MAKER: Design and Evaluation of Automated System Modules for Portable Programmable Logic Controller (PLC) Kit for Industrial Automation and Control Education

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Dr. Jack is not an author. This abstract has been uploaded on behalf of the author.

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Abstract

Automation impacts our daily lives in many areas. Automated doors, elevators, coffee makers, air conditioners, and copy machines all have controllers and sensors integrated into the machine to form an automated system that provides a service. Designing, building, and maintaining industrial scale automated systems is a complex and challenging task. Student education in this area is hindered due to lack of industrial scale equipment to demonstrate how these systems work and how they are integrated. This paper describes the design and evaluation of an automated system module (that includes an industrial-scale controller) and how this module has been integrated with a portable PLC kit to make learning about automated systems and PLCs convenient and accessible in the classroom and at home. Responses from students suggest that (1) the integration of the automated system module into a PLC kit for use in the classroom keeps them engaged in class and allows them to ask what-if questions, and (2) incorporating different kinds of automated system modules is beneficial. Future directions may include incorporating building an automated system module into course requirements, such as semester project.