



N.E.A.T. Newsflash

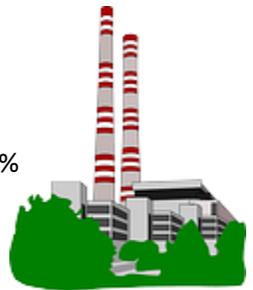
New and Emerging Automation & Technology.

YOUR CAREER IN MANUFACTURING

NOTE: This is the second in a series of N.E.A.T. Newsflashes. N.E.A.T. Newsflashes are produced and distributed throughout the school year to students, parents, teachers, counselors, WorkOne customers, and other interested parties. The N.E.A.T. Newsflashes focus on one business sector each month; providing important labor market information, and directing readers to related educational pathways and resources. Also look for N.E.A.T. Newsletters. The focus of the newsletter is manufacturing; highlighting local companies, their employees, and manufacturing activities - much of which is presented to you through on-site videos. N.E.A.T. productions come to you through a partnership with WorkOne Western Indiana, Ivy Tech Community College, and the CTE Directors serving Indiana Region 7 -Clay, Parke, Putnam, Sullivan, Vermillion, and Vigo counties. Publication contact: lisalee@workforcenet.org.

PICTURE YOURSELF - IN A MANUFACTURING CAREER

Today, 17% of Region 7's workforce is employed in the manufacturing sector; this compares to 9% employment in manufacturing nationwide. Also, manufacturers have the highest job tenure in the private sector. Today's manufacturing is clean, efficient, and uses advanced technology. People are often surprised when they realize that most production floors rely almost entirely on computers and computer-driven equipment.



Every day across America, people in manufacturing make the things we use in our lives. Are you a person who:

Can clearly communicate information and ideas to others?

Has good manual dexterity; who likes to manipulate or assemble objects?

Likes math, algebra, geometry, calculus, statistics, and their applications?

Work well in groups or work teams?

Do you possess the ability to combine pieces of information to form general rules or conclusions?

Then perhaps a career in manufacturing is right for you!

Let's learn more.



CAREERS IN MANUFACTURING

Welding, Soldering, and Brazing Machine Setters, Operators, & Tenders

Tasks –

- Turn and press knobs and buttons or enter operating instructions into computers to adjust and start welding machines.
- Set up, operate, or tend welding machines that join or bond components to fabricate metal products or assemblies.
- Load or feed work pieces into welding machines to join or bond components.
- Give directions to other workers regarding machine set-up and use.
- Correct problems by adjusting controls or by stopping machines and opening holding devices.
- Inspect, measure, or test completed metal work pieces to ensure conformance to specifications, using measuring and testing devices.
- Record operational information on specified production reports.
- Start, monitor, and adjust robotic welding production lines.
- Read blueprints, work orders, or production schedules to determine product or job instructions or specifications.
- Assemble, align, and clamp work pieces into holding fixtures to bond, heat-treat, or solder fabricated metal components.

Education: Results of a recent ONet survey: 50% of people have a high school degree or equivalent. 16% have less than a high school degree. 11% have a Post-secondary certificate.

Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic Tasks –

- Determine the sequence of machine operations, and select the proper cutting tools needed to machine work pieces into the desired shapes.
- Revise programs or tapes to eliminate errors, and retest programs to check that problems have been solved.
- Analyze job orders, drawings, blueprints, specifications, printed circuit board pattern films, and design data to calculate dimensions, tool selection, machine speeds, and feed rates.

- Determine reference points, machine cutting paths, or hole locations, and compute angular and linear dimensions, radii, and curvatures.
- Observe machines on trial runs or conduct computer simulations to ensure that programs and machinery will function properly and produce items that meet specifications.
- Compare encoded tapes or computer printouts with original part specifications and blueprints to verify accuracy of instructions.
- Enter coordinates of hole locations into program memories by depressing pedals or buttons of programmers.
- Write programs in the language of a machine's controller and store programs on media such as punch tapes, magnetic tapes, or disks.
- Modify existing programs to enhance efficiency.
- Enter computer commands to store or retrieve parts patterns, graphic displays, or programs that transfer data to other media.

