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INNOVATION

The Supply Chain Of The Future: What You Need To Know About Additive Manufacturing

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The manufacturing industry has established practices for product development, production and supply chain management. Organizations that develop new products

carefully follow these well-known processes and rarely take risks. However, new opportunities that arise from additive manufacturing may challenge the way things are done today.

Recent events have highlighted the rigidity of traditional manufacturing and supply chain processes. For instance, the shocking economic gridlock at the port of Los Angeles includes ships unable to unload cargo and shipping containers unable to move to their destinations. Supply chain chaos continues to unfold due to increased consumer demand and widespread warehouse staffing shortages, among other factors, leaving many people waiting for basic goods.

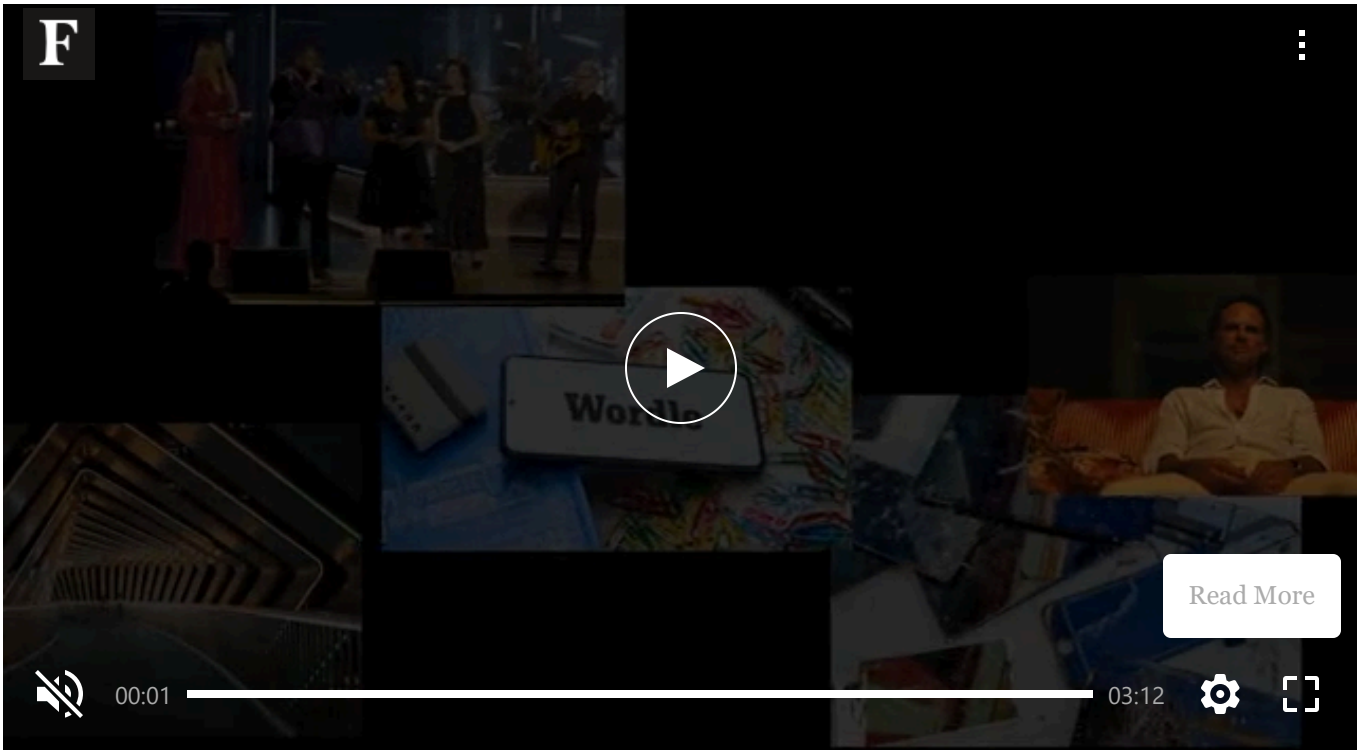
Supply chains must evolve to withstand unforeseen circumstances. Fortunately, additive manufacturing technologies present new possibilities. With this method, businesses can move quickly and flexibly in response to consumer demand. Switching from traditional to additive manufacturing increases the speed and adaptability of production, making future supply chains more resilient and responsive.

