

# Industrial Maintenance Technology Program Proposal



Presented to the South Dakota  
State Board of Education  
January 2011  
for Implementation  
Fall 2011



**Mitchell Technical Institute**  
821 N. Capital • Mitchell, SD 57301



**Mitchell Technical Institute**

**INDUSTRIAL MAINTENANCE TECHNOLOGY**

**Executive Summary**

**Program Title: Industrial Maintenance Technology**

**Length of Program: 9 Month Diploma**

**Number of Students: 12**

**Projected Start Date: Fall 2011**

It is the intent of MTI to offer the Industrial Maintenance Technology diploma for a postsecondary education that is unique to the state and will provide the necessary skills to assist owners and maintainers of large industrial buildings with controlling energy costs and maintaining facilities. The goal of the program is to train both entry level and incumbent workers to handle the maintenance demands for facilities and equipment with a focus on reducing energy consumption.

MTI has long been encouraged by the state to expand our technical training and services beyond the Mitchell area. This effort would complement our current outreach efforts in Yankton.

MTI will be able to offer expertise in both staffing and curriculum to insure success for the delivery of this postsecondary technical program. This includes veteran instructors and existing curriculum in many of the core courses. By combining coursework from MTI's Heating and Cooling Technology and Electrical Construction and Maintenance programs, along with the Energy Star curriculum and the Green Building Council's LEED standards for Operations and Maintenance of Buildings, and partnering with business and industry, this program will meet the needs of the current and future industry trends. General education courses will include technical writing, technical math and computers.



# **MITCHELL TECHNICAL INSTITUTE**

## **INDUSTRIAL MAINTENANCE TECHNOLOGY**

### **Application Overview**

**Program Title:** Industrial Maintenance Technology

**Number of Students:** 12

**Projected Start Date:** Fall 2011

### **Identification and Description**

This project seeks to create a new diploma program for Mitchell Technical Institute, unique to the state, to develop a trained workforce to assist owners and maintainers of large industrial buildings in controlling energy costs and maintaining facilities. The program will train both entry level and incumbent workers.

The program will build on Energy Star curriculum already developed; infuse it with the Green Building Council's LEED standards for Operations and Maintenance of Commercial Buildings; and provide graduates with LEED Green Associate certification.

The industry areas where the graduates of this program may be hired are large and diverse in business focus ( i.e., hospitals, schools, manufacturing, and distribution) with the only requirement being that the organization have relatively

large facilities using complex HVAC, control or electrical systems either as a part of the facilities or as production equipment.

## **Objective and Purpose**

The Industrial Maintenance Technology Program will be dedicated to offering students the experience and overall training to become successful technicians. The program will provide attention to professionalism, communication, and technical skills. Objectives for the program include helping students to:

- Understand basic AC/DC electricity and its characteristics to include a study of the basic components used in various electrical systems
- Master competencies that will allow AWS Welding Certification
- Understand basic theories of heating, air-conditioning and refrigeration
- Understand the operations and maintenance of commercial and industrial buildings that could lead to LEED Green Associate Certification
- Receive OSHA 10 training
- Understand mechanical and electromagnetic control systems
- Learn the basic principles and theories of hydraulics and electro-hydraulic controls
- Communicate effectively through both oral and written means
- Demonstrate a professional attitude and work ethic
- Apply reasoning and critical thinking to solve problems and seek information
- Work cooperatively
- Use computer technology within field of study
- Apply technical skills required of an entry-level technician in a chosen field

## **Methods of Attaining the Objectives of the Program**

Pending approval, MTI will develop marketing materials and recruit students. MTI will hire instructors and, with assistance from an advisory committee, will finalize course syllabi, purchase equipment and supplies, arrange classrooms, develop schedules, secure resource materials, arrange internship sites, and interview staff to hire.

