



Lay-up automation for complex composites

SAMBA & ARTIST STUDIO | Fiber Patch Placement by Cevotec

March 2025

CEVOTEC
milestones in composites

Cevotec – Fiber Patch Placement equipment & software

Founded in 2015, Cevotec has become the globally leading technology partner for automated lay-up processes based on Fiber Patch Placement (FPP) technology.

- Located in Unterhaching near Munich, Germany
- High-tech development lab & facilities
- Founded 2015 by current CEO Thorsten Groene together with composite experts Felix Michl, Dr. Neven Majic and Prof. Klaus Drechsler
- Since 2021, partnered with customized machine builder GFM (Austria)
- As of 2024, 25 employees & growing
- Local sales partners in France, North America, Japan, China
- Key products:
 - SAMBA Series production systems
 - Artist Studio CAD-CAM software
 - Application development and additional services



Our mission:

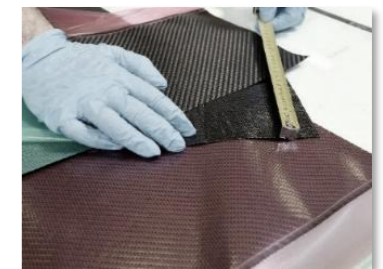
Enabling manufacturers to produce complex composites in high volume and superior quality!

The challenge: Complex composites still greatly manufactured by hand

Need for automation solutions to meet future production demand.



- Long production cycles
- No effective quality control
- High scrap rates (>30%)
- High cost

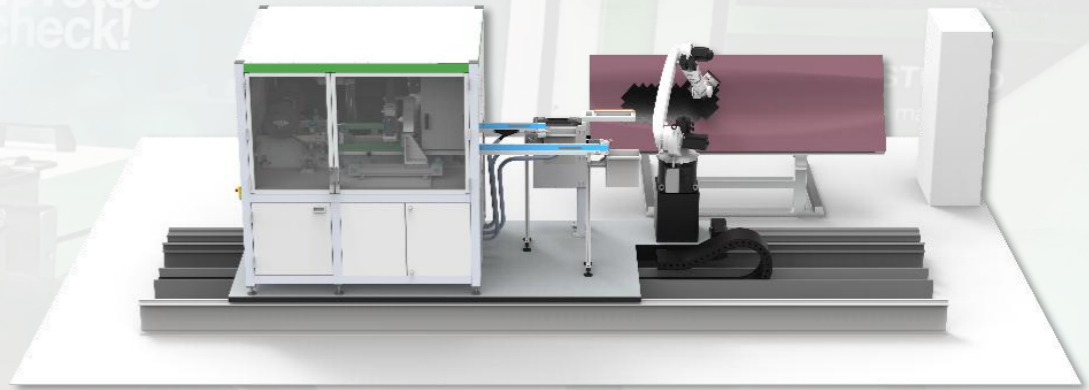


Fiber Patch Placement

Additive 3D fiber lay-up technology for complex composites.

