Hydrogen Contango Pte. Ltd.

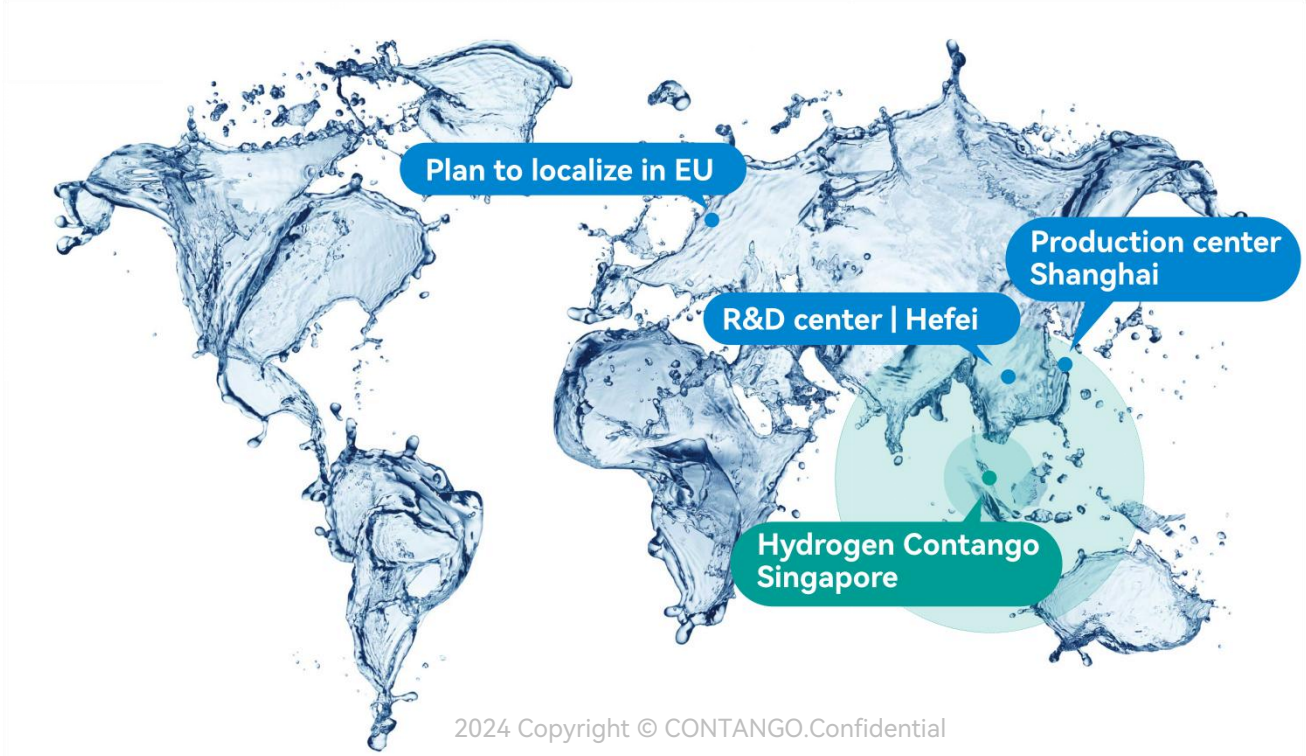
— CCM & Catalyst Supplier

Nov | 2024

Our Company

Hydrogen Contango Pte. Ltd.

As a Singapore-based high-tech company, has an advanced R&D center in Hefei, China and a GW-class manufacturing factory in Shanghai, China. As a part of the Hydrogen Age, we have mastered leading manufacturing technology of catalyst and CCM, through years of research in the field of PEM water electrolysis. Moreover, in recent years, we have also made significant progress in the field of AEM.



