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# *3D printing: Potential tax issues facing industrial products companies*

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## ***In brief***

Many industrial products companies are exploring 3D printing (3DP) as a way to expand their businesses and become more competitive in the global marketplace. According to [3-D printing and the new shape of industrial manufacturing](#), a report prepared by PwC and the Manufacturing Institute, 3DP is transforming manufacturing operations from product design and production to restructured supply chains.

The PwC-Manufacturing Institute report reveals that two-thirds of the more than 100 industrial manufacturers surveyed are incorporating 3DP into their manufacturing operations either by experimenting with the technology or by using it to produce rapid prototypes or customized products. Of the one-third of the manufacturers surveyed that have not begun incorporating 3DP into their operations, a majority of them say they plan to implement 3DP strategies in the future. Nearly two-thirds of all of those surveyed believe that at least half of all manufacturers will adopt 3DP in the next three to five years.

Aside from substantially affecting global manufacturing operations, 3DP likely will have significant impacts on industrial products companies from a tax perspective. As discussed below, potential tax impacts should be identified and addressed as companies plan and implement their 3DP strategies.

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## ***In detail***

### ***Background***

3DP is an additive manufacturing process whereby digital designs are applied to layers of different types of materials - including aluminum, plastics, steel, and titanium - to 'print' various 3D objects - including food, clothing, manufacturing components, replacement parts, and human organs. This additive

manufacturing process, in commercial use since the 1990's, differs from the traditional subtractive manufacturing process, which is based on removing materials to produce finished goods.

Recent advancements in 3DP's speed and capabilities have broadened its use and made it more popular. Appealing because it enables manufacturers to avoid the

often laborious and costly traditional manufacturing process, 3DP has expanded in the aerospace and defense and automotive sectors and is starting to be adopted in other sectors, including chemicals, industrial manufacturing, and metals.

Widely employed for rapid prototyping, 3DP is being used within key areas to produce finished goods. With its ability

to produce small-lot or highly customized parts on demand, 3DP has the potential to revolutionize manufacturing, resulting in significant changes to design, product development, and logistics and producing substantial savings in material, labor, and transportation costs.

### ***Tax opportunities and risks***

As 3DP technology migrates from research and development (R&D) into pilot facilities and eventually full-scale production, a variety of tax impacts and opportunities will need to be considered and managed by the company's tax function. Accordingly, tax departments should work closely with key business partners within and outside of their organizations to proactively integrate tax considerations into the 3DP planning, design, and implementation process.

### ***3DP could shrink supply chains and impact transfer pricing***

According to the PwC-Manufacturing Institute report, one-third of the manufacturers surveyed believe that the greatest change to emerge from adoption of 3DP will be restructured supply chains. As companies implementing 3DP are manufacturing closer to the end user, links in supply chains connecting development, prototyping, production, warehousing, and delivery of parts may shrink or be eliminated. Logistics may be more about electronically delivering digital designs to a system of networked printers than about moving container ships and cargo planes from one part of the world to another.

Such restructuring of supply chains could have a significant impact on the number and nature of intercompany transactions. Accordingly, the transfer pricing of these intercompany transactions may need to be reassessed. In addition, companies

adopting 3DP strategies should consider the potential impacts of related guidance that the Organisation of Economic Co-operation and Development (OECD) may release in this area as part of its base erosion and profit shifting (BEPS) project and that may be adopted by various countries.

### ***Shifts in manufacturing operations from 3DP could impact global tax footprint***

A company's business operating model forms the foundation for its tax profile. If that foundation shifts, the company's global tax footprint likely will be impacted. As implementation of a company's 3DP strategy causes its manufacturing operations to be redistributed among different legal entities and geographies, the related profits and jurisdictions in which they are taxed may change.

Industrial products companies developing global 3DP strategies should consider the practical impacts of the complex and constantly changing tax rules relating to foreign and domestic investments. If they do not factor these considerations into their 3DP strategies, companies could experience some unexpected changes to their global tax footprint, jeopardizing their ability to maintain a competitive and sustainable tax position.

