

PEM/AEM water electrolysis cell development initiative

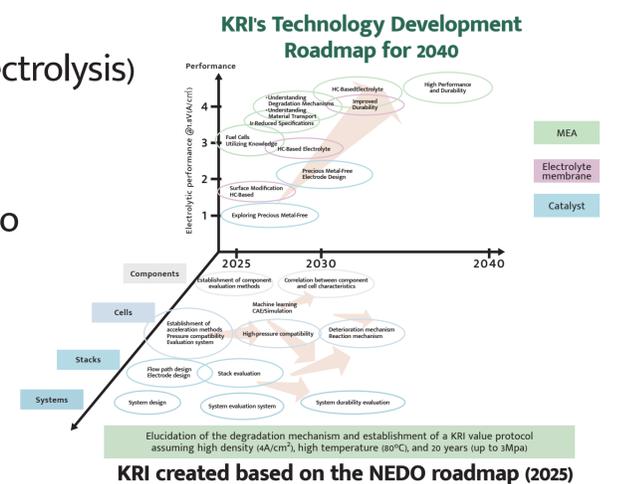
Development of water electrolysis technology aimed at high performance and durability

We have established a development system that can handle everything from electrode development and component evaluation to durability testing.

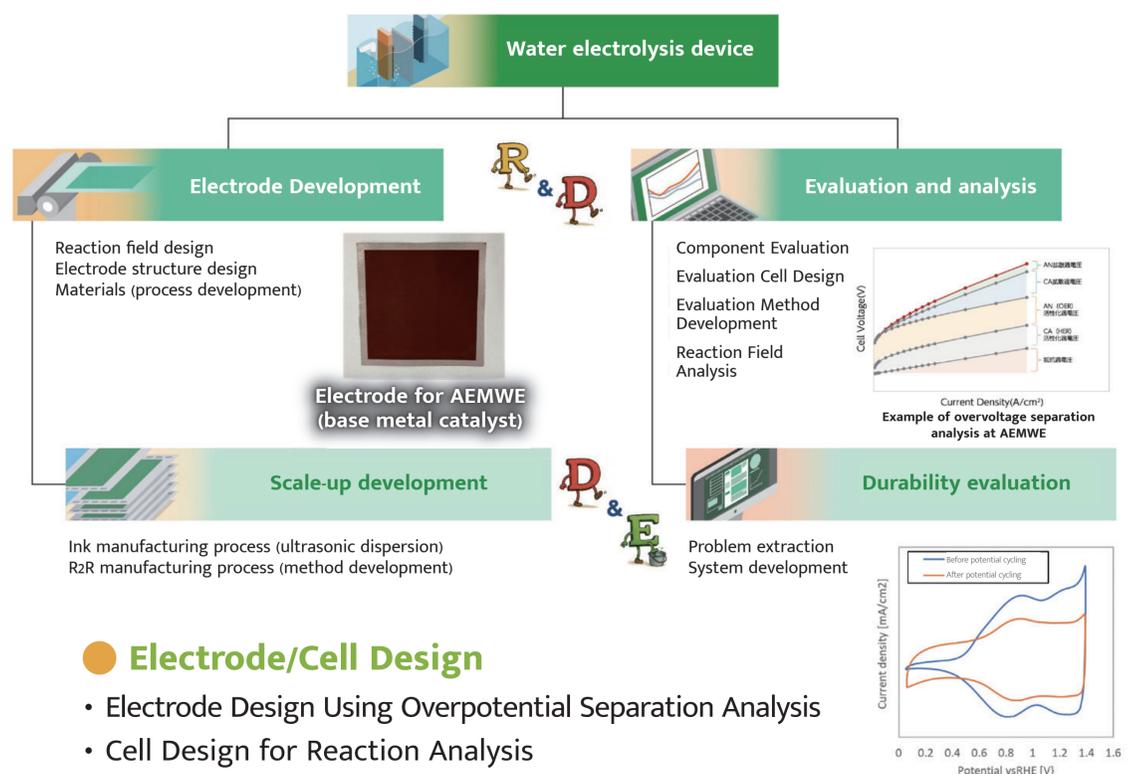
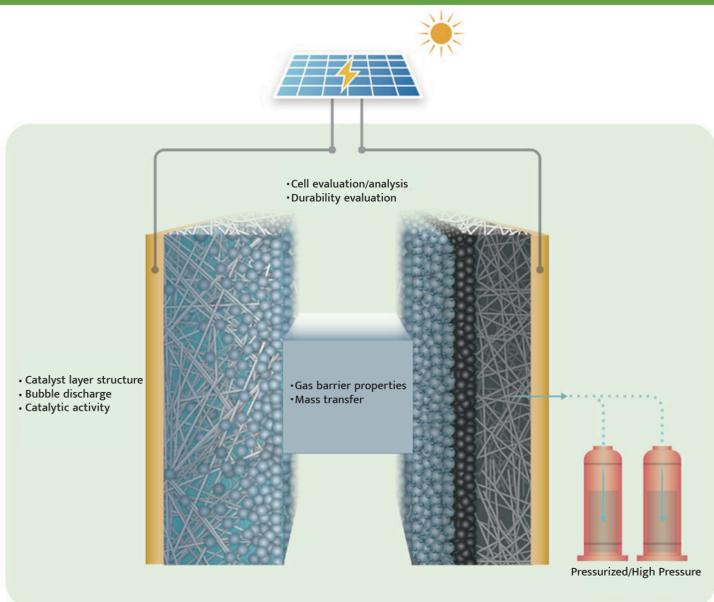
Circumstance/technical issues

As we move towards the realization of a hydrogen society (increasing demand) by 2040, water electrolysis equipment is expected to become more widely used as a hydrogen production technology.

- In low-temperature electrolysis, AEMWE (anion exchange membrane water electrolysis) has been attracting attention in recent years as a potential technology that combines the advantages of AWE and PEMWE.
- In PEMWE, Ir, the anode catalyst, is a rare precious metal, and there is a need to develop technologies that reduce or eliminate Ir usage.
- In AEMWE, reducing the alkaline concentration leads to reduced costs and reduced short circuits, so there is a need to develop technologies that can supply only pure water from alkaline electrolyte.



KRI's Water Electrolysis Development Initiative~Leveraging Fuel Cell R&D Knowledge~



● Electrode Prototyping/Development

- PEM Type : Electrode Development for Low Ir
- AEM Type : Electrode Development Using Base Metal Catalysts

● Component Evaluation

- Catalyst Evaluation Using Half Cells
- Evaluation and Analysis of Each Component (Proposal of Evaluation Methods Tailored to the Issue)

● Electrode/Cell Design

- Electrode Design Using Overpotential Separation Analysis
- Cell Design for Reaction Analysis

● Cell Evaluation

- Evaluation and Analysis of PEM-Type Water Electrolysis under Pressurized Conditions
- Durability Testing of PEM/AEM-Type Water Electrolysis

By utilizing component evaluation technology, we contribute to speeding up development by narrowing down factors through screening, searching for electrode structures that maximize performance, and analyzing evaluation results.