Think of a plastic wrench or plastic salt and pepper shakers, and it’s easy to assume they are toys for a little boy and girl.

But what if they could be printed out by a device in one operation similar to an ink jet printer.

Those little gadgets are just the start of what can be created by the Rapid Prototype 3-D printer, purchased by Mountwest Community & Technical College’s Manufacturing and Engineering Technology Department late in 2009.

The $30,000 piece of equipment, bought with grant money, can build almost anything that is scanned into or created in a 3-D design software program.

But it’s not new technology.

In 2002, doctors at UCLA printed the skulls of two little girls conjoined at the head. They used the model to intricately plan a surgery to separate the children. As a result, the surgery lasted 22 hours, well below the original estimate of 97.

In 2010, the costs of the printers have come down enough to make it feasible for educational institutions and manufacturing companies to purchase them.

Mountwest’s goal is to train students in the technology and allow them to design products on the computer and actually see and feel them.

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Ted Triplett, a Mountwest instructor and curriculum coordinator for Manufacturing Engineering Technology, said its industry purpose is to build affordable prototypes for companies that are designing parts.

At Mountwest, it may lead to students starting companies that can print custom products for consumers or prototypes for companies. But it will certainly provide a trained workforce that he believes will be needed.

“The future of manufacturing is going this way,” Triplett said.

The 3-D printer builds objects layer by layer – an additive process – using a strong plastic material that comes in rolls of strings, similar to what is used in weed eaters. It builds products up rather than cutting them out of something larger.

A New Zealand company – Ponoko – profiled in the October 2009 issue of Inc. magazine, uses a laser printer to cut objects out of large pieces of wood or plastic, among other materials. It’s the complete opposite to the machine Mountwest now owns. But Ponoko’s mission as a company is a prime example of the business capabilities Mountwest’s printer has.

David ten Have, Chief Executive Officer said in the article that the company stores thousands of products in a digital inventory. Current designs can be tweaked for true personalization, while new designs can be uploaded, printed and shipped at a reasonable cost.

Anthony Pelino, a student in the Mountwest program and a business owner from Lincoln County, said the 3-D printing technology could tremendously impact him and his brother’s prop business.

“When we started the company, we made props out of aluminum and PVC,” Pelino said. “As we got experienced and more familiar with the process, we turned to sculpting and machining our own parts.

“Now we model them in 3-D and use the printer,” he said. The printer allows him to make more detailed props, which is just too difficult by hand.

“The most significant advantage is taking the trial and error out of the equation,” he said. “It’s precise. That’s really your biggest cost savings. There’s no more waste.”

Pelino said it also saves a lot of time, because he can be working on something else while the printer does its job. He estimates the technology can and already has started to save his company money and could eventually triple his business.
Mountwest Community & Technical College is starting at least one new course around the printer, Rapid Prototyping Techniques, while tweaking a few others to incorporate the printer into the curriculum.

There also are plans to offer an entrepreneurial class in manufacturing in the fall of 2010 that will utilize the new technology, which is not limited to plastic materials.

“They make printers that do things with titanium,” Triplett said. “They are working on printing organs for humans. And the titanium is already being used for hip replacements.”

Executive Dean Carol Perry said she expects the printer to be integrated into a number of Mountwest programs. One that will really benefit is Allied Health, she said.

It’s also very useful in the architectural realm, producing extremely-detailed parts that are put together in a similar manner as model cars.

One of the ultimate goals is to outsource the printer to local businesses and have those companies hire or utilize Mountwest students who have already been trained in the technology, possibly for internships.

Anthony Wheeler, president of Huntington business Paris Signs, watched a demonstration of the 3-D printer earlier in the spring. He said he was aware of the technology but had never seen it in action.

“It’s pretty cool,” Wheeler said. “It won’t affect us (at Paris Signs), but I have another company I’m working on and can use it to make the prototype.

“It’s a great tool for somebody trying to develop something that doesn’t exist,” he said.

Some businesses and industries also are getting on board. And more will follow, Pelino said, as students are trained and bring that knowledge into the workforce.

“While this machine and scanning technology are important, it’s only a part of the (Mountwest) degree,” Pelino said. “It is about design and function and engineering, and pushing those disciplines into future technologies that will push engineering.”

For more information, contact Ted Triplett by phone at 304-696-3435, or via email at triplettt@mctc.edu.
New Name, Logo and Facility Give MCTC New Identity

A major re-branding effort is underway for the community and technical college that calls Huntington home.

For more than three decades, Mountwest Community & Technical College was under the umbrella of Marshall University, having gotten its start as a community college within the university in 1975.

But since 2008, when legislation completed the separation of the two institutions, MCTC President Keith Cotroneo and the new board of governors have worked very hard to set the college apart. Now, the tools are finally in place to reintroduce MCTC to the city and region. In 2010, the West Virginia Legislature approved the name change from Marshall Community & Technical College (its name since 1991) to Mountwest Community & Technical College. The board of governors also approved the school’s new logo at its March meeting. But the most significant accomplishment this year was the purchase of the former Arch Coal Building at 2205 5th Street. The four-story, glass-windowed building, which also has a ground floor, is scheduled to be ready for classes for the fall 2011 semester, Cotroneo said.

