



Aqualyzer™

Large-scale alkaline water electrolyzer system
for hydrogen production

Asahi**KASEI**

Our History of Electrolyzer



Commercialization

2025

Development and Demonstration of a Large-Scale Multi-Module Electrolyzer System with Global Partners^{*1 *2}

Starting demonstration alkaline water electrolyzer system with 4 modules plant in Asahi Kasei's Kawasaki Works.



2024

Acquiring Operational Experience with Large-Scale Water Electrolyzer System^{*1 *3}

Construction and operation of a 10MW-Class hydrogen production facility using renewable energy at the Fukushima Hydrogen Energy Research Field (FH2R).



FUKUSHIMA
HYDROGEN
ENERGY
RESEARCH
FIELD

2020

Demonstration of Hydrogen Electrolyzer with European Partners in Germany

Participating in the European joint project 'ALIGN-CCUS' and executed operation of a medium-sized electrolyzer.



2010

Initiating the Development of an Alkaline Water Electrolysis

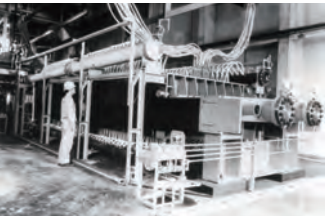
Starting development of a new water Electrolyzer system based on chlor-alkali electrolysis technology.



1975

Commercialization of an Ion-Exchange Membrane-Based Chlor-Alkali Electrolysis System

World's only provider of both in-house electrolysis systems and ion-exchange membranes. With nearly 50 years in the industry, the systems have been implemented in 167 plants across 30 countries.



1923

Commencement of Water Electrolysis

Industrial production of the Haber-Bosch ammonia synthesis method and hydrogen production via water electrolysis using hydropower as a feedstock have begun in Miyazaki.



Gokasegawa Hydroelectric Power Plant



Water electrolysis plant

^{*1} Supported by New Energy and Industrial Technology Development Organization (NEDO).
^{*2} NEDO: Green Innovation Fund / Hydrogen Production through Water Electrolysis Using Power from Renewables / Technology development for increasing the size of water electrolyzers, and Power-to-X large-scale demonstrations / Large-scale Alkaline Water Electrolysis System Development and Green Chemical Plant Demonstration.
^{*3} NEDO: Development of Technologies for Realizing a Hydrogen Society / Development of Hydrogen Energy Utilization Systems / Technical development concerning business model construction and large-scale proof of a hydrogen system for energy reuse.

Our Hydrogen Electrolyzer System

Innovating Through R&D, Reliable Solutions, Scaling Technology



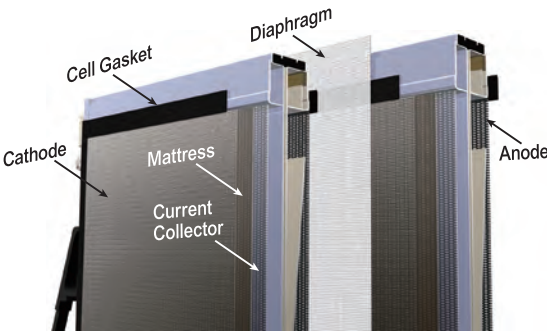
Cell



10MW Module

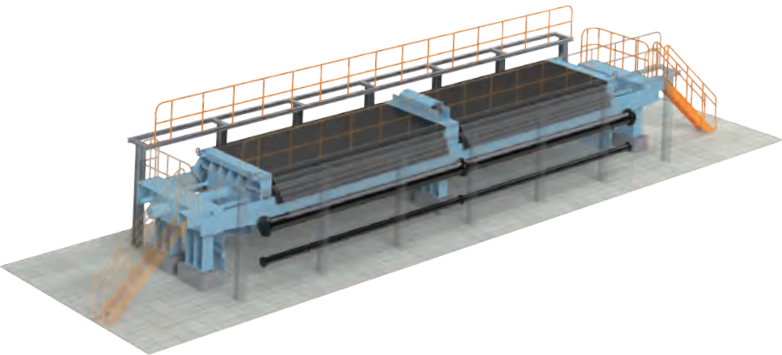


100MW Multi Module System



Cell design and performance improvement

- ▶ Improved cell cost performance
- ▶ Improved internal circulation and uniformity
- ▶ Optimized with diaphragms, electrodes, and gas/liquid separation