SAMBA Series

3D fiber lay-up automation platform



Benefits



Digitized, automated process chain



100% in-process raw material control



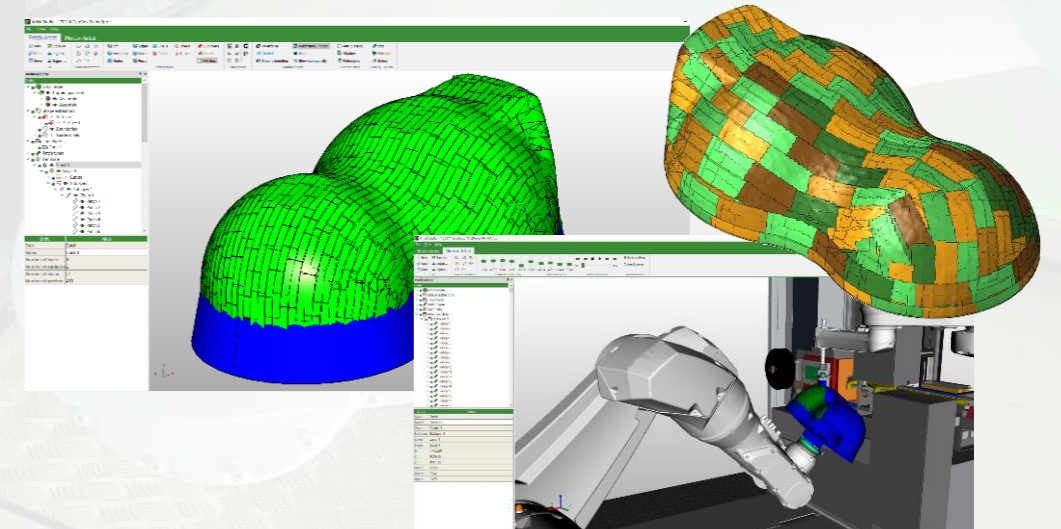
Multi-material lay-up capability



20% - 60% cost & time savings

ARTIST STUDIO

CAE software for design & production



Watch on YouTube how FPP works!

Focus industries

Automated lay-up for complex composites with Fiber Patch Placement.

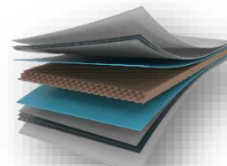


• Aerospace

Lay-up automation for complex, multi-material composites



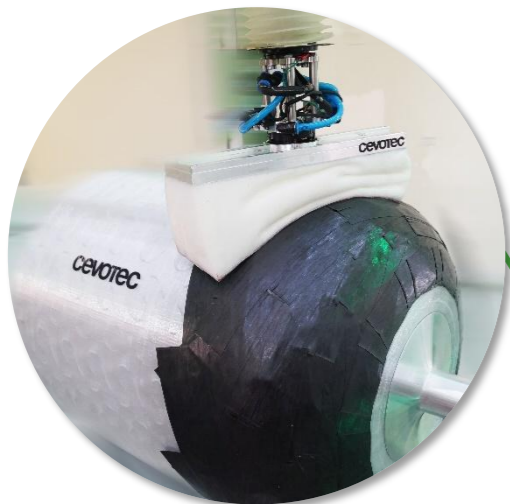
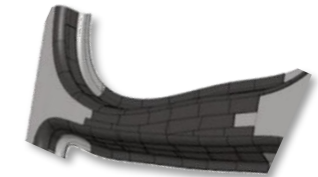
Multi-material composites



Complex geometries



Tailored reinforcements



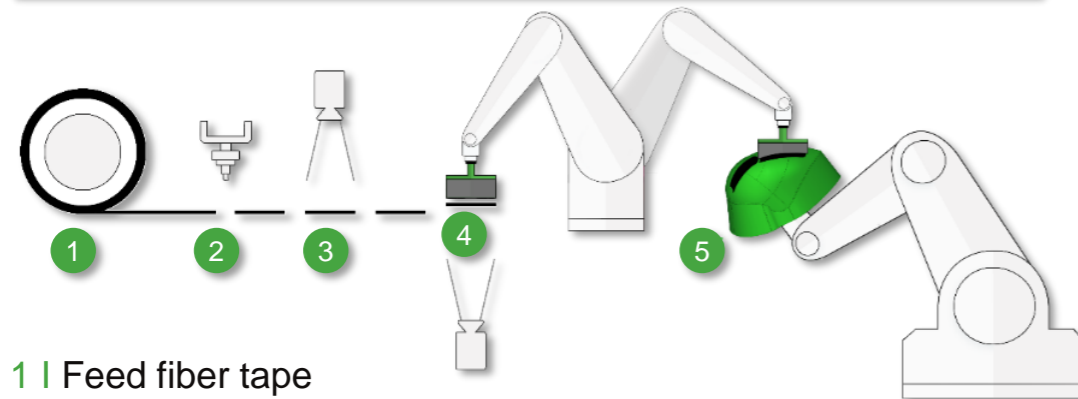
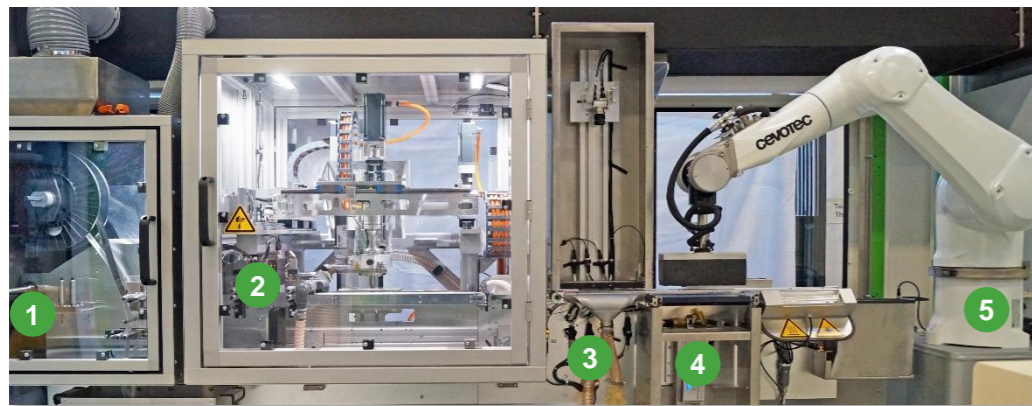
• Composite tanks

