Program Overview

SMARTER NC

Smart Manufacturing Adoption for North Carolina

U.S. DEPARTMENT OF ENERGY AWARDEE™

NORTH CAROLINA DEPARTMENT of COMMERCE

NC STATE UNIVERSITY Industry Extension Services

Phil Mintz, PhD
Executive Director, NC State University
Industry Extension Services

ABOUT US

NORTH CAROLINA DEPARTMENT of COMMERCE

- **The North Carolina Department of Commerce, Office of Innovation & Technology** is leading the DOE Office of Manufacturing and Energy Supply Chains (MESC) State Manufacturing Leadership Program as the primary award recipient: Dr. John Hardin - SMARTER NC Principal Investigator.

NC STATE UNIVERSITY
Industry Extension Services

- **NC State University Industry Extension Services** (IES) is an award subrecipient and technical program lead for SMM engagements and smart manufacturing applications: Dr. Phil Mintz - SMARTER NC Subrecipient Principal Investigator.

SMARTER NC


SMARTER NC
NC DEPARTMENT of COMMERCE
SCIENCE, TECHNOLOGY & INNOVATION
NC STATE UNIVERSITY
Industry Extension Services
North Carolina Small-Medium Sized Manufacturers
NC CLEAN ENERGY TECHNOLOGY CENTER
LAND OF SKY REGIONAL COUNCIL
C.U.C.A. Carolina Utility Customers Association

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Goal: Providing targeted technical assistance to small and medium-sized manufacturers*, increasing awareness, access to, and implementation of smart manufacturing technologies throughout North Carolina.

*Small and medium-sized manufacturing sites for this project have less than 500 employees at their NC facility

Objectives

One

Increase productivity and efficiency of North Carolina (NC) small and medium-sized manufacturers (SMMs) through targeted technical assistance

Two

Increase awareness, access to, and implementation of **smart manufacturing technologies** among participating SMMs

Three

Facilitate efforts in support of the North Carolina manufacturing sector and reduced energy consumption

Targeted Audience

North Carolina Manufacturers

Eligible manufacturers are positioned to adopt smart manufacturing practices and purchase the equipment or technology to improve processes and efficiencies, increase productivity and save energy.

Target Industries

(but not limited to manufacturers in)

- Biopharmaceutical
- Metal Fabrication
- Chemical and Polymer
- Food and Beverage
- Automotive and Heavy Equipment Manufacturing
- Textiles

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What companies might fit this effort?

- Those already planning for a new technology implementation but have not started project
- Those planning for near term production expansions
- Those needing increased production output
- Those needed significant decrease in production defects
- Those struggling with unplanned machine downtime
- Those struggling to maintain assembly labor

What is Smart Manufacturing?

“...the use of emerging, advanced technologies to increase the efficiency of traditional manufacturing processes” - Texas A&M University

Smart Manufacturing Benefits

- **Improved efficiency**

  Smart factories can monitor equipment performance and automate complex processes, which can improve accuracy and reduce human error

  .

- **Increased productivity**

  Smart factories can use data to identify issues, such as when a machine is slowing down production, and then use artificial intelligence systems to resolve them.

- **Waste Reduction**

  By combining new technology with precise process monitoring and control, manufacturers can make significant strides toward minimizing waste.

Smart Manufacturing Benefits

- ## Long-term cost savings

  Smart factories can use predictive maintenance to identify potential problems early and address them at a convenient time, which can save money.

- ## Greater Flexibility

  Smart factories can scale production quickly to meet changing demand and can customize products to meet specific customer needs.

- ## Energy Savings

  By identifying energy-intensive processes, manufacturers can optimize operations and reduce their overall energy consumption by having smart manufacturing manage heating, ventilation and air conditioning more efficiently with real-time monitoring and control.

Key Features of Smart Manufacturing:

Connectivity: Machines, sensors, and devices are interconnected, enabling seamless communication and data sharing across systems.

Data-Driven Decisions: Real-time data is collected and analyzed to optimize processes, reduce waste, and improve decision-making.

Connected Machines & Sensors

Digital Dashboard Displays

Remote Asset Monitoring

Key Features of Smart Manufacturing:

Automation: Smart systems automate repetitive or complex tasks, reducing human error and increasing efficiency.

Flexibility: Systems can quickly adapt to changes in production requirements or customer demands.

