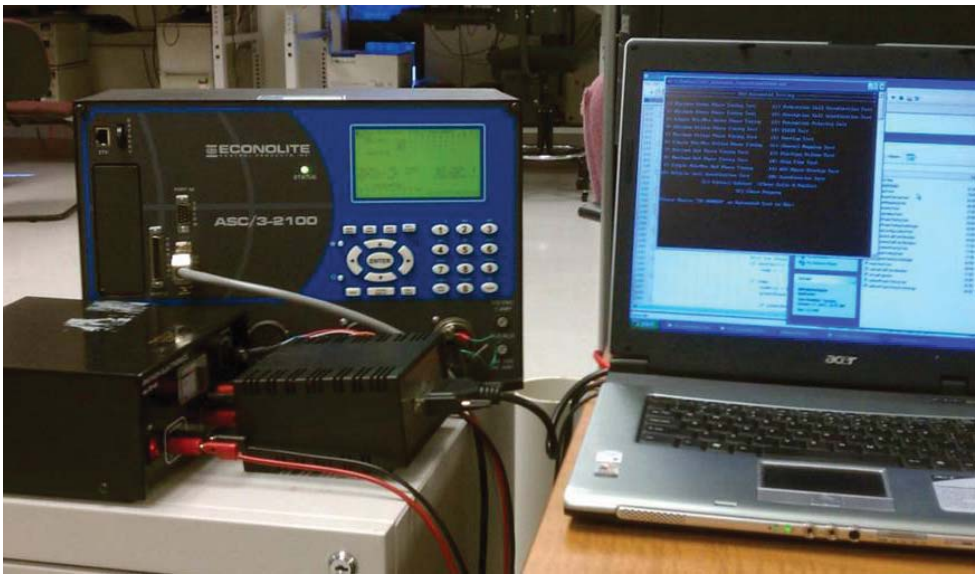
Florida Department of Transportation Research

Development of Automated Testing Tools for Traffic Control Signals and Devices
BDK83 977-08

Section 316.0745, Florida Statutes, requires FDOT to develop and publish specifications for traffic control signals and devices and certify they meet these specifications before they can be sold or purchased as part of a traffic control system. To fulfill this requirement, FDOT's Traffic Engineering and Operations Office, Traffic Engineering Research Lab (TERL), develops specifications and performs operational testing to certify the devices comply with FDOT specifications.



Set-up of the testing equipment with an ASC

One traffic control device manufacturers frequently submit to TERL for certification is the actuated signal controller (ASC). The ASC consists of a microcomputer that processes various inputs and triggers outputs that control traffic signals, pedestrian signals, and other electronic devices that comprise a signalized intersection. The ability of the ASC to be configured to accommodate a variety of intersection types makes testing of the ASC a challenging and time-consuming process. Although current testing is effective, TERL is seeking a more thorough, comprehensive, and automatic method to test ASCs submitted by different manufacturers.

Recently, researchers at Florida State University (FSU) investigated developing a set of automated testing tools to perform automated testing of the ASC. They studied literature concerning an automated testing tool previously developed by the National Institute for Advanced Transportation Technology (NIATT), which requires a controller interface device (CID), also known as hardware-in-the-loop, to be installed between a host testing computer and an ASC. Due to the limitation of the NIATT CID research and other commercially available test tools, researchers determined it would be necessary to design and build a new ASC test tool.

Researchers designed an automated testing system consisting of a laptop computer, a laptop interface card, the Automated Testing Interface Unit (ATIU) used to interface between the ASC and the laptop interface card, and a total of 20 automated test programs. However, because the ASC devices are built by different manufacturers, researchers found that to achieve a more efficient test method, it would be necessary to develop a standard communications protocol that can communicate with all products. Researchers will investigate incorporating the National Transportation Communications for ITS (Intelligent Transportation Systems) Protocol (NTCIP) into a testing system applicable to all ASC devices.

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For more information, visit http://www.dot.state.fl.us/research-center.