Welcome to the homepage of the project team

"RoboSchach"

This is a project of the technical college for automation engineering at BBS1 Mainz /Germany.

On the following pages, you can find more information about the project and the project team..

The Team

The project team "RoboSchach" consists of 4 students of the class FSAPz06 with branches of process automation / electrical engineering and 3 students of the class FSAPd06 production automation with branches of mechanical engineering at the BBS1 at Mainz / Germany.

This project is the final technical examination of the 4 years part time study to get the certification of "Certified Engineer" in process or rather product automation.

Our project supervisors and teachers are Thomas Löser and Markus Musielack.

Now the students will introduce themselves.

About the project:

The available system concerns in the origin of a manufacturing system, which transports work pieces on a conveyor belt to different stations. This was extended from our parent group by a rotating chessboard and two robots. One robot is responsible for positioning the figures on the chessboard and the other one can explain the given manoeuvres. Therefore originated an automatically chess game with flow of material.

You find a detailed procedure description of the optimised system under the chapter Project aim.

Project aim:

Two robots are playing chess. The 32 chessmen are positioned via conveyor technique from 2 robots on the chessboard. Every chessman is placed by robot 1 from the figuremagazine 1 to an transportboard. Now every board are transported with the conveyor belt to the material detection. From this the figures are placed by an pneumatic aspirator in the material detection, which identify the chessman. After that the figure is placed back by the aspirator to the transport board. Now the figures are transported to robot 2. This take the chessman from the transportboard and place it on the correct position of the chessboard. All this steps you can watch on a visualisation. For this purpose the complete conveyor technique and all transportboards with its content are displayed. From the visualisation you can bring the system to the initial state and start them. On our presentation day we will design a simulation of a game from 3 to 5 moves which an further disposed adjustment. This comprised to outcompete a high chessman and take them out of the game. Now the figure gets transported to the figurmagazin 2 where you can take it back in the game as needed. This figuremagazin 2 is a new integrated plant component. There will be assembled a small conveyor belt which can be achieved from an second pneumatic aspirator. The positions of the higher chessmen are placed in that way, you have an optional access on all figures. In the next move we will outcompete a pawn which gets transported to the figuremagazin 1. From this magazine you could not take figures back in game. After a another pawn arrives a changing field, the figure will be outcompete too, transported to magazine 1 an changed to the higher chessman which is placed in the magazine 2. you can see this procedur of the moves on the visualisation too.

The material flow of the chessmen and there moves on the chessboard are controlled by two Profinetmasters of

the Line-1 and the Line 2. the Profinetmaster of Line 2 will be integrated as new component and it will interact over a I/O-Gate with the Profinetmaster from the Line 1.

The project agreement:

On August the 30th 2009 we rendered the existant system from our parent group by our two academics Mr Löser and Mr Musielack. Under the directon of our teamleader Mr Freimuth we arranged the duties in our team. Afterwards we clued an project agreement between our academics and our project team. This agreement includes the detailed project aim and a specification sheet.

Download the project aim/specification sheet (only in German)

Reconstructions:

The cubicles are to be adapt of a standard connector.
The frequency inverters of the system shall be placed in one central cubicle.
The "Eckumsetzer-2" of the conveyor technique is to be upgraded and shall get faster.
The pneumatic aspirator-2 and the figurmagazin-2 shall be integrated in the system.
The linear unit of robot-2 is to be ubgraded.
Installation of a second Profinetmaster and the breakdown of the whole system into line-1 and line-2 shall be realized.

Project feeding:

- Processing a material- and a communication flow concept
- Industrial network automation with Profinet
- Integration of Siemens components
- Widening, programming and initiation of the conveyor technique for the material flow.
- Debugging and initiation of the whole system
- Visualization of sub-systems
- Checking and rewire the network connection
- New guiding of the power supply (240V / 24V)