6 SUMMARY

The thesis was oriented on (a) researching friction coefficient measuring device, (b) finding different approaches for assembling control system and (c) concentrating on the design of higher degree of automation of friction measuring process. For in-depth analysis of the work, this paper is divided into five main parts:

- Introduction – general overview of a given problem, describing the importance & real-life applications of friction coefficient measuring devices, analyzing responsibilities and possible research options.
- Existing system – describing & researching the system which was present before starting the thesis project.
- Manual control mode – in-depth analysis of how the manual control system was assembled and what difficulties were faced while trying to follow given requirements & limitation of components.
- Computer control mode – general overview of why it was not assembled, researching the possible connections and analyzing the limitations of supported serial ports & proposing optimal design choice.
- Economic overview – research of prices of all used components and by trying to approximate the human resources cost, calculating the possible total cost of each mode.

While working on the thesis, it was unavoidable to face various challenges and problems, which are described both, in manual and control mode chapters, but by applying the research, problem-solving and strong analytical thinking skills, in most cases it was possible to overcome them. Due to limitation of the system itself, some initial tasks were impossible to fulfill, but the work was always focused on following the initial purpose of the device. Finally, the outcome was very desirable and the manual control system was assembled fulfilling all initial requirements and following the electrical installation standards provided by ABB (1) as well as American National Standards(4).

As the outcome of the thesis, an operational control system for linear movement test rig was designed, assembled and tested. The control system has the following main features:

1) manual control mode (in addition to the frequency converter standard functionality) with large buttons.

In the manual control mode the main functions are:

- move left (up to the limit shitch operation)
- move right
- stop
- adjustment of frequency using turn-knob

2) Automatic control mode that was designed on the conceptual level and is to be implemented further

As devices for the computer control were not provided, the possible computer control system was well researched and designed, which can further be used as a research objective.