

A COMMUNITY COLLEGE - INDUSTRY PARTNERSHIP TO DEVELOP AN AUTOMATED SYSTEMS TRAINING PLATFORM

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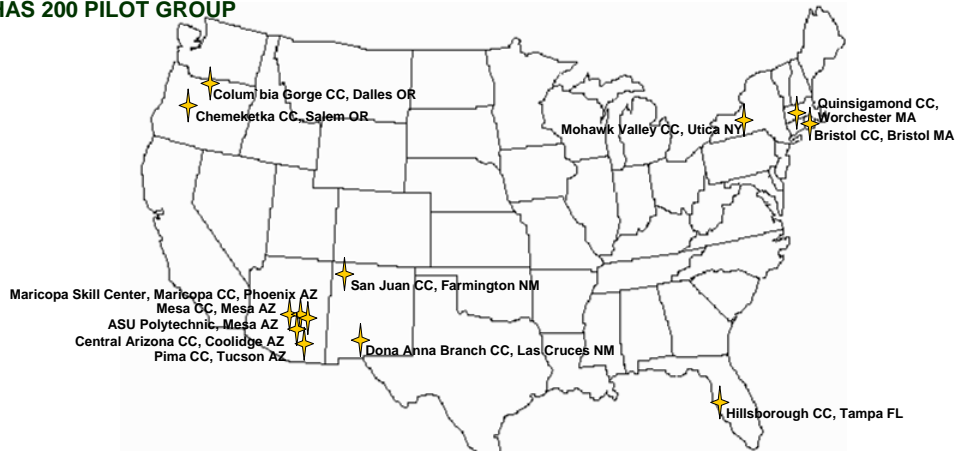
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OVERVIEW

- In 2001, SMC International Training, Inc., Intel, and the NSF supported Maricopa Advanced Technological Education Center (MATEC) partnered to develop a technician training platform for highly automated production systems. It must have broad but significant applications in a variety of high tech industries including micro, mims, and nano device fabrication, aerospace subsystem manufacturing, thin film and optics production, biomedical device material handling, and highly automated cargo transport control and monitoring systems.
- Thirteen educational institutions in the seven states vying for national recognition as high tech manufacturing regions, joined this coalition. These educational institutions participated with industry partners in the conception of and ultimate realization of the HAS 200 (Highly Automated System) Training Platform.
- The Pilot group is facilitated and coordinated by MATEC which supports a web repository of curriculum materials in various stages of development, an issues forum, and equipment and software support documentation.

- HAS 200 training systems were installed at the Pilot schools over a 12 month period in 2003 – 2004. Training sessions were conducted for all of the Pilot school faculty. The community college pilot group partners are currently using the training system in a variety of classes and developing a common curriculum for technician level courses using the HAS 200.
- The Pilot group also continue to troubleshoot both the hardware and software systems and recommend changes for the final Pilot version of the system and software for the commercially available system.
- The group has met regularly since 2001 with and without the project's industry partners in an ongoing effort to bring the project to completion. In exchange for their long-term participation, SMC provided the HAS 200 Training Platforms to the Pilot schools at a much reduced cost and ongoing technical support.

