HyGGe™ 100A

EXION HYDROGEN

CLEAN HYDROGEN ON-SITE

A versatile, robust and scalable containerized water electrolyzer, offering reliable, safe and efficient hydrogen supply.

PRODUCT BROCHURE

40ft containerized – 100 Nm³/h hydrogen
High purity (4.8) – 30 barg pressurized

HyGGe™ 100A
WATER ELECTROLYZER

Robust, reliable and scalable on-site hydrogen production

Hydrogen production through electrolysis is a key technology for decarbonizing various industries. The new HyGGe™ 100A water electrolyzer ensures robust, reliable and scalable on-site hydrogen production for numerous applications and industries.

Compared to traditional grey hydrogen, the electrolytic hydrogen produced by the HyGGe™ 100A is of superior purity. This makes the HyGGe™ 100A an ideal solution for a broad spectrum of industrial uses, even in stringent environments with strict requirements.

The HyGGe™ 100A is also perfectly suited for other emerging markets, including renewable energy projects and hydrogen mobility applications. The HyGGe™ 100A was designed from the ground up with reliability, safety, operability and scalability in mind, so it also fits smaller projects that do not require massive hydrogen production.

HyGGe™ 100A

Exion **Hy**drogen **Gas Ge**nerator **100** Nm^3/h **A**lkaline
40ft Highcube Containerized, 30 barg pressurized, 4.8 Purity

TOP FRAME

An ISO-standard 20ft rooftop frame houses the auxiliary cooling systems of the HyGGe™ 100A and is designed to preferably be installed on top of the main container. This approach minimizes the footprint and allows for hassle-free transport and easy installation.

CONTAINERIZED SOLUTION

The 40ft container allows for easy transportation, installation, and a smooth, fast start-up of the system, thus saving time and money. All safety concerns are addressed and contained within this unit.

GAS PURIFICATION MODULE

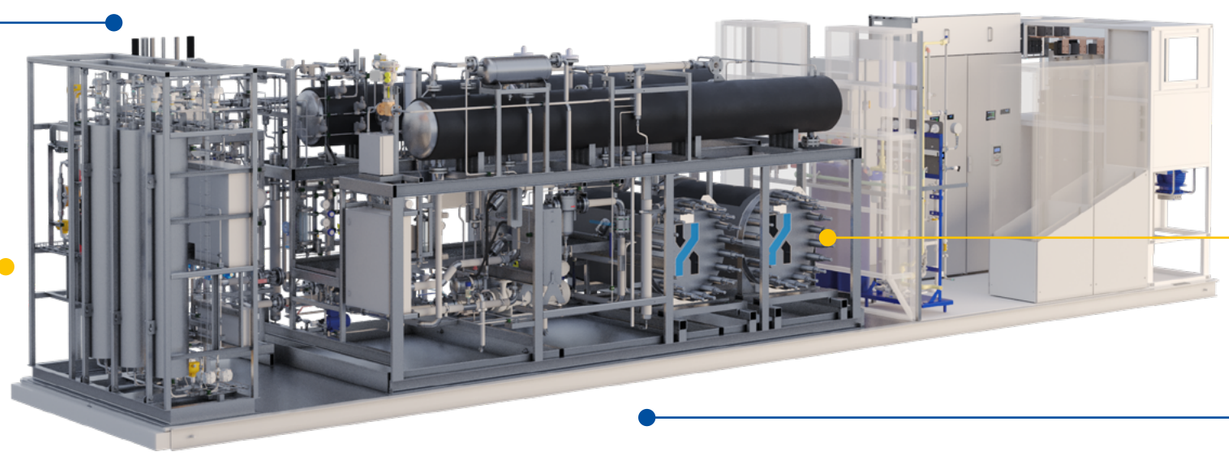
The hydrogen quality is upgraded to the highest standard in the Gas Purification Module, ensuring that even the last traces of water and oxygen are removed in a two-step process. The final result is hydrogen with a guaranteed purity of 99.998% (4.8). The remaining impurity consists predominantly of very minor traces of nitrogen, which is harmless for virtually all applications.

GENERAL PURPOSE ROOM

The high-quality DC power required for the water electrolysis process is provided by thyristor-type rectifiers (quasi-12-pulse) through bus bars, with DC connections to the cell stacks via FlexBus. Control is managed by a Siemens 1500 Fail-Safe PLC with a 12.1” HMI touch screen. Intake tap water is purified by a Water Purification System into high-quality demineralized water with a conductivity of up to 1 µS/cm.

CELL STACKS

The beating heart of the system, the cell stacks, are Exion Hydrogen’s proprietary design. These convert water and electricity into hydrogen and oxygen. Each cell stack has a nominal production capacity of 50 Nm^3 of hydrogen (H_2) and 25 Nm^3 of oxygen (O_2) per hour.
The HyGGe™ 100A is equipped with two stacks, providing inherent redundancy and a total flow of 100 Nm^3/h of hydrogen and 50 Nm^3/h of oxygen.



GAS GENERATION MODULE

The entire Balance of Plant is tailor-made and dimensioned to optimize the operation of the cell stacks.
Its process equipment handles the separation and cooling of H_2 and O_2 in separate loops, while simultaneously controlling internal temperature and pressure. All of this contributes to enhanced gas production efficiency and improved safety. Over 100 parameters are continuously monitored to detect any failures long before potential safety concerns arise.

ROBUST, RELIABLE, RESILIENT

HyGGe™ 100A

HYDROGEN GAS GENERATOR 100 NM³/H ALKALINE

SPECIFICATIONS

Nominal Flow:	**100 Nm³ per hour**
Nominal Output pressure:	**30 barg**
Gas Quality:	**4.8 (99.998%)**
Containerized:	**40ft High Cube sea container with 20ft frame on top**
Energy Consumption:	**5,2 kWh/Nm³**
Turn Down Ratio:	20% - 100%
Ramp time min-max:	< 1 min
Electrical connection:	3 x 400V
Nominal power consumption BOL:	520 kW
Water consumption:	120 l/h tap water consumption @ full flow
Container (40ft):	12,2 m x 2,44 m x 2,9 m – 23 ton
Rooftop Frame (20ft):	6,06 m x 2,44 m x 2,59 m – 3 ton

Directives followed:
Pressure Equipment Directive 2014/68/EU (PED)
Low Voltage Directive 2014/35/EU3
Machine Directive 2006/42/EC
Electromagnetic Compatibility 2014/30/EU5
ATEX Directive 2014/34/EU

Full specifications

EXION HYDROGEN