15% lighter composite tanks through FPP dome reinforcements

Fiber Patch Placement technology

The flexible lay-up technology for complex high-performance composites enables a fully automated, quality-controlled, direct 3D lay-up.

Process overview



1 | Feed fiber tape

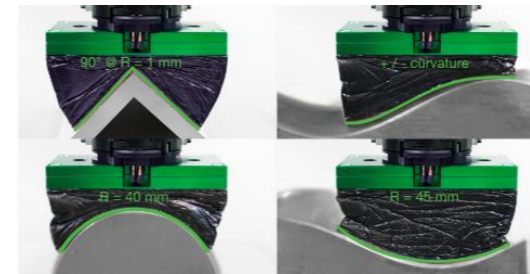
2 | Cut tape into patches

3 | Inspect quality

4 | Pick-up, check position

5 | Place fiber patch

Gripper technology for lay-up on complex shapes



- Controlled fiber deposition on concave & convex surfaces
- Placement directly onto honeycomb cores
- Equipped with compaction-force sensor
- Multiple sizes up to 300 mm x 200 mm
- Suitable for **multi-material placement**: carbon fibers, glass fibers, adhesive films, other technical fibers

Technology uniquely positioned to extend composites' automation envelope

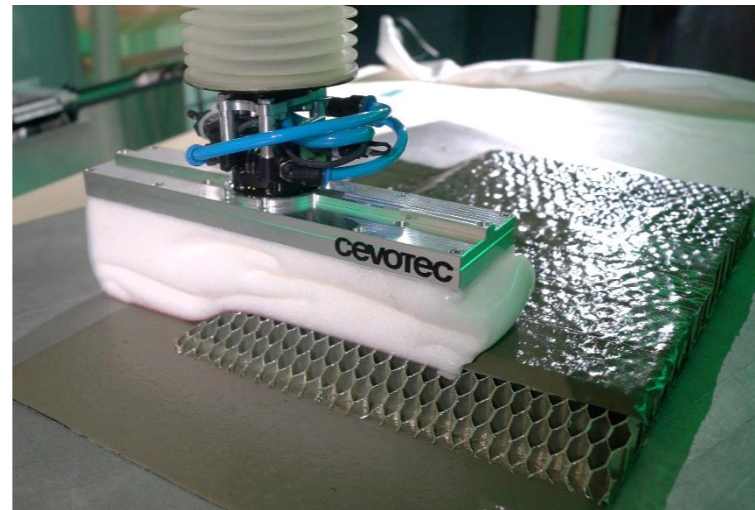
Fiber Patch Placement technology enables the automated lay-up of complex-shaped parts and is compatible with a broad variety of materials.



