

## LSSU-PDC

The Lake Superior State University **Product Development Center** is an extension of the College of Engineering, Technology and Economic Development. The University has a renowned tradition of participation in 'real-world' design projects by its graduating engineering seniors. Over the years a variety of businesses have sponsored **LSSU SENIOR DESIGN PROJECTS**. By the nature of the program, these projects are limited in scope and constrained to specific timelines. The PDC was established to service more varied types of projects.

## MI-SBTDC

The Michigan Small Business and Technology Development Center has set an objective



to expand relationships with universities that can help entrepreneurs and businesses facilitate the development of new technologies that may eventually result in the formation of new companies and the diversification of Michigan's economy.

## MEDC

The Lake Superior State University **Product Development Center (PDC)** and the Michigan Economic Development Corporation (MEDC) work together to foster an environment to help entrepreneurs and technology companies succeed. The MEDC is Michigan's one-stop resource for business retention, expansion, and relocation projects.



## SSMart, Inc.

The PDC works with Sault Ste. Marie Advanced Resources and Technology, Inc., the regional SmartZone<sup>SM</sup>, on economic development projects. The mission of SSMart<sup>SM</sup> is to provide a single point resource where ideas and concepts become products with a feasible business plan for manufacture and market delivery.

## EXAMPLE PROJECT TYPES

Numerous projects have been completed and others are in process comprising a wide range of applications:

### LIFE SCIENCES

- DVT Prevention
- Surgical
- Paraplegic Health Aids
- Veterinary

### INDUSTRIAL

- Remote Process Monitoring
- Process Data Logging Tool
- Assembly Automation

### TESTING

- Strength of Materials
- Flammability
- Analysis for Litigation

### SPORTS PRODUCTS

### CONSUMER ELECTRONICS

### WEB/DATABASE DESIGN

### PATENT DRAWINGS

### 3D CAD AND FINITE ELEMENT ANALYSIS

### RENEWABLE ENERGY

"...utilizing your services was a great help, Thanks again."

– Fred Berg, Nexteer

## MECHANICAL SERVICES

- 2D and 3D Solid Modeling and Design
- Rapid Prototyping
- CNC Machining
- Metal and Plastics Fabrication
- Mechanical Testing
- Finite Element Analysis
- Fluid Dynamics Analysis
- ... and more

## ELECTRICAL SERVICES

- Circuit Design, Board Layout and Assembly
- Embedded Systems Design
- Microcontroller Design and Testing
- Custom Instrumentation System Development
- Component and System Modeling
- ... and more

## MANUFACTURING and ROBOTIC - AUTOMATION SERVICES

- Manufacturing Process Optimization
- Work Cell Layout, Design and Simulation
- Cycle Time Analysis
- Repetitive Testing Using Robots
- Automated/Robotic Manufacturing Studies
- Computer and PLC Programming
- Robotic Assembly Feasibility Studies
- ... and more

## STATISTICAL ANALYSIS SERVICES

- Experiment Design
- Data Analysis
- Assist in Developing Documentation for Certification of Products and Processes
- ... and more



## TECHNICAL WRITING AND DOCUMENTATION SERVICES

- Specification Writing
- Documentation of Systems
- Web/Database Design
- ... and more

## INTELLECTUAL PROPERTY

The PDC will provide Project and Intellectual Property Agreements for work involving Trade Secrets, pre-Patent concepts and other Intellectual Property.

"They were able to create a perfect hands-on model... I have been impressed with their extreme discretion."

– Patrick Duflo, Retired

## COST ESTIMATE PROCESS

Following the execution of Project and Intellectual Property agreements, the client meets with an Engineering Projects Manager to disclose the nature of the concept and establish the scope of the project.

The PDC staff will develop a task by task project plan with costs based upon projected usage of labor, facilities, materials and special equipment.

The PDC then provides a written proposal with cost and estimated completion time. Work can begin when signed and returned by the client with an initial payment.



"matter of fact the assembly machine ... allowed us to price the part competitively so we received the order and were able to hire 4 other machine operators"

– Craig Lauerman

Thank you for considering the Lake Superior State University, Product Development Center (PDC). Please take the time to review the services we offer to businesses in the areas of engineering and technology.

The PDC was established to fill the needs of small businesses that possess limited technological resources.

The Product Development Center provides services in the following areas:

[Mechanical](#)  
[Electrical](#)  
[Manufacturing and Robotic/Automation](#)  
[Testing and Statistical Analysis](#)  
[Technical Writing and Documentation](#)

Please visit our web site at [www.lssu.edu/pdc](http://www.lssu.edu/pdc). As you review our capabilities and learn more about the PDC you will see examples of our unique facilities, experienced staff engineers, quality teaching environment and dedicated faculty.

While you're looking at our web site, be sure to check out the robotics lab where you'll find fourteen industrial robots. This \$1million+ robotics facility is unique in this region. This resource is available along with our other facilities in developing prototype products and processes for clients of the PDC. You can also check out what's happening with different engineering projects and other examples of what the PDC can achieve.

If there is any project you have in mind, please don't hesitate to contact us.

#### Contact Information:

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**Bridging the gap from  
ideas to production for  
resource-limited  
businesses**



**Enhancing production  
through optimization,  
analysis and automation**



**College of Engineering, Technology  
and Economic Development**

#### The PDC

The PDC is a not-for-profit activity of the College of Engineering, Technology and Economic Development at LSSU that provides fee based engineering services to businesses, entrepreneurs and inventors.

#### PDC MISSION

The Product Development Center provides the necessary engineering design tools, engineering staff, materials analysis, product packaging guidance, software development and other similar services leading to the development or testing of a functioning prototype, product or process to meet the needs of small businesses and entrepreneurs of Michigan while providing opportunities for students to obtain real world experience on actual design projects.

#### PDC PEOPLE

Engineering Project Managers with extensive industrial experience participate in each project and guide skilled engineering students to provide an economical result for the client. Whether a prototype device or process is needed or making an existing idea ready for market, the PDC can help with engineering services.

If a project needs additional support in the business or sciences areas, the PDC can manage the project and collaborate with various departments of the university. For example, a project may benefit from the involvement of the LSSU School of Business in developing a marketing or business plan.

*"...you are indeed exceptional. Thank you for taking time to ensure a robust prototype."*

*– J. Crawford, Energizer*



#### GOALS

- Bridge the gap from ideas to the marketplace for resource-limited Michigan businesses
- Provide services that enable small Michigan businesses to compete in the global economy
- Provide assistance and opportunities for business with diverse abilities to enhance their economic growth
- Engage in assessment and continuous improvement activities with client businesses to enhance their growth potential
- Deliver a high quality design experience for undergraduates which incorporates and develops skills in communication, design, ethics, teamwork, and technology relevant to the student's degree

#### PROGRAM OBJECTIVES

- Collaborate with SSMart<sup>SM</sup> and the Sault Ste. Marie/LSSU SmartZone<sup>SM</sup>
- Meet the needs of clients referred by the Mi-SBTDC and MEDC
- Provide economical engineering services to businesses that do not have resources to bring new ideas to a marketable condition
- Establish a self sustaining PDC that improves the economic position of Michigan businesses
- Bring recognition to LSSU as a source of technology and excellent technical graduates