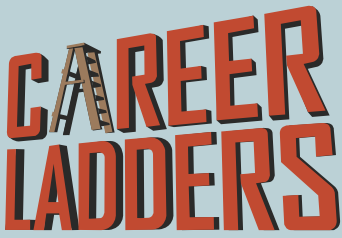


# MANUFACTURING ENGINEER

Manufacturing engineers are responsible for developing effective and innovative manufacturing processes and ensuring that the plant is operating in the most-efficient manner.



## JOB TITLES COMMON TO THIS CAREER OCCUPATION INCLUDE:

Industrial Engineer	Tooling Engineer	Process Engineer
Plant Engineer	Electrical Engineer	Product Engineer
Welding Engineer	Quality Engineer	

## SAGINAW VALLEY

Each ladder depicts a series of work experiences that leads to more challenging and higher paying opportunities. While every level of the ladder can provide a satisfying job, some employees will choose to gain even more skills and responsibilities that will advance them in their careers. To do so, they will need more education, training, and work experiences. Some jobs will require a certificate, a license, or an advanced degree.

CLIMBING THE CAREER LADDER

## ADVANCED LEVEL

Bachelor's degree or proven technical skills that can be demonstrated through industry experience

**Manufacturing Engineer**

\$19.50-\$26.75/hour

**Supervisor**

\$19.00-\$27.00/hour

## MID LEVEL

Associate's degree or equivalent training and experience

**Assembly Specialist**

\$12.50-\$22.10/hour

**Machining Specialist**

\$16.00-\$23.50/hour

**Fabricating Specialist**

\$14.50-\$19.75/hour

## ENTRY LEVEL

High school diploma and completion of the Engineering/Manufacturing and Industrial Technology Career Pathway requirements and/or appropriate career and technical education classes

**Co-op/Internship Student**

\$6.00-\$8.00/hour

**Machinist Trainee**

\$8.10-\$12.00/hour

**Welding Trainee**

\$8.10-\$12.00/hour

Wages will vary within this occupation based on the employee's education, training, and years of experience. The ability to perform multiple manufacturing engineering functions will also increase the wage and the employee's value to the company.

## JOB DESCRIPTION

Each occupation is described in terms of specific tasks and typical job duties.

## A MANUFACTURING ENGINEER MUST BE ABLE TO:

- Develop blueprints and other job specifications for a wide variety of manufacturing applications
- Understand a wide variety of machinery and manufacturing processes
- Perform complex mathematical calculations to determine the best method for producing manufactured products and services
- Design tooling to produce quality parts
- Communicate with coworkers and supervisors to give and receive instructions and coordinate activities
- Use data to analyze and solve problems

## WAGES

Wage information was obtained from the Michigan Department of Labor and Economic Growth and from local employers to give a general idea of the wages and salaries for this occupation.

## WAGE RANGE

\$19.50-\$26.75/hour

## WORKING CONDITIONS

Engineers typically work in an air-conditioned, state-of-the-art environment. They must interact with customers, as well as plant personnel. As part of the interactions with customers, they could have the opportunity for global travel. They must be able to meet deadlines. Occasional overtime is required to ensure customer needs and expectations are met.

## EDUCATION AND TRAINING

Courses, programs, and certificates that are needed for employment are offered by local education and training providers.



### HIGH SCHOOL

- Completion of high school's Engineering/Manufacturing and Industrial Technology Career Pathway and/or appropriate career and technical education classes
- Algebra
- Geometry
- Trigonometry
- Physics
- Career studies, such as electricity, engineering/computer-aided drafting, pre-engineering, machine tool technology, and welding
- Co-op work experience
- Saginaw/Midland/Bay Michigan Works! automation certificate

### COMMUNITY COLLEGE

- Delta College: associate's in applied science, manufacturing/technology; bachelor of science transfer programs
- Machining certificate
- Computer-aided drafting/computer numeric control certificate
- On-the-job training
- Corporate training
- Transfer credits for associate's degree

