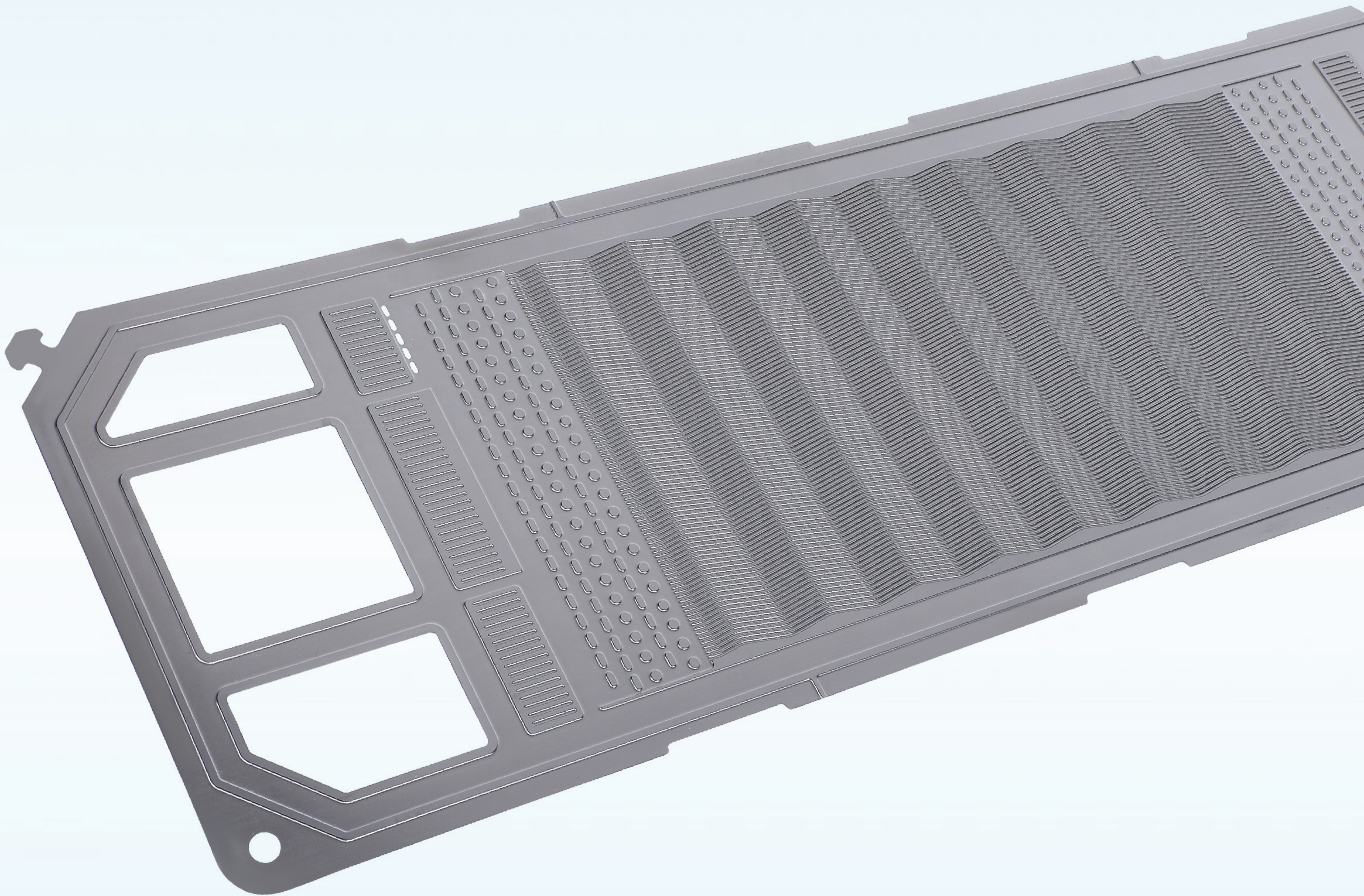


# SydroDIAMOND<sup>®</sup>

Bipolar Plate Coating Solution





## Enabling Energy Transition through Deep Technology

Lifespan, efficiency, and stability are key for fuel cells to meet increasing energy demands, crucial for the success of fuel cell manufacturers. Bipolar Plates are a critical component of hydrogen fuel cells, representing up to 80% of a fuel cell stack's weight and 50% of cost.

