Abstract

This paper presents initial planning for the development of a process control breadboard system. The proposed system will be composed of mechatronic, thermal/fluid, and control elements that using simple hand tools can be easily reconfigured by undergraduate students. An approach for integrating the breadboard system throughout the curriculum, enhancing the design education experience beginning with freshmen and continuing through the senior capstone experience, is proposed. This system is expected to significantly enhance the ability of students to work with a thermal/fluid-based process control system, and to provide the opportunity for design/build/test realization for a variety of completely functional systems. A sampling of configurations will be presented to demonstrate how this proposed system might be used to address an open-ended design problem with external constraints. A comparison with existing educational trainer systems commonly found at academic institutions will be presented, along with preparations for a proof-of-concept adaptation to occur during the fall semester of 2002. Support for K-12 outreach activities and EC2000 professional component program criteria will also be discussed.