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2023

Year End Review

In a matter of weeks, we'll be welcoming 2024. It's a common practice in many publications to fill this time with annual "year in review" articles, covering a wide array of topics. Keeping this tradition alive, we at The Gateway Magazine have decided to briefly highlight all the company spotlights we've put together over the course of 2023. As we step into 2024, we invite you to connect with us and line up your company for its own feature this year. We're eager to make it a reality!

On that note, let's dive right in. We're grateful for your support of the magazine this year and your interest in the features we've been diligently crafting for more than two decades. Don't forget, you can always visit www.thegatewaymag.com to explore our extensive archive, which includes our company spotlight articles and stories on industry tips and trends.

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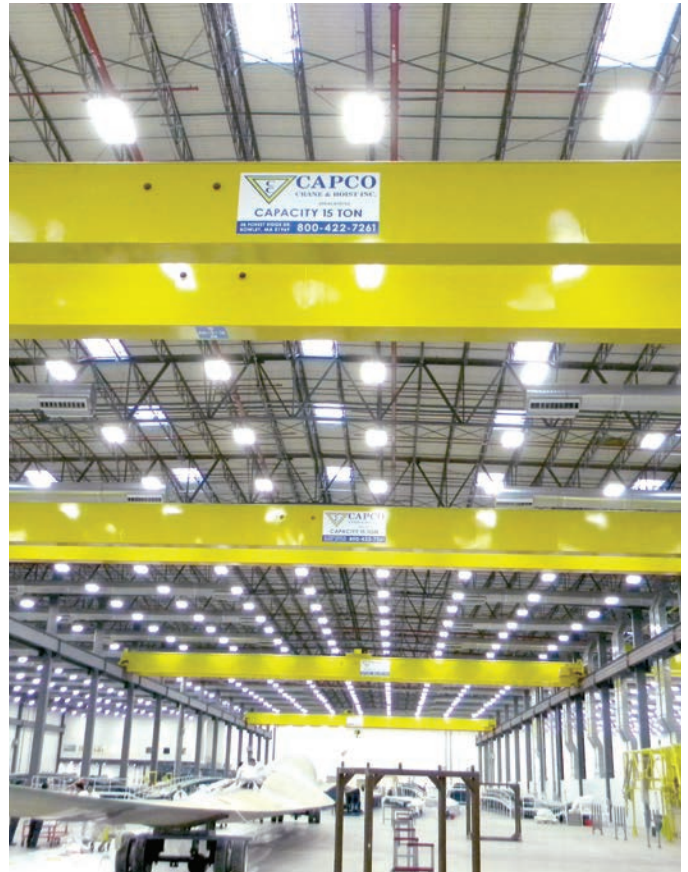
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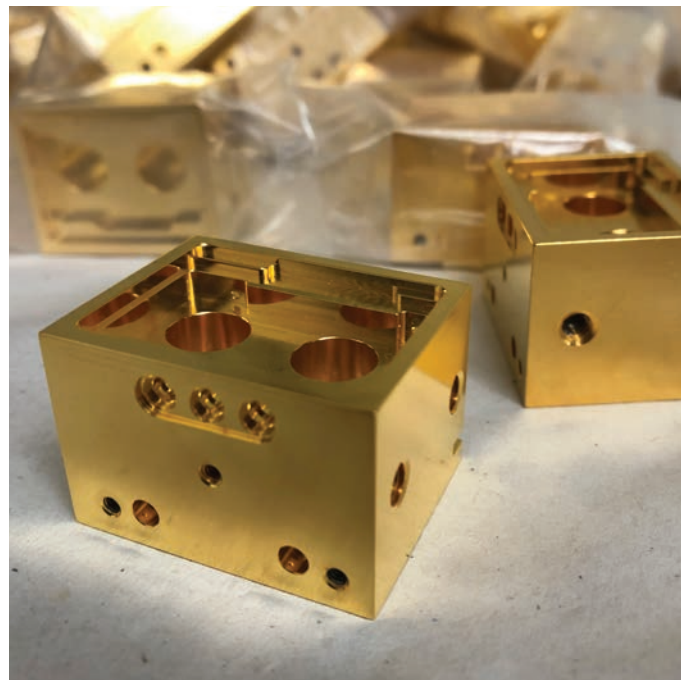
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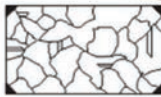