Our Company

150+

10500m²

6 teams

68 Patents

Hefei R&D Center

- CCM capacity **6000m²**/year
- **200MW** project support capability

Shanghai Factory

- CCM capacity **40000m²**/year
- **1GW** project support capability

Core Members

Xinlei Wang

CEO

- Studied at the University of Science and Technology of China, pursuing a doctorate degree in energy power
- Rich entrepreneurial experience, responsible for operation management and business development

Jun Liu

CTO

- Ph.D. , Researcher
- Focus on the research and application of high-efficiency electrocatalysts in PEMWE and PEMFC
- Published more than 50 SCI papers; applied for more than 10 invention patents and realized the transformation of 4 achievements

Xian Zhang

Leader of MEA BU

- Ph.D. , Researcher
- Focus on the research and application of electrochemical catalysis
- Responsible for MEA process and research,production line construction
- Published more than 16 SCI papers; applied for more than 3 invention patents

Shouliang Wu

Leader of Catalyst BU

- Postdoc., Researcher
- Focus on the research of preparation and performance of catalyst
- Responsible for catalyst synthesis, characterization, production line construction
- Published more than 6 SCI papers; applied for more than 3 invention patents

Partnership

Prof. Gongming Wang

University of Science and Technology of China

Focus on materials and technologies for water eletrolysis

- 2004-2008: Bachelor, University of Science and Technology of China
- 2008-2013: Ph.D., University of California, Santa Cruz, USA;
- 2013-2016: Postdoctoral fellow, University of California, Los Angeles, USA
- 2016-present: Ph.D. supervisor, School of Chemistry and Materials Science, University of Science and Technology of China
- Research direction: Design and synthesis of functional nanostructured materials and electrochemical catalytic performance research, carry out the precise design of loaded electrolytic water catalytic materials and structural control around the active center, to achieve the mass production of low-cost, high-efficiency electrolytic water catalytic materials.

Prof. Haiwei Liang

University of Science and Technology of China

Focus on materials and technologies for hydrogen

- 2006-2011: Ph.D., University of Science and Technology of China
- 2012-2015:Postdoctoral Fellow, Max Planck Institute for Polymer Research (MPIP), Mainz, Germany
- 2016-present: :Professor, Department of Chemistry, University of Science and Technology of China
- Hefei National Research Center for Physical Sciences at the Microscale
- Over 100 papers have been published in international journals, with a total of more than 16,000 citations and an H-factor of 60.
- Research direction: Design and preparation of focused atomically ordered alloys (intermetallic compounds) fuel cell catalysts, PEMWE anode catalysts

PEMWE Catalysts

High Catalytic Activity, Good Durability

- Uniform size, even distribution
- Kilogram single-batch capacity with high consistency
- Easy to disperse, suitable for spraying or coating

Hydrogen Contango

Ir-based Catalysts(Anode)

	Product	Ir/IrO_2	Ir Black	IrO_2	IrO_2	IrO_2/TiO_2
Parameters	PML	SS-Ir-1001	SS-Ir-2002	SS-IrO_2-3001	SS-IrO_2-3002	SS-IrTi-4001
	Grain size (nm)	3~12	5.8±1.0	2~4	6.5±1.0	2~4
	Iridium content (wt.%)	85.0±2.0	97.0±2.0	84.0±2.0	>85.0	34.5±2.0
CCM Performance	Voltage@1A/cm^2 (V)	1.645	1.660	1.689	1.708	1.670
	Voltage@2A/cm^2 (V)	1.81	1.823	1.861	1.878	1.826
	Decay rate@2A/cm^2 (μV/h)	4.02 (>5000h)	4.64 (>5000h)	4.86 (>5000h)	4.33(>5000h)	4.78(>3000h)
Test conditions: N115, 60°C, 25cm^2, Cathode 0.3mg_{Pt}/cm^2						

