

# On-Site Hydrogen Solutions for Generator Cooling



Featuring Proton® PEM  
Advanced Water Electrolysis Technology

# On-Site Hydrogen Production Optimizes Cooling Operations for Power Plant Generators

Nel Hydrogen Proton® PEM water electrolyzers are designed to meet the specific needs of power plant generator cooling. Our C, H and S Series units provide fast response times and production flexibility, offering turnkey solutions for generator cooling hydrogen supply. These state-of-the-art electrolyzers utilize a proton exchange membrane and electricity to separate water into pure hydrogen and oxygen. Each generator produces ultra-high purity hydrogen gas at 99.9995+% with output pressures up to 30 barg (435 psig) and at a dew point of -65°C (-85°F) or better.

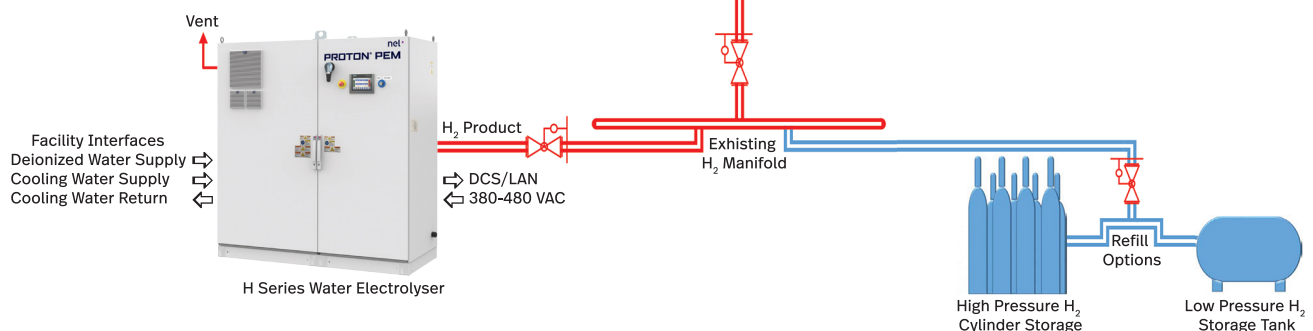
These compact electrolyzers can be placed on the generator deck or any other indoor, non-classified plant area. Their unique design allows the electrolyzers to contain virtually no stored hydrogen, even when generating hydrogen at 30 Nm<sup>3</sup>/h (1,140 scf/h) – meeting the daily hydrogen requirements of power plants, no matter how large.

Nel Hydrogen's water electrolyzers provide reliable, safe, low-cost hydrogen for generator cooling, giving power plant customers an attractive return on investment while improving site security, safety, and personnel productivity.



Hydrogen Cooled Generator

## Typical Flow Chart of On-Site Hydrogen Generation for Power Plant Generator Cooling Applications



SPECIFICATIONS	C10	C20	C30
Capacity per Unit	10 Nm <sup>3</sup> /h	20 Nm <sup>3</sup> /h	30 Nm <sup>3</sup> /h
Production Capacity Dynamic Range	0-100%	0-100%	0-100%
Power Consumption by System	6.2 kWh/Nm <sup>3</sup>	6.0 kWh/Nm <sup>3</sup>	5.8 kWh/Nm <sup>3</sup>
Purity	99.9998%	99.9998%	99.9998%
O <sub>2</sub> -Content in H <sub>2</sub>	< 1 ppm v	< 1 ppm v	< 1 ppm v
H <sub>2</sub> O-Content in H <sub>2</sub>	< 2 ppm v	< 2 ppm v	< 2 ppm v
Outlet Pressure	30 barg	30 barg	30 barg
Dimensions			
Electrolyser Enclosure – L x W x H	2.5 m x 1.2 m x 2 m	2.5 m x 1.2 m x 2 m	2.5 m x 1.2 m x 2 m
Power Supply Enclosure – L x W x H	1.7 m x 1 m x 2 m	1.7 m x 1 m x 2 m	1.7 m x 1 m x 2 m
Ambient Temperature	5-40° C	5-40° C	5-40° C
Electrolyte	Proton Exchange Membrane	Proton Exchange Membrane	Proton Exchange Membrane
Feed Water Consumption	0.9 l/Nm <sup>3</sup>	0.9 l/Nm <sup>3</sup>	0.9 l/Nm <sup>3</sup>

