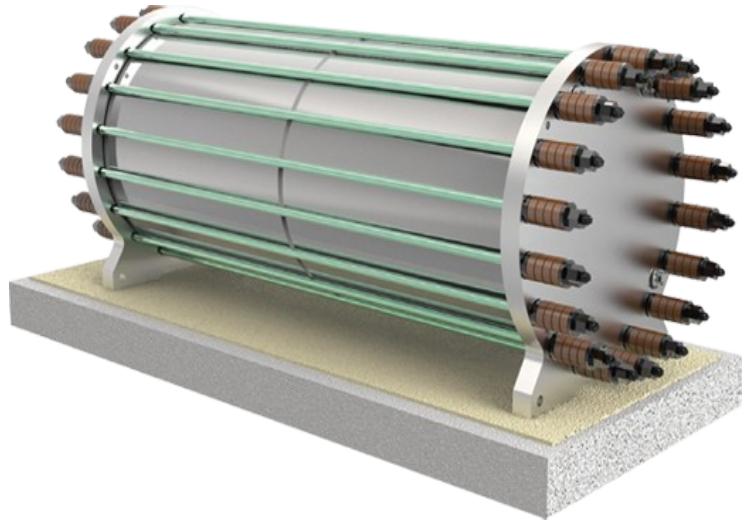


# HYDROGEN GENERATORS



The electrolysis stack operates at the pressure of 1.6 or 3.2 MPa. The alkaline electrolysis stack is featured by large hydrogen production volume, high hydrogen purity, long service life, reliable operation and low requirements for operation and maintenance.



## ALKALINE ELECTROLYZER RANGE

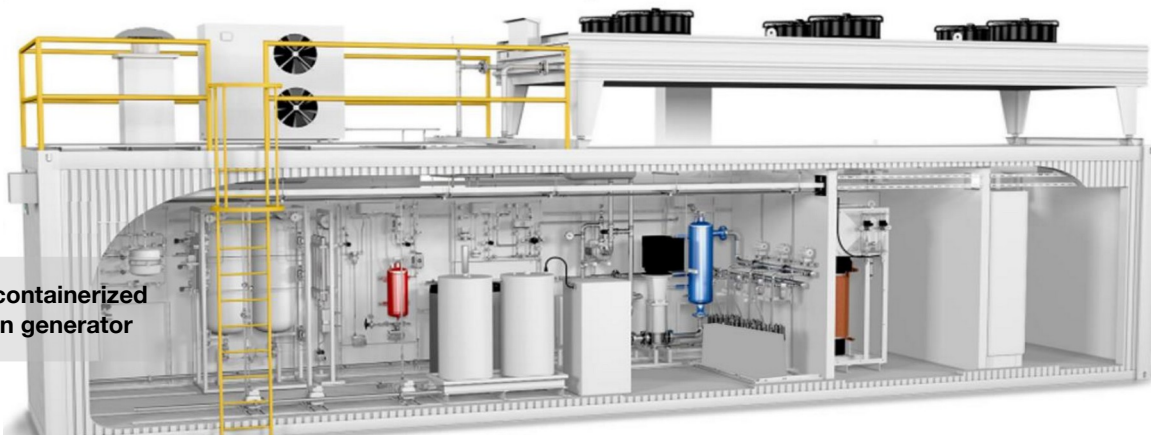
TECHNICAL DESCRIPTION	Unit	CGA200	CGA500	CGA1000	CGA2000
Hydrogen production	Nm <sup>3</sup> /h	200	500	1000	2000
Operation pressure	MPa	1.6(3.2)	1.6	1.6	
Operating temperature	°C	85~92	85~92	85~92	
Rated current	A(DC)	3500	7000	14000	
DC Power consumption (BOL)	KWh/(Nm <sup>3</sup> H <sub>2</sub> )	4.0~4.3	4.1-4.4	4.1-4.4	
DI Water consumption	L/h	≤180	≤450	≤900	
KOH electrolyte concentrations	wt%	30	30	30	
Structural type of electrolyzer	-	Bipolar press filter	Bipolar press filter	Bipolar press filter	
Polar plate	-	Carbon steel nickel plating	Carbon steel nickel plating	Carbon steel nickel plating	
Anode/cathode material	-	nickel	nickel	nickel	
Diaphragm material	-	PPS (asbestos free)	PPS (asbestos free)	PPS (asbestos free)	
Electrolyzer weight	KG	14700	35200	50000	
Dimensions of electrolyzer	mm	3200*1649*1639	4200*2440*2555	6900*2440*2355	

