

Vermont Manufacturing Firms Embrace Advanced Tools & Techniques

Advanced Manufacturing uses highly integrated and innovative technologies along with cutting edge materials and tools to produce exceptional products. A recent study released by Deloitte Consulting indicates that Vermont Advanced Manufacturing jobs have increased by 8% since 2009. This pushes Vermont to 4th out of the six New England states for these jobs.

Production innovations often come from emerging nanotechnology, chemistry and biology fields. Many Vermont firms are also using fully digital design, additive manufacturing (3-D printing for example), advanced sensors and even robotics. The integration of high precision, advanced materials and information technologies along with an exceptional workforce allows an advanced manufacturer to excel. Some even use sensors and software to manage overall operations and maximize efficiency. Metrics can continuously monitor production to help streamline processes, improve quality, reduce downtime, and save energy.

GE in Rutland has invested \$300 million in Advanced Manufacturing to produce cutting edge jet engines. GE is using additive technology for quick prototyping, tooling, modeling, manufacturing, assembly aids and inspections.

Advanced tools and techniques are used across many Vermont industries, including semiconductors, life sciences, food processing, injection molding and metalworking. When Vermont manufacturers employ advanced automation throughput can be increased by nearly 25 percent with less down time, improved quality and lower energy consumption.

IBM in Essex has been at the forefront of the semiconductor foundry business through innovation and collaboration around Advanced Manufacturing and technology tools and techniques. IBM Essex has made breakthrough innovations in semiconductor design, manufacturing, wafer testing and photo masking. It is the global leader in 200mm cell phone chip production.

Advanced Manufacturing can yield significant savings of time and money by using new processes to quickly change parts and eliminate set-ups by consolidating work on a single machine. It provides designers and engineers with tools to create

innovative parts and products, often from materials that were once considered too challenging to use. Optical measuring machines can quickly inspect complex contours leading to a nearly 25% increase in production while improving quality and decreasing down time.

Vermont Manufacturing Extension Center (VMEC) and BioTek Instruments in Winooski collaborated to analyze work processes and develop new manufacturing approaches to increase productivity and job satisfaction. Biotek, a leader in microplate instrumentation technology, was able to reduce set-up time by 50%, reduce component cost by 3.5% and increase machine life by 150%.

Manufacturing is undergoing a sea change that is as significant as any change in this generation. The future is about “Vermont style”: small, nimble manufacturing operations using highly sophisticated tools and materials. Even small manufacturing businesses can benefit from using digital fabrication, lean manufacturing, rapid prototyping, advanced materials science and supply chain efficiency.

Vermont HITEC and Husky in Milton partnered to provide an apprenticeship program leading to a certificate in Advanced Machine Tool Technology. Students from area schools spent several weeks learning about Advanced Manufacturing in Husky’s facility. Students get hands-on real-world experience shadowing and performing various responsibilities. Husky uses advanced tools and techniques to make machines that mold plastic for world-wide manufacturers.

Pockets of innovation in Vermont focus on carbon fiber composites, high tech ceramics, and nanomaterials. Advanced Manufacturing materials and processes are changing the competitive landscape and establishing a new path to a successful future for many Vermont manufacturers. These companies are realizing benefits that include improved quality, productivity, safety, speed and lower costs. The main driver for this change is the need to compete not only in the U.S. but globally as well. Vermont businesses are flexible and persistently moving forward with Advanced Manufacturing to help them meet today’s market challenges.

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