Metallic bipolar plates are the technology of choice for the mass production of fuel cells due to its ability to enable a smaller form factor, weight and scalable production techniques.

However, the metallic bipolar plates easily degrade in fuel cells, leading to severe reduction performance over its lifespan.

	Graphite	Metal	Coated Metal
Corrosion Resistance	✓✓	✗	✓✓
Electrical Conductivity	✓	✓	✓✓
Mechanical Strength	✗	✓✓	✓✓
Weight	✗	✓✓	✓✓
Material Thickness	✗	✓✓	✓✓

## Why SydroDIAMOND® ?

Maintains long-lasting cell performance at a high current density enabling smaller cell and stack sizes

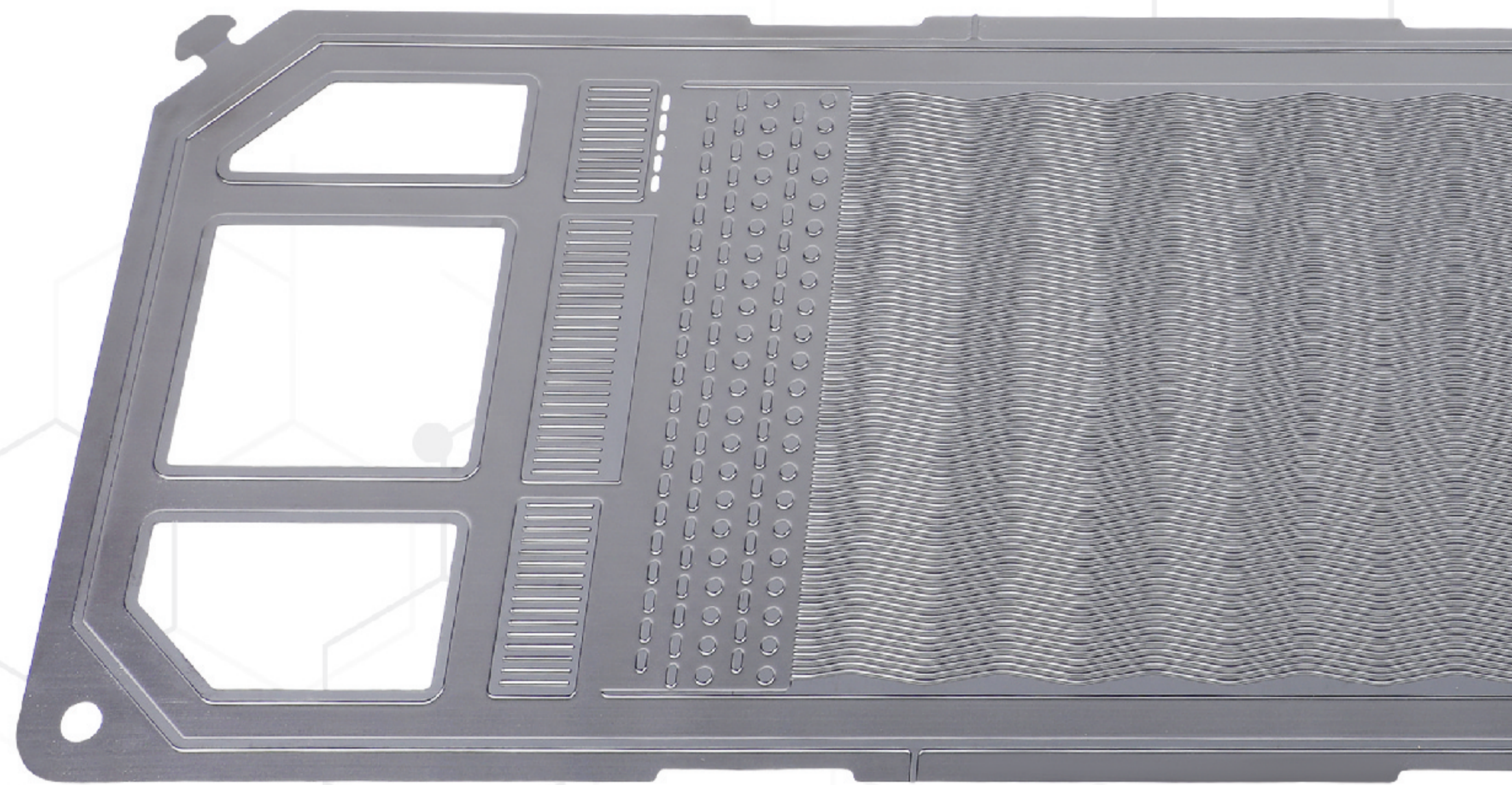
**SydroDIAMOND®**  
ion-leaching test result  
demonstrated to be  
**9 times** better than  
PVD gold benchmark



