



WATER ELECTROLYZER PRODUCT SPECIFICATION

Hydrogen Optimized’s patented **RuggedCell™** unipolar alkaline water electrolyzers are designed for the lowest levelized cost of clean hydrogen at large scale. Building on the proven Stuart technology platform, the system’s attributes include **dynamic power response**, **20-year lifespan** with minimal efficiency loss, **low-cost on-site maintenance**, and **no Iridium and PFAS “forever chemicals”**.

Specifications	RuggedCell™ Module
Production Rate	950 kg/hr
Output Pressure	0.2 +/- 0.1 barg
Hydrogen Purity	99.9 +/- 0.05% dry basis
Cell Efficiency (DC)	42 - 51 kWh/kg*
Operating Range	0-100%
Rectifier Efficiency at Peak Operating Range	98.5%
Ramp Rate 0 – 100% (Hot)	≤10 seconds
Ramp Rate 0 – 100% (Cold)	≤ 1 minute
Operating Temperature	70-75°C
Cooling Duty	10 kWh/kg H ₂
Electrolyzer Power Consumption Degradation	5 - 7% over 20 years
Feedwater Consumption	< 10 L/ kg H ₂
Feedwater Purity	<2 μS/cm
Electrolyte	30% Potassium Hydroxide

* System specific consumption considers beginning of life and operation across the entire load range of 0% to 100%

KEY FEATURES & BENEFITS

DESIGNED FOR THE LOWEST LEVELIZED COST OF CLEAN HYDROGEN AT LARGE-SCALE

FLEXIBLE AND SIMPLE SOLUTION:

- Size flexibility to match end-use requirements – choice of 12.5 MW and 50 MW standard single modules, or customize to any size in-between
- Adaptable to wide variations in electrical power inputs from intermittent renewable sources – ensures flexible integration with renewables and high purity over full operating range
- Flexible efficiency– system efficiency can be customized to capital spending requirements

DURABILITY:

- Low efficiency degradation
- Durable and reliable components ensure maximum up-time
- Low-cost onsite maintenance – modular design enables fast replacement of key components

SCALABLE & COST-EFFECTIVE:

- All balance of plant components included in system
- Lowest electrification cost in the industry
- Supply chain reliability through use of commonly available materials (e.g. steel, nickel), a precious metal-free design and in-house manufacturing of key components