Industry
Manufacturing

Technologies
Sensing
Connectivity
Data Contextualization
Predictive Modeling

Solutions
Manufacturing Productivity
Energy Efficiency

CESMII
THE SMART MANUFACTURING INSTITUTE

PROJECT CASE STUDY

Upskilling Small & Medium Sized Manufacturers on Smart Manufacturing Tools

PROJECT LEAD

G-W Process Optimization, Inc.

PROJECT TEAM

New Jersey Manufacturing Extension Partnership, ModTek, Texas Manufacturing Assistance Center at Lamar, Buckstin Brewing

PROJECT OBJECTIVE

Upskill small manufacturers with smart manufacturing tools by providing them with a method for sensing, contextualizing, and analyzing manufacturing process data via the CESMII Smart Manufacturing Interoperability Platform (SMIP).

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Industrial Printer Sees a 58% Reduction in Energy Costs When Implementing Smart Manufacturing Tools

BENEFITS TO OUR NATION

Training line workers on smart manufacturing techniques and technologies is essential to strengthening the U.S. economy. By equipping workers with skills in sensing, data contextualization, and data analytics, American manufacturers boost productivity, reduce waste, and improve product quality. This shift not only makes U.S. manufacturing more competitive globally, but also creates higher paying, rewarding jobs that empower workers and communities. It's a step toward sustaining innovation, cutting energy consumption, and securing the nation's industrial future in an increasingly digital world.

BENEFITS TO INDUSTRY

A skilled workforce equipped with knowledge of automation, data analytics, and the IIoT will adapt to rapidly changing technologies, drive operational improvements and reduce waste. This leads to more competitive industries, fostering job creation and increasing global market share for U.S. manufacturers. Furthermore, these advancements support sustainability goals and help bridge the growing skills gap, ensuring long-term industrial growth and economic resilience,

PROJECT DESCRIPTION

TECHNICAL APPROACH

- Analyze the manufacturing process and determine sources of actionable process data.
- Install sensors for real-time data collection.
- Create SM Profiles and stream sensor data to the CESMII Smart Manufacturing Interoperability Platform.
- Generate predictive algorithms to control throughput and quality.
- Create data visualization dashboards.

ACCOMPLISHMENTS

- Deployed Smart Manufacturing Tools upskilling schema at 3 participating small manufacturers.
- At ModTek, the integration of manufacturing data to the CESMII SMIP informed a decision to convert to a new manufacturing technology that improved both throughput *and* energy efficiency.

DELIVERABLES

- Delivered workforce training documentation package
- Delivered beer fermenting sensor package
- Delivered smart manufacturing machine profiles for integration to the CESMII SMIP:
  - Beer Fermenter Profile
  - Industrial Printer Profile

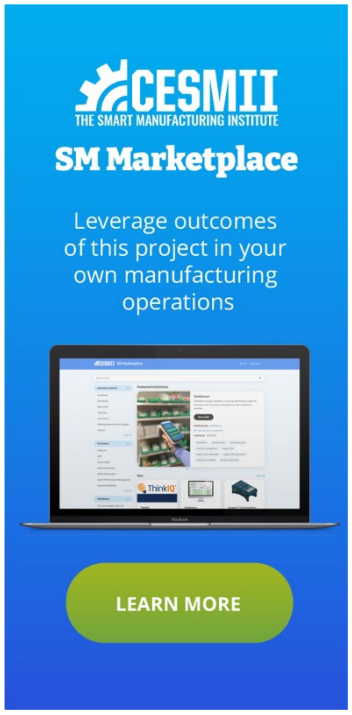
REUSABLE OUTCOMES / SM MARKETPLACE

- CESMII SMIP Profile Creator
- Sensor to Excel Data Translator
- Excel to SMIP Data Translator
- Multiple Wired Sensors to Multiple Excel Files Data Translator
- Wireless Sensor Cloud to Excel Data Translator

RESULTS

↓ 58%

SM tools yielded process data that informed a production process change that will reduce energy costs by 58% when implemented.



PROJECT DETAIL
Budget Period: BP5
Submission Date: 10/23/2024
Sub-Award (contract) Number:
4550 G IA037
SOPO: 2361

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