Automated Tape Laying



Automated Fiber Placement

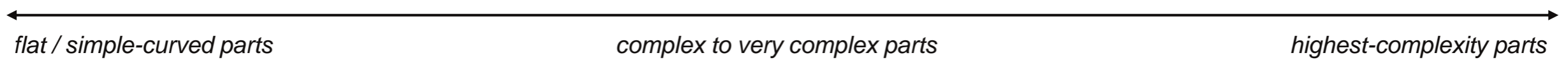


Cevotec's Automated Fiber Patch Placement



Hand layup and other unoptimized processes

extending capabilities as technology develops

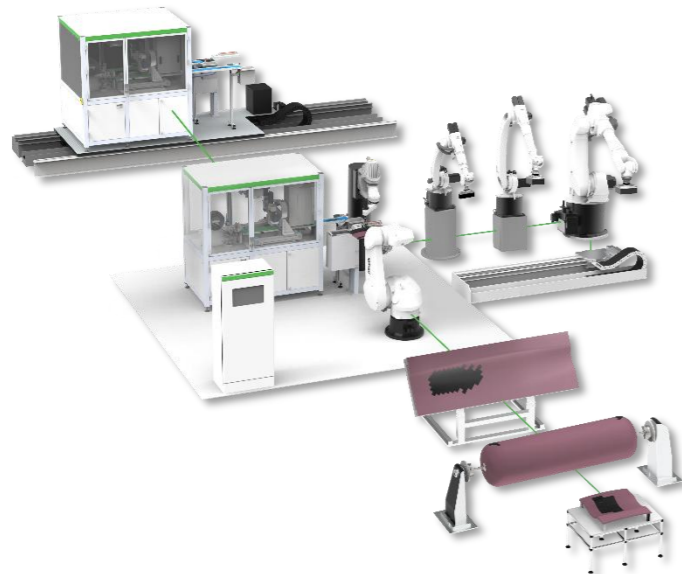


The Cevotec portfolio

Specialized automation equipment, software and services based on Fiber Patch Placement. We support from initial concept to series production and beyond.

SAMBA Series

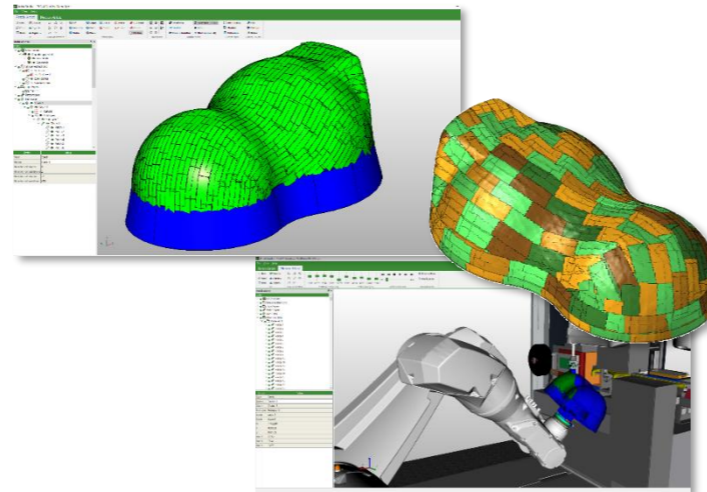
Automated lay-up systems



- Flexible 3D fiber lay-up platforms
- Configurations tailored to applications
- 20% - 60% cost & time reduction
- Maintenance & engineering services

ARTIST STUDIO

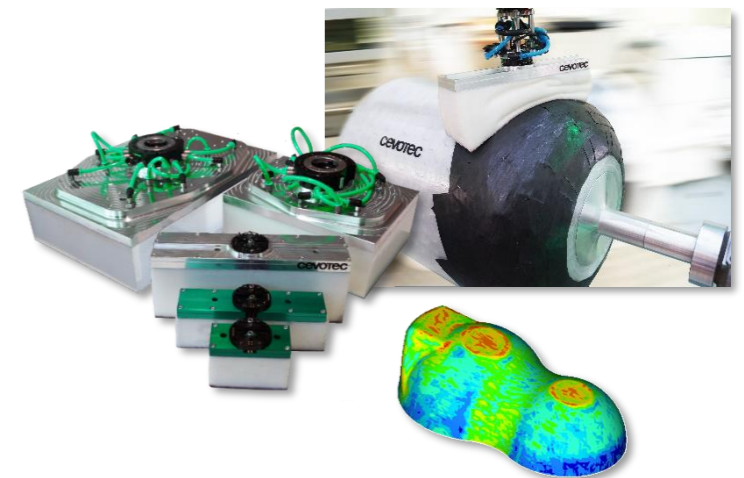
CAE software platform



- CAD-CAM for patch technology
- Automated programming of SAMBA systems
- Interface module for FE software
- Training and consulting for engineering teams