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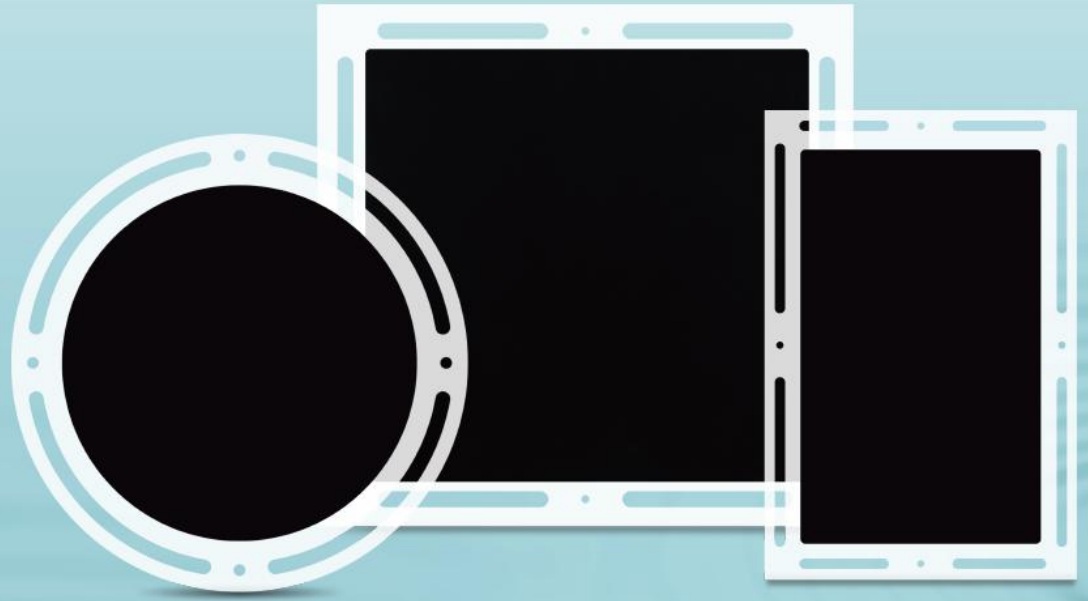
Pt-based Catalysts(Cathode)

Product	40%PtC	75%PtC	Pt Black	Pt Black
PML	SSC-4001	SSC-7501	SSPB-01	SSPB-02
Platinum content (wt.%)	40.0±1.0	75.0±1.0	94.0±2.0	> 97.0
Grain size (nm)	3.2±0.5	3.8±0.3	5.5±1.0	13.0±1.5

