



CAMDEN
CENTRAL HIGH SCHOOL

CASE STUDY

Camden Central High School Benton County, Tennessee



Rural Tennessee School District Leads with Industry 4.0 Training Center

THE CHALLENGE

To create an advanced manufacturing training program that prepares students for local industry needs while positioning the rural county for future economic growth, including supporting the upcoming Ford plant, known regionally as the Blue Oval City.

THE SOLUTION

Camden Central High School partnered with Intelitek and their local integrator Learning Labs Inc. to implement a state-of-the-art Industry 4.0 training center, funded through the governor of Tennessee's Innovative School Model grant program. The center features a comprehensive SmartCIM 4.0 Advanced Manufacturing environment – a state-of-the-art industrial training solution.

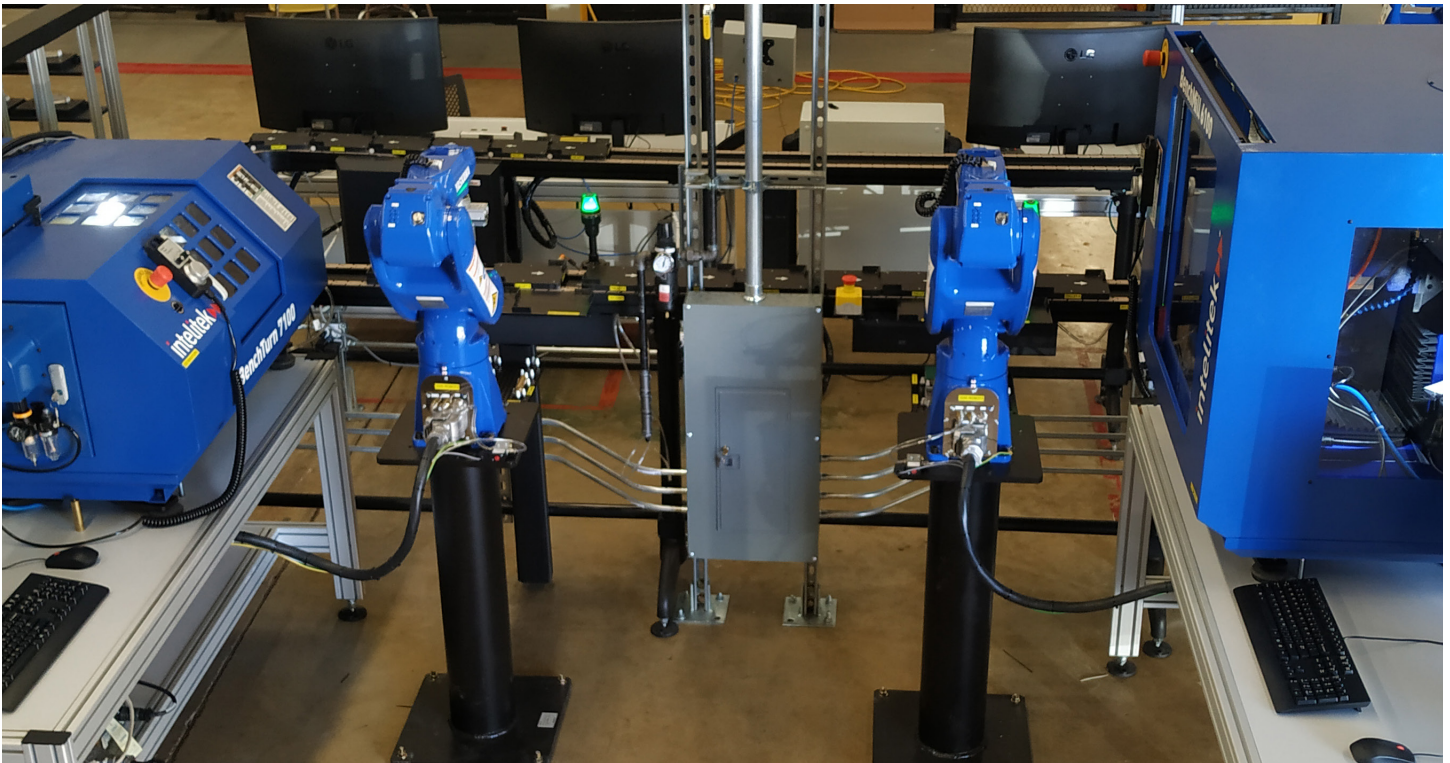
THE RESULTS

By adopting Intelitek's advanced manufacturing curriculum and equipment, students can now learn on industry-standard technology and will be able to earn dual enrollment credits through the Tennessee College of Applied Technology (TCAT) network. This will prepare them for immediate employment in the region's growing manufacturing sector.

