https://venturebeat.com/datadecisionmakers/revitalizing-us-manufacturing-demands-advanced-technology/

Revitalizing US manufacturing demands advanced technology

October 5, 2022 1:07 PM | Daniel Diez, Magic Leap

Expect high-bandwidth technologies, such as augmented and virtual reality visualization, to play an increasing role in manufacturing as engineers and floor technicians can improve physical processes with virtual guidance. 5G will give these workers greater ability to perform these tasks wherever needed.
Image Credit: Getty Images

From surging prices to empty shelves, the fragility of our global supply chain has been exposed by two years of continuous disruption from COVID-19 shutdowns, geopolitical tensions and rising energy costs. The increasing risk of extreme climate events, such as this summer's heat waves and catastrophic flooding, have delivered real, disruptive impact to different sectors from agriculture to manufacturing.

These disruptions are not one-off occurrences. They're an inherent risk of a worldwide, just-in-time manufacturing and supply chain infrastructure that is more vulnerable than previously thought. However, restoring domestic manufacturing appears to be an uphill battle. After all, how can manufacturers in the U.S. — or in any country — beat hyper-efficient, low-cost competitors, especially while navigating a persistent skills shortage at home?

Rather than continuing to bet on low-cost solutions, it's time to go high tech. A new class of advanced technologies, including robotics, the internet of things (IoT), 3D printing, and augmented reality (AR), now promise to transform manufacturing. By embracing these solutions, U.S. manufacturers can improve efficiency, bolster productivity and scale expert knowledge, while attracting a new, younger generation of workers who seek an accessible career at the leading edge of technology. The result: A nationwide network of sophisticated manufacturers who create solid jobs, provide vital goods and protect the economy and consumers from future supply chain disruptions.

While the "fourth industrial revolution" has been discussed for some time, the technology is finally catching up to the hype. Many of these solutions are available today, and the need for this technology has never been clearer.

Embracing AR and virtual training

Over the past three decades, the U.S. has lost around 5 million manufacturing jobs. Workers naturally turned to other industries, leading to the growing shortage of manufacturing skills we're now experiencing. Today, more than 80% of manufacturers say attracting and retaining quality talent is a top focus, especially given a coming wave of retirements among their most senior experts. Overall, the National Association of Manufacturers estimates the skills gap could lead to 2.1 million unfilled manufacturing jobs in the U.S. by 2030.

Technology solutions can fill the gap, driving both operational efficiency and workforce skilling. For example, Augmented Reality (AR)-based knowledge capture applications enable seasoned employees to record complex procedures as they complete them, then share those instruction sets for trainees to follow in real time. This process creates a virtual training program in the real world, where new employees can experience the process of assembling a complex part without the risk of it resulting in scrap and thousands of dollars in cost for the company.

The efficiency gains can be dramatic. PBC Linear, a manufacturer of linear motion products, recently used this solution to reduce training time from three weeks to three days, while delivering a 20% annual savings through more precise and efficient operations.

The new industrial IOT

And AR is just one example. The industrial internet of things can optimize quality control, monitor equipment's performance and guide predictive maintenance. Linking robotics in a cloud-based solution can reduce unexpected production interruptions. Two-thirds of U.S. manufacturers are already using 3D printing in some capacity, from prototyping to high-volume manufacturing. And as these technologies are adopted, linked, analyzed and optimized, they will unlock even greater business value.

U.S. companies can lead that transformation, with wide-reaching benefits for workers, communities and the economy. Manufacturing jobs typically offer higher wages and better benefits than other sectors, especially for non-college-educated workers. When advanced technologies are integrated, these jobs also hold the appeal and status of working in a highly innovative industry. This could jumpstart a virtuous cycle, attracting more people into an engaged, skilled workforce that can push further tech advances.

A stable, worldwide supply chain

Stronger domestic manufacturing would also help to mitigate the impact of future supply chain disruptions. Homegrown manufacturers can reduce the risk of critical shortages, like we saw for personal protective equipment at the beginning of the pandemic, as well as ease the everyday pain at the check-out caused by a snarled global supply chain. Bipartisan lawmakers have recognized this need, and policy can play a vital role. But efficient, competitive, sophisticated manufacturers are ultimately the surest solution.

The past two years have raised urgent new questions about how our world operates, including the wisdom of a supply chain that reaches around the world and assumes stability in every part of it. Re-balancing towards high-

tech domestic manufacturing offers a more resilient path, while also creating attractive jobs in communities across the country.

For U.S. manufacturers, the greatest promise lies with the advanced technologies poised to supercharge efficiency, attract talent and level the competitive playing field.

Daniel Diez is chief marketing officer for Magic Leap, which specializes in Augmented Reality technology.