The future of the supply chain looks brighter. Moving forward, businesses that take advantage of additive manufacturing opportunities will be able to obtain the goods they ned, when they need them. This will lead to positive economic impacts as these goods reach their destinations.

Determining If Additive Manufacturing Is Right For You

Using additive manufacturing in the supply chain unlocks new business opportunities and makes market entry more affordable. Starting with a mechanical design, it is possible to begin additive production quickly. This allows companies to respond rapidly to shifts in demand and scale production. In contrast, other types of manufacturing require tooling and sometimes special steps to organize a factory's operations to get started.

When demand and logistics are in harmony, businesses can reduce the costs of production waste, which in some cases can exceed one-third of the total goods produced. But reduced waste is just one advantage of additive manufacturing. Here are three ways an organization can identify potential opportunities for additive manufacturing.



1. You are interested in optimizing inventory and reducing costs.

Additive manufacturing allows you to produce parts on demand, freeing up space and saving money that would otherwise be tied up in inventory. The on-demand nature of additive manufacturing can make production cheaper. For instance, instead of buying 50,000 units in bulk to achieve a minimum order quantity or optimal unit cost, you can manufacture the 10,000 units needed now and produce more on demand at similar unit costs.

Inventory carrying costs typically make up 20% to 30% of a company's total inventory expenses. Additive manufacturing eliminates those costs by creating virtual inventories of parts and their manufacturing information. You just need to identify the right parts for this strategy.

To determine if this opportunity is valuable, an organization should evaluate its inventory levels and the costs of maintaining that inventory. For items that have high levels of inventory for long periods of time, additive manufacturing might be a good option. In contrast, items that have lower inventory levels may be less attractive. Additionally, not every component has a design or material that is appropriate for additive manufacturing, so it is important to screen for product requirements that are a match for additive manufacturing.

2. You want to improve innovation and manufacturing speed.

Traditional manufacturing methods, like injection molding, require manufacturing tooling before production can begin. The design and fabrication of tooling take time, money and expertise, which can slow down production's start. In addition, modifying or producing new tooling to test different designs or make improvements requires more investment and time.

Additive manufacturing allows you to create products rapidly, moving smoothly from design to prototype to production. As additive technologies become more prolific, businesses will be able to launch products quickly and adapt to changing consumer needs. Additive manufacturing will lead to higher levels of innovation and better products by simplifying the path to market and enabling more agile supply chains that rapidly launch new products.

In addition, additive manufacturing typically has a cost advantage over other types of manufacturing when the production volumes are low. For high-volume production, the cost advantage of traditional manufacturing technologies may be significant. Thus, it is important to evaluate the total economic value of speed offered by additive manufacturing versus production economics that may favor traditional manufacturing.

3. You need agile and elastic production capabilities.

One of the exciting benefits of additive manufacturing is the elastic nature of production. Once you have a design, you can order it in any quantity desired. Additionally, you can turn production on and off as necessary and modify your design between orders. This means you can enter the market with a small quantity of product, change it if necessary and make more as demand rises.

With traditional manufacturing, this type of scaling and design modification incurs delays and costs. Traditional manufacturing requires minimum order quantities that amortize tooling costs over many parts to achieve a reasonable cost-per-part. With additive manufacturing, the unit costs are much less sensitive to production quantity.

Agile and elastic production are helpful if you have the management processes in place to take advantage of them. For example, an organization needs to sense demand and determine customer preferences quickly in order to predict required inventory levels or make needed design changes. Without these processes in place, it may not be possible to leverage the related benefits of additive manufacturing.

Embracing The Future Of Manufacturing

In the future, consumers will have even more choices. Businesses will need to utilize additive manufacturing to respond quickly to market changes. This will create a world where supply chains are smarter, products are cheaper to manufacture and consumers receive what they need when they need it.

Most organizations have more additive opportunities than they can feasibly activate right away. Get started by picking an application for which there is a clear business case, and then find a champion within the organization who can go get the win. Once you begin, more opportunities will flow.

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