

» MÜHLBAUER SUPPORTS YOUR JOURNEY FROM LAB TO FULL PRODUCTION «

At Mühlbauer, we are committed to pioneering sustainable solutions that propel the world towards a cleaner future. Our first-of-its-kind Membrane Electrode Assembly Line (MEA) with Fuel Cell Stacking Module and testing unit covers the precise lamination of a specific number of cell layers, including frames, GDL Gas Diffusion Layers,

membrane and electrodes with highest precision. This cutting-edge equipment produces fully completed MEAs that meet strict product specifications, making it ideal for high-capacity fuel cell system manufacturing with customizable designs. Join us in shaping a cleaner, greener tomorrow with Mühlbauer's fuel cell solutions.



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MÜHLBAUER eMobility
FUEL CELL PORTFOLIO

» WE ARE READY TO DELIVER 20 MIO MEA'S PER YEAR! «

Our MEA line has been meticulously designed for high-speed and high-accuracy manufacturing, yielding impressive speeds of up to 20 m/min & alignment accuracy of +/-100 µm.

- » 5 OR 7 LAYER MEA
- » 1 OR 2 FRAMES
- » NARROW OR WIDE WEB
- » 1HZ TECHNOLOGY



MB ATECH GmbH

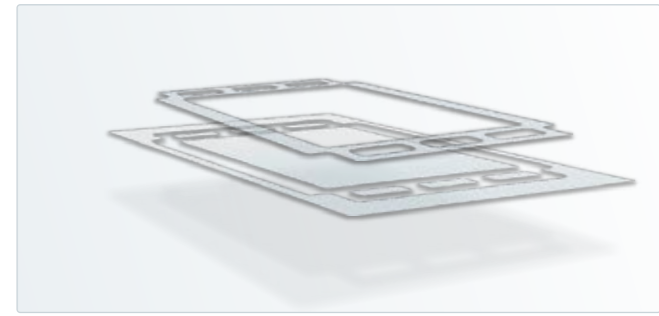
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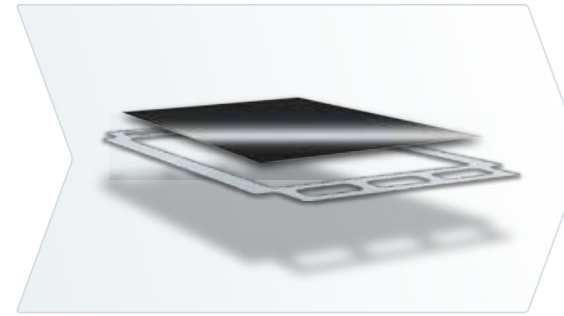
DISCOVER OUR **TURNKEY EQUIPMENT SOLUTION**

MEA



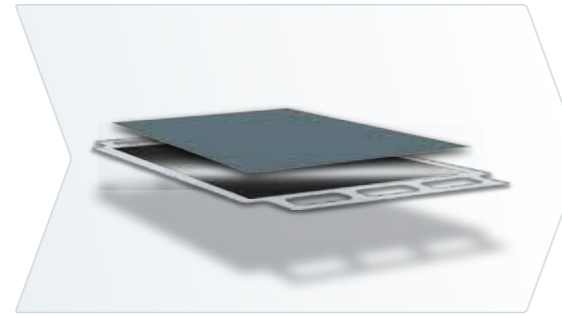
1 FRAME HANDLING

- Frame material is unwound, markings are made and frame is cut out
- Ensuring precise positioning of frames for accurate alignment and high-quality output



2 HANDLING THE CCM MEMBRANE

- Adhesive is applied to frame
- CCM is unwound, cut to size and CCM blank is glued to frame
- Ensuring proper alignment and uniform pressure for optimal results



3 GDL-1 WITH ADHESIVE

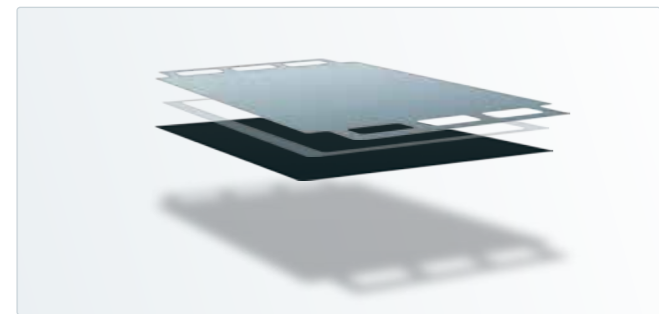
- Adhesive is applied to frame
- GDL material is unwound, cut to size and glued to web
- Exercising meticulous attention to detail to eliminate wrinkles
- Utilizing high-speed placing techniques for efficiency



4 GDL-2 PLACEMENT

- Complete frame is turned over to glue GDL to the bottom side
- Second frame is optional
- Executing precise handling techniques to avoid wrinkles or damage to the GDL layers
- Enhancing the reliability of the MEA through careful placement and handling

STACKER



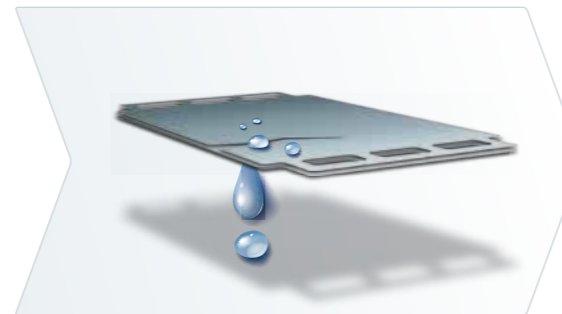
1 STACKING

- Utilizing Mühlbauer's pick & place method to stack BPP and MEA together
- Achieving precision in stacking through the „MB's-on-the-fly“ inspection process



2 PRESSING

- Employing effective stack pressing techniques to ensure long-term durability
- Stack fixation during pressing possible
- Providing full control on applied force over the whole pressing process



3 LEAKAGE TEST

- Conducting a leakage test to detect early leaks in stack modules
- Enhancing overall performance and longevity by addressing potential issues proactively



ADVANCED STACKING MODULE FOR A RANGE OF INDUSTRIES

Our stacking system offers flexible configurations that cater to a wide range of industries, from automotive and aviation to energy storage and marine applications. It can be fully automated or semi-automated, providing versatility in manufacturing processes. The system features customized magazines for input materials like Bipolar Plates (BPP) and Membrane Electrode Assemblies (MEA), along with pick-and-place heads to ensure consistent product picking. This precision is crucial for maintaining the correct configuration, especially when dealing with materials that vary in behavior.

Moreover, our system includes an automatic “MB-on-the-fly” inspection during transportation to the placement position. This functionality allows for real-time corrections in the x, y, and theta directions without interrupting the movement, ensuring accurate final placement.

OUR STACKING STATION GUARANTEES:

- Total stack accuracy of +/- 100 µm
- Cycle time of 0,5 sec per MEA resp. BPP

» **ACHIEVING 1HZ LINE BALANCE AND PRODUCING OVER 60,000 STACKS PER YEAR WITH OUR SOLUTION** «