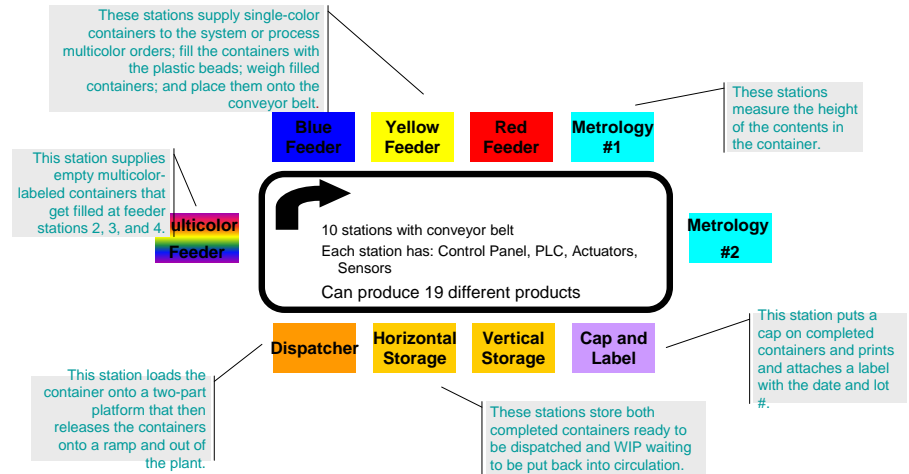
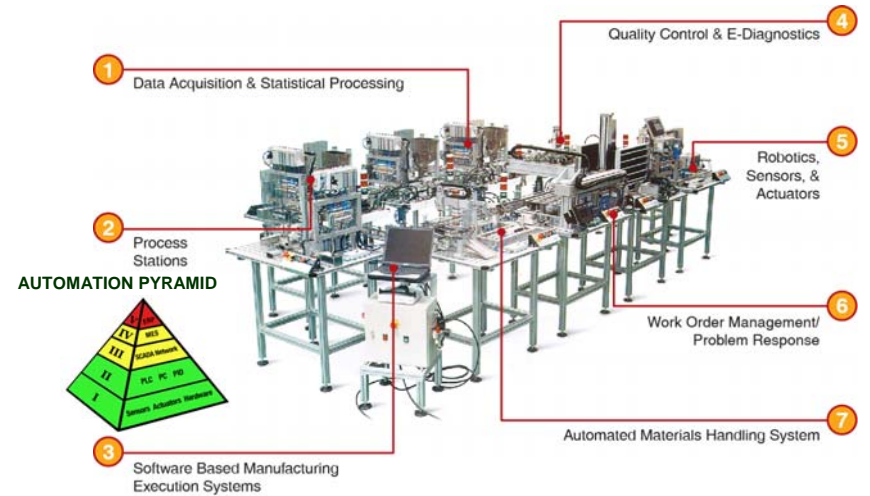
HAS 200 PILOT GROUP



Lessons Learned During the Development Process

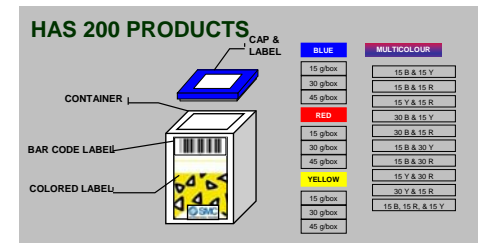
- Project goes smoothly when
 - partners meet personally and electronically
 - Workshops – hands-on
 - Progress reviews – phone/email
 - have project-supported time to become familiar with new systems
- Teaching/demonstrating various aspects of factory dynamics requires full access to the system hardware and software
- Industry partners need continued positive reinforcement and commitment from educational institutions to accomplish marriage of industry defined skill standards with course training content.
- For new automation projects:
 - initial planning should be directed to software structure of the Manufacturing Execution System (MES)
 - include ample time to test and troubleshoot MES and other software during and after the development phase
- Focus more effort on
 - defining and facilitating use of applications for degree and certificate programs
 - connecting lessons and activities to technical schools and engineering programs

THE HAS 200 TRAINING PLATFORM



Fundamentals of Highly Automated Manufacturing Systems Modules

Topic
1 HAS 200 System Overview
2 Intro to 3DSupra & Actuator Movements
3 Sequences
4 Cycle Time I
5 Cycle Time II
6 Routine Procedures & Documentation
7 Troubleshooting
8 Intro to MES and Production Data
9 Production Tracking
10 Intro to SPC Charts
11 Problem Solving & SPC Charts
12 Locating Bottlenecks
13 Work Order Management
14 Factory Metrics
15 Underutilized Tools



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