

# Manufacturing Practices that will be Outdated within the Decade

written by Lauri Moon | September 21, 2016

(Manufacturing Transformation - Jon Wikstrom: 6-30-16) Do your manufacturing processes still rely on analog or paper-based components? Perhaps now is the time to embrace digitization as a strategy?

As you read this article, the manufacturing industry is moving towards a fourth massive revolution.

The first came in the 18th century in Britain, when machines started arriving in textile mills across the continent and the second came when Henry Ford introduced the world to the powers of mass production.

Since then manufacturing practices remained pretty static until the advent of the computer, which set in motion a series of technology advances that are now gaining momentum. The addition of the Internet to devices promises to further accelerate the innovation that is to come.

We live in a time when a number of very useful technologies are only just beginning to converge. With new materials, innovative software, more capable machines and better processes, we are in the midst of a perfect storm for evolution in the manufacturing industry.

And it won't be long before many of today's practices become obsolete, or even illegal.

Here I take a look at five common manufacturing practices I believe won't survive the next decade.

**Reliance on Human Labor.** At the start of the first industrial revolution, factories had to be run around the clock in order to be profitable, so workers often toiled away for up to 16 hours a day. Although conditions have changed dramatically in the developed world, you still can't go more than a few weeks without reading about a

sweatshop in Bangladesh, forced labor in Qatar or child labor in India.

This may be on the cusp of change though. Factories have been using automated robots in some form since the 1960's. Now these bots have evolved enough to take over many of the repetitive tasks humans used to do in factories.

This is one of the reasons companies like Apple and GM have been shifting jobs back to the US for the first time in many decades. Robots can work day and night, be more precise and don't need to be paid. Advanced robotics will most likely make many repetitive, assembly jobs obsolete in the coming years, both in developed and developing nations. Our human resources will then need to be applied to the programming of processes and optimization of production throughput instead.

**Analog to Digital Management.** Digital technologies have transformed many industries in the past decade alone. In the coming decade they are expected to dramatically change the way manufacturing operates. For example, the convergence of virtual and real worlds in manufacturing is now in full swing. Digitization has also enabled the introduction of mobile apps across the shop floor, which can help assure quality, maintain labor records, track vehicles and shipments, and provide high-quality data all in real time. Legacy paper-based, analog systems will soon be virtually non-existent as the digital revolution continues its transformation.

**Two-Dimensions.** If you'd mentioned printing to anyone prior to a few years ago, nearly everyone would have talked to you about home computers and paper. If you'd mentioned machines that could print real 3D objects like toys and bricks and even cars, they would have assumed you were talking about the latest sci-fi blockbuster.

But 3D printing is very much a reality now and is become a bigger part of practical engineering every day. After years of research and development, we're finally able to produce objects by creating designs on a computer and having a printer lay it down, layer after layer, till we've made something from the inside-out.

Also known as Additive manufacturing, this process will undoubtedly change the way we produce objects. There are already ideas for creating lighter airplane wings and complex prosthetics with the technology. While the next decade may not see us depending entirely on 3D printing, you can be sure that a great many will

incorporate the printers for some components of their production.

**Wasting Water.** It's not often given much thought, but a staggering amount of water is used for cleaning at different stages of the manufacturing process. The traditional processes result in a great deal of waste water, hazardous materials and messy residues.

Using water in this way is not only inefficient but also an environmental hazard, especially considering the fact that many places in the world are starting to experience more and more water shortage crises. It's clear that the use of water in manufacturing has to be seriously rethought in order for manufacturing to be at all sustainable for the planet and human survival.

But how do you replace water? One example being used at innovative companies is the use of carbon dioxide (CO<sub>2</sub>), which can be stored in liquid or gaseous form. The gas is recycled from other industrial processes and is, thus, very eco-friendly. And, CO<sub>2</sub> can be used to clean anything from clothes to complex medical equipment. It's easy to obtain, cheap to use, very effective and leaves no residue.

**Traditional Hierarchies.** With the rapid rate at which new technologies are developing, it is starting to make less and less sense to have distinct separations between the production and engineering teams. Given the fact that participating in the line at almost any level will soon involve some expertise in engineering and robotics, more and more companies are moving towards vertical relationships between employees at every level.

Furthermore, the level of education and knowledge necessary to work at the operating level will be higher than it's ever been before. Companies that want to retain their experienced and loyal operations teams will now have to begin training them for a different kind of work requiring more advanced skill sets.

Technology is developing at an exponential rate that will only become more rapid in the years to come. Simultaneously, environmental concerns are becoming such that the government is intervening in order to force corporations to change the way they do things.

These and other factors are combining to make dramatic change imminent in the manufacturing industry. As has always been true on the eve of massive shifts, those who want to stay relevant and successful will innovate. Those who don't will soon find their skills in less demand.

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