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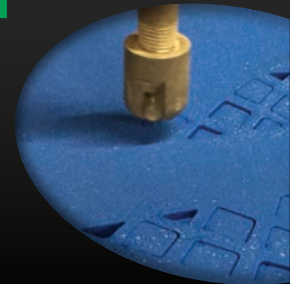
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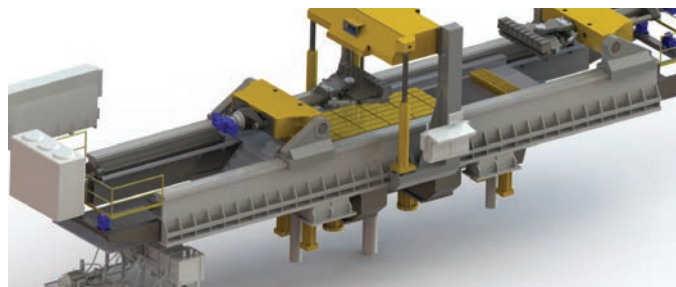
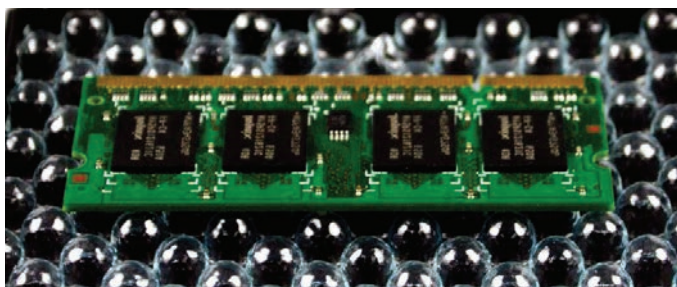
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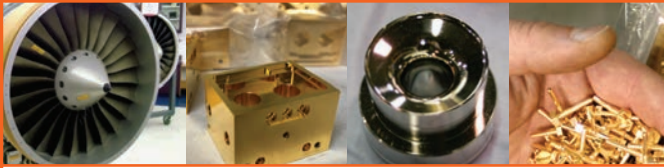
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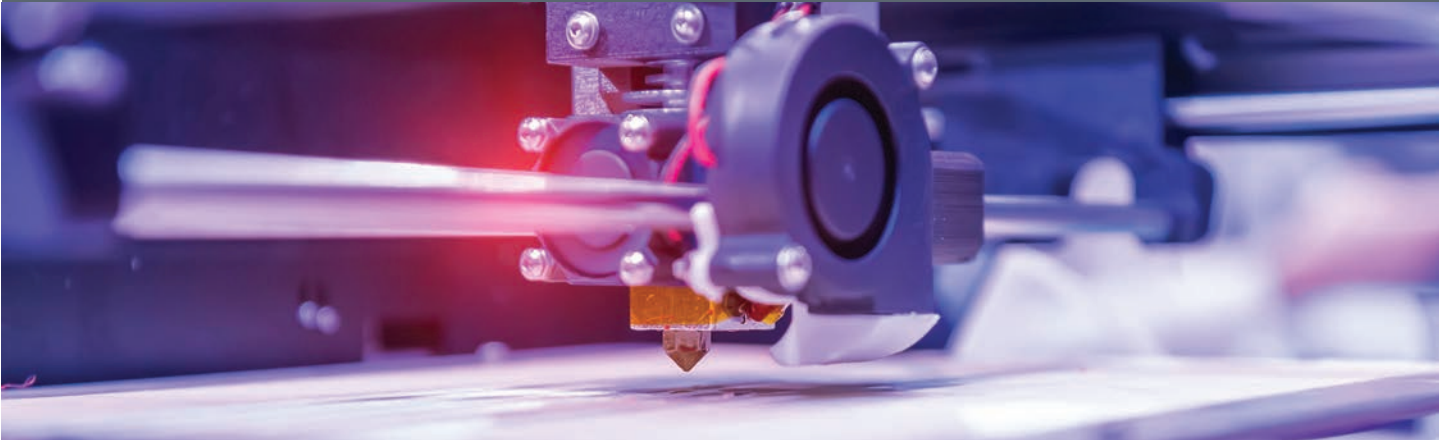


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Artificial Intelligence (AI), once a concept confined to science fiction and theoretical discussions, is now an integral part of our everyday lives. From personalized recommendations on streaming platforms to virtual assistants on our smartphones, AI is everywhere. One sector where its impact has been truly transformative is the manufacturing industry. In an era where speed, efficiency, and precision are key drivers for success, AI has emerged as a game-changer, heralding a new phase in the evolution of manufacturing.

