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No. 251

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May 2020



Piedmont Plastics®
where solutions take shape

SEE PAGE 3

**CAM Software Help
Job Shop Reduce
Cycle Time by 50%**

SEE PAGE 15

COVER PHOTO: PIEDMONT PLASTICS | Northeast States: New Hampshire - Massachusetts - New York

CONTENTS

MAY 2020 | ISSUE 251

COMPANY SHOWCASE

03 Piedmont Plastics: Where Solutions Take Shape

INDUSTRY INSIGHTS

15 CAM Software Help Job Shop Reduce Cycle Time by 50%

INDUSTRY NEWS

22 Regional Press

24 Upcoming Events

29 Classifieds

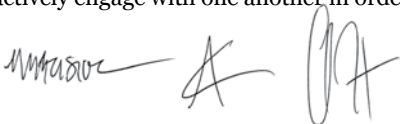
As Covid-19 continues to present daily operative challenges, we're going to start this month the way we ended our introductory welcome in the last month's issue of The Gateway...

What are you doing to keep your orders on target? How have you shifted the way you work to meet the demands of employee and customer safety? We'd love to hear your strategies and stories so that we can put them forth to the rest of your peers in hopes that we can all work smarter and in good health for the rest of 2020 and beyond. Share your latest development and newly minted "best practices." We're all ears. Utilize *The Gateway* as your sounding board to make the manufacturing industry stronger and more robust than ever.

Have you been on the frontlines of switching gears and helping to manufacture products that are being distributed to the frontlines of those workforces combatting the Covid-19 pandemic? We want to hear about that too (and, we commend your own service in advance!)

We're hoping to gather some of your stories for one of our June features, so please submit your thoughts to chris@thegatewaymag.com by March 9th for consideration.

As a country, and industry, we're all in this fight together. Together we'll navigate these turbulent waters that are "the times," and together we'll bounce back and prosper once all this has past. And it will. Strange hurdles are always cleared, the end result is the undefined variable. We're stronger in numbers, so let's continue to communicate and actively engage with one another in order to keep our lines primed and at the ready.



May 2020

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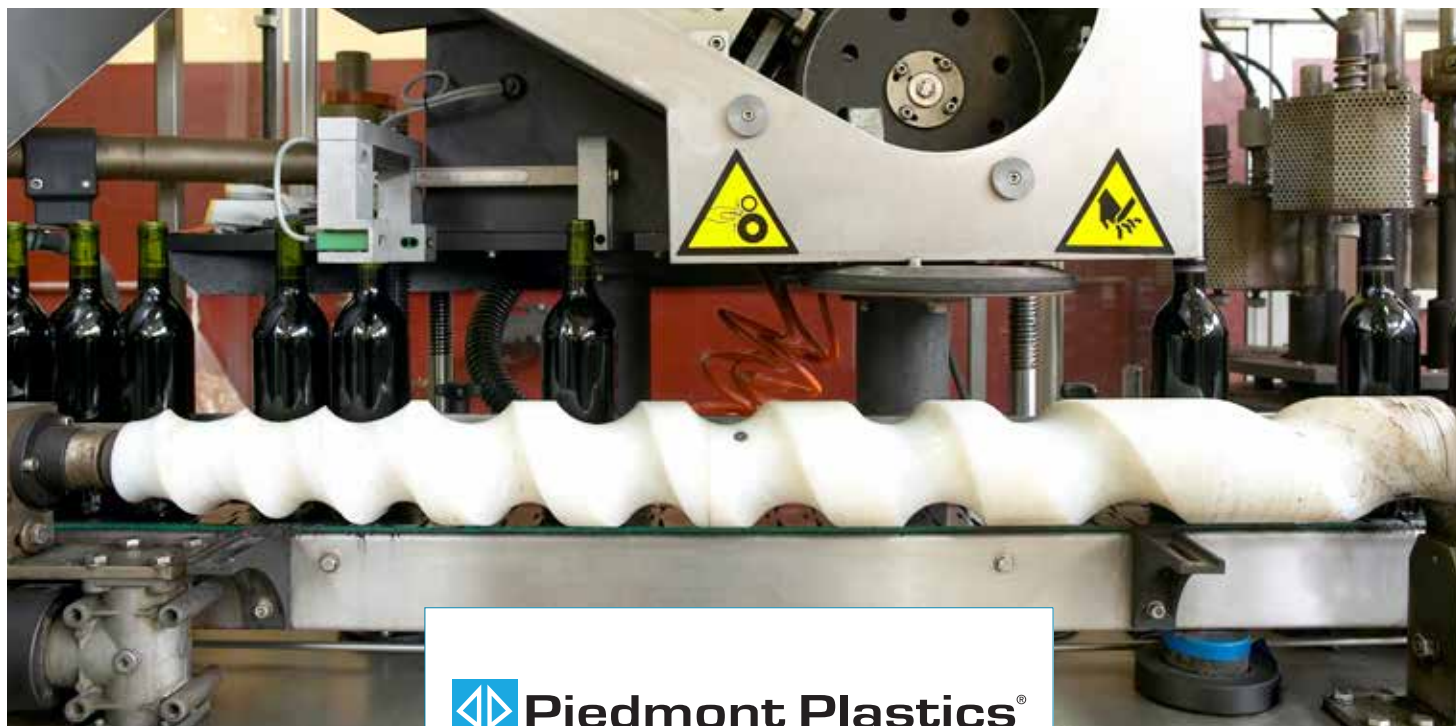
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PIEDMONT PLASTICS: WHERE SOLUTIONS TAKE SHAPE