MTI provides assurance that it possesses the resources and staff necessary to:

- Develop marketing materials and recruit students
- Recruit and supervise qualified staff
- Assess the abilities of students for good program and course placement
- Provide tutoring for students needing extra academic help
- Provide access to library materials and computer labs
- Develop and administer budgets
- Make available textbooks and other instructional resources
- Provide career and personal counseling to students
- Evaluate programs and staff
- Assist students in finding jobs
- Secure input from industry through advisory committees
- Maintain membership in professional organizations and provide time and fiscal resources for professional development
- Provide financial aid and scholarships
- Provide a typical two-year technical institute climate
- Provide services to disabled and nontraditional students
- Provide classrooms and laboratories
- Provide a variety of general education courses

## Description of Labor Market Demand

Industry areas where the graduates of this program would be hired are diverse. Almost all large facilities have either a workforce dedicated to maintaining their facilities or equipment or they contract with companies to maintain them. South Dakota does not have a source of training dedicated to performing the required maintenance. This program will fill this void in that it will train entry level and incumbent workers who want or need to add to their skill set in the following occupations.

Occupational Title	2008 Base Number of Jobs	2018 Projected Number of Jobs	Actual Change	Percent Change	Average Annual Demand for Workers
Electrical and Electronics Repairers, Commercial and Industrial Equipment	255	280	25	9.8%	6
Industrial Machinery Mechanics	805	960	155	19.3%	27
Maintenance and Repair Workers, General	2,540	2,860	320	12.6%	71

Source: Labor Market Information Center, SD Department of Labor, January 2011

## Population Served

The program is available to any applicant who has successfully completed the admission requirements set by Mitchell Technical Institute. MTI does not discriminate in its educational programs on basis of race, color, creed, religion, age, sex, disability, national origin or ancestry. The program will draw its students from South Dakota and surrounding states, and the opportunities for employment will favor that same geographical area. This program will not only be targeted at traditional-age college students, but will also be appealing to career changers and older workers looking to change or enhance skills. It may be of particular interest to students from rural areas who wish to stay in smaller communities after graduation.

## Projected Three-Year Budget

	2011-2012	2012-2013	2013-2014
Salaries/Benefits	\$71,000	\$75,000	\$80,000
Equipment	\$80,000	\$20,000	\$20,000
Supplies	\$ 5,000	\$5,000	\$5,000

## Program Competencies, Entry and Exit Points

Entry point will be the fall of 2011. The exit point will be at the completion of coursework. Graduates will receive a diploma in the Industrial Maintenance program. Graduate must maintain an overall GPA of 2.0 to graduate. The curriculum is competency-based and will be reviewed and approved by a program advisory committee. Additionally, MTI will adhere to any future guidelines or certifications set by the industry facilities maintenance industry.

## Statement of Non-Duplication

At the present time we are not aware of a similar degree offered anywhere in South Dakota.

# Curriculum Design and Research

## Fall Semester

Student Success .....	1
Electrical Fundamentals and Lab .....	5
Welding and Metal Work .....	2
Technical Math .....	3
Heating and Cooling Concepts and Lab.....	4
Facilities Operation & Management .....	<u>3</u>
	18 Credits

## Spring Semester

Computer Software Applications .....	3
Technical Writing .....	3
OSHA 10 Training .....	1
Introduction to Industrial Controls.....	3
Programmable Logic Controls.....	3
Basic Mechanical Drives .....	3
Basic Hydraulics.....	<u>3</u>
	19 Credits

## Wage Factor

Occupation	Average Hourly Salary
Electrical and Electronics Repairers Commercial and Industrial Equipment	\$22.53
Industrial Machinery Mechanics	\$19.12
Maintenance and Repair Workers General	\$14.58

Labor Market Information Center, SD Department of Labor, January 2011

## CIP Code 46.0401

A program that prepares individuals to apply technical knowledge and skills to keep a building functioning, and to service a variety of structures including commercial and industrial buildings. Includes instruction in the basic maintenance and repair skills required to service building systems, such as air conditioning, heating, plumbing, electrical, major appliances, and other mechanical systems.

## **Appendix A      Letters of Support**



12/22/10

Mr. Mark Wilson  
Director of Curriculum, Career and Technical Education  
SD Dept. of Education  
Pierre, SD

RE: Industrial Facility Maintenance Program

Dear Mr. Wilson,

I am providing this letter of support for the Industrial Facility Maintenance Program at MTI.