cevoLab

FFP Competence Center



- Application & process development
- Customization of equipment
- Prototyping & low-volume production service
- CAE analysis & FEM-based optimization

SAMBA Series: Lay-up automation systems based on Fiber Patch Placement

Scalable and flexible technology for a variety of applications.



SAMBA Pro

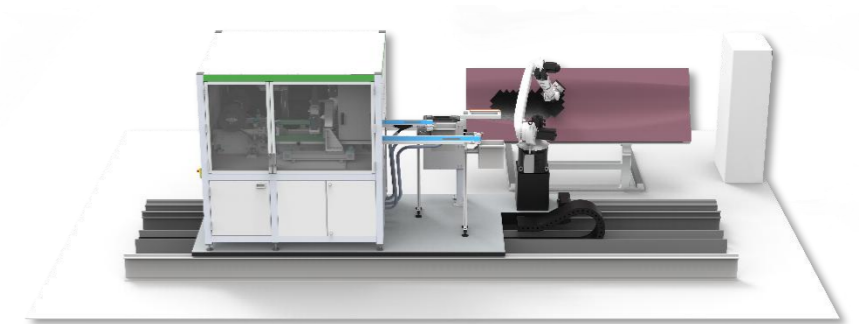
3 modules:

1. Automated material feeding & cutting
2. Placement units
3. Tool holders and manipulators

 [Watch our video about SAMBA!](#)