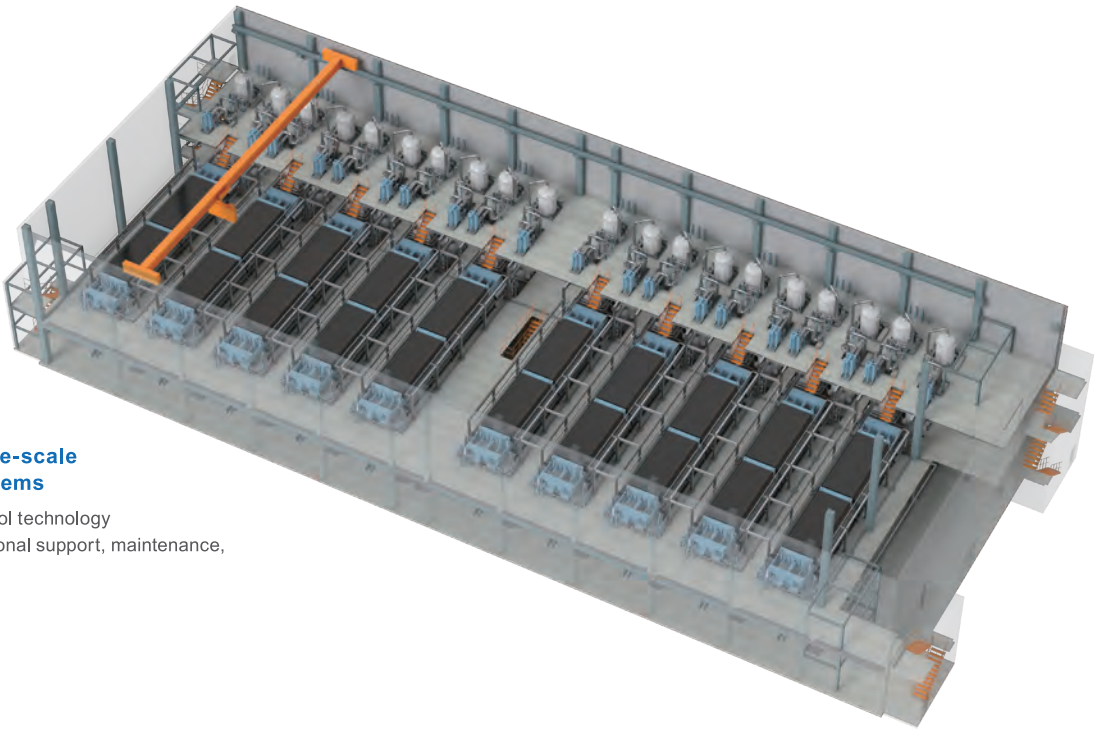


Downtime reduction

- ▶ Easy replacement of diaphragms, electrodes and gaskets
- ▶ Automatic sequence

Enhanced safety

- ▶ Automatic lock adjustment
- ▶ Predictive maintenance
- ▶ Performance monitoring and optimized operation control



