

# Think Robotics, Not Wrenches

## In Advanced Manufacturing! By Housley Carr

Forget what you've heard about manufacturing jobs moving overseas. Sure, some of that's happening. But if you're only catching the bad news, you're missing out on the good. Great career and entrepreneurial opportunities abound.

The fact is that the new breed of advanced manufacturers—that make everything from computers to mountain bikes to jet parts—can't find enough trained people to hire!

"All the boring manufacturing jobs already have been outsourced" to other countries, says Dan Conroy. "The jobs that are still here are the best ones. The jobs using the latest technology—lasers, micro-machining, and nanotechnology."

Conroy should know. He's the human resources director at the Nexen Group. Nexen's plant in Webster, Wis., uses high-tech equipment to make industrial equipment that is sold around the world.

Conroy says that finding trained people for Nexen's good-paying jobs is hard work. "It doesn't make sense, because these are really good jobs. It's just that people don't know that there are awesome career opportunities in advanced manufacturing."

According to the Washington, D.C.-based Manufacturing Institute, an individual who works in manufacturing will be paid 22% more than the average U.S. worker.

Teamwork also rules at the Cannondale bicycle plant in Bedford, Penn. Its 350 employees "work really closely together, trying to solve problems as they come up," says Scott Collins, human resources supervisor. "We're like family."

The technology at our plant "runs from old-school to lasers," says Collins. The company's edge in the bike market is the level of quality that is hard to get from overseas, he says. Perfect cuts

on frame tubing. Flawless welds. Smooth-as-silk gears.

"We have some employees with high school diplomas, a lot with two-year degrees, and some with four-year degrees. But no matter what job you have here, you're involved in quality control. We want people who really care about their work, and who pay attention to the detail. That will make you or break you at Cannondale," says Collins.

Because so many of the workers are into cycling in a big way, there's an extra rush that comes with the paycheck. "I welded for 10 years before taking the hiring gig," says Collins. "Each bike gets the stamp of the welder. I knew that every bike I welded was going out into the world with my initials on it. There's real pride in that."

Collins says that no matter where you work in manufacturing, you have to be comfortable with computers. And it really helps to have at least a two-year technical degree. A four-year degree is even better.

Technical schools, community colleges and universities expose you to what the best companies are looking for. Computer-aided design and computer-aided manufacturing. Robotics. Metrology—measuring the tiniest things. Equipment installation and repair.

Education beyond high school also gives you a chance to get better at other stuff that really matters in manufacturing. "Things like creative thinking, teamwork, and problem-solving," says Nettie Simon-Owens. She is the coordinator of workplace services at Danville Community College in Virginia, which offers an advanced manufacturing technology program. The program involves "applied learning," says Simons-Owens. "There's a lot of hands-on work so that graduates can flow right into a good job, anxiety-free. (Well, almost.)"

"We work with Griffin Technical College" in Griffin, Ga., and



### Photo left:

The automobile industry relies on advanced manufacturing technology and high-tech workers to produce quality products.

# PAYDAY

Average annual salaries for advanced manufacturing staff

Assembler	\$32,900
Avionics Technician	\$46,570
Chemical Engineer	\$78,030
CNC Machine Operator	\$43,320
Cost Estimator	\$50,870
Drafter	\$47,300
Electrical Engineer	\$79,680
Electrician	\$41,760
Electromechanical Equipment Technician	\$39,580
Environmental Engineer	\$70,830
Fabric and Apparel Patternmaker	\$35,530
Industrial Engineer	\$67,820
Inspector	\$31,590
Precision Instrument Repairer	\$46,400
Machine Setter & Operator	\$27,790
Manufacturing Engineer	\$65,230
Material Mover	\$31,350
Mechanical Engineer	\$71,110
Medical Equipment Technician	\$31,550
Metal Fabricator	\$31,260
Model Maker (Metal and Plastic)	\$45,520
Painter (Transportation Equipment)	\$36,980
Petroleum Engineer	\$92,840
Plant Manager	\$109,090
Plastics Fabricator	\$31,260
Printing Machine Operator	\$32,300
Safety Technician	\$39,300
Semiconductor Engineer	\$90,000
Tool and Die Maker	\$44,620
Welder	\$31,430

CHART SOURCE: U.S. DEPT. OF LABOR, BUREAU OF LABOR STATISTICS



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—DAN CONROY, NEXEN GROUP

some other schools, says Shane Sumner. He is the president and chief executive officer at Snapper, the lawnmower company. Sumner runs a huge plant in McDonough, Ga., that is three times as productive as it was only 10 years ago.

Now, lasers cut the parts. Computers control the steel-stamping presses and robots do the welding. All this happens under the watchful eyes of trained people. The end result is a better lawnmower.

If you really want to go places in advanced manufacturing, get an engineering degree. Employers will be fighting over you come graduation, says Cynthia Redwine. She is the director of the Career Resources Center at the University of Michigan’s School of Engineering.

“We get recruiters from companies like Boeing, General Electric, Ford, and Northrop-Grumman,” says Redwine. In 2005, mechanical engineering graduates got jobs with average starting salaries of \$52,150, she says. Stay on for a master’s degree in manufacturing engineering and you could start at about \$70,000.

Even for an entry-level manufacturing worker, the pay is good. According to the federal government’s Bureau of Labor Statistics, the average hourly wage

for a production worker making transportation equipment was over \$21 an hour in late 2005. That’s about \$43,000 a year—without overtime.

For someone making computers or electronic equipment, the average wage was almost \$18 an hour. Steelmakers make about the same. And it goes up from there.

Gain more work experience and continue your education and you may find yourself a production control manager. They make an average of \$76,000 per year. What about a plant manager? They make an average of \$109,000 per year. Thinking really big? A manufacturing executive makes approximately \$210,000.

“There are tons of jobs in advanced manufacturing for those with education, training, and good work ethics,” says Conroy, from Nexen. “And the opportunities to advance are great too. A career in advanced manufacturing is really something young people should think about.”



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