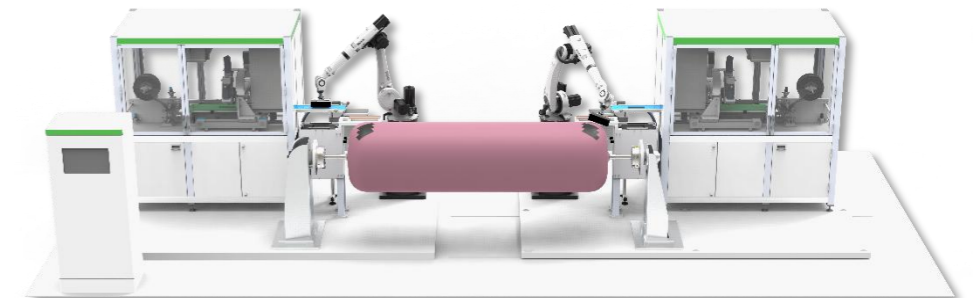
SAMBA Pro Multi

Sample configuration for aerospace



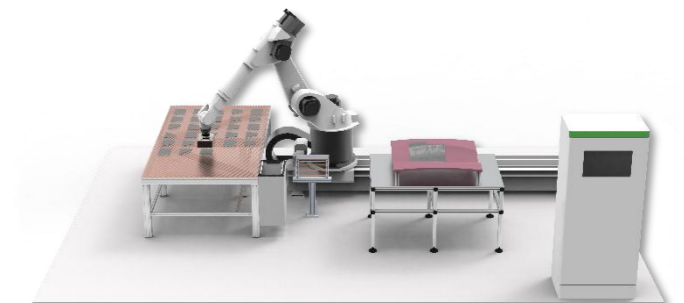
SAMBA Pro PV-1

Sample configuration for composite tanks



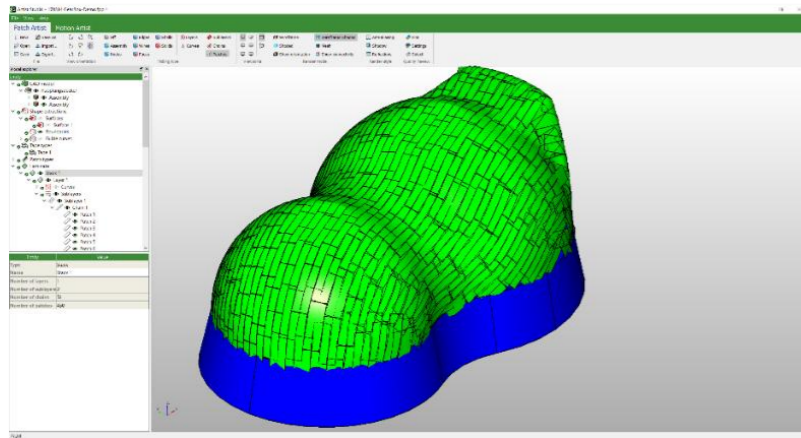
SAMBA Step L

Sample configuration for research & development



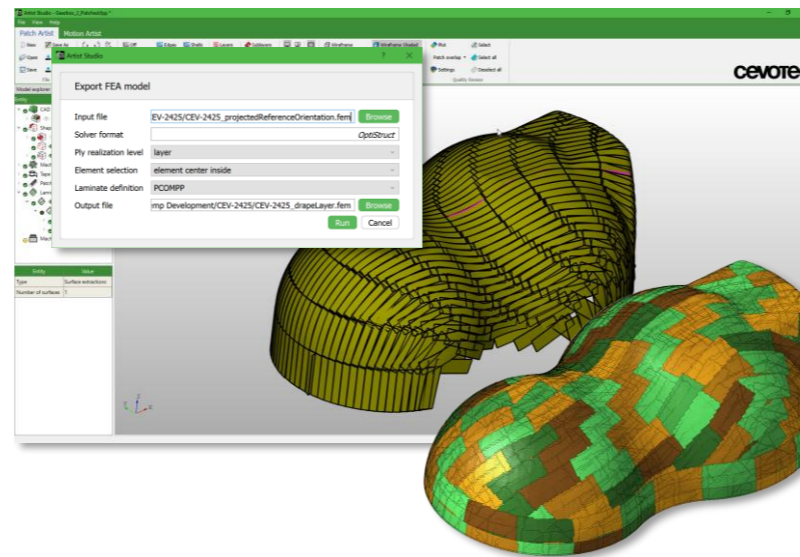
ARTIST STUDIO: CAE software platform

Advanced CAD-CAM software with interface module for FEA software to enable comprehensive digital product and process development.



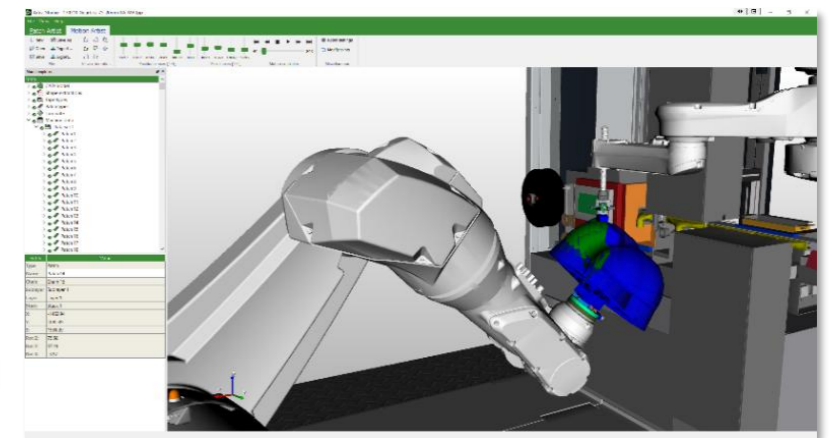
CAD – Patch Artist

- Generating optimized patch laminates
- Automated patch creation on guide curves
- Unique & efficient FPP-specific design features



FE-Module

- Connecting FPP laminates with FE meshes for structural analysis
- Automated modeling of patches, fiber orientation, thickness, patch overlaps



CAM – Motion Artist

- Generating SAMBA machine data through fully automated offline robot programming
- Robot movements with consideration of axis limits, robot range, singularities, collision detection