AI in Manufacturing: An In-depth Overview

Artificial Intelligence, in its most basic definition, is a subset of computer science that aims to develop machines capable of mimicking human intelligence. This includes the ability to learn from experience, understand complex problems, and make decisions based on the information at hand. In the realm of manufacturing, AI's potential is being harnessed to optimize various processes, drastically reduce operational costs, enhance efficiency, and ultimately increase profitability - a true testament to the power of AI.

The Role of AI in Manufacturing: More Than Just Automation

While automation has been a staple in the manufacturing industry for years, AI takes it a step further by introducing elements of learning and decision-making, effectively creating systems that improve over time. Here's how AI is revolutionizing manufacturing:

- **Enhanced Efficiency and Productivity:** AI-powered machines can work 24/7 without fatigue, significantly boosting productivity levels. They can also perform tasks more efficiently than humans, minimizing errors and increasing overall efficiency.
- **Predictive Maintenance:** One of the major advantages of AI is its ability to predict machine failure before it happens. By employing machine learning algorithms, AI can identify patterns in data generated by machines, predict future failures, and prompt

preventive maintenance. This not only prevents costly downtime but also extends the lifespan of the equipment.

- **Quality Assurance:** AI's role isn't limited to production alone. It can also ensure quality control by detecting and correcting errors in real-time. By analyzing data from various stages of the manufacturing process, AI can identify issues that humans might overlook, ensuring the production of high-quality goods.
- **Supply Chain Optimization:** One of AI's most significant contributions to the manufacturing industry is in supply chain management. AI can analyze vast amounts of data in real-time, allowing manufacturers to streamline their supply chains. This leads to improved demand prediction, effective inventory management, and timely delivery of products.

Real-World Applications: How Companies are Leveraging AI in Manufacturing

AI isn't a futuristic concept for the manufacturing industry; it's a present reality. Several companies worldwide are leveraging AI to transform their manufacturing processes:

General Electric: GE uses AI for predictive maintenance of their machinery. Their AI system analyzes data from sensors embedded in machines and predicts when they might need maintenance, thereby reducing downtime and extending equipment life.

Siemens: Siemens leverages AI to optimize their manufacturing processes. Their system, known as "AI Workbench," helps engineers simulate and optimize automation processes before implementing them on the factory floor, thereby saving time and resources.

Toyota: Toyota uses AI for quality control. Their system analyzes images from various stages of the production process to detect defects and ensure the production of high-quality vehicles.



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The Future of AI in Manufacturing: A New Era Beckons

The potential of AI in manufacturing is immense and we're only scratching the surface. As AI continues to evolve, its role in manufacturing is set to become even more critical. Here are some ways we can expect AI to shape the future of manufacturing:

Real-time decision making: With the ability to analyze data in real-time, AI will be able to make decisions on the fly. This will allow manufacturers to respond quickly to changes in demand or disruptions in the supply chain.

Personalized manufacturing: AI will enable manufacturers to produce goods tailored to individual customer preferences, ushering in a new era of personalized manufacturing.

Autonomous operations: The ultimate goal of AI in manufacturing is to create fully autonomous factories where machines handle all aspects of production, from design to delivery.



To riff a little bit on what we've outlined above, let's take a look forward to 2024 here in New England, where the role of Artificial Intelligence (AI) in our industry is set to expand dramatically. Based on recent trends and expert predictions, here are five ways AI could impact the manufacturing industry in New England in the New Year:

- 1. Increased Automation:** AI-powered machines and robots will likely take on more tasks in manufacturing plants, leading to increased productivity and efficiency. This will allow manufacturers to reduce costs and improve output.
- 2. Predictive Maintenance:** AI can significantly reduce unplanned downtime by predicting when machinery will need maintenance. This will be particularly beneficial for manufacturers in New England, helping them save time and resources.



