



## Hydrogen

# Hydrogen, made in America

Combining domestic manufacturing with global partnerships to support the rise of clean hydrogen technology

**Pam Poulin**, Market Development Manager and **Kayli Kokol**, Market Development Specialist at Thermo Fisher Scientific, and **Dr. Julian Renpenning** conducted this interview with Dr. Jeremy Steinshnider, Director of Product Development of FuelCellsEtc.

### FuelCellsEtc introduction

FuelCellsEtc, founded in 2003 and headquartered in Bryan, Texas, is a leading manufacturer of custom fuel cell and electrolyzer components. Specializing in Membrane Electrode Assemblies (MEAs), Catalyst Coated Membranes (CCMs), Gas Diffusion Electrodes (GDEs) and related hardware, the company supplies catalysts, gas diffusion layers, and membranes to OEMs, researchers, and educators worldwide. Dr. Jeremy Steinshnider, Chief Technologist at FuelCellsEtc, oversees research, development, and manufacturing strategies that ensure cradle-to-ship quality and performance. Under his guidance, the company has expanded its in-house capabilities to include catalyst synthesis, machining, and stack assembly, all while maintaining Made-in-America production. In this interview, Dr. Steinshnider shares the founding story, growth milestones, technical challenges, and the role FuelCellsEtc plays in advancing clean hydrogen energy.

**Can you share the story behind the founding of FuelCellsEtc and the original motivations or unmet needs were that inspired its creation?**

FuelCellsEtc actually evolved from an RCD company that worked in many different fields. One of the internal departments focused on membrane electrode assembly (MEA) fabrication for the company's electrochemical testing—mostly proton exchange membrane (PEM) fuel cells and electrolyzers, but also hydrogen peroxide and ozone production. As our team attended conferences, researchers often asked if we could make MEAs on the side to support their work. Dan Westerheim, the original owner, saw this market pull over a couple of years and took the bold step to spin out the department. He licensed the technology from the original RCD company, and that's how FuelCellsEtc came to be.

**What was happening in the fuel cell or clean energy landscape two decades ago that convinced you this venture was both timely and important?**

There has been—and continues to be—an ebb and flow in research funding and consumer interest in electrochemical technologies. What we saw was a consistent demand for small-scale products, but a fundamental lack of know-how in producing reliable MEAs.

Many groups struggled to apply catalyst uniformly to substrates and get reproducible results. We believed we could fill that gap with customizable products and consistent quality that others couldn't match.

### Since your founding in 2003, what have been some of the major milestones or turning points in your company's journey?

Early on, we acquired other companies, which expanded our capabilities and market presence, allowing exponential growth. Each year, as sales increased, we expanded our facility footprint to meet the needs for additional space and personnel.

### Over the years, how has your product portfolio evolved—from those early custom MEAs to the diverse range of catalysts, membranes, and hardware you offer today?

As we hired more specialized staff and forecasted growth in certain areas, we brought more manufacturing in-house to reduce costs for our customers. By adding catalyst synthesis and machining capabilities, we cut outsourcing expenses and improved quality control, knowing every step from cradle to ship. Though we stand at the beginning of our journey and will face further obstacles, especially in regulations, we are confident we can master them and play a crucial role in European fuel cell technology.

### How did FuelCellsEtc grow its global customer base to include OEMs, universities, and individual researchers—from Texas to Japan and beyond?

Nearly all our growth—about 99%—comes from delivering reliable, high-quality products and offering open, responsive support. Because we're involved in academia, we build relationships with students and professors who continue to rely on us as they move into industry roles after graduation.

### Every company faces hurdles along the way. What have been the biggest technical or business challenges you've encountered, and how did your team overcome them?

Growth is often painful, whether in hiring and training new employees for a highly specialized field or expanding our facilities to boost production. We tackle challenges by focusing on the issue, collaborating on solutions quickly to minimize downtime, and then getting back to serving customers. Training is time-intensive, but critical to maintaining high levels of customer service.

### As a manufacturer operating entirely from the United States, what unique challenges or advantages have you experienced in the global marketplace?