### ***3DP could involve manufacturing by service providers***

Industrial products companies adopting a 3DP strategy may choose to transfer their digital designs to service providers to manufacture their goods. Akin to contract manufacturing arrangements, these transactions generally could be treated by their terms as the license or sale of intangible property followed by the sale of personal property or the provision of manufacturing services.

Characterization of a transfer of a 3DP design as either a sale or license may determine whether withholding tax would be required in transactions involving cross-border transfers of 3DP designs. Whether a 3DP transaction is characterized as a sale of property or the provision of services may determine the source of the income, an important factor if the service provider is a controlled foreign corporation of the owner of the digital designs.

### ***3DP could impact inventory-related costs***

Industrial products companies implementing 3DP could test the market first with 3DP products, then use traditional high-volume manufacturing for those products that attract orders, thus avoiding holding inventory for products with little or no demand. In addition, manufacturers could avoid printing excessive runs of products with falling sales and print only those products that are in high demand, resulting in potential savings in inventory-related costs. In light of these potential changes to inventory-related costs and the amount of inventory held, companies adopting 3DP may want to revisit their use of certain accounting methods for inventory (e.g., last-in, first-out).

### ***Integrating 3DP into R&D***

Many industrial products companies are integrating 3DP into their R&D function, enabling them to gain speed and flexibility in product development and launch new and improved products faster and more frequently. These companies may be able to take advantage of research incentives that the United States, state and local governments, and foreign countries provide in the form of tax credits, 'super deductions,' and cash grants. Several foreign jurisdictions provide tax relief in the form of 'patent boxes' - low tax regimes for income

associated with technology-based intellectual property. In addition to providing tax savings, these R&D and patent box programs may result in the reduction of a company's effective tax rate.

### ***Managing, recruiting, and retraining talent to innovate with 3DP technology***

Nearly half of the manufacturers surveyed for the PwC-Manufacturing Institute report attributed lack of talent to fully exploit the technology as a top barrier to implementing 3DP. Accordingly, a big part of their strategy will be retraining their existing workforce or recruiting new talent with the skills to create digital designs as well as oversee 3DP production.

While it may be too early to discern how this labor-saving technology will impact the industrial products workforce, the arrival of 3DP may add jobs for workers with technical know-how and could contribute to the re-shoring of jobs that were previously moved offshore. As a result, companies adopting a 3DP strategy may be eligible for federal, state, and local credits and incentives for hiring and training new workers.

Similarly, given the complexity and priority of future 3DP strategies for industrial products companies, these companies will need to possess the

right skills, in the right place, at the right time. Companies that deploy this technology overseas likely will incorporate international assignments into their 3DP strategies. Finding ways to minimize the cost and complexity of international assignments while proactively managing the tax risks associated with them will be critical to a successful 3DP strategy.

### ***Buying into 3DP through acquisitions, joint ventures, or other business combinations***

Instead of developing expertise internally, some industrial products companies may wish to 'buy' into 3DP through acquisitions, joint ventures, or other business combinations. While structuring a business combination through an acquisition is quite common, pursuing business opportunities through the use of partnerships or joint venture structures can provide a high degree of flexibility for business planning and can increase US and foreign tax efficiencies.

As industrial products companies consider such transactions as part of their 3DP strategy, they should evaluate a variety of possible structures, arrangements, and financing mechanisms. Structuring business combinations requires a deep understanding of the global business environment as well as of the

increasingly sophisticated revenue-raising approaches taken by many tax authorities globally.

### ***Increased transparency and scrutiny could impact companies adopting 3DP***

As a result of an unprecedented level of cooperation among tax authorities around the world, industrial products companies implementing global 3DP strategies can expect a sharp focus on cross-border transactions with an emphasis on transparency. This development, coupled with the changing tax environment - including the OECD's BEPS project and local country reforms across multiple aspects of international tax planning and documentation- should prompt companies to develop a 3DP strategy strong enough to withstand increased scrutiny from these global taxing authorities.

### ***The takeaway***

3DP likely will provide industrial products companies with opportunities to expand their businesses and be more competitive in the global marketplace. Given the potential changes in global manufacturing operations that industrial products companies may experience as they implement a 3DP strategy, they should identify and address the potential broad tax implications of these changes.

## ***Let's talk***

For a deeper discussion of how 3DP could impact your business from a tax perspective, please contact:

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