### UNIVERSITY

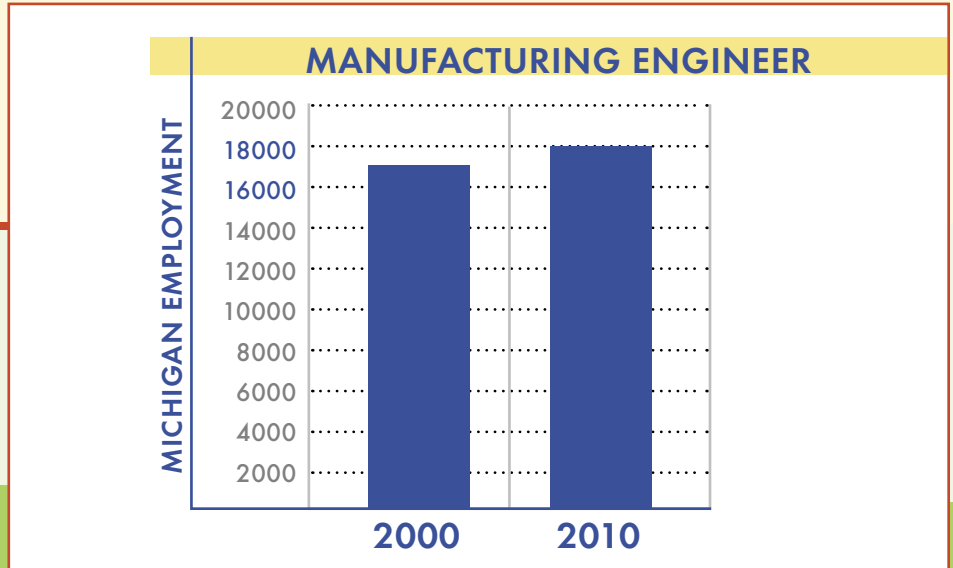
- Corporate training
- On-the-job training
- Selected classes
- Transfer credits for four-year degree
- Engineering degree
- Saginaw Valley State University: master of business administration; master of science, technological processes

### LOCAL EDUCATION AND TRAINING PROVIDERS

- Local school districts
- Bay-Arenac ISD Career Center
- Saginaw Career Complex
- Saginaw/Midland/Bay Michigan Works!
- Delta College
- Delta Corporate Services
- Davenport University
- Davenport Corporate Services
- Saginaw Valley State University
- Saginaw Valley State University Center for Manufacturing Improvement

# JOB OUTLOOK

The rate of growth within this occupation is projected by data from local employers and the Michigan Department of Labor and Economic Growth.



## ADVANCEMENT

Manufacturing engineers have worked their way to the advanced level of their career ladder. They may advance further by increasing their skills, supervision or training of other employees, managing a department, or through other increased responsibilities.

## WHAT THE EMPLOYER SAID



### WHAT DO YOU LOOK FOR IN A POTENTIAL EMPLOYEE FOR THIS POSITION?

"Manufacturing engineers are critical to our success at this Delphi plant. They help us with the day-to-day operations on the floor. One of their duties is to keep the manufacturing equipment running so we can meet production goals. The qualities that we look for in employees are that they be well-rounded with technical expertise and people skills because they will have the opportunity to interact with individuals from all levels of the organization. Engineers must be proactive with problems and take a team approach to any challenge. They must also have a four-year engineering degree."

Glen Hall, personnel director  
Delphi Automotive Systems – Delphi Energy and Chassis

# STAR PROFILE

This interview is intended to show you what is needed to be a star employee.



**EMPLOYEE:**  
**KATHERINE**  
**WOJTOWICZ**

**OCCUPATION:**  
**MANUFACTURING**  
**ENGINEER**

**COMPANY:**  
**DELPHI AUTOMOTIVE**  
**SYSTEMS – DELPHI**  
**ENERGY AND CHASSIS**

## TELL US HOW YOU ATTAINED YOUR CURRENT POSITION.

I started in April 1991 as a Saginaw Valley State University student working for Delphi part-time. When I transferred to Michigan Technological University to finish my degree, I was hired as a co-op student. After graduation in 1995, I accepted a full-time position. In 1997, I transferred to Dayton, Ohio, where I worked on international projects. I then spent two years at Ohio State University earning my master's degree in engineering. When finished, I returned to Saginaw and started the position I currently hold.