DEVELOPMENT UNDER R+D

## PEM ELECTROLYZER RANGE

TECHNICAL DESCRIPTION	CG004	CG020	CG050	CG200	CG500
Hydrogen Flow Rate H <sub>2</sub>	3.72 Nm <sup>3</sup> /h	19.4 Nm <sup>3</sup> /h	47 Nm <sup>3</sup> /h	200 Nm <sup>3</sup> /h	500 Nm <sup>3</sup> /h
H <sub>2</sub> Nominal production	8 Kg/day	42 Kg/day	100 Kg/day	430 Kg/day	1,100 Kg/day
Oxygen Flow Rate O <sub>2</sub>	1.86 Nm <sup>3</sup> /h	9.7 Nm <sup>3</sup> /h	23.5 Nm <sup>3</sup> /h	100 Nm <sup>3</sup> /h	250 Nm <sup>3</sup> /h
H <sub>2</sub> Output pressure	4.0 Mpag	4.0 Mpag	3.0 Mpag	3.0 Mpag	3.0 Mpag
Specific Power consumption	≤ 5.0 Kwh /Nm <sup>3</sup>	≤ 5.0 Kwh /Nm <sup>3</sup>	≤ 4.85 Kwh / Nm <sup>3</sup>	≤ 4.85KWh / Nm <sup>3</sup>	≤ 4.85KWh / Nm <sup>3</sup>
H <sub>2</sub> Purity (After Purification)	≥ 99.999%	≥ 99.999%	≥ 99.999%	≥ 99.999%	≥ 99.999%
O <sub>2</sub> Output Purity	≥ 99%	≥ 99%	≥ 99%	≥ 99%	≥ 99%
H <sub>2</sub> Output Purity	≥ 99.8%	≥ 99.8%	≥ 99.8%	≥ 99.8%	≥ 99.8%
Idle to Full Load / Cold startup	5-10 Min	5-10 Min	5-10 Min	5-10 Min	5-10 Min