Lewis and Clark Hydraulics is located in Yankton, SD and we are a manufacturer of hydraulic cylinders. We are a division of Prince Manufacturing Corporation based in North Sioux City, SD. The processes performed at our facility here in Yankton are welding, machining, assembly and painting the cylinders we manufacture. We have a staff of three in our maintenance department who are in charge of not only building fixtures but also the maintenance of our equipment and building. The building maintenance includes the upkeep and replacement of our heating, cooling and ventilation systems as well as the maintenance on our gas fired oven and washing equipment.

Our business, in order to stay competitive with foreign competition from rapidly industrializing third world countries, relies heavily on the ability to control our costs to include the cost of production. Because we use energy to both maintain temperature control in the manufacturing facilities and power the various manufacturing equipment, energy costs contribute significantly to the bottom line costs. Controlling energy costs through the selection of and proper control and maintenance of the right HVAC equipment is imperative in today's manufacturing world. Yet, we find ourselves lacking the properly trained people to perform this task.

Down time of equipment or the improper maintenance of equipment that is used in the manufacturing process is also of critical importance to our manufacturing process. Simply put, a down machine, or a machine that is improperly performing, contributes to wasted labor time and significant costs for reworks. The only way to control this is through systematic preventive maintenance, calibration and repair of industrial machines. Unfortunately, finding qualified personnel or training for existing personnel is difficult to come by which impacts the efficiency of our processes.

The proposed MTI course will provide a new entry level workforce input into our company as well as instruction for our existing workforce that would contribute greatly to the efficiency and cost control of our operations. An individual that would have the skills to perform energy auditing, HVAC control and industrial machine maintenance is in high demand both in this business and the entire manufacturing sector and we strongly endorse the initiation of such a program by MTI.

Sincerely,

Colin Kathol  
Production Mgr.



December 21, 2010

Mr. Mark Wilson  
Director of Curriculum, Career and Technical Education  
SD Dept. of Education  
Pierre, SD

RE: Industrial Facility Maintenance Program

Dear Mr. Wilson:

I am providing this letter of support for the Industrial Facility Maintenance Program at MTI.

Kolberg-Pioneer in Yankton, South Dakota, is a worldwide manufacturer of mobile and stationary heavy construction equipment for the aggregate industry. Our products are engineer-designed for our customers. We operate a 300,000 square-foot production facility with a wide variety of machinery and energy sources, and employ 360 individuals. We are always looking for ways to minimize energy consumption, and it is an endless challenge to keep all the manufacturing equipment up and running. We must have a workforce that understands the opportunities as well as the ability to maintain new systems and equipment.

The proposed MTI course in Industrial Facility Maintenance will provide this organization with new entry-level workers that have the skills we are looking for, as well as providing instruction for our current workforce to upgrade their skills. An individual that would have the skills to perform energy auditing, HVAC control, and industrial machine maintenance tasks is the next level of skilled worker we are looking for to assist this institution in reaching its maintenance and energy-use goals, and we whole-heartedly endorse MTI's efforts to begin this program.

Please contact us if you would like to discuss further the benefits of MTI's training programs for our facility.

