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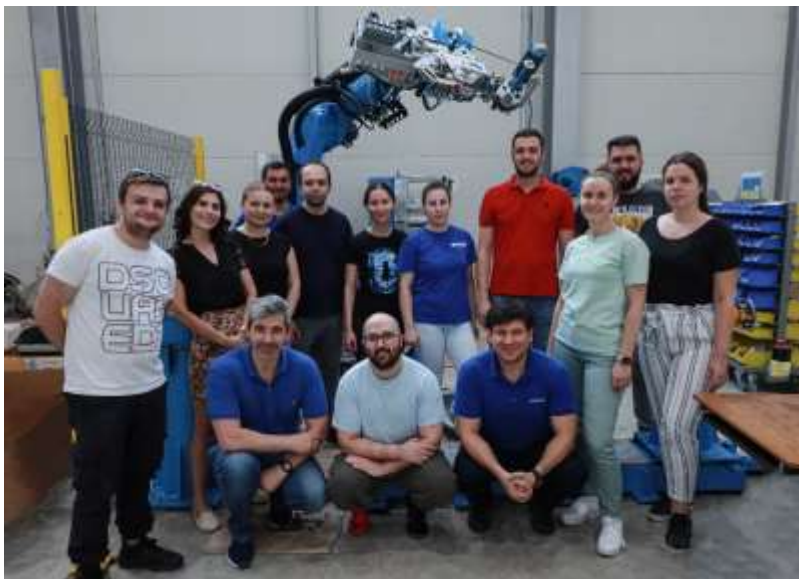
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Mikrosam Delivers Versatile Robotic Filament Winding Cell with Single Tape Placement Head to Cidetec

Prilep, Macedonia – November 2024 – Mikrosam, a pioneer in composite manufacturing technologies, proudly announces the delivery of its advanced robotic filament winding machine with automated tape placement head to [Cidetec, Spain](#). This versatile, cutting-edge solution will support Cidetec's innovative projects in developing sustainable composites based on their proprietary 3R technology (Recyclable, Repairable, and Reprocessable epoxy resin). The equipment is designed to handle **both wet and towpreg winding processes, as well as precise tape placement of thermoset UD slit prepreg tapes**, offering exceptional flexibility for a range of applications.



Mikrosam and Cidetec team at Mikrosam's factory during the FAT

Ultimate Flexibility in Winding Processes for Various Applications

The **single-spindle robotic setup** provides unmatched adaptability by supporting both **wet and dry (towpreg) winding** processes with various materials, including carbon, glass, aramid fibers and different epoxy resin systems. There are 8 interpolated axes in the winding process. Equipped with a 6-axis robotic arm for accurate placement and 2-axis control for spindle rotation and payout eye movement, the system can accommodate mandrels with different diameters and lengths. This allows the production of a wide range of parts, including hydrogen storage tanks which is a hot topic in the market, but also another large range of products.

Mikrosam's proprietary software, *Winding Expert*, enhances the system's capabilities with advanced simulation and programming features. This ensures consistent quality and optimized production for even the most demanding applications.

Cidetec plans to use this equipment for several European epoxy development projects, starting with the [CUBIC project](#), which focuses on the development of bio-based sustainable composites. These composites, utilizing Mikrosam's filament winding technology, will be a critical component in the production of hydrogen tanks. The goal is to offer a bio-based alternative that supports the green and digital transformation of the manufacturing industry.

According to Dr. Eva García Lecina, Deputy Director of CIDETEC Surface Engineering "this equipment will help us take our developments to the next level, contributing to the use of more sustainable composites in the Energy, Aerospace and Automotive sectors".



Robotic towpreg winding process

Efficient and Precise Tape Layup for Next-Generation Wind Turbines and Aircraft Structures

The single tape placement head offers high-speed, bi-directional layup of thermoset UD prepreg tapes, emphasizing precision and adaptability for complex composite structures. Designed for both 2D and mild 3D geometries, this head is ideal for advanced aerospace and wind energy applications.

The system accommodates tapes of ½ inch width, achieving a placement tolerance of ± 0.1 mm. A compact fiber creel minimizes material distortion and allows quick tape changes, reducing downtime. Integrated with an infrared (IR) heating unit, the system preheats the prepreg tape, ensuring optimal bonding during layup. The programmable heating power adjusts in real time to match the layup speed, ensuring consistent temperature control.

Cidetec will also employ this system in two other projects. The [Carbo4Power project](#) aims to manufacture sustainable wind turbine blades using Mikrosam's automated tape placement machine with Cidetec's 3R epoxy resin. This initiative seeks to enhance the performance and durability of offshore wind and tidal turbine blades while reducing energy production costs, maintenance needs, and environmental impact. The project's goal is to recycle up to 95% of blade materials thanks to the innovative properties of Cidetec's 3R resins, which enable debonding on demand.

The second project, [GENEX](#), targets the aerospace sector and focuses on optimizing manufacturing and maintenance for next-generation aircraft composite structures. Cidetec has been collaborating on this project for a year, working on formulating and characterizing aeronautical-grade 3R resins and developing prepreg tapes with integrated fiber optic sensors. These materials will be used to manufacture access panels for aircraft through Mikrosam's automated tape placement process.



Single Tape Placement and Robotic Filament Winding Equipment at Mikrosam



Customizable Solutions for Modern Manufacturing

Mikrosam's equipment is fully customized to meet Cidetec's specific needs, integrating seamlessly into their production environment. Both systems feature a comprehensive *Quality Control System* that tracks and records essential production data, ensuring complete traceability and quality management for every part produced.

"One of Mikrosam's key strengths is the flexibility of its machines, which can be tailored to meet our customers' unique requirements," said Vele Samak, Vice President of Mikrosam. *"The delivery of this advanced filament winding and tape placement system will empower Cidetec to achieve the highest levels of performance and efficiency in their manufacturing processes. Additionally, our collaboration on these projects positions us at the forefront of the global challenge for a cleaner, greener future."*

About Cidetec

CIDETEC is a private applied research organization founded in 1997 with the purpose of increasing the competitiveness and innovation capacity of companies through the generation and transfer of technological knowledge. Located in the Gipuzkoa Science and Technology Park in San Sebastian and with facilities also in the Gipuzkoa Electromobility Hub MUBIL, CIDETEC integrates three technological centres specializing in Energy Storage, Nanomedicine and Surface Engineering. CIDETEC is a private, non-profit research organization whose board of trustees is made up of leading entities from the private sector, public administration and universities. With a strong focus on innovation, Cidetec aims to bridge the gap between cutting-edge research and industrial needs, offering technologies that support sectors such as automotive, aerospace, and renewable energy. The center is particularly known for its work in sustainable technologies, including composite materials and electric vehicle batteries, driving progress toward a greener, more efficient future. Read more at: <https://cidetec.es/>

About Mikrosam

Mikrosam, based in Prilep, Macedonia, is a globally recognized leader in machines and know-how for the composites industry. It has installed more than 330 composite production lines for some of the most demanding customers in over 45 countries, including Germany, Sweden, the USA, Japan, China, India, Korea and more. All machines are engineered-to-order using unique knowledge from proven solutions in 6-axis filament winding, AFP/ATL robotic and gantry machines, automated production of CNG/H2/LPG tanks, prepreg production & conversion. Integrated with its state-of-the-art software for simulation and process automation, Mikrosam provides factory automation for modern composite manufacturing. In our R&D center, we offer prototyping, testing, product design, and technology development. Join our growing customer success list. Visit Mikrosam at www.mikrosam.com.