Founded in 1968 in Charlotte, North Carolina, Piedmont Plastics is a wholesale distributor of plastic sheet, rod, tube, and film products. Today, they are a North American company with recent regional local ties (as of 2019) in Londonderry, NH, and Agawam, MA, providing an assortment of solutions to their customers by way of delivering expert product knowledge, local inventory, an array of value-added services, all tied together with a comprehensive team approach. This adds to two other locations in the Boston and Albany, NY to complete their coverage of the Northern New England marketplace.

Piedmont takes pride in their approach to being committed to fielding the most knowledgeable sales team in the plastics distribution industry with representation here in the Northeast and across North America. In total, the company employs over 500 people amongst 48 locations with an average tenure of almost 10 years.

In all of their facilities, known as branches, Piedmont offers plastic sheet, rod, tubing and film products that meet the demands of all major markets across a myriad of industries. And with 48 stocking locations throughout the United States, Canada, and Mexico, what you need won't take long to receive.

COMPANY SHOWCASE: PIEDMONT PLASTICS

STRATEGIC INTENT AND VALUE STATEMENTS:

“We intend to be the premier North American distributor and converter of basic plastic shapes and film. We intend to accomplish this while maintaining the highest level of integrity in all aspects of our activities and in a manner that promotes an enjoyable and profitable working environment for our customers, employees, and suppliers.”



Piedmont Plastics

We intend to add value for our customers and exceed their expectations.

We encourage and support open and clear communication.

We act with honesty and integrity.

We provide our employees with opportunities for personal and professional growth.

We show respect and consideration for others.

We promote continuous improvement.

MARKETS SERVED:

- ***Aerospace***
- ***Architecture***
- ***Automotive***
- ***Building and Construction***
- ***Chemical Manufacturing***
- ***COVID-19 Protection***
- ***Displays / Point of Sale***
- ***Electrical***
- ***Exhibit, Trade Show, and Convention Services***
- ***Food Processing and Handling***
- ***Framing and Mounting***
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(CONTINUED ON PAGE 6)



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COMPANY SHOWCASE: PIEDMONT PLASTICS



Piedmont works with suppliers who are largely United States based, promoting reputable brands.

RECYCLING AND SUSTAINABILITY

Company Conservation Policies

- *Ongoing development, implementation, and maintenance of environmental initiatives*
- *Complying with federal, state, and local environmental laws, regulations, and requirements*
- *Proactively reducing resource consumption and waste generation*
- *Eliminating or minimizing adverse environmental impact from our business operations*
- *Providing eco-friendly products and services to our customers*

(CONTINUED ON PAGE 8)

CORE MATERIALS:

- *Acrylic*
- *Polycarbonate*
- *Polyolefin*
- *PVC*
- *UHMW*
- *And much more...*



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COMPANY SHOWCASE: PIEDMONT PLASTICS

Piedmont Plastics actively supplies a wide range of ecofriendly materials that provide sustainable solutions for their customers. Many of the plastics products they serve are recycled, recyclable, or biodegradable. Their diverse assortment of materials meets the environmental demands of many different industries and applications.

Piedmont also operates a recycling program that is utilized within each branch, offering this program to their customers and wherever scrap material is being produced. A lot of this is used in the signage and graphics industry. An example is selling plastics to a print shop or a sign shop who may take a sheet of material and then cut out that material what the exact specifications they need for whatever signs they're making, which obviously leads to some waste. That expended material will find its way into a Piedmont provided Gaylord box which comes with it the service of coming out to pick it up and then send it back to the supplier that manufactured the material so they can best render it back into the manufacturing stream. Piedmont also has agreements with local recycling yards for those materials that do not go back to their origin source ensuring proper recycling as a direct end result.



