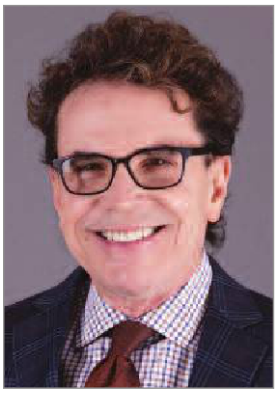
3D Printing

What Are You Doing About Additive?

by Mark Avsec of Benesch, Friedlander, Coplan & Aronoff LLP


Mark Avsec

Manufacturing industries sit on the precipice of a seismic shift because of 3D printing, also called additive manufacturing. Consumer manufacturing is shifting from mass production to production by the masses, with a high level of customization. One day people may print their products at home, designed just for them. That may be a long way off for sophisticated products. But consumers may in the not-too-distant future begin using a local fabricator to print goods that Amazon or UPS now delivers to them.

3D printing has already begun in medical and aerospace industries. This is not about little plastic trinket items sold at carnivals or the sort your children now print in the school lab. Brackets and engine parts for airplanes, prosthetics and even electronics are now being printed in a variety of metals, polymers and concrete, some with electrically conductive materials. Prognosticators predict that a fully functioning smart phone could be printed in less than10 years. Food is being printed (that market is expected to explode). Entire buildings are being printed in China and in Dubai. One of Twitter's co-founders, Biz Stone, predicts that Nike could be a pure software company in 10 years. Gartner analysts predict more than $100 billion damages in intellectual property losses as a result of rogue 3D printing of patent-protected, copyright-protected and/or trademark-protected goods by next year, "away from the control" of IP owners. When you see companies like GE and Caterpillar focus on 3D printing, it is time for your transportation business to take note. A maxim is commonly bantered about in additive manufacturing circles: if you are not running in this space, then you are already falling behind.

3D printing is clearly a way for manufacturers to streamline operations, improve quality, and lower costs—and they will leverage it. Take as one example GE's 3D-printed LEAP fuel nozzle, which is 25% lighter than its conventionally assembled predecessor (thereby saving fuel costs for airplane owners): the number of GE engineers for the part was reduced because only one part is being designed; the number of prints was reduced because there is only one part; and the number of third-party suppliers for this part was dramatically reduced. It used to be that 20 suppliers supplied components for this fuel nozzle—but now there is only one supplier: GE. That means that transportation companies (perhaps many of them) have lost the business of moving component parts for the fuel nozzle.

The evolution of 3D printing, then, has substantial implications for domestic and international freight firms. As more and more products are manufactured in finished form, like GE's fuel nozzle, and manufacturing occurs closer to the point of disbursement, the need to get parts from multiple parties around the world is correspondingly reduced, decreasing the need for global transportation. Ocean container shipments and air cargo will be reduced. That means that a significant portion of the domestic trucking business is at risk due to the decline in goods that once started as air cargo or containers on ships.

How are leading transportation and logistics companies dealing with this supply chain shift? UPS has opened several 3D printing kiosks and is partnering with SAP and Fast Radius. Together they are not just designing for additive; they are designing for the supply chain. UPS, SAP and Fast Radius are putting manufacturing capabilities inside a logistics network such as UPS. It is impressive and inspiring when a 150-year-old, successful logistics company like UPS realizes the need to retool itself to operate in a changing world.

Indeed, to really leverage 3D printing value, businesses will operate in a whole new way, changing both product design and supply chain configuration. Businesses will be seeking to manufacture in multiple, geographically dispersed sites closer to the point of use. The factories of the future will likely be huge warehouses full of 3D printing machines close to their customers with the ability to print "stuff."

Like UPS, Amazon is launching a 3D printing store, and has also recently filed a patent for a method of 3D printing on demand within mobile manufacturing hubs. Warehouse space is expensive for Amazon. Amazon wants to be able to send a digital file to a mobile unit that is closest to a customer, providing instructions to print out the ordered item. The mobile hubs would include a means to both additively and subtractively manufacture an item (which could include 3D printing technologies and other machining tools).

Many manufacturing companies needing to carry spare parts for the big machines they make will look to 3D printing to reduce inventories. The value of global inventories is approximately $10 trillion. Reduce that amount by 5% and it would generate up to $500 billion in working capital. Imagine a farmer who bought a tractor from John Deere in 1958. The tractor is a good machine and is still running. John Deere has to carry replacement parts for that farmer's machine. What if John Deere eradicated its inventory and simply printed out a replacement part on demand when it was needed, if ever? The savings would be enormous. This is the "long tail" on steroids—and it is going to happen.

The bottom line is that every business should have a discussion item on its annual strategic planning meeting agenda: what are we doing about additive? Benesch has for more than five years focused on 3D printing by staging a world-class annual symposium every May and by forming a multi-disciplinary group of attorneys who make it their business to know about 3D printing issues.

About the Author

Mark E. Avsec is a Partner and Vice Chair of the Innovations, Information Technology & Intellectual Property (3iP) Practice Group at Benesch. He is also Co-Chair of Benesch's Sports and Entertainment Group and leads Benesch's 3D Printing Legal Team. A copyright, trademark, and media lawyer by trade, and a litigator and business attorney, Mark focuses his practice on "old" and "new" media issues, consumer products, technotainment (including music and other entertainment-related technology licensing matters), and general mobile commerce.

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