“We feel like it’s all coming together in a more meaningful way than we originally imagined,” he said. “It will be a comprehensive community college with its own campus, which also allows us to expand programming and focus more directly on our mission.”

The facility, currently leased to DirectTV, is scheduled to be vacated by this fall. That’s when about $7.7 million in renovations will begin on what is a $7.5 purchase. Mountwest will use $13.5 million appropriated from the sale of state bonds, along with $2 million in reserves to get the facility into higher education shape.

Even though all this only happened within the past six months, Cotroneo said division heads, faculty, staff and the administration have been preparing for a new home.

Since the 2008 legislation, Mountwest has grown in enrollment, rolled out new programs within Business and Information Technology and Allied Health; signed three articulation agreements, including one with ShangHai ZhenHua Foreign Trade Professional School in ShangHai, China; developed its own Student Services department; and used grant money to expand facilities and equipment in several areas.

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The school also launched a new Workforce Development Institute in 2009 that provides credits to employees for employer-led training.

In a nutshell, Cotroneo said he not only wants people to know who they are and what they offer but also generate a strong wave of support as it gets closer to opening the new facility next August.

“I do hope that it builds to the point where the college is in position to take the ball and run,” he said. “And more is expected once the new campus opens because of the amenities all the space will provide. For the first time, Mountwest will have its own wet and dry science labs, slated to be built on the fourth floor. The campus also has a large kitchen on the ground floor, with vast space for a cafeteria. Cotroneo said he envisions the culinary students having the opportunity for more day-to-day work experience in addition to the catering portion of the Cooking and Culinary Institute – which will remain on 3rd Avenue in downtown Huntington.

“It gives us the capacity to think more broadly about programming that currently is restricted (by space),” he said. “We have been limited in what we’re able to do.”

Cotroneo said participation from the business community and program advisory groups are as important as ever in the shaping of Mountwest’s future. “(A new campus) definitely gives us flexibility to more directly meet their needs in terms of workforce development,” he said. “They can have a significant hand in determining what programming needs to be offered rather than what we’re able to offer.”

Among the programs that Cotroneo would like to see started as a direct effect of the new campus are electrical instrumentation, biomedical instrument repair and alternative energy.

“We can invest in the future because it will be a long-term facility,” he said. “I’m extremely confident Mountwest will be successful; there’s no question in my mind.”

**About the new facility**

**Ground floor:** Has existing locker rooms, commercial kitchen, cafeteria space and outdoor dining terrace. Space available for a recreation center and Internet café.

**First floor:** Plans call for all of student services to be located in rear offices; space available for a bookstore, some classrooms and a student lounge. Has existing access to patio and deck.

**Second floor:** Classrooms, labs and a learning center are planned in the center with faculty offices and a study lounge running along the exterior.

**Third floor:** Layout of classrooms and offices similar to second floor, although a resource/library center is planned on this floor.

**Fourth floor:** Conference rooms and administrative offices are planned for the fourth floor, in addition to the Occupational Therapy Lab, which will be named for Genesis HealthCare because of a $75,000 donation to the Mountwest Community & Technical College Foundation.

Total plans call for 18 classrooms and 16 labs.
Mountwest Program
Giving Culloden Man
Second Chance at Career

When Greif Brothers closed its Culloden plant in the spring of 2009, Daniel McDaniel wasn’t sure about his future.

He was in his early 50s, having worked in the machine shop there for 34 years. He had plenty of experience but lacked the official certifications other employers were looking for.

About a year later, though, he is hopeful that he can once again be a productive employee in the workforce. In March, he started the once-per-week adult Electrical Program through Mountwest Community and Technical College, held at Spring Valley High School’s Academic Skills Center.

The Electrical program is a 240-contact hour training program that teaches students electronic fundamentals that provide a foundation to work in the electrical or electronics industry. “This is very important. I did not have the certificates, even though I had done the work for years,” he said.

The Electrical Program’s three 80-hour modules include: Basic Electricity, Motors and Generators and Basic Electronics.

McDaniel hopes that this time in 2011, he’ll have finished the program and be on his way toward a new profession. “No question, I will learn a lot,” he said. “It’s a really good opportunity for me to learn here.

McDaniel, like other displaced workers may be, was eligible to receive money to pay for school through the Trade Readjustment Allowance and Trade Adjustment Assistance programs. Without it, he said he would not have been able to go back to school (more information is available at www.doleta.gov).

Once the financial aspect was taken care of, he said he had to overcome the fear of returning to school.

“At 54 years old, it scared me to death,” McDaniel said. “But I’m feeling better about it.”

The curriculum for the Electrical Program was developed in part by Brad Toney, the president of Genedyne Automation in Milton. Toney taught the first 240-hour contact program from September 2008 through November 2009.

He said the program provides training on the latest equipment and doing the most up-to-date industry techniques. “We worked hand in hand to ... tailor it to the requests of industry,” Toney said.