Sincerely,

  
Mark J. Luchtel  
Manufacturing Manager

  
Rhonda J. Kocer  
Human Resources Manager

MAIN OFFICE  
800-668-2579/605-665-9311  
FAX: 605-665-2623

SALES DEPARTMENT  
800-542-9311  
FAX: 605-665-8858

PARTS DEPARTMENT  
800-766-9793  
FAX: 605-665-9348

SERVICE DEPARTMENT  
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- FAMILY PRACTICE  
M.J. MABEE, M.D.  
D.L. BARNES, M.D.  
S.A. WEBER, D.O.  
L.M. CAMMOCK, M.D.  
M.E. HANSON, M.D.  
M.E. THURLOW, PA.-C.
- GASTROENTEROLOGY  
S. GUTNIK, M.D. ASSOCIATE
- GENERAL SURGERY  
J.E. APPELMICK, M.D.  
J.L. KAMPSHOFF, M.D.  
M.J. AHLBOM, M.D.  
L.C. SERCK, M.D.
- HEMATOLOGY-ONCOLOGY  
M.L. FARVER, M.D.  
M.J. VILANUEVA, M.D.
- INTERNAL MEDICINE  
R.J. NEUMAYR, M.D.  
J.J. FRANK, M.D.  
D.J. MEGARD, M.D.  
T.L. HANSON, M.D.  
B.A. MIKKELSEN, M.D.  
S.E. FANTA, M.D.  
B.W. NOWAK, M.D.  
M.E. MARSHALL, PA.-C.
- OBSTETRICS-GYNECOLOGY  
C.A. ADAMS, M.D.  
R.L. FERRELLI, M.D.  
K. BRAY, M.D.  
A.M. EICHFELD, M.D.
- PEDIATRICS  
C.D. ISBURG, M.D.  
D.W. WITHROW, M.D.  
R.W. HEISINGER, M.D.  
D.M. LARSON, M.D.
- PULMONOLOGY  
L.A. HANSEN, M.D.  
M.P. PETHA, M.D.
- RADIOLOGY  
W.R. EIDNESS, M.D.
- UROLOGY  
G.R. FOURNIER, JR., M.D.
- TRIMILLION MEDICAL CLINIC  
W.J. DENDINGER, M.D.  
C.C. YELVERTON, M.D.  
M.D. KRELL, M.D.  
M.A. CHAUSSEE, PA.-C.  
C.A. SCHUSTER, PA.-C.  
DOUG O'CONNOR  
DIRECTOR OF OPERATIONS
- ADMINISTRATION  
C.A. AMAN, C.E.O.  
M.J. MATHISON, C.O.O.

December 23, 2010

Mr. Mark Wilson  
Director of Curriculum, Career and Technical Education  
SD Dept. of Education  
Pierre, SD

RE: Industrial Facility Maintenance Program

Dear Mr. Wilson,

I am providing this letter of support for the Industrial Facility Maintenance Program at MTI.

At Yankton Medical Clinic, P.C. we have over 90,000 square feet of floor space to maintain that requires skilled personnel. The Facility Maintenance Program appears to provide an excellent framework for individuals to properly prepare themselves for a position in a facility setting such as ours. We are actually anticipating a retirement in our Maintenance department in the next 18 months, so we would see this as a timely fit for our organization.

Energy consumption is one of the major costs associated with running our facilities and we are constantly struggling as an organization to reduce these costs through the proper maintenance of our existing HVAC plant as well as understanding the structural modifications that will contribute to a reduction of these costs. With the dramatic changes taking place in the energy sector today to include renewable energy or hybrid systems, we believe that there is great opportunity to achieve dramatic reductions in energy consumption—but we must have a workforce that understands the opportunities as well as the ability to maintain these new systems.

The proposed MTI course in industrial facility maintenance will provide this organization new entry level workers that have the skills we are looking for as well as providing instruction for our current workforce to upgrade their skills. An individual that would have the skills to perform energy auditing, HVAC control and other industrial facility maintenance tasks is the next level of skilled worker we are looking for to assist this institution in reaching its maintenance and energy use goals and we heartedly endorse MTI's efforts to begin this program.

Sincerely,



Mike Mathison  
Chief Operating Officer



December 15, 2010

Mr. Mark Wilson  
Director of Curriculum, Career and Technical Education  
SD Dept. of Education  
Pierre, SD

RE: Industrial Facility Maintenance Program

Dear Mr. Wilson,

I am providing this letter of support for the Industrial Facility Maintenance Program at MTI.

At Vishay Dale Electronics, we manufacture a wide variety of electronic components found in virtually every electronic application. We are a global company with operations throughout the world.

Our organization operates facilities that require highly skilled personnel to maintain. Energy consumption is one of the major costs associated with running our facilities and we are constantly struggling as an organization to reduce these costs through the proper maintenance of our existing HVAC plant as well as understanding the structural modifications that will contribute to a reduction of these costs. With the dramatic changes taking place in the energy sector today to include renewable energy or hybrid systems, we believe that there is great opportunity to achieve dramatic reductions in energy consumption—but we must have a workforce that understands the opportunities as well as the ability to maintain these new systems.