PEMWE CCM Customization

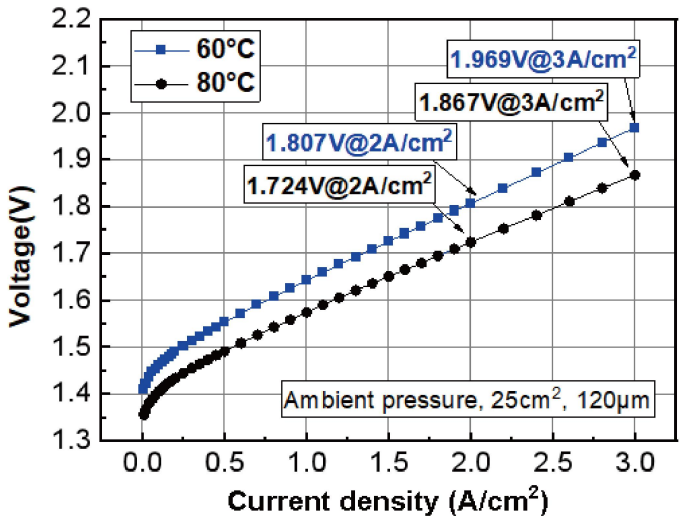


High Performance, High Durability

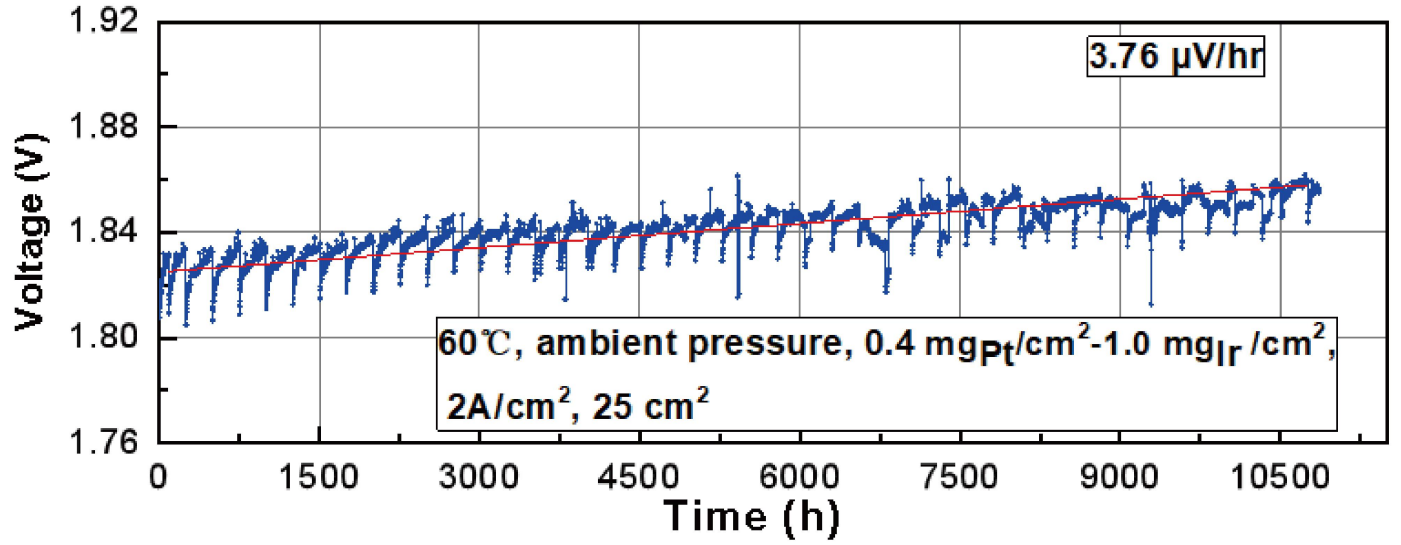
- CCM max width 1m
- Self-developed catalysts to fit different membranes
- High consistency in multiple batches