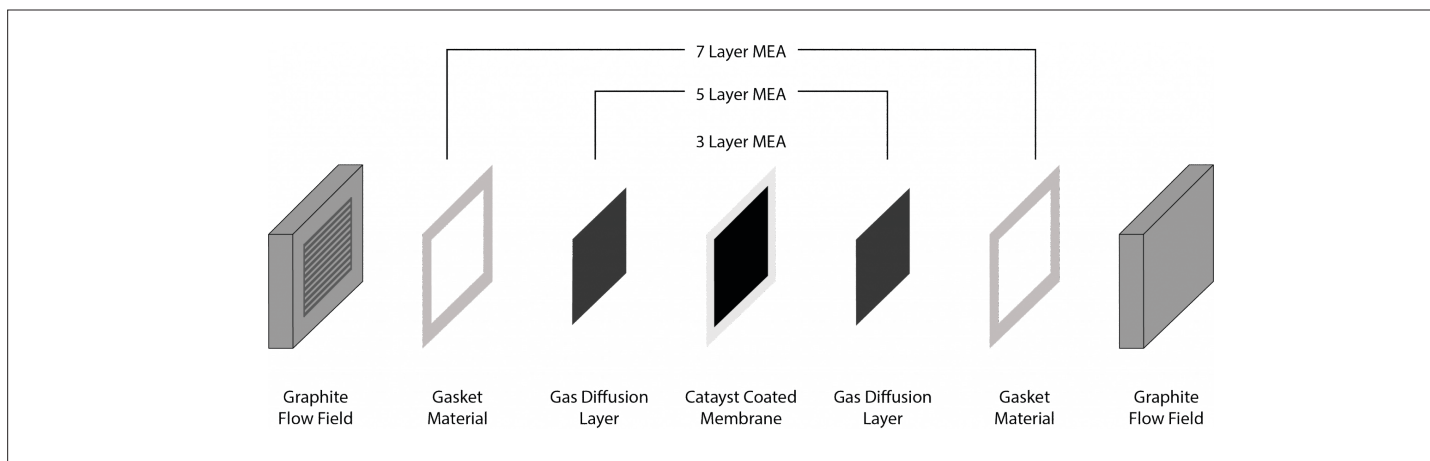
The biggest challenge is maintaining a competitive edge on a global scale while producing entirely in the U.S.

### For those less familiar with your field, how would you explain the role and importance of specific components within fuel cell and electrolyzer systems?

I often use the analogy that MEAs are the heart of an electrochemical device. The other parts of a stack or cell—flow fields, bipolar plates, and gaskets—are important, but without the MEA nothing happens. You can flow gases or water and apply electricity, but there's no electrochemistry without it. A catalyst coated membrane (CCM) is one method of making an MEA, and gas diffusion electrodes (GDEs) can be used as part of an MEA or standalone, depending on the cell's needs.

### What are some of the most exciting R&D efforts you're pursuing right now?

We're always looking for more efficient and customizable manufacturing methods. Many techniques require large runs of identical parts to justify setup costs and material losses. We're working on approaches that support small to mid-volume production without those drawbacks.



Examples of multilayer membrane electrode assemblies (MEA) like those developed by FuelCellsEtc.

**In your view, how are products from FuelCellsEtc helping to advance or accelerate the adoption of clean hydrogen energy worldwide?**

We believe we're training and educating the next generation of electrochemical engineers. By engaging with secondary schools and universities globally, we expose students to electrochemistry, hoping to inspire careers that lead to new products and ideas that bring fuel cells and electrolyzers into everyday life.

**Can you share examples of how your technology is making a difference in real-world applications—be it in transportation, grid stabilization, research, or another area?**


We can't be too specific due to customer confidentiality, but our products are used in space applications, environmental remediation, and they're spawning new research papers every day applications, we achieve scale and share ongoing improvements and maintenance practices.

**As fuel cell and electrolyzer technologies mature, what barriers to broader industry adoption do you most often see, and how is FuelCellsEtc. helping to overcome them?**

A basic barrier is unfamiliarity and discomfort with hydrogen gas. Hydrogen gets a bad reputation for flammability, but one stigma we work to dispel is that it's inherently more dangerous than fuels like gasoline. People are comfortable with gasoline because they deal with it daily in their cars.



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