The proposed MTI course in industrial facility maintenance will provide this organization new entry level workers that have the skills we are looking for as well as providing instruction for our current workforce to upgrade their skills. An individual that would have the skills to perform energy auditing, HVAC control and other industrial facility maintenance tasks is the next level of skilled worker we are looking for to assist this institution in reaching its maintenance and energy use goals and we heartedly endorse MTI's efforts to begin this program.

Sincerely,

A solid black rectangular box used to redact the signature of Tim Butler.

Tim Butler

Vishay Intertechnology, Inc.

P.O. Box 180, 1505 Highway 50, Yankton SD 57078-0180 U.S.A. Phone (605) 665-9301 Fax (605) 665-1627 [www.vishay.com](http://www.vishay.com)

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December 21, 2010

Mark Wilson  
Director of Curriculum, Career and Technical Education  
SD Dept. of Education  
Pierre, SD 57501

RE: Industrial Facility Maintenance Program

Dear Mark,

I am providing this letter of support for the Industrial Facility Maintenance Program at Mitchell Technical Institute (MTI). The South Dakota Human Services Center operates one of the largest complexes in Yankton providing health care services to our citizens. The campus is continually updating and changing technology and is in the process of constructing a new 20,000 square foot food services addition. While we are adding new facilities, we also have parts of our campus that are over 100 years old and in need of modernization.

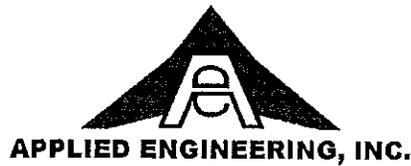
To effectively operate our organization we require highly skilled personnel to maintain and update facilities. Energy consumption is one of the major costs associated with running our facilities and we are constantly working to reduce these costs through the proper maintenance of our existing HVAC plant as well as understanding the structural modifications that will contribute to a reduction of these costs. With the dramatic changes taking place in the energy sector today to include renewable energy or hybrid systems, we believe that there is great opportunity to achieve dramatic reductions in energy consumption—but we must have a workforce that understands the opportunities and has the knowledge, skill and ability to maintain these new systems.

The proposed MTI course in industrial facility maintenance will provide our organization with workers that have the skills we need. The program can also assist in providing instruction for our current workforce to upgrade their skills. To that end I am in support of MTI's efforts to implement this program.

Sincerely,



Cory D. Nelson  
Administrator/CEO



December 20, 2010

Mr. Mark Wilson  
Director of Curriculum, Career and Technical Education  
SD Dept. of Education  
Pierre, SD

RE: Industrial Facility Maintenance Program

Dear Mr. Wilson,

I am providing this letter of support for the Industrial Facility Maintenance Program at MTI.

Applied Engineering, a manufacturer of precision machined aluminum components and assemblies located in Yankton, currently occupies 65,000 square feet of space and is building an additional 25,000 square feet of manufacturing space. Our need to maintain our facility in a cost-efficient and proactive manner is crucial to our ability to compete in both our national and international markets.

Our organization operates facilities that require highly skilled personnel to maintain. Energy consumption is one of the major costs associated with running our facilities and we are constantly struggling as an organization to reduce these costs through the proper maintenance of our existing HVAC plant as well as understanding the structural modifications that will contribute to a reduction of these costs. With the dramatic changes taking place in the energy sector today to include renewable energy or hybrid systems, we believe that there is great opportunity to achieve dramatic reductions in energy consumption—but we must have a workforce that understands the opportunities as well as the ability to maintain these new systems.

The proposed MTI course in industrial facility maintenance will provide Applied Engineering with entry level workers that have the skills we are looking for as well as providing instruction for our current workforce to upgrade their skills. An individual that has the skills to perform energy auditing, HVAC control and other industrial facility maintenance tasks is the next level of skilled worker we are looking for. Furthermore, Applied Engineering is willing to help our employees pay for the cost of tuition through tuition assistance from the company. Upon successful completion of classes, employees must commit to work for Applied Engineering for an extended period of time to be determined by management.

We are willing to do what it takes to home grow our workforce and MTI can help us achieve our goals.

Sincerely,

Rick Duimstra  
Operations Manager  
Applied Engineering, Inc.