Master Thesis Evaluation

Name of the student: Chahir MESSAS
The Topic: Pressing Facility Pneumatic Control System Innovation

According to the master thesis guidelines the task was:
1. Make an analysis of the actual situation according to the facility sketch and the pneumatic control system drawing
2. Discuss advantages and disadvantages of this solution
3. Design possible changes with respect to the modern control technology

Student has started to work upon the redoing the previous thesis comparatively late, only in the second week of November. He has consulted every week, but the progress from one to the other consultation have been comparatively small, with many mistakes occurring again and again though the mistakes and structure of the work have been reclaimed many times.

So again he has not enough time to complete all in the depth, scope and structure originally desired and also to complete the real implementation in the physical in the laboratory. The design of innovation is completed only by listing of the basic linear program for real PLC without HMI and errors handling. Pneumatic interconnection and electrical interconnection of the real PLC has not been done. During preparation of it many crucial mistakes have been manifested.

The formal layout of the thesis is now in good level, with all pictures and tables with their numbers and names and with the list of them.

In the names of variables there are still some problems (Table 3, Figure 17).

The diploma thesis is divided into six chapters. Unfortunately the advice to separate the general design and real implementation into two subchapters (here of chapter two) for better overview, what is really new, has not been accepted by the diplomant.
But it is very valuable that some new methods of analysis have been added now, state diagram and Petri net. Also the description of the GRAPHCET language in general has been included now.

In the Table 4 there are still mistakes related to the speed of movements, we have discussed it many times.

The simulation of the electropneumatic solution of the task given as a preparation for the software solution for real PLC is inserted, unfortunately it is again without explanation of the method used for the construction of the circuit and again with the another mistake related to the internal variable K16. This causes the run of the circuit without starting it through the Starting pushbutton again and again, what was not intended.

In the Chapter 3 Advantages and disadvantages of the pneumatic solution are presented nicely, but only in general and without application to the task given and to the innovation of the solution.
In the Chapter 4 Advantages and disadvantages of the pneumatic solution are presented nicely, but only in general and without application to the task given.

In the Chapter 5 some Safety problems for pneumatic system are named, but again only in general, without analysis with respect to the task given.

The same problem is related also to the Chapter 5.3 about Industry 4.0 and Chapter 6 related to possible errors, where only general statements are given without respect to the task given.

No method is designed in the solution for the virtual PLC to inform the operator about the problems – for example the simplest problem of not achieving of the end position by any of the three motors. Nor the simplest way of the possible stopping the working cycle upon one batch after one cycle, to name only one of the basic Human machine interface functions, is designed here.

In the Appendix there are nice pictures, but their placement here is not very suitable. Instead of this the listing of the program for the real PLC should be here as I have reclaimed it several times.

The synthesis in general and for real implementation of the system innovation is without proper explanations and evaluations of ways and methods used by the diplomant in the solution.

The thesis as a document is still written rather briefly, with some nice photographs from the laboratory and some printouts of schemes from the FluidSIM® Pneumatics environment, but with very small number of pages with the description of diplomant own design work.

With the respect to the facts given and the fact that the basic criteria in the the guidelines have been fulfilled my evaluation is

„E“ – sufficient.

In Prague, 30.1.2017

Ing. Marie Martinásková, Ph.D.