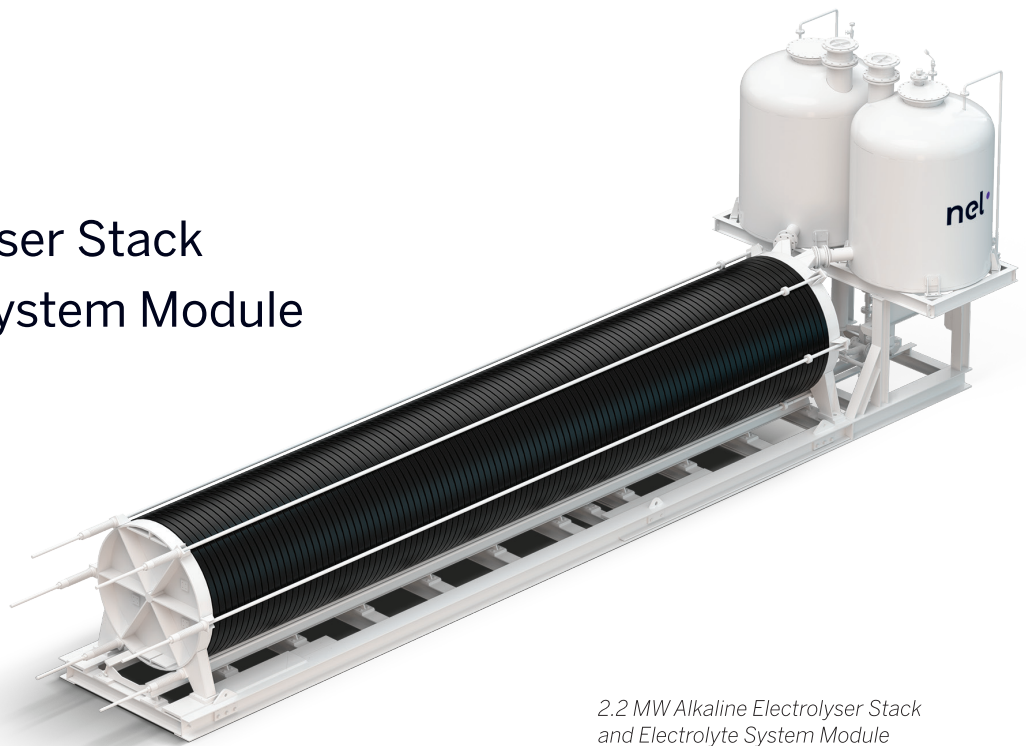




A485 Series

Alkaline Electrolyser Stack and Electrolyte System Module



2.2 MW Alkaline Electrolyser Stack and Electrolyte System Module

The A485 is an atmospheric bi-polar alkaline electrolyser cell stack coupled to a matching electrolyte system. The stack consists of 230 cells assembled on a self-supporting rigid steel frame. As DC voltage is applied between the first and last electrodes, current flows through the cells, splitting water molecules to generate hydrogen and oxygen gas.

Each cell is composed of an anode and a cathode, separated by a woven non-asbestos diaphragm which is integrated in a synthetic rubber frame. The gas from each cell is collected in the hydrogen and oxygen flow ducts which feed the gas into the electrolyte system.

The electrolyte system consists of two gas separators, water seals, a lye circulation unit and a support frame. The main functions are to separate the gases (H₂ and O₂) from the lye coming from the cell stack and to cool and circulate the lye back to the stack. The electrolyte system is designed to serve a single atmospheric alkaline electrolyser cell stack. For large-scale plants the number of A485 stacks and electrolyte system modules are simply multiplied to obtain the required H₂ production volume.

