

MANUFACTURING'S NEXT REVOLUTION



■ Jerry Peck

AS A SELF-CONFESSED “gadget-guy,” I’m admittedly drawn like a moth to flame whenever the latest piece of high-tech electronics hits the market. My closet bears silent witness to this passion where numerous boxes store a small museum’s worth of archaic equipment. Remember the original laser disc players and their LP-sized movies you had to flip over? Yep, it’s in there.

These days, the technology that has my full attention — and imagination — is “3-D Printing.” Also known as “Additive Manufacturing,” an object of virtually any shape can be manufactured from a three-dimensional model through a process that prints individual layers of material.

In addition to being waste-free as opposed to traditional machining, this revolutionary process has a seemingly endless diversity of applications. In the medical field for instance, 3-D printing already has been used to produce a living human ear, various customized prosthetics and artificial bone.

NASA recently announced the successful test firing of a rocket engine injector — a highly complex and expensive component that typically takes more than a year to produce — that was completed via additive manufacturing in less than four months and at 70 percent of the cost.

NASA also awarded a grant for the development of a prototype 3-D food printer with the idea of being able to provide astronauts with perfect replicas of pizza and other comfort foods.

So what does this have to do with supply chains? Plenty. A June 26 EBN article titled “Manufacturing Trends Revolutionize Procurement” states that some experts already believe industry

is in the midst of a new industrial revolution and that 3-D printing and other new technologies are leading to a manufacturing “renaissance.”

As these printers get more sophisticated and affordable, combined with advancements in printing materials and technology, the concept of small retailers being able to produce customized orders on demand may be closer than many realize.

In short, “the factory can be anywhere.”

Yossi Sheffi, director of MIT’s Center for Transportation & Logistics, provides another example: “Faster production coupled with closer proximity to markets should shorten supply chains and reduce the need for larger inventories, thus making it ideally suited for just-in-time operations,” he says. “For example, 3-D printers in auto repair shops and retail outlets could make certain auto components on site, eliminating the need for these items to be delivered by suppliers. When a production line goes down, the part needed to fix the problem might have to be shipped from a faraway supplier using expensive same-day delivery services. Simply printing the part in situ avoids this costly transportation option.”

If this were an international shipment, add the additional time and cost savings associated with clearing Customs, and its related service fees and import duties and taxes.

Some supply chains will become obsolete altogether, while procurement functions will shift from buying parts and components, to buying the materials that will feed their printers.

And, although the initial application of Additive Printing will be

limited to certain products, it’s easy to foresee how this soon could spill over into similar technologies and industries. Imagine walking into a tailor where you select a particular style of suit, fabric and color. You then step into a scanner where your body measurements are precisely recorded by lasers that then feed the data into a machine that cuts and sews the suit while you wait.

A variety of simple consumer printers are already on the market with prices ranging from the equivalent of a DVD player to a large flat-panel TV — and more are coming, particularly due to key patents on this technology expiring next year.

A recent Quartz Business article states that China already is poised to be a major benefactor of the coming manufacturing explosion, with China’s Ministry of Industry and Information Technology launching an initiative in 2012 to fund 10 research centers devoted to 3-D printing, at a cost of 200 million yuan (\$32 million).

Perhaps similar to what Keurig did to revolutionize the way we purchase and prepare our coffee, we soon could see a consumer food printer capable of “building” a perfect slice of pizza. Just pop in the cartridge of pre-mixed ingredients and push the button.

True to form, I’ll likely be among the first in line to buy one. I just hope they perfect Canadian bacon and pineapple. **joc**

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