SPECIFICATIONS	H2	H4	H6
Capacity per Unit	2 Nm <sup>3</sup> /h	4 Nm <sup>3</sup> /h	6 Nm <sup>3</sup> /h
Production Capacity Dynamic Range	0-100%	0-100%	0-100%
Power Consumption by System	7.3 kWh/Nm <sup>3</sup>	7 kWh/Nm <sup>3</sup>	6.8 kWh/Nm <sup>3</sup>
Purity	99.9995%	99.9995%	99.9995%
O <sub>2</sub> -Content in H <sub>2</sub>	< 1 ppm v	< 1 ppm v	< 1 ppm v
H <sub>2</sub> O-Content in H <sub>2</sub>	< 5 ppm v	< 5 ppm v	< 5 ppm v
Outlet Pressure	15 barg/30 barg option	15 barg/30 barg option	15 barg/30 barg option
Dimensions – L x W x H	1.8 m x 0.8 m x 1.9 m	1.8 m x 0.8 m x 1.9 m	1.8 m x 0.8 m x 1.9 m
Ambient Temperature	5-50° C	5-50° C	5-50° C
Electrolyte	Proton Exchange Membrane	Proton Exchange Membrane	Proton Exchange Membrane
Feed Water Consumption	0.9 l/Nm <sup>3</sup>	0.9 l/Nm <sup>3</sup>	0.9 l/Nm <sup>3</sup>