MEA based on 120μm

Activity Test



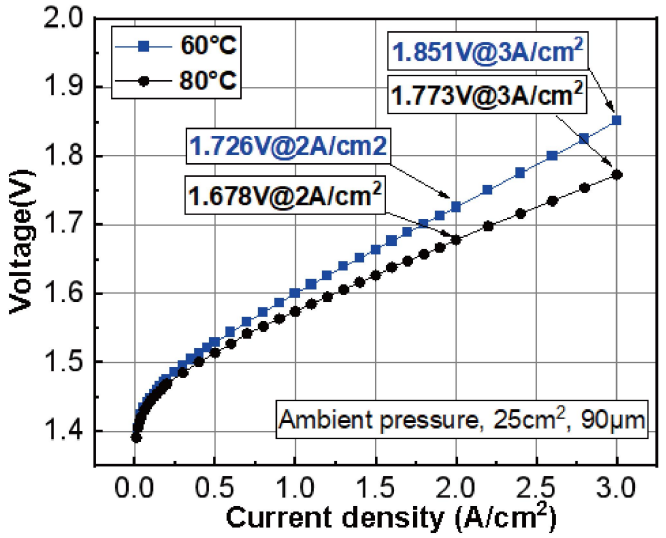
Durability Test



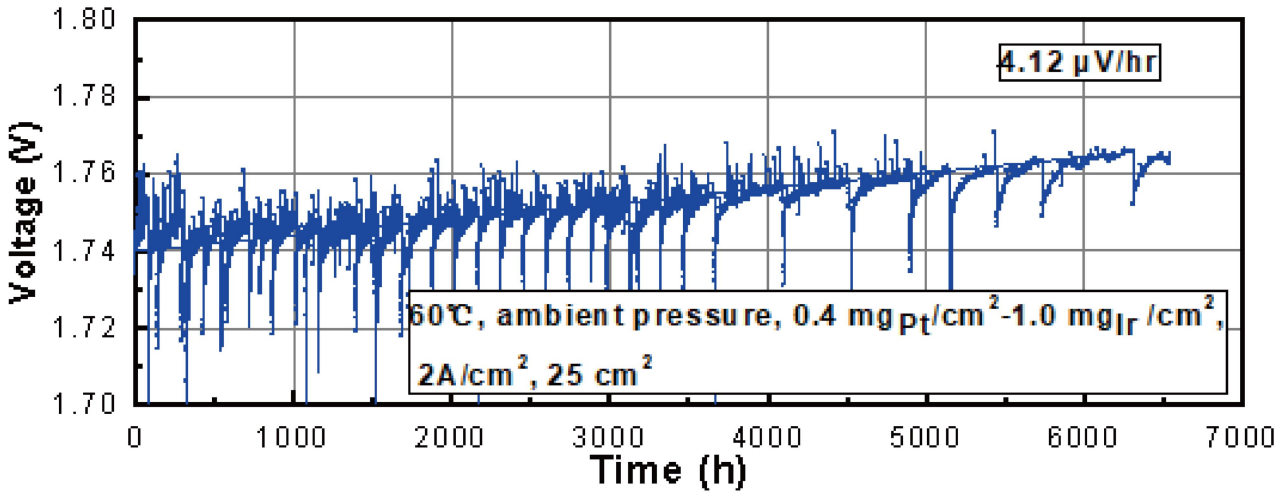
- H_2 in O_2 ≤0.1% @3MPa, 2A/cm²

MEA based on 90μm

Activity Test



Durability Test

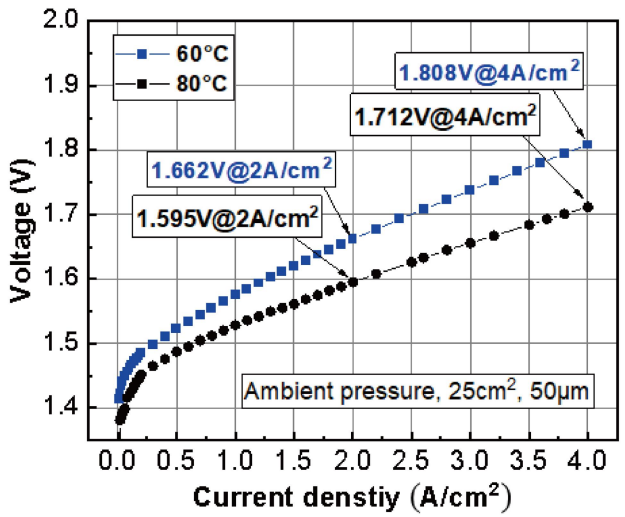


H_2 in O_2 ≤0.2% @3MPa, 2A/cm_2

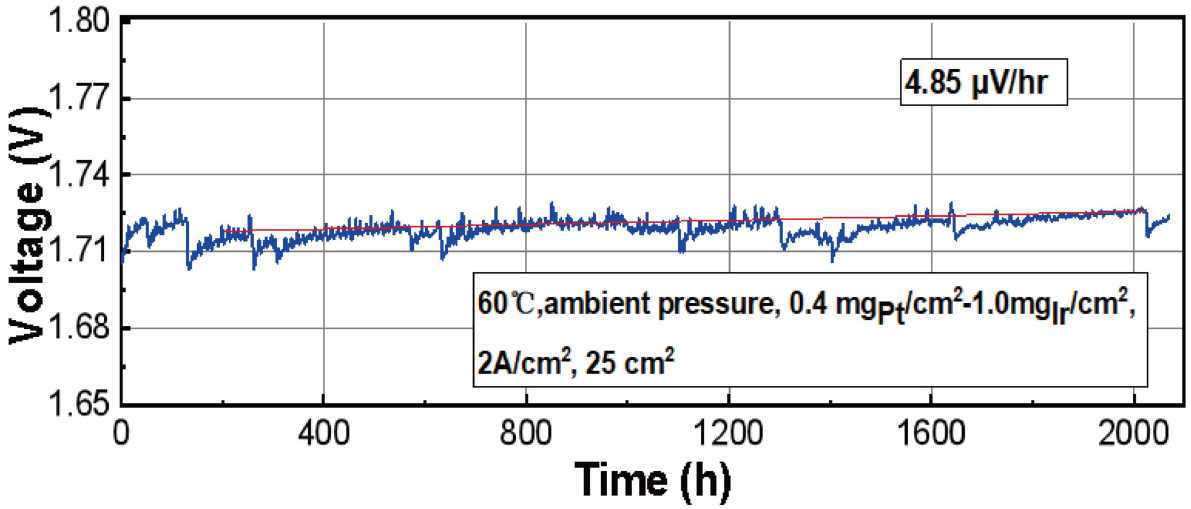
MEA based on 50μm PEM

