

Auskunft:

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Studienarbeit (Mechatronics)

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Title: Programming and Commissioning of a Siemens LOGO! control system for a test rig for analyzing the failure behaviour of band knives (Motion Control)

Contour cutting machines for foam blocks operate with a revolving band knife and are similar in their basic structure to a horizontal band saw. In the free cutting area, the band knife can be rotated to produce contour cuts in combination with a horizontal movement of the foam block and a vertical adjustment of the cutting unit. A test rig is to be set up to obtain knowledge about the failure mechanisms. It consists of two rollers, one of which is driven and one of which is equipped with a clamping device. Between the rollers, there is a twisting unit in one strand. The aim is to obtain experimental data on the fatigue strength of the knives under different load levels.

The student project is aimed at the programming and commissioning of the Siemens LOGO! control system for the test stand, especially the AC-Motor for the main drive (ω) and the Servo-Motor for the twisting unit (MT). From a real machine, mechanical parts of a twisting mechanism can be used to twist the knife (MT, statically, dynamically or in combination).

Therefore, the study work includes the following steps:

1. Commissioning of VFD to drive Motor - AC main drive (ω) and Servo twisting mechanism drive (MT).
2. Code Development for the Controller (Siemens LOGO!).
3. Build up a visualization with control elements (start, stop, speed ω , speed and target angle for MT).
4. Integration of emergency stop and safety devices/safety functions in case of damage or opening of the protective enclosure.
5. Documentation and presentation of the work.

What you bring:

- The ability for careful and independent work as well as own ideas.
- Determination, high commitment and motivation.
- Experience with motion control and instrumentation using PLCs.
- Familiarity with LOGO! Soft Comfort V8 SPS-Software.

The work can be done in German or English. Please note the special conditions of our working group MSHM and the respective examination office. Particularly it should be finished in five months.