Modular containerized hydrogen generator

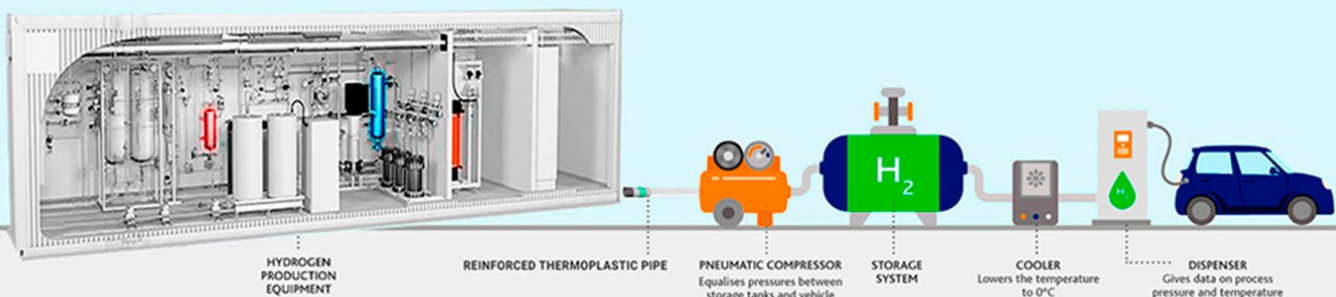
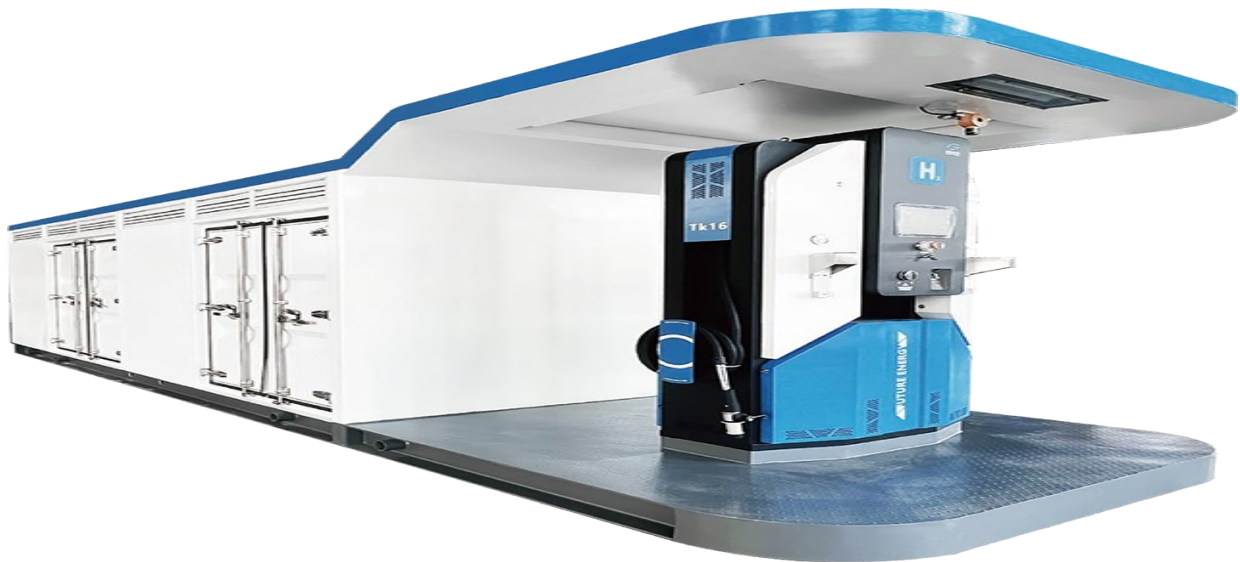


# HYDROGEN REFUELLING STATIONS



SIEBC provides scenario-based analysis service for various hydrogen refuelling station application, which includes preliminary planning, budgetary proposal, comparative analysis of products selection. Additional service like EPC and smart O&M for hydrogen refuelling station etc are also available in selected market.

Item	Value	Unit
<b>Compressor Hydraulic Driven</b>		
Power	55	KW
Inlet pressure	14~16	Bar
Discharge pressure	500/950	Bar
Capacity	200	Nm <sup>3</sup> /h
<b>Dispenser</b>		
Power	15	KW
Inlet pressure(H35)	≤500	Bar
Inlet pressure(H70)	≤950	Bar
Design pressure (H35)	482	Bar
Design pressure(H70)	950	Bar
Maximum Flow Rate	≤3.6	Kg/min
Measure accuracy	≤±1.5	%
Refueling protocol	Meet SAE J2601	
<b>Accumulator Type   500/950 Bar</b>		
Design pressure	552/1030	Bar
Working pressure	500/950	Bar
Water volume	4.145/0.5	m <sup>3</sup>
Hydrogen storage capacity	~129.6/~24.2	Kg