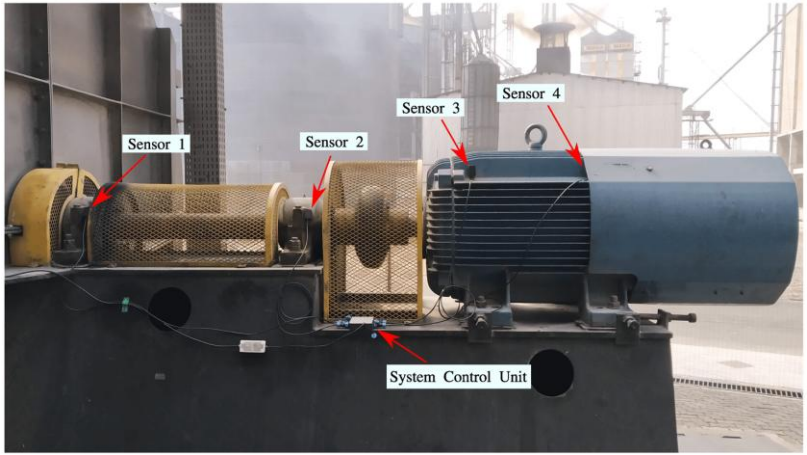
One Robotic Arm Serving Multiple Machines

www.thefabricator.com

Key Features of Smart Manufacturing:

Predictive Maintenance: Advanced analytics predict equipment failures, allowing maintenance before breakdowns occur, reducing downtime.

Vibration Analysis



www.mdpi.com

Thermal

www.advancedtech.com

Key Features of Smart Manufacturing:

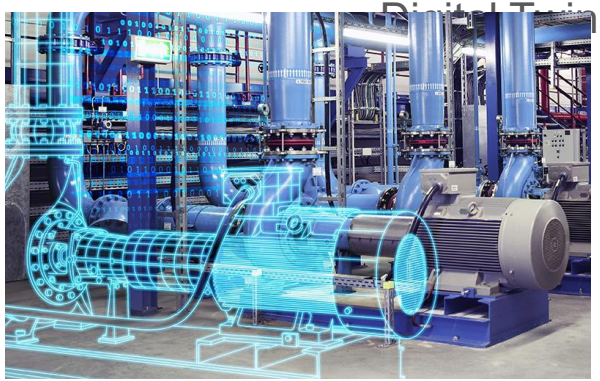
Customization: Enables mass customization by efficiently adjusting production lines to produce tailored products.

Sustainability: Optimized processes reduce energy use, waste, and resource consumption, contributing to greener manufacturing practices.

Automated Guided Vehicles

Source: Modern Materials Handling

Digital Twins



Source: MACS

What Type Projects are Under Consideration?

- Deploy Scanners for Automated Receiving Data
- Display Dashboarding of Production Data
- Transportable Robot Arm Deployment in CNC Machining
- Automated Guided Vehicle System
- Critical Material Flow Management for Extrusion Process
- Digital Manufacturing and Smart Inventory Integration
- Advanced Automated Electronics Parts Counting System

Projects not being Considered

- Next generation machining centers
- Process machines to provide new production operations
- New energy systems
- Projects unrelated to manufacturing operations

How the program works

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How the SMARTER NC program works

1

North Carolina manufacturers will complete a short application (approximate time is 10 minutes) to determine if their company is ready to participate in the program. ncstateies.com/sncapp

2

The SMARTER NC team will review applications and initially qualified companies (at least 100) selected to participate will receive an initial walkthrough viability assessment (verify application items, confirm production and energy systems, collect information concerning current and future commitments to smart manufacturing*).

***Important: Assign a smart manufacturing project decision-maker**

How the SMARTER NC program works

From the 100 initial walkthroughs, up to 75 SMM will be approved to receive comprehensive smart manufacturing technical assessments to help develop implementation project ideas and strategies. Includes detailed process assessments and energy assessments. Results will be shared with the company to assist with their engagements with 3rd party integrators for a project solution plan and cost proposal.

Project solution plans and cost proposal are submitted to SMARTER NC for approval of any reimbursements prior to project start. At least 50 SMM projects will be approved for partial reimbursement of some project non-equipment costs.

How the SMARTER NC program works

4

The SMARTER NC team reviews the quote and agrees to reimburse a matching level of **non-equipment costs** including integration and training expenses. **Note: Participating companies must provide matching investment of at least 30% of project cost.** Example: For a $20,000 smart manufacturing implementation project, SMARTER NC can approve reimbursement of up to $14,000. Maximum reimbursement to any company project is $25,000. Average reimbursements are expected to be ~$15,000.

Company completes the approved project with 3rd party and submits the agreed to reimbursement amount invoice for payment.

Application

ncstateies.com/sncapp

Contact

Phil Mintz
Executive Director, NC State University Industry Extension Services

smarternc_info@ncsu.edu

https://ies.ncsu.edu/smarternc/

Download a flyer:

https://ncstateies.com/SNCflyer

Questions?

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