... Excellent minus (1–)
- F. Students own contribution ..... Excellent (1)
- G. The conclusion statement ..... Excellent (1)
- H. Fulfillment of Thesis tasks (goals) ..... Fulfilled
- I. Structure, correctness and fulness of references ..... Excellent (1)
- J. Typographical and language level ..... Excellent (1)
- K. Formal quality ..... Excellent (1)  
(text structure, chapters order, clarity of illustrations)
- L. Student access (independence, activity etc.) ..... Excellent (1)

### Comments, remarks:

The presented work deals with the design of a controller for a small temperature chamber based on a Peltier cell. The author designed the schematic of the controller, he designed the printed circuit board, which he assembled. He also programmed the firmware with the temperature controller and set its parameters. He realized the temperature chamber using 3D printing. The result is a functional prototype.

Some keywords are general and not directly related to the topic.

The designed hw has the usual concept based on the power H-bridge. Control is provided by two development boards with embedded microcontrollers. One controls the power part and regulation, and the other controls the touch screen and user interface.

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Overall assessment:

The student spent much time designing the hw and debugging the FW. Unfortunately, he had little time for the part dedicated to the temperature chamber regulation algorithm. The proposed PI algorithm has a standard structure and uses the suppression of the wind-up effect by resetting the integration component. There was not enough time left to solve other regulatory issues. However, the created prototype is functional. The author worked independently with great effort and successfully dealt with both hw and firmware design.

Questions for the defense:

What is the required battery capacity for an hour of operation?

**Plagiarism checking:**

Similarity by STAG 3 % (see [www.IS/STAG](http://www.IS/STAG))

Comment if similarity is above 5 %:

Low similarity (obligatory chapter Declaration, references).

**Overall classification and recommendation:**

Work meets the Master degree requirements and therefore I recommend it for the defense

I suggest to classify this work by grade: Excellent minus (1–)

By signing I certify that I am not in any personal relationship with the author of the thesis

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Supervisor signature