# CARBON CAPTURE TECHNOLOGY



## CARBON CAPTURE PROCESS

### 1- CARBON CAPTURE

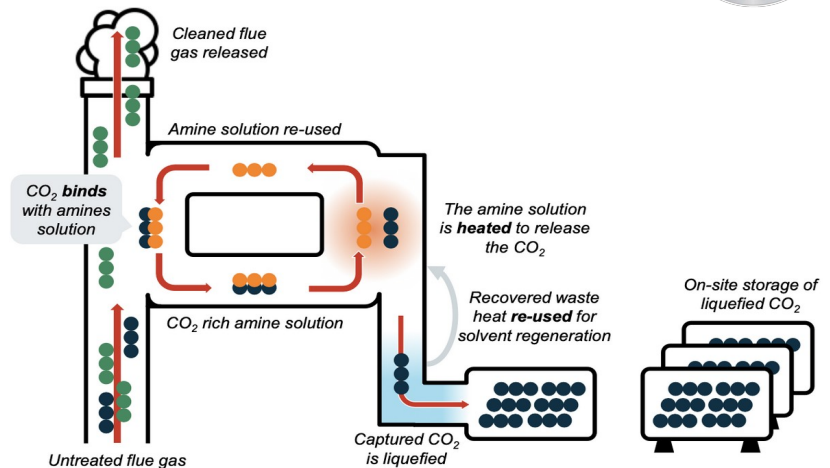
Relates to the amine loop of Binding and releasing CO<sub>2</sub>

### 2 – LIQUEFACTION

Relates to the cooling and Compression of captured CO<sub>2</sub>

### 2.- ON-SITE STORAGE

Relates to storage of liquified CO<sub>2</sub> Before transportation



## Superior HSE characteristics

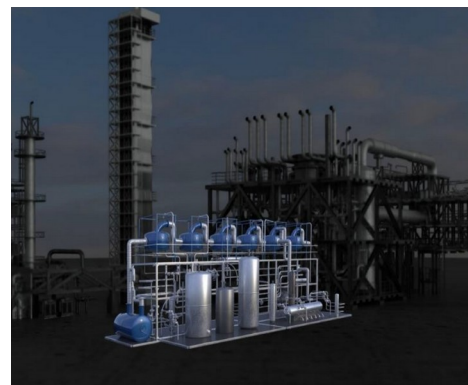
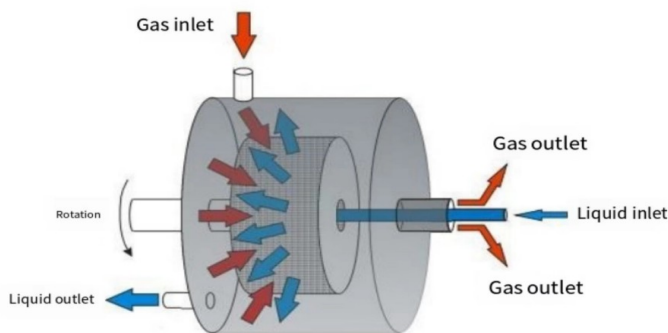
- Minimum emission
- Non-toxic
- Biodegradable
- Minimum liquid waste
- Minimum corrosion

## Energy efficient

- Energy efficient reclamation
- Superior energy plant integration
- Optimal integration toward conditioning

## SIEBC MODULAR CARBON CAPTURE UNIT

Modular carbon capture unit based on rotary packed bed technology compared to a conventional process. Due to its significantly reduced size, the product can be modularised in the factory and delivered to the customer in a skid-mounted configuration, thus minimising the time and cost of on-site installation and the impact on the customer's existing production.



The third generation of high-efficiency absorber, which reduces the unit cost of carbon capture by about 35% compared with the second-generation absorber

The order of magnitude improvement in gas-liquid mass transfer by rotating packed beds further reduces the unit cost of carbon capture to less than 13€/ton CO<sub>2</sub>

Reduce the footprint of the carbon capture unit by half with a smaller rotary packed bed

Standardised design and components, modular and skid-mounted pre-production to suit different carbon capture specifications, minimise on-site installation time and costs, and minimise disruption to the customer's existing production

Adopting standardised design and flexible addition of carbon capture units to match customers needs for step-by-step decarbonisation.