 [Watch our video about ARTIST STUDIO!](#)

cevoLab: The Fiber Patch Placement Competence Center

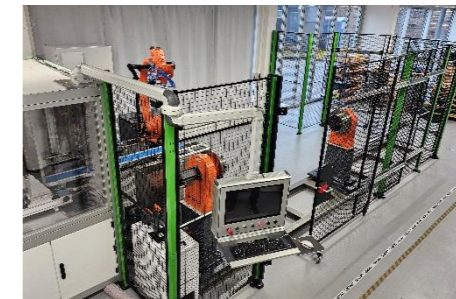
Cevotec's high-tech lab optimally supports application and process developments, prototyping and small series production.

Range of services

- Virtual design and studies, e.g. FPP laminate design, FE-based simulation, unit cost analysis
- Prototyping with FPP: material testing, proof of concept, full-scale demonstrators, etc.
- FPP-as-a-service: production of small batches of series products
- Process development and customization of equipment

Available equipment

- **SAMBA Pro PV lab system**
 - Kuka KR 22 placement; Kuka KP1-HCS500 rotary tool manipulator
 - Ultrasonic cutting; tape width 20–75 mm; axisymmetric parts, length: ≤ 350 cm, diameter: ≤ 100 cm
- **SAMBA Pro system (Gen 1)**
 - Stäubli TP80 scara placement robot and TX 200 6-axis tool manipulator
 - Laser cutting; tape width 12.5 – 50 mm; part size envelope: $\sim 1\text{m}^3$, max. tool weight: ~ 100 kg
- **SAMBA Step L system**
 - Large Kuka KR 60-3 placement robot mounted on KUKA linear rail; flexible space for customer tool
 - Material feeding table for patches up to $\sim 200 \times 300 \text{ m}^2$; part size envelope (LxWxH): $\sim 2 \times 3 \times 2 \text{ m}^3$
- **Software stack:**
 - CAD: Autodesk Inventor, ARTIST STUDIO | FEM: Altair Hyperworks | CAM: ARTIST STUDIO



Samba Pro
PV lab



Samba Pro
lab (Gen 1)



Samba
Step L



[Watch SAMBA in Rolling Motion!](#)

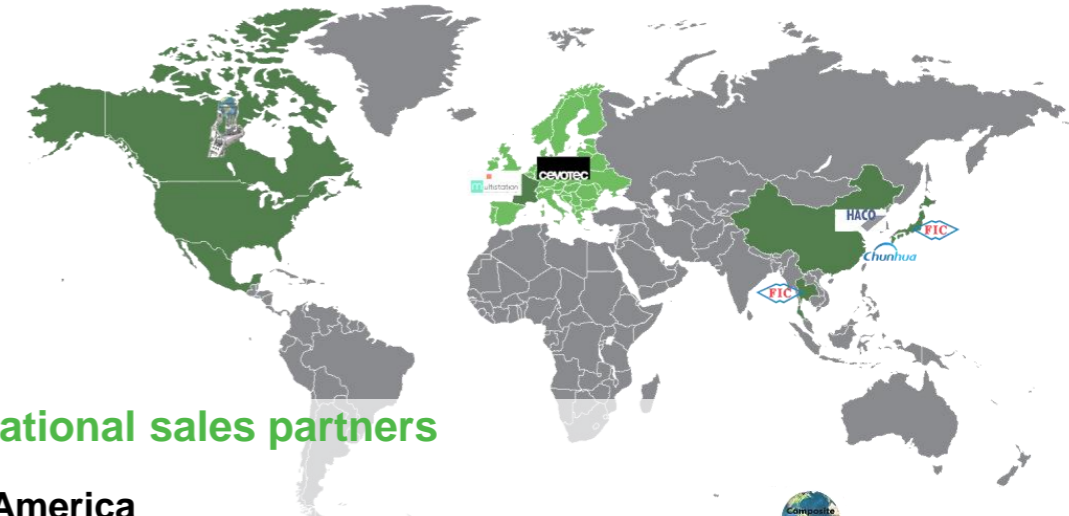
Partners & references

Premier OEM, manufacturers and institutes worldwide develop innovative automation solutions with us.