The 4th Generation Hydrogen Crossover Control Technology (4th HCCT)

- **Activity Test**



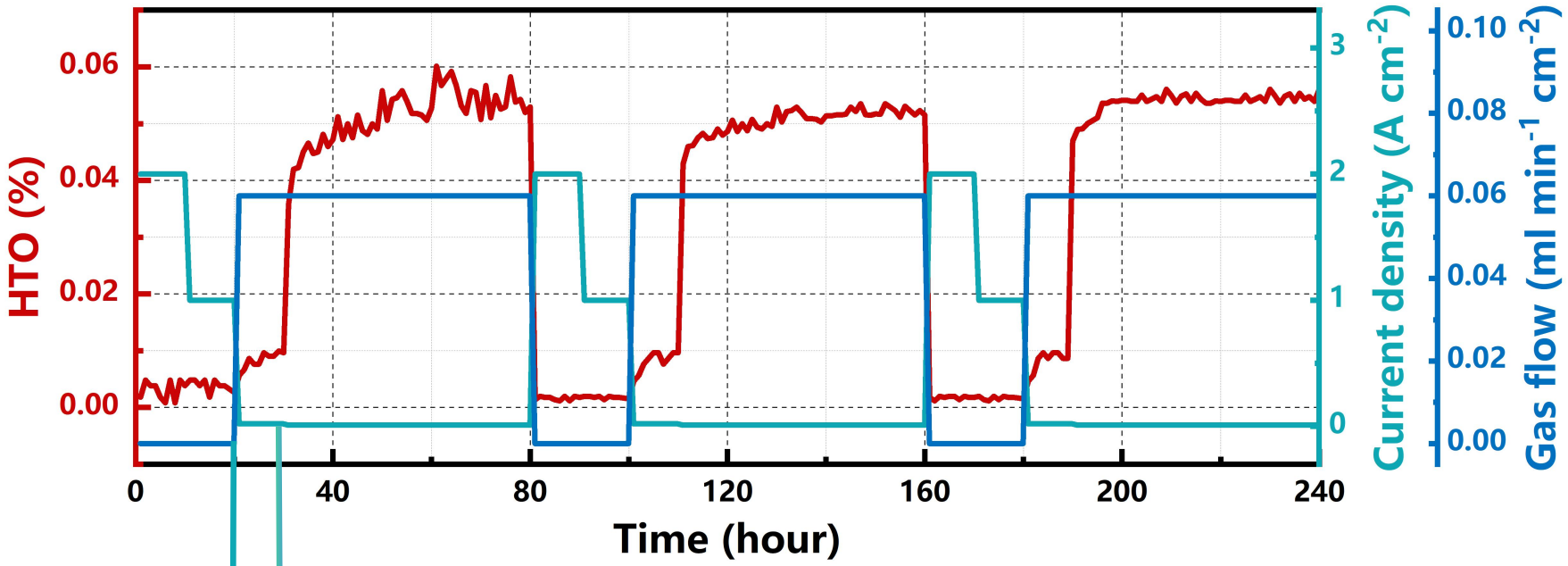
- **Durability Test**



- **H_2 in O_2 ≤0.3% @3MPa, 0.2A/cm²**
- **Hydrogen Generation Efficiency > 97%**

4th HCCT on 120μm PEM

1%-150% Load Operation



Switch to 0.01 A cm^{-2}

Switch to 0.02 A cm^{-2} Simultaneously pass 0.06 mL min^{-1} cm^{-2} of oxygen at Anode

