

Prototype and evaluation of high-temperature operating electrolysis cells

We support technology development for solid oxide electrolysis cells (SOEC) and fuel cells (SOFC), from cell prototyping to evaluation.

Circumstance

- Toward achieving carbon neutrality, advanced technological development is required to link renewable energy and fuel cells.
- At KRI, we manufacture and evaluate prototype cells using components developed by our customers for electrolysis cells and fuel cells that operate at high temperatures.

Supporting customers in prototyping cells using newly developed materials and cell evaluation tests

Cell Prototype Process

Ink Mixing



- Planetary Rotating Mill
- Vibration Mill
- Ball Mill
- Three-Roll Mill

Coating



- Screen printing machine
- Applicator
- Dip coater

Compression



- Cold isostatic press
Compression pressure: up to 300 MPa
- Hot press

Firing



- Firing furnace (atmosphere furnace)
Gas: Air, N₂, H₂, Ar, H₂O, etc.
Temperature: Up to 1700°C

- We can produce cell prototypes using the wet method, from coin size to B5 size.
- We also support cell prototypes using transfer printing and multilayer co-firing.
- We also support various substrates (electrolyte-supported, anode-supported, metal-supported).
- In addition to electrode prototypes, please consult us about current collecting layers and coating layers.

Cell Evaluation

- We create test fixtures for prototype cells or cells developed by our customers, and flexibly customize our testing equipment to meet your specific requirements.

- Evaluation of single cells to short stacks
- Electrochemical measurements using the three-electrode (five-terminal) method
- Testing using special gases (CO, H₂S, NH₃, etc.)
- Supply of high-dew-point water vapor (100% H₂O is also possible)
- Durability testing
- Off-gas composition analysis

- In addition to electrolysis/fuel cells, we also handle various sensors.

Output example