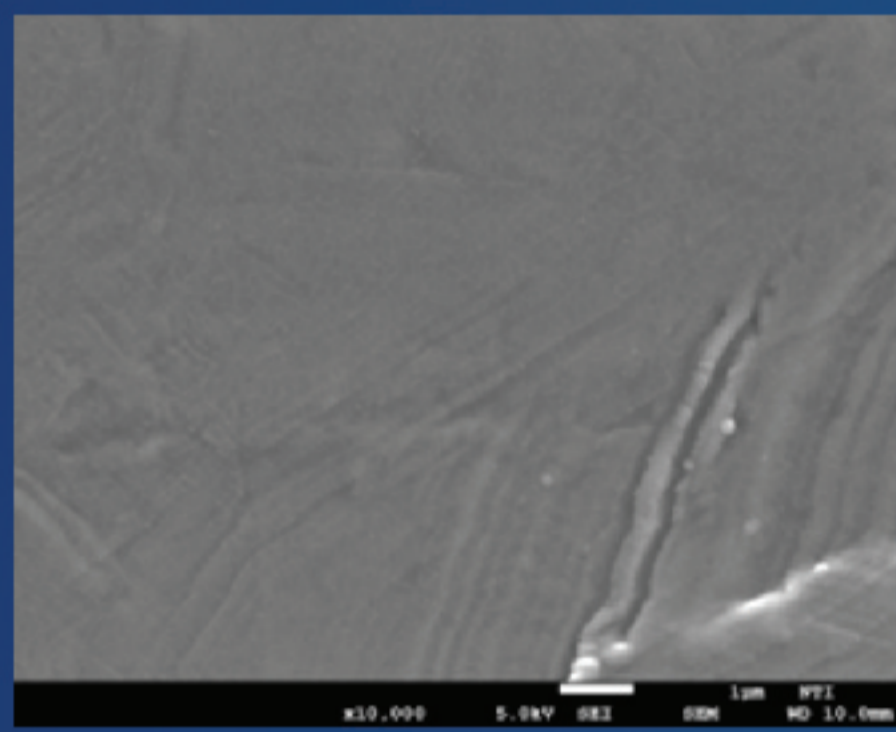
# SydroDIAMOND®: Metallic Bipolar Plate Coatings for PEM Fuel Cells

SydroDIAMOND® is a precious metal-free bipolar plate coating that enhances material conductivity and protects substrate materials from degradation.

SydroDIAMOND® is commercialised and in-production for SUS 316L, SUS 304 and Titanium substrates using our unique Filtered Cathodic Vacuum Arc (FCVA) coating technology.

