New Applied Engineering Center puts USI on the map

ONE OF A KIND

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University of Southern Indiana

FORTUS
3D PRODUCTION SYSTEMS
USI'S AEC

The Applied Engineering Center is the latest addition to the University of Southern Indiana campus. Its purpose is to be a learning factory for students in the Engineering, Advanced Manufacturing and Industrial Supervision programs as well as to support the regional business community.

The 16,000 sq.ft. facility, designed with input from our Industrial Advisory Board, incorporates key features, such as an open highbay with 10-ton bridge crane and utility trenches, that enable the following functionality:
- Flexible configuration of equipment to develop different production lines
- Production flow from basic raw materials (sheet metal, metal stock, plastic resin and compounds, wood) to automated assembly
- Precision measuring and reverse engineering
- Additive Manufacturing
- Process Controls in Unit Operations
- Printed Circuit Board

Through USI's Division of Outreach & Engagement, the AEC can be a resource and a catalyst for economic and workforce development in southern Indiana and Tri-State region.
MATERIAL PROCESSING AREA

Stock materials of various sizes can be received through the highbay dock and processed into desired shapes by using any of the following equipment:
- 5-Axis Waterjet
- Wire EDM
- CNC Router
- Stamping & Bending equipment
- Wood processing equipment: Wood saw, jointer, router, planer

WELDING AREA

Full fabrication shop with the following welding and wood capabilities:
- Motoman spot welding robot
- MIG and TIG welding

MACHINING AREA

Materials can be processed further through the machining area. The available CNC equipment can be easily configured to create different production cells:
- 3 Haas CNC Lathes
- 3 Haas CNC Mills
- Haas SL-20 fully automated Machine Center
- Manual Lathes and Mills
- Heat treating equipment

PLASTICS TECHNOLOGY AREA

Through collaboration with SABIC Innovative Plastics, a twin screw extruder was designed and custom built for the AEC with unique feeding capabilities that enables reactive compounding to create innovative resin compounds. Materials can then be molded through a 50-ton Negri Bossi Injection Molding machine. Tooling for injection molding can be designed and machined in-house.

AUTOMATION LAB

Everything comes together in the Automation Lab, where a FESTO MPS transfer system can be configured in many different ways to test optimal process flow, just in sequence and SCADA, vision systems, and much more.
In addition, a 12-station Allan-Bradley PLC lab and 4 FESTO Process Control units can be used to train PLC and equipment integration.

PRECISION MEASURING LAB / CAD LAB

Designs can be created and printed in the CAD lab, equipped with 16 CAD stations using AutoCAD and SolidWorks. A Zeiss CMM machine and laser scanner can be used to reverse engineer parts as well as for quality control. A fully equipped materials testing lab is also available in the Business & Engineering Center.

ADDITIVE MANUFACTURING & PCB FACTORY

The latest technology in additive manufacturing is available through a Stratasys Fortus system, which is now capable of printing functional parts using engineered resins like Ultimo, PC and PC/ABS. The PCB Factory allows our students to design and print circuit boards in-house.
AVAILABLE SERVICES

• Certificate Programs

• Specialized training and applications in the areas of:
  - Machining (Manual & CNC)
  - Precision machining (Wire EDM)
  - Abrasive cutting
  - Robotic welding
  - Plastic extrusion
  - Plastic Injection Molding
  - Additive Manufacturing
  - Flexible Manufacturing Systems
  - Equipment integration
  - PLC
  - Process Controls
  - Precision Measuring (CMM)
  - CAD/CAM
  - Lean Operations & Management
  - Quality Control
  - Material testing
  - Supply Chain

• Prototype development
• Manufacturing process development
• Lean implementations
• Process Improvement