

Electrical and Computer Engineering Technology Department Heads Association

Mini-Grant Sponsorship

Application for Project

Project Title:

Adding Hands-On Lab Activities to Programmable Logic Controller (PLC) Course Content

Project Director:

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(Department Head: Dr. Leah Akins)

Abstract:

Many companies in our local area are looking to hire technicians who have some proficiency with Programmable Logic Controllers (PLCs). This proficiency is best developed in a course or training that includes hands-on activities. In order to build a PLC-based hands-on lab bench, the cost of the PLC itself is requested from the mini-grant.

Justification & Project Results:

Technicians who have proficiency with the installation and troubleshooting of PLCs need to know how to connect devices to PLCs, basics of logic, ladder logic, basics of programming, and how to download, test, and back up programs. These skills are learned much better with the inclusion of hands-on activities. To build hands-on lab benches, PLCs will be purchased that are small and inexpensive, but still have most of the features of the full sized models, and still use the same programming software and I/O device connection modes.

The PLC lab benches will be used in credit courses in automated systems, for the electrical technology AAS degree students, and also in non-credit training sessions for technicians from local companies taught here at the college.

The building and use of the PLC lab benches during the automated systems credit course offering in Spring 2008 will be documented and shared with the electrical engineering technology community. The documentation will include how to build the PLC lab bench itself (with a list of materials and wiring diagrams), teaching materials used, circuits built and programs downloaded and tested.

Sharing this information with the electrical engineering technology community will contribute to the proliferation of PLC study with hands-on activities, using the (relatively) inexpensive approach to building a lab bench that will serve to teach electrical technicians the basics of PLCs.

The motivator for applying for this grant is more to share the work with the electrical engineering technology community than for the funding.

Anticipated Timeline:

Dec 07

Submit abstract to present to SAME-TEC Conference in July 2008

Jan 08-May 08

Constructing the lab benches, creating the teaching materials, and building and testing control circuits with the ladder logic control programs will all occur during the automated systems credit course offering in the Spring 2008 semester, completing in May 2008.

June 08

Send all completed materials to Electrical and Computer Engineering Technology Department Heads Association.

The timeline can be further defined, and further presentations added, upon request.

Anticipated Budget:

One complete PLC lab bench – Total Estimated Cost \$650

- One Allen-Bradley Micrologix 1200 PLC, Cat# 1762-L24BWB
- One License – Allen Bradley RSLogix 500 Software for Micrologix Family PLCs, Cat#9324—RL0100ENE
- Additional materials to build the lab bench (such as input switches, output indicating lights, wiring terminal blocks, etc.)

Materials for another complete PLC lab bench will be purchased by Dutchess Community College so that two will be build and in use during the Spring 2008 semester.

Additional Information:

Any additional information about this project will be supplied upon request.