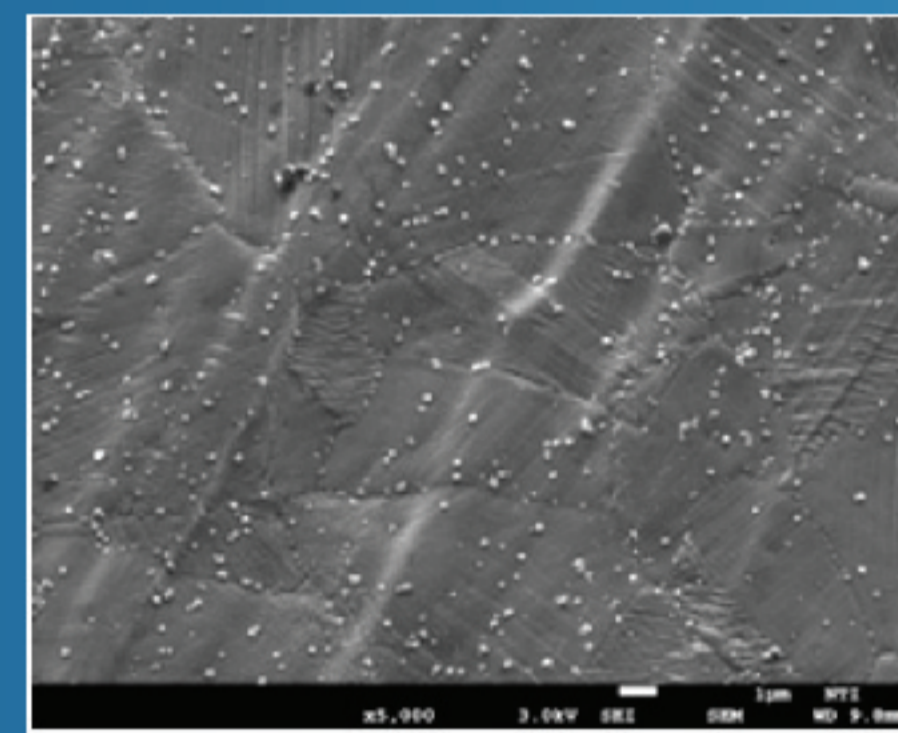


## Market-Leading Wear Resistance



SydroDIAMOND®  
Coating

- Smooth, uniform coatings using FCVA



Alternative Carbon  
Compounds

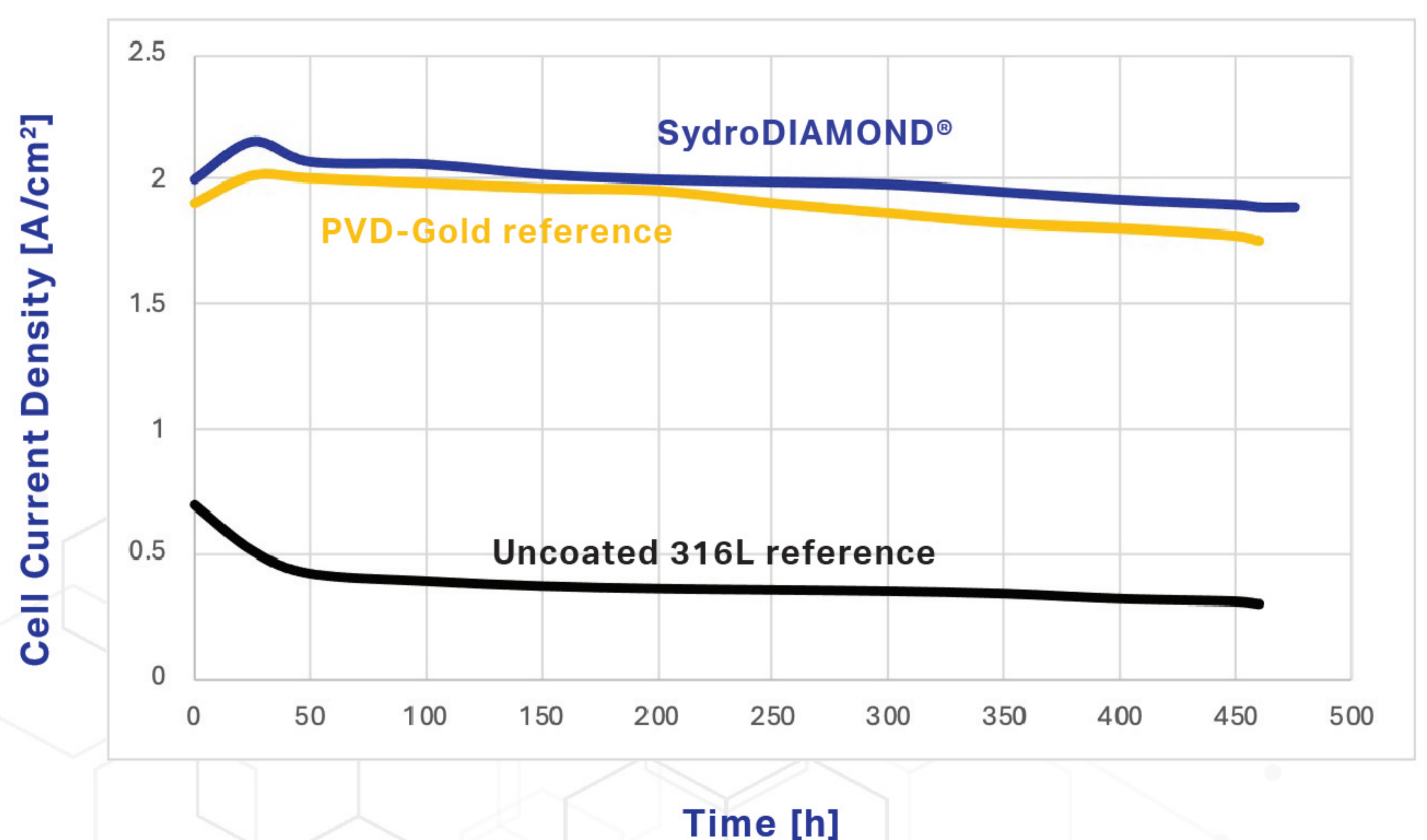
- Rougher coatings susceptible to degradation by conventional PVD

## Verified to Maintain High Fuel Cell Current Density

SydroDIAMOND® has been demonstrated to maintain a high Fuel Cell current density with lower degradation compared to a reference gold material.

These were tested under cyclical Accelerated Stress Test conditions.

The AST was conducted by third-party German research institute Zentrum für BrennstoffzellenTechnik GmbH (ZBT), a leading fuel cell research institute in Duisberg, Germany.





## Benefits

Features	Benefits
Enabling high current density	Reduce cells required and stack size
Increasing BPP lifespan	Avoid fuel cell losses in efficiency & stability over time
Low ion-leaching	Protect Membrane Electrode Assemblies
Enhancing water management	Optimal fuel cell performance
Replacing expensive noble metals	Reduction in cost of coating materials
Customisable to high precision	Tailored to your operating conditions

## Technical Data

Substrate	ICR (mΩ*cm <sup>2</sup> )	Corrosion Current (μA/cm <sup>2</sup> )
DOE 2025 Benchmark	< 10	< 1
SUS316L	≤ 2	I <sub>corr</sub> <0.05 (0.84V vs SHE for 100H) I <sub>corr</sub> <1 (1.6V vs SHE for 20H)
SUS304	< 2	< 0.1
Titanium	< 2	< 0.05

- Test conditions: ICR tested at 0.6MPa, higher voltage test conditions
- Iron Ion-leaching is customizable to below 10ppb
- Water Contact Angle properties are adjustable for optimised water management



# Full Spectrum of Capabilities for a Complete Bipolar Plate Solution

Sydrogen's coating technology is in mass production and integrated with other key manufacturing stages in the production of high-quality Bipolar Plates. We work closely with partners with expertise in Vision AI, bipolar gaskets, and cleaning for the capability to deliver a complete bipolar plate product.







## Contact Us Now!

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