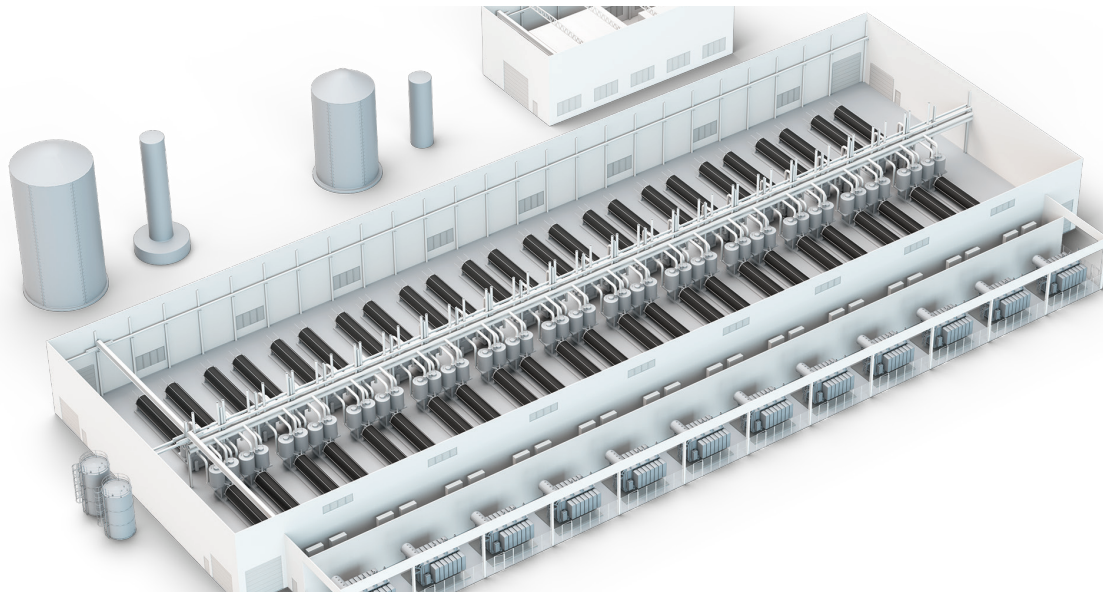
MODEL	A485
Class	2.2 MW
Description	MW-class Alkaline Stack Module for on-site hydrogen generation utilizing a modular design for ease of installation and integration with the balance of plant
Electrolyte	25% KOH solution
HYDROGEN PRODUCTION	
Maximum Production Rate Nm ³ /h (m ³ /h@ 0° C, 1 bar) kg/24 h	485 Nm ³ /h (+0/-3%) 1,046 kg/24 h (+0/-3%)
Operating Pressure	0.03 barg (0.435 psig)
Power Consumption at Stack per Unit of H ₂ Gas Produced at 100% Capacity ¹	4.5 kWh/Nm ³ (±0.1) 50 kWh/kg (±1.1)
Purity (concentration of impurities)	99%+ [saturated gas with liquid water, O ₂ < 1 %]
Ramp Rate (% of full-range)	> 10% per minute
Turndown Range	15 to 100%

DI WATER REQUIREMENTS		
Consumption, electroysis	0.9 l/Nm ³ of H ₂ (0.24 gal/Nm ³ of H ₂) 10 l/kg of H ₂ (2.64 gal/kg of H ₂)	
Pressure	2 to 16 barg (29 to 232 psig)	
Input Water Quality	Deionized Water, < 1 µS/cm	
ELECTRICAL SPECIFICATIONS		
Electrical Requirements	DC (Cell Stack) ¹	355 to 414 VDC; 775 to 5,150 A Detailed DC power specifications to be provided separately
	Electrolyte System	400 VAC, three phase plus neutral and protective earth, 50 Hz or 480 VAC, three phase and protective earth, 60 Hz
PHYSICAL CHARACTERISTICS		
Dimensions W x D x H	14.1 m x 4.3 m x 4.3 m (46.3 ft x 14.1 ft x 14.1 ft)	
Weight, Operational	71,440 kg (157,498 lbs)	
ENVIRONMENTAL CONSIDERATIONS – DO NOT FREEZE		
Standard Siting Location	Indoor, pad mounted or concrete pier mounted	
Ambient Temperature	5 to 45°C (41 to 113°F)	
Altitude Range ²	Sea Level to 1,000 m (3,281 ft)	

Utility Requirements

Nel provides specifications for utility requirements, but it is the responsibility of the buyer to design for and provide them. With Nel's standard scope, the following utilities shall be provided by the buyer:

- Deionized water
- Nitrogen for occasional purging
- AC power for the electrolyte system
- Input power switchgear (MV & LV)
- DC power for the stack
- Process cooling



100 MW Alkaline electrolysis plant featuring A485 Series Electrolyser Stacks and Electrolyte System Modules.



Specifications are subject to change. Please contact Nel Hydrogen for solutions to best fit your needs.

¹ Beginning of life and dependent on configuration and operating conditions.

² Consult Nel Hydrogen Applications Engineering Department for installations above 1,000 m (3,281 ft).