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3. Improved Decision-Making: AI will transform industries by automating tasks and improving decision-making. In the context of manufacturing, companies can use AI to analyze data in real-time and make informed decisions regarding production, supply chain management, and more.

4. Addressing Labor Shortages: Manufacturers are expected to face ongoing shortages of skilled labor in 2024. AI can help address this issue by taking over repetitive tasks, freeing up human workers for more complex jobs. This could be especially crucial in New England, where labor shortages are a significant concern.

5. Sustainability Initiatives: The World Economic Forum suggests that AI could help the manufacturing sector deal with pressures including sustainability. Manufacturers in New England could use AI to optimize their processes, reduce waste, and make their operations more eco-friendly.

The AI revolution in the manufacturing industry is just beginning. As technology continues its relentless march forward, the role of AI in manufacturing will only grow, pushing efficiency, productivity, and profitability to new heights. Manufacturers that embrace AI now will be well-positioned to lead the industry in the future. The future of manufacturing is here, and it's (partially) powered by AI.

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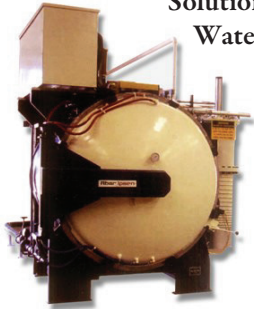
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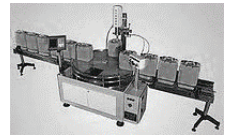
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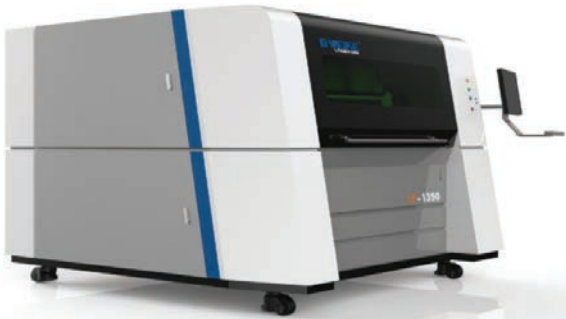
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NH manufacturer wins 1st grant from federal CHIPS and Science Act

NASHUA, N.H. (WCAX) - A military supplier in New Hampshire is set to receive the very first grant being doled out through the federal CHIPS and Science Act. President Biden signed the bipartisan ACT into law last year, which aims to bolster the country's semiconductor manufacturing capabilities.

Monday, the U.S. Department of Commerce announced the first of many grants in the works at BAE Systems, an aerospace and defense company based in Nashua.

U.S. Commerce Secretary Gina Raimondo says a \$35 million grant will allow BAE Systems to quadruple its semiconductor manufacturing capabilities. The defense contractor supplies the government with, among other things, the chips that are used in F-35 fighter jets that fly in and out of Burlington.

"From next-generation aircraft and satellite to military-grade GPS and secure communications, our semiconductor capabilities are deployed on systems that enable operation in all domains," said Tom Arseneault, the president and CEO of BAE Systems.

The U.S. used to lead the world in semiconductor manufacturing but that is no longer the case. The administration says rebuilding the country's domestic chip production is a matter of national security.

"Sourcing these materials and these chips from a few countries in Asia undermines our national security," Raimondo said.

It's not just about filling the military's needs. The chips are used in the computers that run everything from the cars we drive to how our health care is delivered.

"One of the things that we saw very clearly during the pandemic was we don't have some of the critical components that we need in order to run the U.S. economy," said Sen. Jeanne Shaheen, D-New Hampshire.

BAE Systems is New Hampshire's largest private employer with roughly 6,000 on staff. Officials say expansion there will lead to more jobs both in and out of the company.

"Every time you have a semiconductor manufacturer expand, there will be supply chain jobs that come with it which will benefit everyone in New Hampshire," Raimondo said.

In all, the Commerce Department will be rolling out \$53 billion in grants, some of which will be for research and development in addition to manufacturing. Those grant announcements are expected in the next couple of months.

*Article submitted by WCAX3 - Vermont's Own
Author Adam Sullivan*

<https://www.wcax.com/2023/12/11/nh-manufacturer-wins-1st-grant-federal-chips-science-act/>

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