Education: Results of a recent ONet survey: 36% of people have an Associate's degree. 30% have a post-secondary certificate. 15% have a Bachelor's degree.

Machinists Tasks –

- Calculate dimensions or tolerances, using instruments such as micrometers or vernier calipers.
- Machine parts to specifications, using machine tools, such as lathes, milling machines, shapers, or grinders.
- Set up, adjust, or operate basic or specialized machine tools used to perform precision machining operations.
- Align and secure holding fixtures, cutting tools, attachments, accessories, or materials onto machines.
- Measure, examine, or test completed units to check for defects and ensure conformance to specifications, using precision instruments, such as micrometers.
- Monitor the feed and speed of machines during the machining process.
- Maintain machine tools in proper operational condition.
- Study sample parts, blueprints, drawings, or engineering information to determine methods or sequences of operations needed to fabricate products.
- Operate equipment to verify operational efficiency.
- Check work pieces to ensure that they are properly lubricated or cooled.

Education: Results of a recent ONet survey: 50% of people have a post-secondary certificate. 34% have a high school degree or equivalent, 5% have an Associate's degree.

Quality Control Systems Managers Tasks –

- Collect and analyze production samples to evaluate quality.
- Analyze quality control test results and provide feedback and interpretation to production management or staff.

- Stop production if serious product defects are present.
- Monitor performance of quality control systems to ensure effectiveness and efficiency.
- Communicate quality control information to all relevant organizational departments, outside vendors, or contractors.
- Instruct staff in quality control and analytical procedures.
- Produce reports regarding nonconformance of products or processes, daily production quality, root cause analyses, or quality trends.
- Participate in the development of product specifications.
- Review statistical studies, technological advances, or regulatory standards and trends to stay abreast of issues in the field of quality control.
- Identify critical points in the manufacturing process and specify sampling procedures to be used at these points.

Education: Results of a recent ONet survey: 73% of people have a Bachelor's degree. 11% have some or no college. 11% have a Master's degree.