Toney and his partner, Robert Woods, both said that despite the economic downturn, skilled electricians are needed in the workforce, both locally and regionally. Woods said his former employer, Diamond Electric Manufacturing in Putnam County, was not fully staffed until the company decided to pull the open positions off the market during the recession. “Companies were running deficits before the downturn,” Woods said.

Sara Chapman, Director of MCTC Corporate Education, said the facilities were a $500,000 investment made possible by MCTC and Wayne County Schools.

Inside the Electrical Program

* Basic Electricity module: Includes instruction on atomic structure and electron theory, electrical quantities, Ohm’s Law, AC / DC circuit analysis, Alternating Current theory, and introduction to transformers.

* Motors and Generators module: Students apply the material learned in Basic Electricity to study AC polyphase motors, AC single phase motors, DC Machines, and transformer arrangements.

* Basic Electronics: Allows students to move into multiple careers such as industrial electronics technicians, PLC techs, robotics maintenance specialists, or industrial process instrumentation technicians. The curriculum for this module includes: The diode, power supplies, transistors, IGBT’s, integrated circuits, operational amplifiers, encoders and decoders, digital computer fundamentals.
Summer Certificate Program Designed for Entrepreneurs

Mountwest Community & Technical College is offering a summer certificate program called “Entrepreneur Skill Set.”

The program, which requires five courses, can be completed during the summer sessions at Mountwest.

The skill set is a step in the right direction to help any individual who wishes to start his or her own business. And courses taken may also apply toward an Associate in Applied Science degree.

Three courses are required, including Introduction to Accounting (AC 103), offered from 10 a.m. to 12:15 p.m. Monday through Thursday during Summer Session C; Introduction to Business, (MG 101), 5-9 p.m. Monday and Wednesday, Summer Session C; and Fundamentals of Marketing (MK 130), 5-9 p.m., Tuesday and Thursday, Summer Session C. Students also must take either Basic Economics (EC 102), which is offered online during Summer Session C, or General Law I (LAS 101), which is offered two different times during the fall.

The final requirement is one of three Information Technology classes, including Fundamentals of Computers (IT 101), Fundamentals of the Internet (IT 107) and a special topics class in networking (IT 280), but the latter requires permission.

IT 101 is offered online during Summer Sessions B and C, while IT 107 is offered online during Summer Session C. IT 280 also is offered during Summer Session C.

Course descriptions:

Introduction to Accounting: This course will provide an introduction to basic accounting concepts and generally accepted accounting principles. It will include a focus on the accounting cycle and accounting terms.

Basic Economics: An introduction to basic microeconomic and macroeconomic concepts and institutions, key economic relationships and terms.

Fundamentals of Computers: An introduction to computers and the fundamentals of operating systems and software programs. Provides hands-on experience with computer applications including word processing, spreadsheets, electronic mail, and the Internet.

Fundamentals of Internet: This course deals with fundamentals of the Internet. Topics considered include electronic mail, sending and receiving data across networks, and navigating the Internet. Also included are topics on business and research on the Internet.

Introduction to Business: Study of the nature of business activities and problems regarding ownership, organization, management and control. Course content is designed to emphasize business vocabulary and explore personal characteristics and training most desirable for various areas of specialization in business.

Fundamentals of Marketing: Study of the marketing process as it relates to the problems and policies of business enterprises. Attention is given to the role and significance of middlemen, evaluation of consumer needs, price determination, promotional and sales strategies and governmental regulations.

General Law I: This course is designed to teach the art of legal reasoning and analysis. Course content includes the meaning and function of law, how laws are created and enforced, the state and federal court systems, an overview of civil law and procedures, and jurisdiction.

For more information about enrolling, call 304-696-5431.
There were 460 new class registrations resulting in 120 new, full-time adult student enrollments at Mountwest Community and Technical College through the Workforce Development Institute during the fall 2009 semester. Another 254 new class registrations during the spring 2010 semester resulted in 57 new, full-time students.

The new program is available to employers in Cabell, Wayne, Mason, Putnam and Kanawha counties, as well those in Lawrence County, Ohio, and Boyd County, Ky.

To earn a degree, students must complete 30 credits from the technical core, all of which may be attained through employer training. They also must complete 21 to 22 general education credits, which include written and oral communication, fundamentals of computers, human relations, math, science and an elective. If they’ve taken those courses in the past, Mountwest can verify and transfer the credits. Those with military training also may be eligible to receive credit toward the two degree programs offered through the Workforce Development Institute: Associate of Applied Science in Technical Studies and Board of Governors Associate Degree.

Mountwest also offers a three-credit course called College 101. This credit/no credit course is designed to reintroduce adult learners to the college classroom experience. The course promotes success in college and some areas of concentration, including: developing academic skills, study skills (note taking, test taking, research and writing) and how to relate to others through diversity.

80 percent of jobs require some post-secondary education or training, and more than 62 percent of new jobs require employer-led training that often includes hands-on learning and experiences.

To learn more, call Erika Bailey by phone at 304-525-1466 or by email at wdi@mctc.edu. Information also is available at www.mctc.edu.