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# Newsweek International Edition



## Factory Work Takes A Videogame Turn

By Benjamin Sutherland  
Newsweek International

Jan. 30, 2006 issue - Computer graphics usually appear on screens. **Craig Wyvill**, a researcher in optics engineering at Georgia Tech in Atlanta, prefers to display his on dead, plucked chickens dangling from a monorail. In noisy poultry plants, workers who trim defective parts from chickens currently receive cutting instructions via complex hand gestures from an inspector up the line. But now, Georgia Tech is replacing gestures with graphics superimposed directly onto chickens.

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The technology known as augmented reality, in which images and data are projected onto goggles, windshields or other objects, is quickly moving beyond videogames and laboratory demos. The killer app is turning out to be boosting the productivity of factory workers by displaying "pages" of instructions and technical diagrams in front of them while they work.

More sensitive electronics are allowing the new systems to take on more sophisticated tasks. Georgia Tech's poultry system, for instance, incorporates cameras that can identify bruises, tumors, broken wings and other flaws on the chickens. Computer-controlled projectors track the birds by way of sensors attached to their feet and shine handling instructions for the workers onto the carcasses. Wyvill says that research done in GTRI's mock poultry plant will save U.S. chicken-processing plants at least \$20 million yearly when the technology is rolled out in the next three years.

One of the challenges in designing the new ARsystems is how to display copious data in a way that's not confusing. Manufacturers are coming up with almost as many tricks as there are devices. Last August, Metaio, a leading AR start-up based in Garching, Germany, began selling Virtual Retina Display headsets, which beam a low-intensity laser directly onto the retina in one of the user's eyes. The user sees "pages" of partially transparent, full-color graphics floating in thin air. Using a wireless track pad and click button attached to the waist, the worker can open additional diagrams and text instructions as he progresses from one task to another. Another Metaio headset uses a head-mounted camera and software to get a fix on where the worker is in relation to the equipment around him. Then it beams images (say, a virtual wrench) onto the spot where the next bolt needs tightening.

Germany's auto industry is a big beneficiary of

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the new technology in part because in 1999 the government established ARVIKA, a research consortium of more than 20 engineering firms. Now these companies are racing ahead with products. BMW, for instance, has made the Intelligent Welding Gun. It uses four wall-mounted optical-tracking cameras to generate graphics that show welders exactly where to apply the torch. In tests, the gun slashed welding time by 50 percent, while improving quality. Volkswagen is beginning to test AR see-through visors in its assembly plants that display graphics written onto them by lasers.

The technology is also making its way into inventory management. Mitsubishi researchers are testing an AR system that displays information stored in microchips attached to warehouse boxes. When a worker aims a flashlight-size projector at a box, information about what's inside appears on the cardboard.

Some AR experts believe that the technology will boost manufacturing productivity in high-labor-cost countries, allowing them to better compete. As costs fall, the AR market is expected to expand to include do-it-yourself mechanics, and it may blossom as a communications medium for consumers. But first, it stands to give old-line manufacturing some serious augmentation.

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