Oklahoma State University
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New Product Development Center

Creating an On-Campus, Multidisciplinary, Experiential Learning Ecosystem for Student Interns to Solve Product Design and Business Problems for Companies

06.17.15

Administration & Business

Dr. Taylor - Director

Dr. Tilley - Assoc. Director

Dana Fisher – SBTDC, Director

Jessica Stewart – Grant/Office Coordinator

Interns

5-6 Business and Communications Undergraduate and Graduate Student Interns

Agricultural business

Agricultural economics

Agricultural communications

Accounting/Finance

Economics

- **Engineering**
  - Jennifer Vinyard – Sr. Design Engineer
  - Terri Ventress – Sr. Chemical Engineer
  - Heather Lewis – Sr. Design Engineer
  - **Interns**
    - 20-25 Engineering Undergraduate Interns and Graduate Research Assistants
      - Industrial Engineering
      - Mechanical Engineering
      - Chemical Engineering

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Current Funded Programs

Advanced Manufacturing Jobs and Innovation Accelerator Challenge (AMJIAC) funded by DOE, NIST, EDA, SBA, ETA

Inventors Assistance Service (IAS) funded by the Oklahoma Center for the Advancement of Science and Technology (OCAST)

Small Business Technology Development Center (SBTDC)
Funded by SBA

Oklahoma Advanced Research Support Program, funded by OCAST

Small Business Innovative Research (SBIR), funded by USDA

Industry funded technology support program, funded by industry

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Manufacturing Improvement Program for the Oil and Gas Industry Supply Chain and Marketing Cluster

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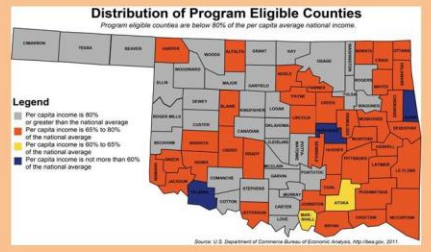
EDA, NIST, DOE, ETA, SBA
Stillwater, Oklahoma

OKLAHOMA MANUFACTURING ALLIANCE

Cluster/Business Sector Description

Small- to medium-sized oil and gas industry manufacturers located within 43 low-income Oklahoma counties



Vision and Collaboration

NIST - Provide technical assistance, make program introductions, assist with communications between the client and technical support staff.
SBA - Business position or market analysis for small oil or natural gas supply chain manufacturing businesses
DOL - Develop training programs that enhance the manufacturing skill set for engaged clients. Provide the necessary training for oil and natural gas manufacturing clients.
DOE - Assist in implementation of advanced manufacturing technologies, provide energy audits and plant layout designs for oil and natural gas manufacturing clients.
EDA - Technical assistance with the introduction of new products or processes or the upgrade of the manufacturing process for existing products or processes

Project Plan and Objectives

- Assess current competency.
- Reduce energy use.
- Improve manufacturing processes.
- Innovate product lines.
- Train a diverse workforce.
- Manage financial consequences and outcomes.
- Identify and meet the needs of customers and markets.

Project Activities / Events

- Identify clients and facilitate communication, organization and reporting.
- Conduct energy audit, process and facility analysis.
- Analyze business and market potential.
- Train employees for the use of advanced manufacturing processes and design tools.
- Redesign current products and create new product development for manufacturing.
- Completed a new facility layout and designed additional support equipment.
- Completed the automation of a melting and pouring process.
- Designed a new plastics casting process.
- Completed new product or process business analysis for several companies.

Goals and Impacts

- Foster growth and job creation
- Develop a skilled and diverse workforce.
- Increase use of advanced manufacturing technologies.
- Expand to increase competitiveness.
- Leverage and expand collaborative research and development.
- Accelerate commercialization of technologies for advanced manufacturing needs.
- Support testing of new products and processes.
- Increase exports, repatriate jobs back to the U.S.

Year 1: Twelve companies engaged; six company projects completed.

Year 2: 10 companies engaged; 2 additional companies to engage.

Year 3: On track for program completion at 36 companies

Lessons Learned from Overcoming Challenges

- Company project target length of engagement is 180 days.
- Difficulty in finding company employees suitable for the training proposed.

Outcomes

- 32 companies engaged
- 20 company projects completed
- Capital investment: $1,382,668
- Unnecessary investments avoided: $134,679
- Cost savings: $14,356
- Change in sales: $4,030,000
- Jobs created: 14 Retained: 4
- 14,000 hours invested in training young adults for the workforce

Continuity Plans

- Introduction of a pay-for-service program to support program continuation.
- Partner commitments
- Searching for additional funding streams to continue program activities and allow expansion to the rest of the state.
- Working with state based economic development entities to provide additional support.

Team Contact Information

- **NIST** – Dave Rowland, Oklahoma Manufacturing Alliance President, chuck.prucha@okalliance.com
- **SBA** - Dan Tilley, Ph.D., NPDC Associate Director, daniel.tilley@okstate.edu
- **ETA** - Robert Taylor, Ph.D., NPDC Director, robert.taylor@okstate.edu
- **DOE** – Terri Ventress, Senior Design Engineer, terri.ventress@okstate.edu
- **EDA** - Robert Taylor, Ph.D., NPDC Director, robert.taylor@okstate.edu

AMJIAC Program Implementation

Program delivery is based on a mentored student service delivery model.

Projects are matched to student skill set, both graduate and undergraduate students participate.

NPDC faculty, staff and company technology leaders share the Student mentoring responsibility.

Some projects are farmed out to the capstone design classes in engineering and agricultural economics.

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Inventors Assistance Service (IAS)

Assisting 60 – 70 inventors per year.

Approximately 15% of inventors engaged enter the engineering process.

Economic impact of 5:1.

Implementation uses a mentored student service delivery model.

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Oklahoma Applied Research Support (OARS) and Small Business Innovative Research (SBIR) Programs

These are company based research programs that rely on graduate student support.

Graduate students mentors are NPDC faculty and staff and faculty from various university departments.

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Industry Funded Technology Support
Pay for Service

- Companies engage mentored students for technology and innovation support.
- Projects selected for the program need to be appropriate for the students ability.
- Graduate and undergraduate students work in the program.

160 K in Support	25 Companies

Starting A Program

- Identify and cultivate relationships with internal and external partners
- Be prepared to write for grants!!
- A full time support staff is needed to run the unit.
- Ask companies in the program to provide financial support.
- Demand professional behavior from your students.
- Model after similar centers.