Provision of large-scale electrolyzer systems

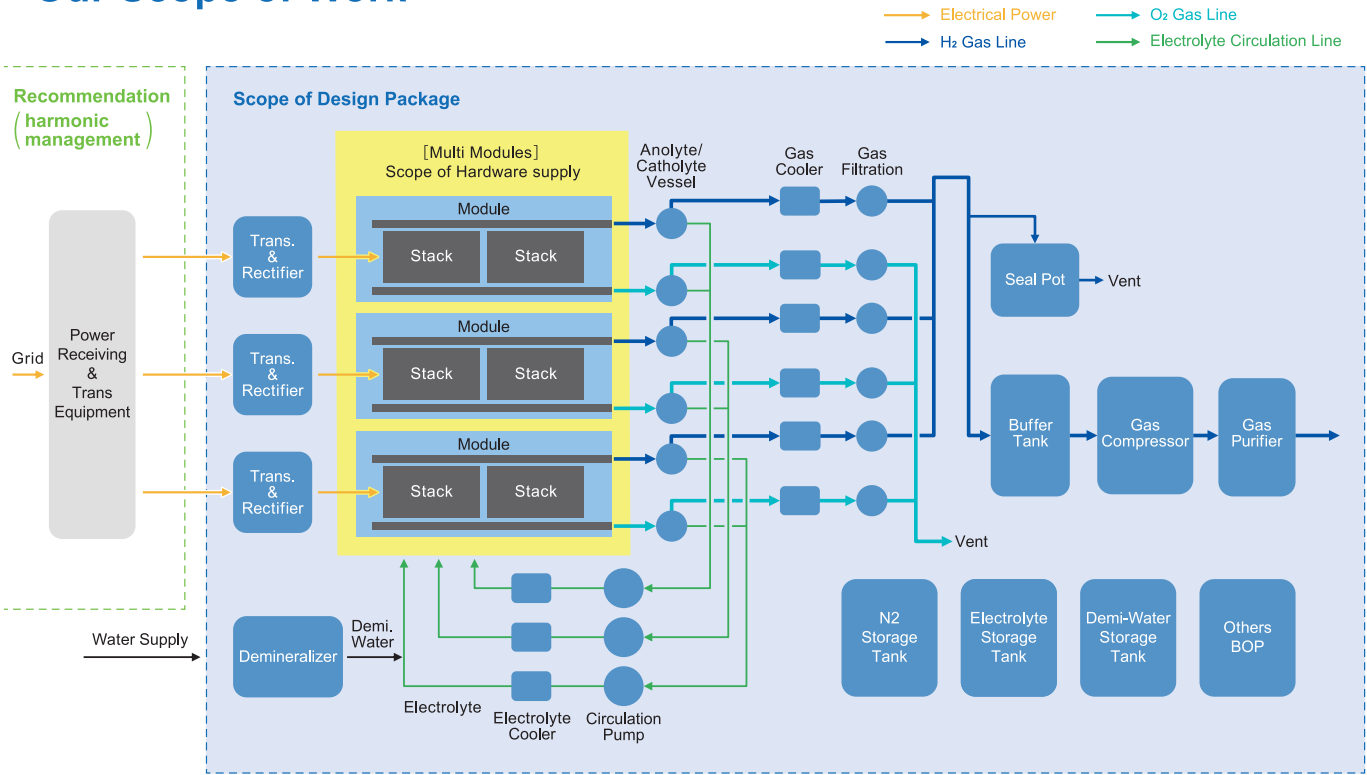
- ▶ Multi-module control technology
- ▶ Long-term operational support, maintenance, and spare parts

Specifications of 100MW Alkaline Water Electrolyzer System

H ₂ production rate	20,000Nm ³ /h
Number of modules	10
H ₂ production ratio	15-100%
Power consumption	4.4 kWh/Nm ³ (DC)
H ₂ pressure (stack discharge)	0.5barG
Deionized water consumption	0.9L/Nm ³
H ₂ purity (with purification)	up to 99.999%

Note : all figures above are to be understood as "expected values" and may vary depending on operating conditions

Our Scope of Work



Asahi Kasei's Electrolyzer Business

● = Number of Plants Using Our Electrolyzer for Chlor-Alkali



Alkaline Water Electrolyzer Aqualyzer™



Asahi Kasei Europe
Düsseldorf, Germany

Asahi Kasei America
Novi, USA

10MW class Water Electrolyzer
at FH2R,
Fukushima, Japan

Headquarters
Tokyo, Japan

Multi-module Water Electrolyzer
Pilot plant at Kawasaki Works,
Kanagawa, Japan



Chlor-Alkali Electrolyzer Acilyzer™



>45 years experience
supplying high reliability electrolyzer
systems



Membrane supply
Aciplex™-F membranes are also
supplied to major Chlor-Alkali
customers



Maintenance facilities
close to customers on each continent
to transfer maintenance know-how



>1GW of electrolyzer
manufacturing capacity in Japan, with
additional expansion planned for AWE,
is set to increase to multiple GWs



Worldwide
installations at 167
end user plants



Asahi Kasei Corporation Green Solution Project

1-1-2 Yurakucho, Chiyoda-ku, Tokyo, 100-0006, Japan
green-solution-ml@aml.asahi-kasei.co.jp



Asahi Kasei Europe GmbH

Fringsstraße 17, 40221 Düsseldorf, Germany
Tel.: +49 (0) 211 33 99 2000