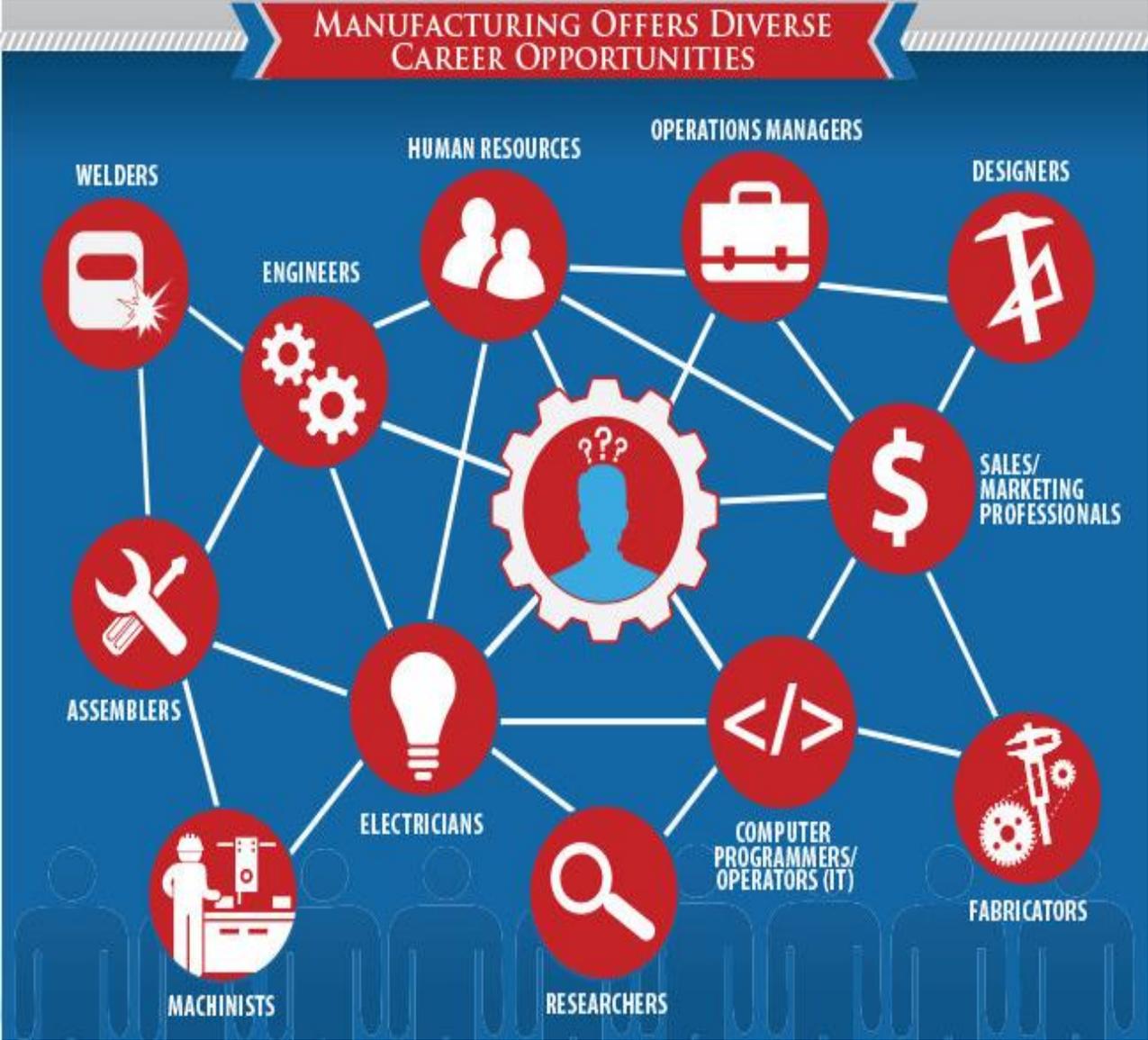
First-Line Supervisors of Production and Operating Workers Tasks –

- Enforce safety and sanitation regulations.
- Direct and coordinate the activities of employees engaged in the production or processing of goods, such as inspectors, machine setters, and fabricators.
- Confer with other supervisors to coordinate operations and activities within or between departments.
- Plan and establish work schedules, assignments, and production sequences to meet production goals.
- Inspect materials, products, or equipment to detect defects or malfunctions.
- Observe work and monitor gauges, dials, and other indicators to ensure that operators conform to production or processing standards.
- Conduct employee training in equipment operations or work and safety procedures, or assign employee training to experienced workers.
- Interpret specifications, blueprints, job orders, and company policies and procedures for workers.
- Keep records of employees' attendance and hours worked.
- Read and analyze charts, work orders, production schedules, and other records and reports to determine production requirements and to evaluate current production estimates and outputs.

Education: Results of a recent ONet survey: 44% of people have a high school diploma or equivalent. 23% have a Bachelor's degree. 14% have some college, no degree.

SOURCE – O*Net Online

While many times people think of jobs directly related to the production floor as jobs in manufacturing, there are actually hundreds of jobs which support final production that are key to the success of the business. The diagram below illustrates just a few of the many diverse jobs in manufacturing.



SOURCE: National Manufacturing Day website

1. **HIGH SCHOOL COURSES** Students interested in careers in manufacturing need look no further than their school's Career and Technology Education (CTE) programs. CTE offers numerous courses and pathways related to manufacturing. Many of these courses are dual credit, which means students can earn college credit from schools like Ivy Tech Community College and Vincennes University at the same time they are fulfilling high school graduation requirements. Pathways and courses related to manufacturing in Region 7 high schools include:

Electronics Technology

Production Technician (Advanced Manufacturing)

Precision Machine Technology

Welding Technology

Check with your school counselor to see what classes are available to you!