Benefits of Piedmont Plastics Recycling Program into the Operative Flow:

- ***Reduces landfill contribution costs***
- ***Allows for a clean and organized work environment***
- ***Decreases carbon footprint***
- ***Eliminates the hassle out of sorting through miscellaneous plastic scrap material***

(CONTINUED ON PAGE 10)



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THE PURSUIT OF EXCELLENCE

Piedmont Plastics is focused on safety, quality, with a commitment towards continuous improvement. They invest in:

- ***Quality materials***
- ***Comprehensive training programs***

Other value add initiatives for their customer base (outside of the recycling program outlined above) include:

- Cut-to-Size services for plastic sheet, rod, and tube products utilizing a variety of available cutting technologies such as CNC panel saws, guillotines, planing, and laser cutting. The team specializes in maximizing yields and tolerance while maintaining adherence to high-quality standards.
- Finish and Semi-Finish Parts enable the delivery of quality turnkey finished parts for customers located throughout North America. Piedmont provides industry-leading CNC routing and machining services, as well as many other value-added alternatives such as heat bending, gluing, and assembly.
- ISO Certified Film Conversion capable of meeting the diverse needs of markets across the country. Piedmont's film conversion facilities specialize in converting and distributing plastic film based on exact specifications and requirements.

In addition to providing plastic film materials, they can provide a full array of film conversion services to customers including:

- ***Precision guillotine cutting***
- ***Interleaving***
- ***Laminating***
- ***Pre-masking***
- ***Rewinding***
- ***Sheeting***
- ***Slitting***
- ***Tipping***
- ***And more...***

Piedmont Plastics thrive off of exceeding industry requirements regarding safety and have had zero incidences in their history. There also exists a formal quality program in every branch that is based on ISO. All film conversion centers are ISO 9001:2015 certified.



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*Photo: Manufacturing Engineer Tyler O'Donovan (left) holds part programmed in ESPRIT.
Fellow Mnfg. Eng. Jason Sicina stands to his right. Photo credit: Creative Technology*

Founded in 1984 and located in southern Maine, Arundel Machine has evolved into one of New England's leading CNC manufacturers of precision-machined components. With consistent annual investments of more than \$1.5 million per year, Arundel Machine is equipped with more than 40 CNC machines including three DMG MORI NTX 2000 9-axis mill/turn machines, two DMG MORI DMU-50s, and one DMG MORI NMV 3000 5-axis machining center, as well as several DMG MORI NHX4000/5000 Multi Pallet Horizontals. The company has built a fantastic team of manufacturing engineers that produce more than 1,500 CNC programs each year while also designing many custom fixtures and tooling.



Arundel Machine manufactures products to support the US Department of Defense, the US Navy, as well as others—all with stringent level one and safety critical requirements. They're also proud to serve the oil and gas industry with level one subsea components that sustain the extreme pressures and temperatures of the ocean floor.

Arundel Machine's third major industry is aerospace, providing parts for engine and propulsion components, actuation, landing gear, and sensor components. Finally, the company provides flow and pressure components for the semiconductor sector, which requires a deep understanding of critical finishes, handling, and process controls.

As Arundel Machine increased its investment in advanced technology, the company soon recognized the limitations of its previous CAM software.

"The old software was cumbersome, hard to use, did not do 3D machining very well, and lacked good technical support," says John Hebert, engineering manager at Arundel Machine. "I flew out to the software developer's training facility to see if these issues could be resolved, but it wasn't possible."

Hebert searched for an alternative that could help the company progress to the next level. He came across ESPRIT CAM software from DP Technology, which offers the ability to import a solid model from leading CAD software and use it as the basis for the CNC program. ESPRIT supports state-of-the-art technology, such as 5-axis machining, mill/turn, and probing, which is available for any class of CNC machine tool.

"I talked to the owners of DP Technology and was impressed by the fact that they are machining guys as much as they are computer guys," says Hebert. "ESPRIT gave us a trial version and at the end of the trial, we were impressed and purchased the software."

As an example of the parts that Arundel Machine successfully programs with ESPRIT, Hebert pointed to a shaft built for a defense application. The shaft had multiple concave and complex profiles, flat sections, and slots on the end of the shaft. In the past, this part would have been produced in two setups on a CNC lathe, one for each end of the part, three setups on a 4-axis machining center to produce the profiles, flat sections, and crosshole, and one setup on a 3-axis vertical mill to produce the slot.

(CONTINUED ON PAGE 18)



Inspection of part on ZEISS coordinate measuring machine. Photo credit: Creative Technology