Partners & references (selection)



The Boeing Company
Mercedes Benz AG



International sales partners

North America

Composite Automation LLC
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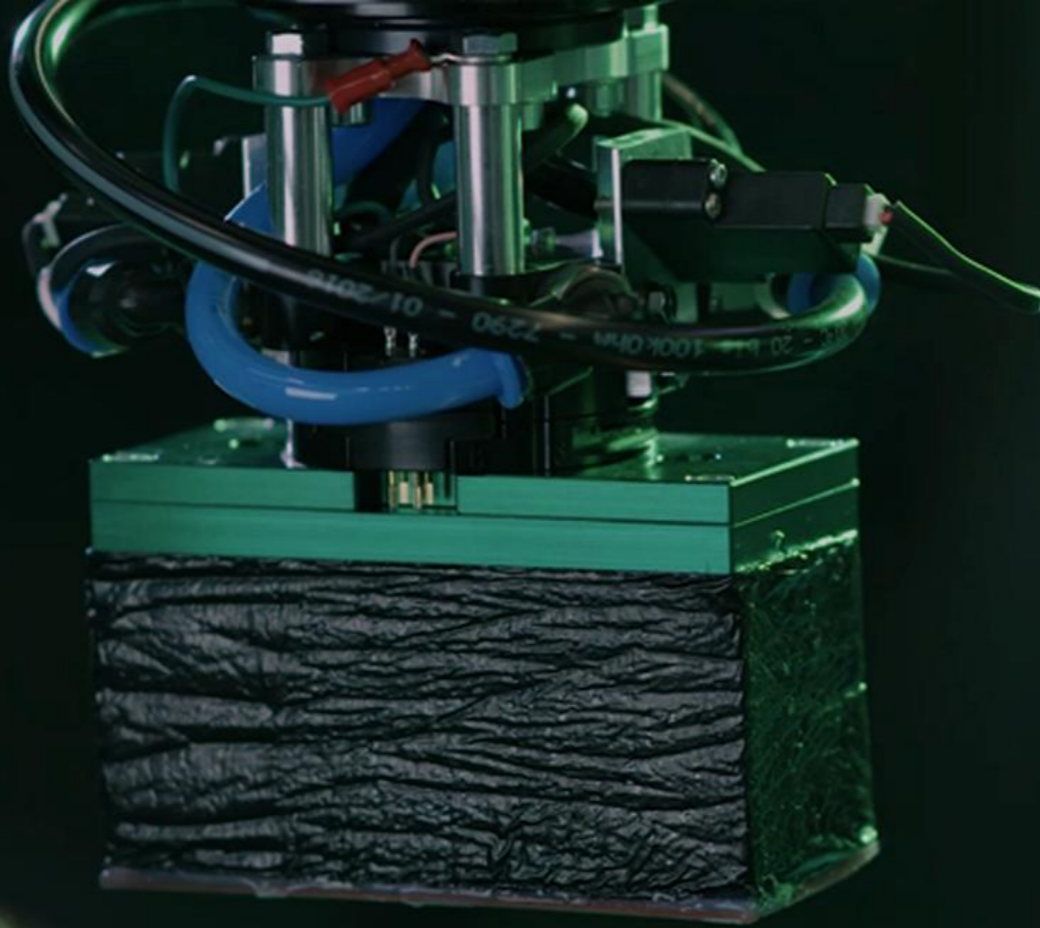
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milestones in composites

How to get started with Fiber Patch Placement?

Step 1: ROI & suitability assessment

Includes manufacturability assessment, unit cost & time analysis, benefits & ROI estimation. This service is free of charge.

→ **How much does your application benefit from FPP?**

Step 2: Joint application development

Includes virtual studies, application and demonstrator development, equipment customization, and more.

→ **How do you best develop & test your FPP application?**

Step 3: Customized lay-up equipment

Includes SAMBA lay-up systems, ARTIST STUDIO software, customized patch grippers, quality control systems, and more.

→ **Which system configuration is best for your application?**

Get started with

Fiber Patch Placement

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We enable manufacturers to produce complex composites in high volume and superior quality.
For a lighter, more sustainable future.