

Hardware and software upgrade of the motor test unit in HAMK Valkeakoski

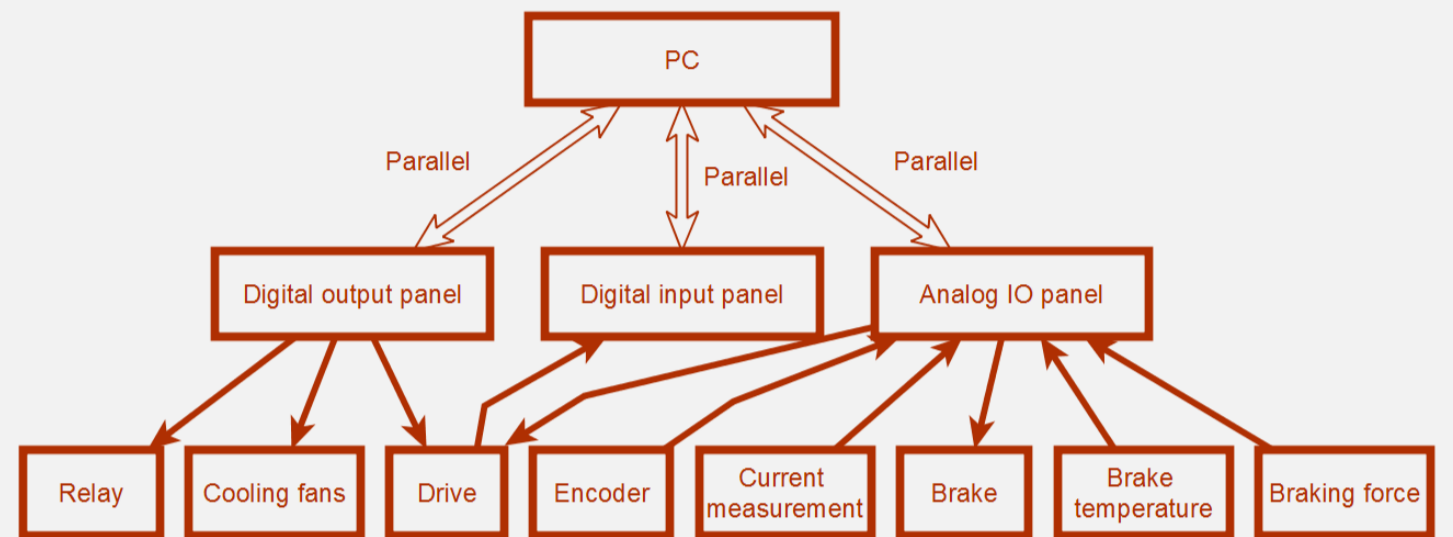
Geutjens Kevin

Academiejaar:

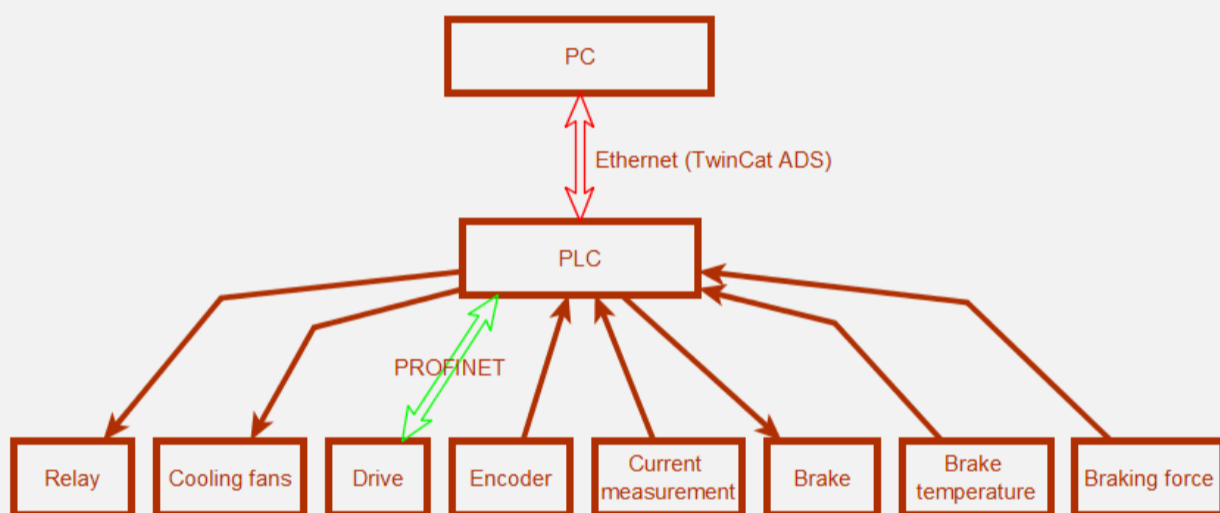
2014-2015

Initial situation

- HAMK Valkeakoski, Finland
- Didactical motor testing unit
- Outdated (made in 1999)
 - Windows 95 computer
 - 3 Parallel interface
 - Old ABB ACS600 drive
 - Doesn't function anymore
- Needs upgrade
 - Software (Windows 7)
 - Hardware (new communication, new drive)



New hardware



- New Windows 7 PC
- Replaced custom I/O panels by Beckhoff CX9020 PLC
 - Dedicated PLC → SAFER
 - Communication through Ethernet (TwinCAT ADS)
- Replaced ACS600 drive by new ACS355 drive
 - Overdimension (student proof)
 - Communication through PROFINET
- Improved emergency stop system

New software

PLC

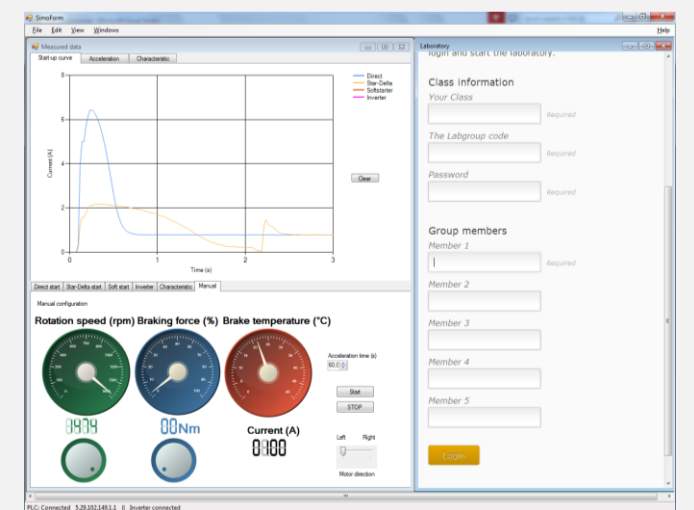
- Beckhoff TwinCAT 3
- Intelligence
 - Independent
 - Takes load from PC program
- Improved emergency stop system
 - Connection monitoring
- Datalogging

PC

- Shows startingcurrent, speed and acceleration of:
 - Direct start
 - Star-delta start
 - Softstarter start
 - Drive start
- Torque-speed characteristic measurement
- Manual control
- Very user friendly

Conclusion

- Ready to use solution
- Improved simplicity by using Ethernet and PROFINET connection
- Student proof
- Modern communication
 - Ethernet
 - PROFINET
- Easy to use
- Highly improved safety



Promotoren / Copromotoren: Intern: ing. Eric Claesen
Extern: ing. Timo Väisänen