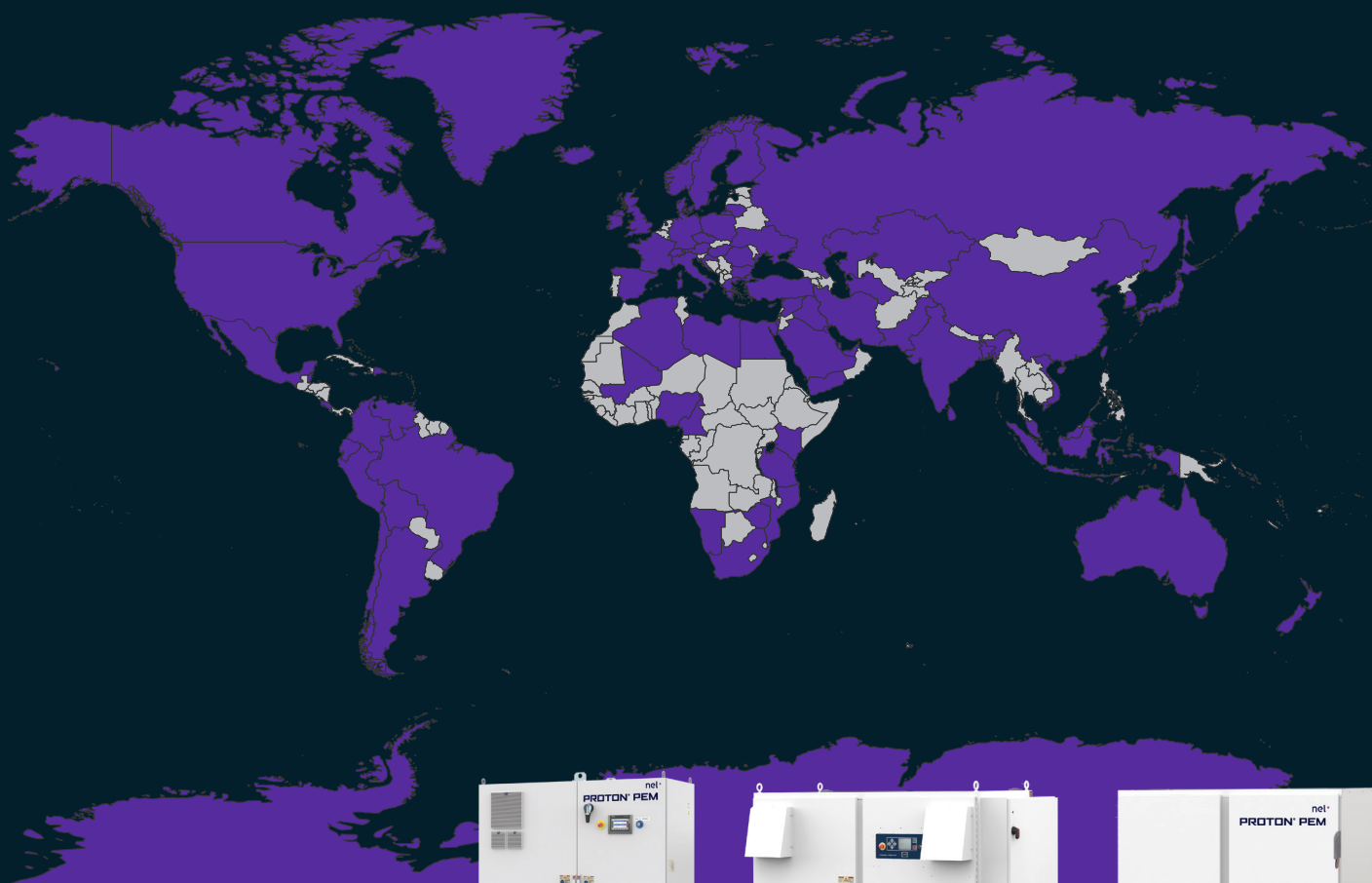
SPECIFICATIONS	S10	S20	S40
Capacity per Unit	0.27 Nm <sup>3</sup> /h	0.53 Nm <sup>3</sup> /h	1.05 Nm <sup>3</sup> /h
Production Capacity Dynamic Range	0-100%	0-100%	0-100%
Power Consumption by System	6.1 kWh/Nm <sup>3</sup>	6.1 kWh/Nm <sup>3</sup>	6.1 kWh/Nm <sup>3</sup>
Purity	99.9995%	99.9995%	99.9995%
O <sub>2</sub> -Content in H <sub>2</sub>	< 1 ppm v	< 1 ppm v	< 1 ppm v
H <sub>2</sub> O-Content in H <sub>2</sub>	< 5 ppm v	< 5 ppm v	< 5 ppm v
Outlet Pressure	13.8 barg	13.8 barg	13.8 barg
Dimensions – L x W x H	0.8 m x 1 m x 1.1 m	0.8 m x 1 m x 1.1 m	0.8 m x 1 m x 1.1 m
Ambient Temperature	5-40° C/5-50° C option	5-40° C	5-40° C
Electrolyte	Proton Exchange Membrane	Proton Exchange Membrane	Proton Exchange Membrane
Feed Water Consumption	0.9 l/Nm <sup>3</sup>	0.9 l/Nm <sup>3</sup>	0.9 l/Nm <sup>3</sup>

For reference only – specifications are subject to change. Please contact Nel Hydrogen for solutions to best fit your needs.

# Global Service and Support Solutions

Nel Hydrogen is proud to offer products and services that assure a superior level of customer satisfaction. Our uncompromising attention to excellence and quality enables us to deliver, install and support gas generation solutions on every continent. With proven reliability and world-class coverage in over 75 countries, we continue to foster a strong network of lasting relationships with our customers.

Let us help you, visit [www.nelhydrogen.com](http://www.nelhydrogen.com) to learn more!



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MADE IN USA

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