"I'm more excited about this project than I have been about any project in my entire career. For me, it is the fulfillment of a 12-year goal to have something like this for the students in Benton County."

Randy Shannon
Supervisor of College and Career Readiness
Benton County Schools





Camden Central High School, Benton County, TN

EXPERIENCE MEETS INNOVATION

Shannon brings more than two decades of hands-on career and technical education leadership to this project. As principal of the Senator Frank P. Lashley Career and Technical Center for more than 20 years before becoming district supervisor, he developed a deep understanding of student needs and industry demands. This experience proved crucial in recognizing the right moment to implement an advanced manufacturing program.

“I’ve been interested in bringing advanced manufacturing to our students for years,” Shannon explains. “We currently have welding and machining programs, but I felt we should go further into industrial control, maintenance, and mechatronics. We never had enough money to do it the way I felt it should be done – until now.”

A COMPREHENSIVE INDUSTRY 4.0 ENVIRONMENT

The program centers around a SmartCIM 4.0 Advanced Manufacturing capstone environment that includes:

- Closed-loop conveyor system with 7 stations
- ASRS (Automated Storage and Retrieval System) with 72 shelves & an RFID Reader
- CNC (BenchMill 6100 Mill) with a 6 axis Yaskawa Robot
- CNC (BenchTurn 7100 Lathe) with a 6 axis Yaskawa Robot
- Laser Engraver with a 6 axis Yaskawa Robot
- Automated Welding Cell with a 6 axis Yaskawa Robot
- An Assembly & Quality Control station with a 6 axis Yaskawa Robot

The system is managed by the OpenMES software from the System Management Station. In addition, the conveyor and stations are monitored by IO-Link smart sensors and controlled by an Allen Bradley CompactLogix 5000 PLC.

The school will have access to the complete library of Intelitek curriculum delivered by LearnMate.

Building the Right Foundation

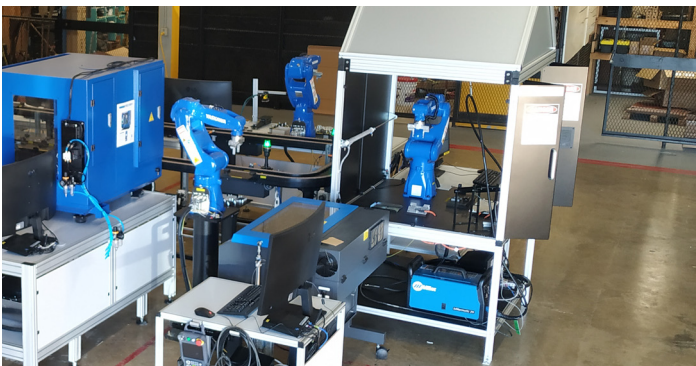
The journey to implementation wasn't without its challenges. After securing the grant funding, the program faced a critical yearlong delay as the district searched for the right instructor. "I didn't think we'd be able to do it. I didn't think we'd have anybody that wanted to or could teach it," Shannon admits. However, patience paid off when they found an engaging instructor who exhibited all the right qualities. "He seems like he's got a lot on the ball. He's very engaging with the students," said Shannon.

Before making the final decision on equipment and curriculum, Shannon and his team conducted thorough research, including a visit to a community college in northern Mississippi to see a similar Intelitek installation in action. Though smaller than what Benton County would ultimately implement, the visit provided valuable insights into the system's capabilities and potential impact on students.

"Seeing is believing," Randy notes. "The beauty of this system is that it's a continual problem-solving venture. With so many different working parts, if you don't know from A to Z, you're not going to be able to develop the project in a timely manner. That troubleshooting process is going to be a phenomenal learning curve for the students."

