



SUPERVISOR'S REPORT ON THE MASTER'S THESIS

Master's thesis title..... **Design of an automated control system for subway escalators**

Author (including degrees)..... **Bc. David Hoyos Posada**

Master's thesis supervisor (incl. deg.) **Ing. Bc. Vladimír Faltus, Ph.D.**

Evaluation criteria and their classification

Fulfilment of the master's thesis requirements and goalsA (excellent) ... 1,0

Self-action and own initiative during the master's thesis elaborationA (excellent) ... 1,0

Application of knowledge gained by self-study and from professional literature.....A (excellent) ... 1,0

Usage of groundwork and data from practice B (very good) ... 1,5

Professional level and contribution of the master's thesis.....A (excellent) ... 1,0

Formal aspects of the master's thesisA (excellent) ... 1,0

Further comments to the master's thesis:

The assignment is more challenging. It requires to master theoretical analysis, design, simulation and optimization, and the implementation of part of the algorithms. The student fulfilled all points of the assignment.

The student was very active. The work was regularly consulted and actively communicated with representatives of the Prague Public Transport Company in the investigation of documents and information about the operation of escalators in metro stations.

Terminology is well used in the work. There are many references to professional literature. Used sources are sufficiently up-to-date.

Some quantities, such as escalator capacity or saturated flow, were counted or simulated, but they were not verified in real operation.

The work has a logical segmentation that matches the assignment. Both the linguistic and typographic pages are without many reservations.

The difficulty of work underlines several diverse key sub-tasks, among which the following can be included:



- search for descriptive patterns of passenger flow, such as capacity of escalator, saturated flow, delay times, etc.
- measurement of the real input characteristics of the passenger flow at the station I. P. Pavlova
- design of algorithm for dynamic escalator control including parameterization for subsequent optimization
- usage of a structured SW tool for simulating the movement of people on escalators and queues, including the possibility of assessing different escalator control principles
- usage of optimization task and self-determination of optimization criteria
- assessing the resulting optimum and comparing it with the current settings

The thesis proved that the student has successfully completed a challenging task. The resulting option reduces the current delays of up to 43%, which is very positive, even though operating costs would increase by 30%.

QUESTION: The optimal option includes only two mode changes during the daily operation being tested. If we did a similar setting with fixed two mode changes at set times (without pedestrian detection), could this fixed setting bring similar results? What argument should the escalator operator require to operate the system including pedestrian detection?

I **recommend** the master's thesis for the defence.

Summary classification of the master's thesisA (excellent) ... 1,0

Vladimír Faltus

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master's thesis supervisor's name

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master's thesis supervisor's signature

In Prague - June 14, 2017 -