One additional note: when I started college, I never intended to be a manufacturing engineer. Someone I worked with strongly suggested I enroll in a couple of engineering courses to see if I would like it. Even after a semester, I still wasn't sure but I stuck with the program. With a mechanical engineering degree, there are numerous opportunities to try new things. It wasn't until I had my first experience with manufacturing engineering within Delphi that I realized this was the career path for me.

## DESCRIBE YOUR TYPICAL DAY.

When I arrive at my desk, the first task is to listen to my voicemail to understand what happened the night before. Then I will "walk the floor," which means I will go to the plant floor to see what is happening and talk to maintenance and operations personnel. I have meetings scheduled every day, so some additional time is devoted to preparing for them. I also spend time delegating assignments to my employees and following up on open issues. As an engineering supervisor, I am also responsible for developing my employees, which means understanding what their career goals are and helping them to reach their potential.

## WHAT QUALITIES MAKE SOMEONE A "STAR" IN THIS OCCUPATION?

The qualities that make someone a star in this occupation are a willingness to learn, leadership abilities, excellent communication and personal skills (verbal, written, and sometimes nonverbal), and the ability to think and act outside your normal comfort range.

## WHAT TRAINING AND EDUCATION DID YOU NEED TO ENTER THIS POSITION?

A bachelors of science for a position in engineering is usually required. A masters of science is typically not required, but it is very helpful to have to advance to higher positions.

While my undergraduate studies provided understanding of engineering concepts, I received my most valuable training on the job. I would strongly recommend that people apply for a student position during their studies.

I would also strongly recommend taking some courses or seminars on time management and leadership. Being a good leader is a skill that takes practice and patience, but once learned and understood, it will be your greatest asset in both your professional and personal life.

## WHAT DO YOU LIKE MOST/LEAST ABOUT YOUR JOB?

If you like to do the same thing over and over again, then I don't believe manufacturing engineering is the career for you. I have new opportunities and challenges every day. Some are small and some have a wide impact, but none are insignificant. That is what I like most about this job. There is a satisfaction when obstacles are overcome and tasks are performed well.

The thing I like most about this job can also become the thing I like least. Managing the multiple tasks can be very demanding, and projects must be prioritized. Manufacturing engineers must learn to juggle all the demands placed on them.

## WHAT ADVICE CAN YOU GIVE SOMEONE SEEKING A JOB IN YOUR FIELD?

The advice I would give someone seeking a job in this field is that it is just as important for you to interview the company as it is for them to interview you. You should know if the company is right for you. Evaluate their policies. Understand what they have to offer you. A positive organizational fit will lead to better job satisfaction.

## ARE THERE ANY LICENSES OR CERTIFICATIONS NEEDED FOR YOUR POSITION?

Careers in manufacturing engineering are wide ranging. Although my position only requires a bachelor's degree and work experience, other types of positions may require additional certification.

## ACKNOWLEDGMENTS

The Career Ladders project began as a Saginaw County Vision 2020 initiative. To date, more than 300 individuals have been involved in the project. It is impossible to list them all, but the Comprehensive Education and Workforce Development Committee appreciates each one and the incredible participation by our major employers and educational institutions, as well as the support from the Arnold and Gertrude Boutell Memorial Fund, The Dow Chemical Company, The Dow Corning Foundation, the Fordney Club, the Hospital Council of East Central Michigan, the Michigan Department of Labor and Economic Growth, the National Tooling and Machining Association – Saginaw Valley Chapter, the Saginaw Community Foundation, the Saginaw County Business and Education Partnership, the Saginaw County Chamber of Commerce Foundation, Saginaw County's local school districts, Saginaw County's Promise, the Saginaw County Vision 2020, the Saginaw Future Inc., the Saginaw/Midland/Bay Michigan Works!, the Saginaw Township Business Association, the Saginaw Valley Manufacturers' Association, and the Saginaw Valley Tech Prep Partnership. We also want to thank NOVA for their guidance.

EQUAL OPPORTUNITY EMPLOYER/PROGRAM. AUXILIARY AIDS AND SERVICES ARE AVAILABLE UPON REQUEST TO INDIVIDUALS WITH DISABILITIES.