

Master Diploma Thesis Evaluation

Name of the student: Yutian Hu

The Topic: Control an visualization of the special pneumatic drive application

According to the master thesis guidelines the task was:

1. Prepare analysis of the application chosen
2. Design control system in the software environment FluidSIM®
3. Design implementation of the part of the control algorithm
4. Design visualization of the part of the system in the SCADA system Reliance
5. Debug the whole system in the real time

The master thesis delivered is divided into six main chapters.

In the second chapter the softwares used are listed with their short functionality description.

In the third chapter student has introduced main properties of the GRAFCET language. Here there is very valuable part related to the tools for application structurizing and to the compulsory commands.

In the fourth chapter all important hardware components used for the implementation in the laboratory are clearly introduced and described.

In the fifth chapter all the simulation models in the FluidSIM are placed, both for the whole system and also for the two parts, Station 1 and Station 2 as preparation for the real implementation with real components in the laboratory. Here the part related to application of the stucturizing tools from GRAFCET for all machines modes is very valuable and actually new inbetween works of the similar scope of tasks we have solved in the laboratory.

In the sixth chapter the real implementation in the laboratory is documented both for the Station 1 and Station 2. Student has been able to solve many practical problems here until the full functionality of both stations according the sequence desired also in the conditions of some limitations in the components at disposal and also with respect to all common modes of the machines.

In the last, seventh, chapter visualisation application in the SCADA system Reliance for the controlled machines has been described. There have been two projects prepared, one with simulated run through script for the Station 1 and the second one for the real run with the real tags from the PLCs communicated through the OPC server to the SCADA Reliance and for both stations. Here is also very valuable part of this thesis solved and described and this is communication between the two Stations on the level of SCADA system Reliance.

The thesis as a document is written nicely, it is clearly structured according to the topics given and solved. In the document there are many nice photographs from the laboratory work, many useful tables and many important schemes from the FluidSIM® Pneumatics environment and also some important parametrisation screens or on line windows copies from the SCADA system Reliance.

Our student has started to work upon the topic given with great enthusiasm and effort from the very beginning. He has studied hard, consulted regularly and has applied many topics from his both mandatory and free chosen courses, from materials in the FluidSIM®, from components Data sheets and also from the literature given. He has also found many important information necessary for the solution from recommended documentation of Siemens company for the PLC S7 200 and from documentation of GEOVAP company for the SCADA system Reliance.

The scope of the topic is here very wide and deep, so it was rather difficult to describe all the work done clearly and in a compact and comprehensive form upon 68 pages. But I think our student has mastered it very well.

All points of the guidelines have been fulfilled completely and in the very short time, some of them in more ways and even some topics, e.g. communication between two PLCs at the SCADA level, have been solved above the mandatory list. And this is very valuable and result of the great effort of our student during working in the laboratory.

With the respect of the facts given my evaluation is „A“ – excellent.

In Rajecké Teplice, 13.6.2018

Ing. Marie Martináková Ph.D.