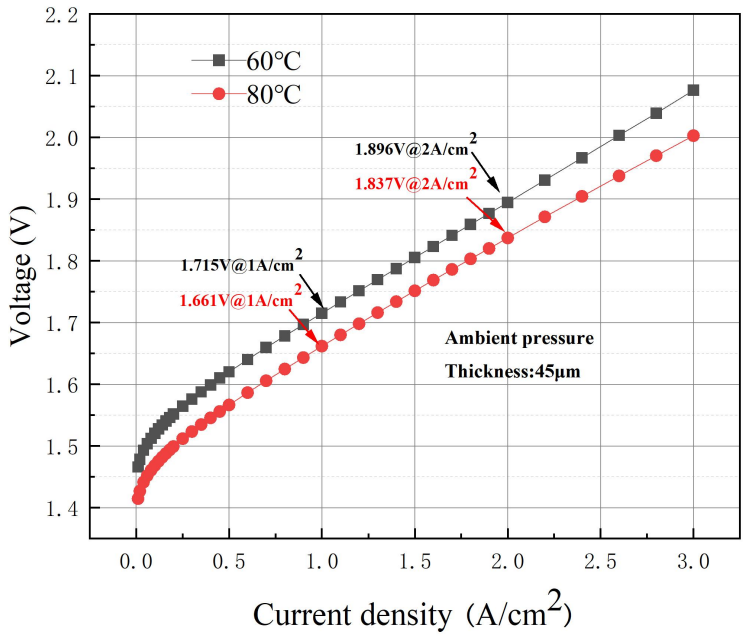
AEMWE CCM Customization

Good Performance, Good Durability

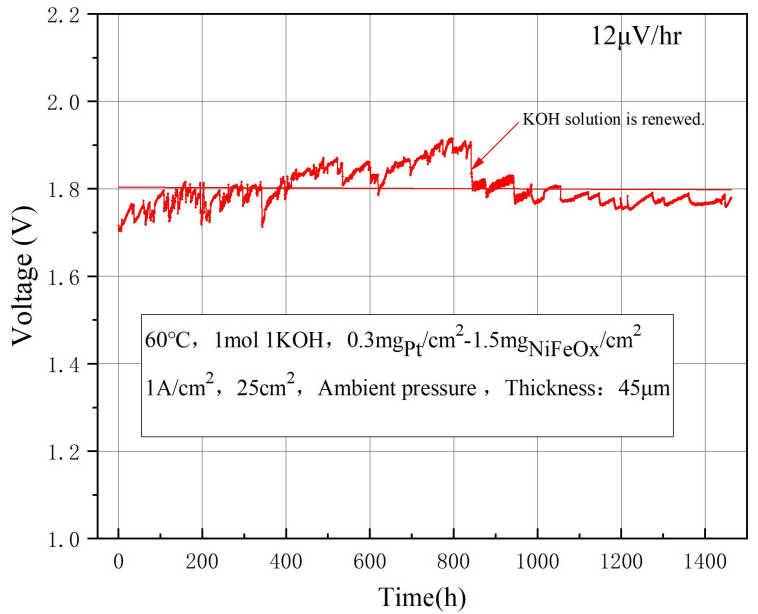
- Mass production capability of non-noble metal catalysts
- Mature manufacturing process for AEMWE CCM
- Independently established comprehensive R&D testing platform