Vision Meets Opportunity

After decades of working to bring advanced manufacturing education to Benton County, Shannon's vision finally aligned with state-level support through Governor Bill Lee's Innovative School Model grant program. The \$2.7 million grant enabled the district to create a comprehensive mechatronics program that goes beyond traditional manufacturing education.



The Laser Engraver and Welding Cell, like other stations, are served by 6 axis industrial robots that move parts from the conveyor to the work area



The OpenMES manager includes advanced functionality and digital twinning of the SmartCIM 4.0 process

"Despite our size and being a rural area, we have opportunities for students," Shannon explains. "If they learn these skill sets from this project we're putting together, they can make a good living in Benton County based upon the manufacturing infrastructure that's around us."

Building for Success

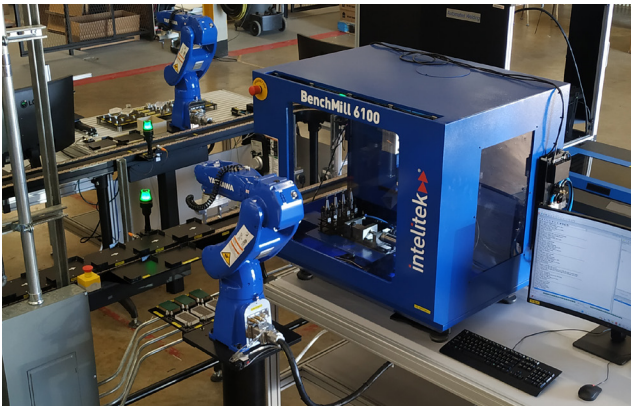
The program found its home in a repurposed automotive shop within the Senator Frank P. Lashley Career and Technical Center. The facility renovation created a perfect space for the new mechatronics classroom and lab environment.

Students will progress through Tennessee's mechatronics program of study, which includes Mechatronics I and II. In these courses, students learn about careers as maintenance technicians, electromechanical technicians, and manufacturing engineers.

Community and Economic Impact

The timing couldn't be better for Benton County students. With the Ford plant's development under construction to the west near Memphis, the skills taught in this program directly align with future workforce needs.

"Everything that they need will be there," Shannon notes. "The single most important driving factor for a student's success in school is a meaningful and engaging teacher. I believe we have that right, and so I think we're going to see nothing but success from this program."



Each station is a flexible manufacturing system incorporating machining with an industrial robot

ABOUT BENTON COUNTY SCHOOLS

Benton County Schools' goal is to provide a school system that prepares students to be successful, lifelong learners who possess integrity and an understanding of service. The staff members and community are dedicated to providing students the best education possible in a positive and nurturing environment.

Camden Central High School offers an Industry 4.0 Diploma which is a distinction outlined by the Tennessee Department of Education that allows high school students to pursue a career in a high-need, high skill industry, after graduation.

KEYS TO SUCCESS

Shannon attributes the program's successful launch to several factors:

1. Transparency with stakeholders
2. Strong partnerships with state leadership
3. Support from the local school board and administration
4. Finding the right instructor
5. Choosing the right equipment partner

"If I can't tell you why I'm doing something, I probably shouldn't be doing it," Shannon says about his approach to building community support. This transparency helped unite stakeholders behind the vision of creating a world-class training facility in rural Tennessee.

LOOKING TO THE FUTURE

As the program launches its first cohort, plans are already in place to expand dual enrollment opportunities through TCAT in the coming school year. The comprehensive nature of the training environment ensures students will be well-prepared for the realities of modern manufacturing.

"CTE is life," Shannon reflects. "Career and Technical Education (CTE) is what you do in life. These kids are going to be successful because they want to engage with the entirety of the project and explore what could be, rather than simply do the problems on page 10."



Mr. Shawn McDowell, Principal
 Dr. Dawn Churchwell-Cooper, Assistant Principal
 Mrs. Erica Lynch, Assistant Principal

INTELITEK PARTNER NETWORK

Our business and technology partners share our vision of enhancing Career and Technology Education by helping schools achieve their CTE goals.

Benton County was supported by our partner in the region, Learning Labs, Inc.