2. **IVY TECH – WABASH VALLEY CAMPUS (Terre Haute) –**

Phone 1-888-IVY-LINE www.ivytech.edu/wabashvalley

Ivy Tech Community College offers a number of areas of study related to manufacturing in their "Technology and Applied Sciences Division." These programs are designed to prepare graduates for immediate employment or in a few select programs, may prepare for transfer or employment. Programs include, but may not be limited to:

Advanced Manufacturing

Design Technology

Electronics and Computer Technology

Industrial Apprenticeship

Industrial Technology

Informatics

Information Technology Support

Machine Tool Technology

Manufacturing Production and Operations

Ivy Tech also offers a large menu of certifications and short-term programs, in areas such as CNC machining, CAD, welding, and PLC. Contact the Corporate College for more information.

3. **OTHER AREA COLLEGES AND UNIVERSITIES** offering manufacturing courses:

Indiana State University, Terre Haute, IN

Phone 812-237-6311 <http://cms.indstate.edu>

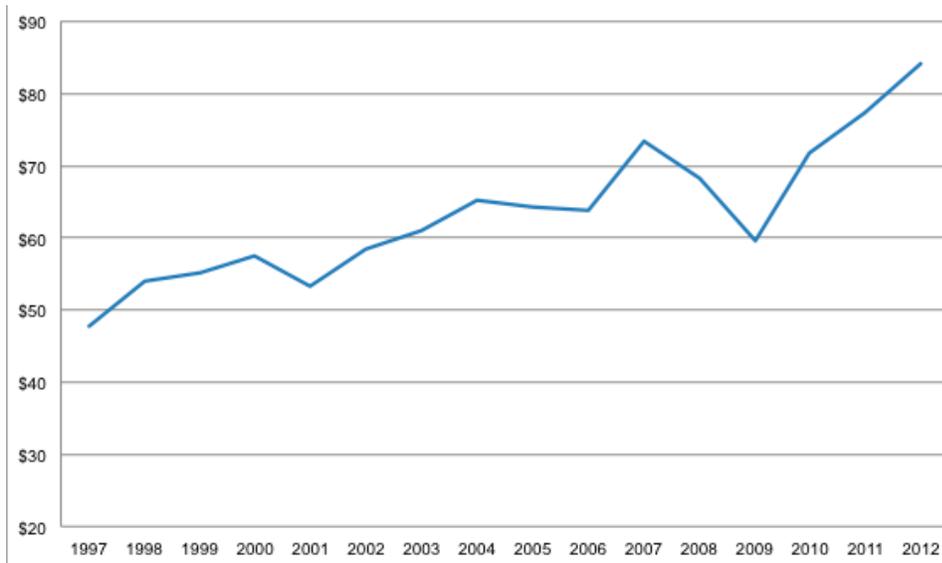
Vincennes University, Vincennes, IN

Phone 812-888-8888 www.vinu.edu

Manufacturing is Back and Stronger than Ever

While manufacturing, like so many other industries around the county, was hit hard by the recession of 2008/2009, the chart below sends a clear message that manufacturing has not only made a comeback in Indiana, but manufacturing is stronger than ever.

Indiana Manufacturing Output - In Billions of Dollars from 1997-2012



Source: U.S. Bureau of Economic Analysis

HEAR INTERVIEWS WITH THOSE IN THE FIELD



To see interviews with people in the field of manufacturing talking about their careers, go to the Indiana Department of Workforce Development “Hot Jobs” website at <https://netsolutions.dwd.in.gov/hh50/jobList.aspx> and click on:

- # 16 Management Analyst
- # 19 Sales Representative, Wholesale and Manufacturing
- # 37 Industrial Machinery Mechanic