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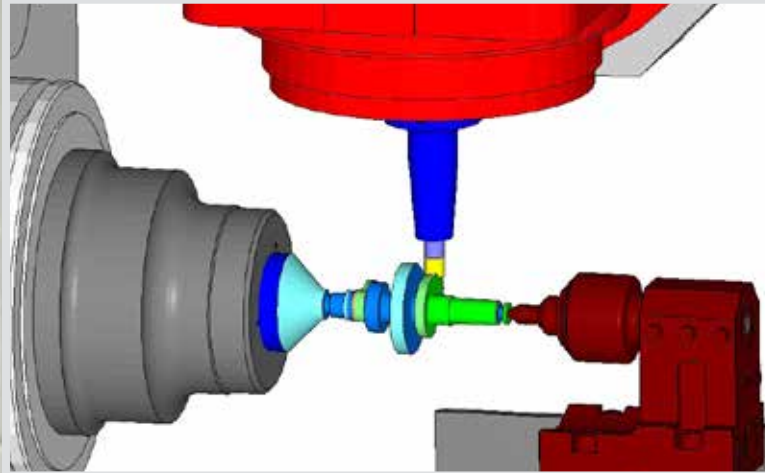
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Today, Arundel Machine produces this part in a single setup by leveraging the NTX 2000 Mill/Turn machine and ESPRIT CAM software. The manufacturing engineer created the CNC program by first importing the solid model provided by the customer into ESPRIT. He oriented the part and then used the CAM software to recognize the features. The software recognized most, but not all, of the 100+ features in the part. The engineer defined the rest of the features manually by changing the model to wireframe geometry, picking the edges to define each feature one by one and selecting the ‘Chain’ command.

(CONTINUED ON PAGE 20)

Probing being performed on a DMG MORI NMV 3000 5-Axis machining center.

Photo credit: Creative Technology

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Machining a part on DMG-MORI NTX 2000. Photo credit: Creative Technology

In defining roughing toolpaths, the engineer used ESPRIT's ProfitMilling strategy, which optimizes engagement angle, chip load, lateral cutter force, and machine acceleration to reduce cycle time when cutting out large areas of stock. Profit Turning was also used for grooving out between the cams. Compared to the traditional turning toolpath, this ESPRIT cycle worked wonderfully for breaking chips, resulting in increased removal rates and longer tool life. ESPRIT's 4-axis wrap milling is used for cutting, while the C-axis is rotated to semi-finish and finish machine the cam profiles. Other finishing operations performed with 5-axis include contouring and composite cycles.

These operations were apportioned among the machine's two spindles in several steps:

- 1.** The bar is fed into the first spindle.
- 2.** Lathe and turning tools are used to machine the exposed sides of the part.
- 3.** When these operations are completed, the bar is cut off and transferred to the second spindle, exposing the unmachined side of the part for machining.
- 4.** Meanwhile, the bar advances through the first spindle and the first side of this new part is machined.

The manufacturing engineer apportioned operations between the two spindles to equalize their cycle time by dragging and dropping operations from one spindle to the others.

When the engineer was satisfied, he ran a simulation of the machining operation to check for crashes or gouging, inspected the dimensions of the machined part, and looked for opportunities for cycle time improvement. The program worked exactly as simulated on the machine and produced good parts from the very first time it was run.

"We could not have programmed this part with our old CAM software," Hebert concluded. "ESPRIT not only provided a relatively painless programming process, but also enabled us to reduce the cycle time by 50% compared to similar but less complex parts that we programmed with our old software."

For more information about ESPRIT

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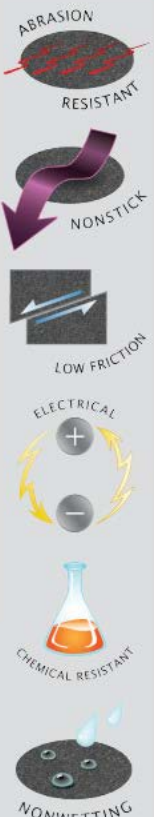
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DESIGN-2-PART

Design-2-Part, has made the decision to reschedule the Southern New England Design-2-Part Show in Uncasville, CT to December 3 & 4, 2020.

The decision to reschedule was not an easy one. Since Connecticut was on pace for record attendance, we feel the shift to the December dates will carry that same excitement. Design-2-Part is strongly positioned to help U.S. manufacturing re-establish itself as the most reliable global source for parts and services.

Any questions surrounding the Connecticut Show should be directed to D2P's sales and customer service departments. If you were planning on staying at Mohegan Sun as a part of our room block, they will handle your cancellation as a group. If you made your reservations outside our room block, you will need to cancel your own reservation.

Thank you for your understanding and patience during these challenging times.

Show hours are 9:00am - 3:00pm on both Wednesday, December 3 and Thursday, December 4.

For more information about the Design-2-Part Show or to register for free show admission, visit www.D2P.com.

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COVID-19 Update

Due to the nationwide pandemic, all events are cancelled or postponed for the foreseeable future to abide in the prevention of COVID-19 spreading any further than it already has. We will update you on any changes when we hear of any.

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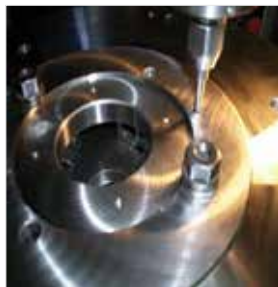


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