

Automated Thermoplastic Processing

Airborne automated solutions | 2020

- Suitable for high and medium volume
- Full digital production connectivity
- Flexible, turn-key solutions
- Minimal labour required



Airborne

Automated Thermoplastic Processing

Thermoplastic materials have tremendous potential for applications in many industries, but the lack of efficient manufacturing can hold back implementation. Especially uni-directional (UD) tapes provide superior performance, but are challenging to process efficiently. Often, the forming and consolidation process is automated, but the conversion of UD tapes into tailored laminates is inefficient. Airborne solves this challenge by offering automated thermoplastic processing systems for high volume and flexible, low- to medium volume applications.

Why automate

Automated manufacturing of tailored thermoplastic laminates does not only ensure constant quality at high volumes, but reduces manual intervention. To transform thermoplastic tape material into stabilised 2D preforms or laminates, Airborne has developed a toolbox of solutions to suit different production volumes.

Proven technologies can be combined into a fully or partially automated cell. Easy programming allows for short start up times with minimum engineering effort. Digital traceability throughout the process ensures transparency on your shop floor.

- Easy adaption to your production rate
- Allows for high product mix with short turnover times
- Reduction of manual labour
- Improve quality of output

High Volume Manufacturing Line

An example of a high volume solution is the Falcon Line at the headquarters in Den Haag. This fully end-to-end automated high volume thermoplastic line utilises UD tape to produce consolidated laminates which are inspected for quality, all on the same line without manual intervention. This line not only proves our capability to produce well over 1,5 million laminates per year, it can also be used for prototyping and serial production if you are not ready to invest in your own manufacturing line. Thermoplastic UD tapes are processed into laminates within 15 sec cycle time, with the option to add core material, fabrics or surface finish materials.



Thermoplastic Building Blocks

To help our customers best, we created a toolbox of building blocks for automated thermoplastic processing. One key technology is Automated Preforming by Pick & Weld: a ply is picked from a feeding system, placed accurately and welded to previous plies, producing a 100% net-shape laminate ready for consolidation. This technology can also handle large plies and can process the full range of materials, from high-quality tapes to low cost semi-impregnated materials. By offering various options for material feed, quality control, laminate offloading and digital integration, we can create the perfect solution for you. From very flexible systems to fully integrated and high-volume lines such as the Falcon line.

Figure 1: Automated Preforming system based on 'Pick & Weld'

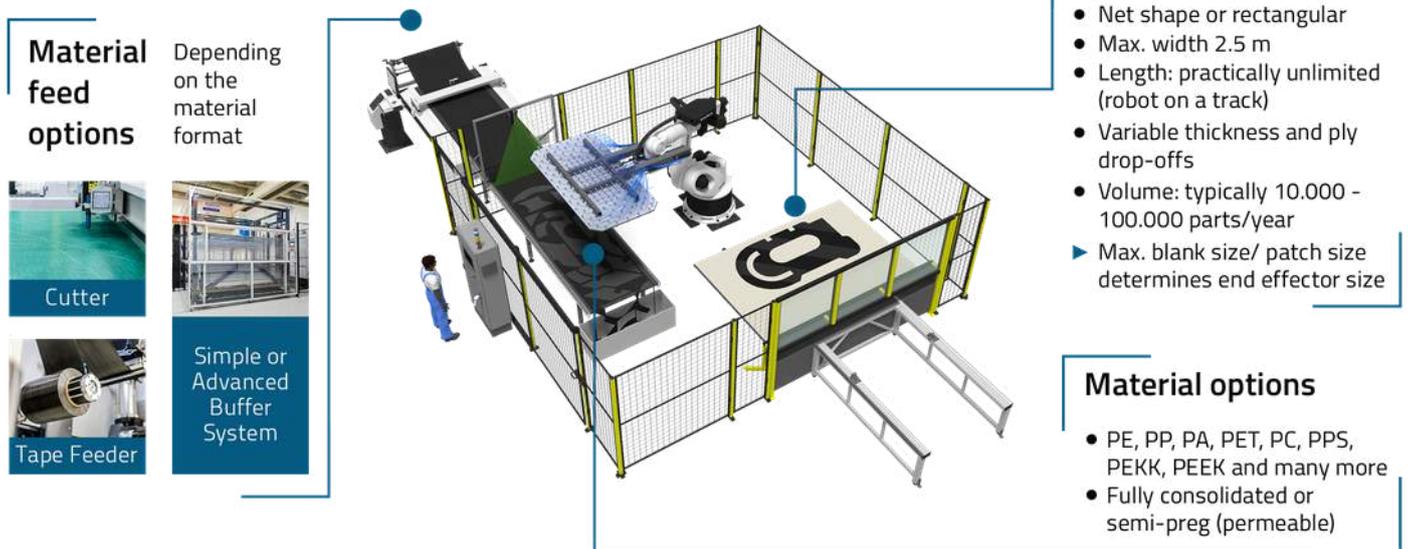


Figure 2: High volume manufacturing line 'Falcon'



Airborne's Digital Automation Portfolio

Production volumes in the composites industry are increasing, while unit prices are reducing and cycle times are shrinking. Companies therefore look for ways to radically reduce touch labour and takt time, minimise footprint, improve material utilisation and reduce time to market of new, complex, engineered composites products. To meet these needs, Airborne developed a suite of digital manufacturing solutions for composites manufacturing. Automated Thermoplastic Processing is one of the building blocks in Airborne's digital offering.



Automated Honeycomb Potting

Our Honeycomb Potting solution enables easy manufacturing of locally reinforced honeycomb sandwich panels, while reducing work preparation, material waste and the cost of quality.



Automated Laminating

Our Laminating solution makes the layup of tailored thermoset prepreg preforms effortless, by combining tape laying, cutting, and pick & place in a single cell.



Automated Kitting

Our Kitting solution delivers fully sorted and sequenced composite ply kits to increase productivity, improve material utilisation and reduce work preparation.

About Airborne

At Airborne we know that innovation in manufacturing through automation, digitalisation and advanced analytics is the catalyst for the significant increase in productivity that companies need to stay competitive. We understand the complexity and cost involved in producing composite products for demanding applications in highly regulated industries. Our legacy in advanced composites manufacturing makes us experts in developing and delivering automated solutions that enable our customers to achieve high production rates and radically low conversion costs.

Contact details

Airborne
T: +31 70 3017 400
info@airborne.com

Laan van Ypenburg 70-78
2497 GB The Hague
The Netherlands

Publication date: August 2020 | All rights reserved