MEA based on 45μm AEM

Activity Test



Durability Test



H_2 in O_2 ≤0.1% @3MPa, 1A/cm²

PEMWE Test Station

Over 100-channels Test Station

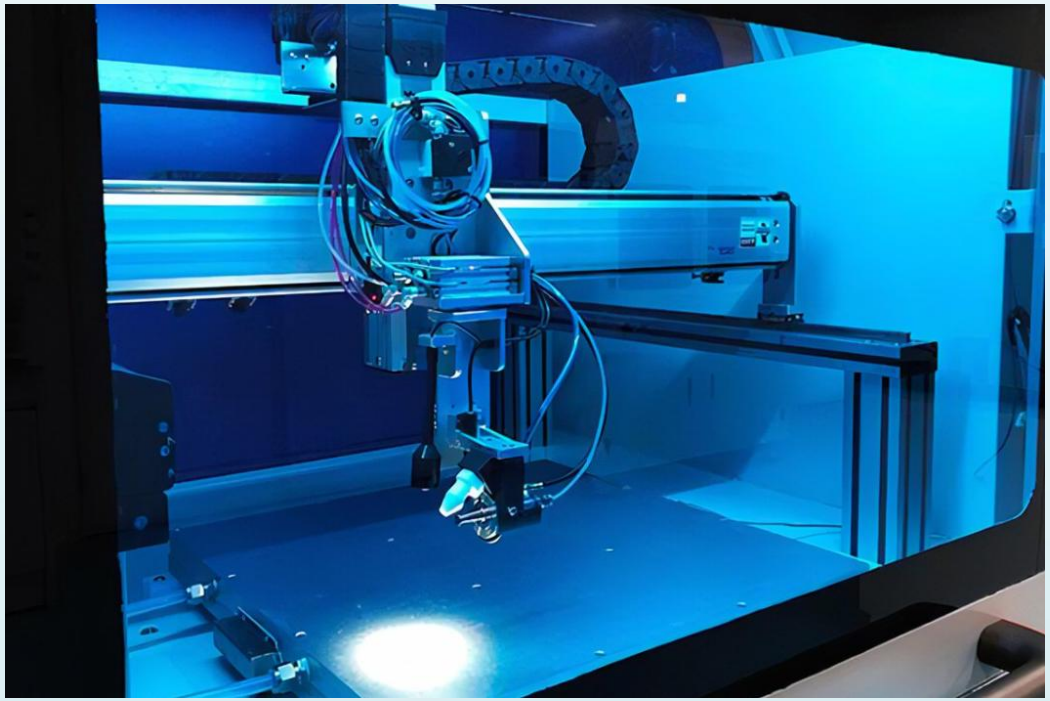
High-pressure Test Station

- Over 100 uninterrupted test channels for durability tests of our MEA products
- High-pressure test station for the research of MEA used in the bias pressure operating condition (H_2 in O_2 or O_2 in H_2 etc.)

CCM Manufactory

Slot Die Coating

Multi-nozzle Spraying



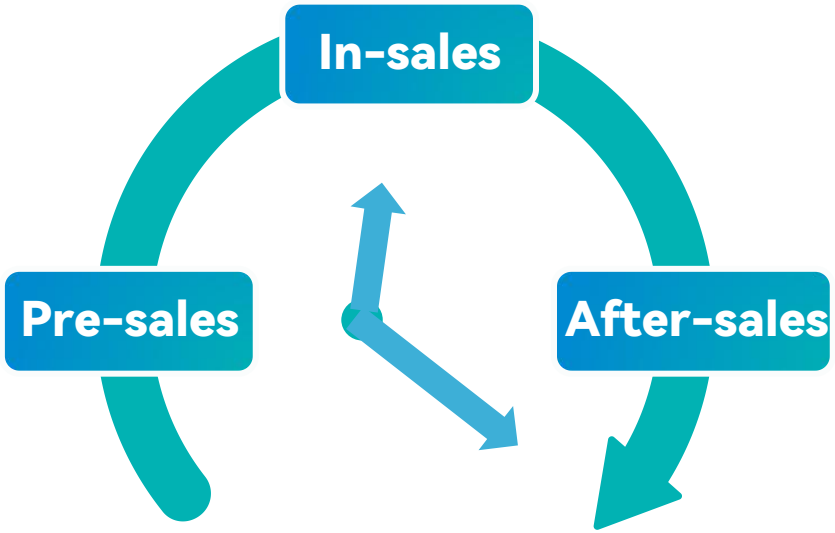
Our Service

Hydrogen Contango

Customized design

Make sure delivery cycle

Usage instructions



Requirements communication

Immediately service response

THANK YOU

Hydrogen Contango Pte. Ltd.

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https://h2contango.com/

Hydrogen Contango PTE LTD

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