GreenH Electrolysis

Main Characteristics	EL0.5N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	1
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	0.5 Nm^3/h (1.08 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	1-20 barg (14.5-290 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	400 VAC ± 10% (3Ph+N) / 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	3.2 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	6.5 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 7" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	Cabinet (1.8m x 0.8m x 2.1m) (5.9ft x 2.6ft x 6.9ft)
Approx. Weight	750 kg (1,653 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 /NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	Oxygen Processing System
Emergency Shutdown System	Hydrogen Purification System (SAE J2719 September 2011)
Overpressure Relief System	Water Treatment System
Redundancy on Critical Safety Parameters	Extreme Environmental Conditions Package (Low and High Temp)
Uninterruptible Power Supply (UPS)	Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)
Heat Management (No Cooling Water is Needed)	
Virtual Private Network (VPN) connection	

GreenH Electrolysis

Main Characteristics	EL1N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	1
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	1 Nm^3/h (2.15 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	1-20 barg (14.5-290 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	400 VAC ± 10% (3Ph+N) / 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	6.3 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	6.3 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 7" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	Cabinet (1.8m x 0.8m x 2.1m) (5.9ft x 2.6ft x 6.9ft)
Approx. Weight	750 kg (1,653 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 /NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	Oxygen Processing System
Emergency Shutdown System	Hydrogen Purification System (SAE J2719 September 2011)
Overpressure Relief System	Water Treatment System
Redundancy on Critical Safety Parameters	Extreme Environmental Conditions Package (Low and High Temp)
Uninterruptible Power Supply (UPS)	Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)
Heat Management (No Cooling Water is Needed)	
Virtual Private Network (VPN) connection	

GreenH Electrolysis

Main Characteristics	EL2N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	2
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	2 Nm^3/h (4.31 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	1-20 barg (14.5-290 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	400 VAC ± 10% (3Ph+N) / 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	12 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	6.0 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 7" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	Cabinet (1.8m x 0.8m x 2.1m) (5.9ft x 2.6ft x 6.9ft)
Approx. Weight	800 kg (1,763 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 /NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	**Oxygen Processing System**
Emergency Shutdown System	**Hydrogen Purification System (SAE J2719 September 2011)**
Overpressure Relief System	**Water Treatment System**
Redundancy on Critical Safety Parameters	**Extreme Environmental Conditions Package (Low and High Temp)**
Uninterruptible Power Supply (UPS)	**Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)**
Heat Management (No Cooling Water is Needed)	
Virtual Private Network (VPN) connection	

GreenH Electrolysis

Main Characteristics	EL10N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	1
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	10.05 Nm^3/h (21.68 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	15 - 40 barg (217-580 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	3 x 400 VAC ± 10% (3Ph+N) / 3 x 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	53.2 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	5.3 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 7" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	10 ft container (3.0m x 2.4m x 2.9m) (9.8ft x 7.9ft x 9.5ft)
Approx. Weight	5,000 kg (11,023 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 / NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min
Nitrogen System	For each purge, consumption is <0.1 kg at 3 barg (to be supplied by the customer)
Instrumentation Air System	Consumption 4 Nm^3/h at 10 barg (to be supplied by the customer)

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	Oxygen Processing System
Emergency Shutdown System	Hydrogen Purification System (SAE J2719 September 2011)
Overpressure Relief System	Water Treatment System
Redundancy on Critical Safety Parameters	Extreme Environmental Conditions Package (Low and High Temp)
Uninterruptible Power Supply (UPS)	Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)
Heat Management (No Cooling Water is Needed)	Instrumentation Air System
Virtual Private Network (VPN) connection	Nitrogen System

GreenH Electrolysis

Main Characteristics	EL20N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	1
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	20 Nm^3/h (43 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	15 - 40 barg (217-580 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	3 x 400 VAC ± 10% (3Ph+N) / 3 x 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	106.6 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	5.2 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 7" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	20 ft container (6.0m x 2.4m x 2.9m) (19.7ft x 7.9ft x 9.5ft)
Approx. Weight	11,000 kg (24,251 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 / NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min
Nitrogen System	For each purge, consumption is <0.2 kg at 3 barg (to be supplied by the customer)
Instrumentation Air System	Consumption 7 Nm^3/h at 10 barg (to be supplied by the customer)

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	Oxygen Processing System
Emergency Shutdown System	Hydrogen Purification System (SAE J2719 September 2011)
Overpressure Relief System	Water Treatment System
Redundancy on Critical Safety Parameters	Extreme Environmental Conditions Package (Low and High Temp)
Uninterruptible Power Supply (UPS)	Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)
Heat Management (No Cooling Water is Needed)	Instrumentation Air System
Virtual Private Network (VPN) connection	Nitrogen System

GreenH Electrolysis

Main Characteristics	EL30N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	1
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	31.7 Nm^3/h (68.40 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	15 - 40 barg (217-580 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	3 x 400 VAC ± 10% (3Ph+N) / 3 x 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	164.8 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	5.2 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 15" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	20 ft container (6.0m x 2.4m x 2.9m) (19.7ft x 7.9ft x 9.5ft)
Approx. Weight	11.000 kg (24.251 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 / NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min
Nitrogen System	For each purge, consumption is <0.2 kg at 3 barg (to be supplied by the customer)
Instrumentation Air System	Consumption 7 Nm^3/h at 10 barg (to be supplied by the customer)

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	**Oxygen Processing System**
Emergency Shutdown System	**Hydrogen Purification System (SAE J2719 September 2011)**
Overpressure Relief System	**Water Treatment System**
Redundancy on Critical Safety Parameters	**Extreme Environmental Conditions Package (Low and High Temp)**
Uninterruptible Power Supply (UPS)	**Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)**
Heat Management (No Cooling Water is Needed)	**Instrumentation Air System**
Virtual Private Network (VPN) connection	**Nitrogen System**

GreenH Electrolysis

Main Characteristics	EL60N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	2
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	63.3 Nm^3/h (136.58 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	15 - 40 barg (217-580 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	3 x 400 VAC ± 10% (3Ph+N) / 3 x 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	329.2 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	5.2 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 15" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	20 ft container (6.0m x 2.4m x 2.9m) (19.7ft x 7.9ft x 9.5ft)
Approx. Weight	13,000 kg (28,860 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 / NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min
Nitrogen System	For each purge, consumption is <0.2 kg at 3 barg (to be supplied by the customer)
Instrumentation Air System	Consumption 7 Nm^3/h at 10 barg (to be supplied by the customer)

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	**Oxygen Processing System**
Emergency Shutdown System	**Hydrogen Purification System (SAE J2719 September 2011)**
Overpressure Relief System	**Water Treatment System**
Redundancy on Critical Safety Parameters	**Extreme Environmental Conditions Package (Low and High Temp)**
Uninterruptible Power Supply (UPS)	**Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)**
Heat Management (No Cooling Water is Needed)	**Instrumentation Air System**
Virtual Private Network (VPN) connection	**Nitrogen System**

GreenH Electrolysis

Main Characteristics	EL100N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	1
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	100 Nm^3/h (215 kg/day)
Hydrogen Flow Range	10 - 100%
Operating Pressure	15 - 40 barg (217-580 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	3 x 400 VAC ± 10% (3Ph+N) / 3 x 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	515 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	5.1 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 15" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to +95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	40 ft container (12.0m x 2.4m x 2.9m) (39.4ft x 7.9ft x 9.5ft)
Approx. Weight	18,000 kg (39,683 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 / NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min
Nitrogen System	For each purge, consumption is <0.2 kg at 3 barg (to be supplied by the customer)
Instrumentation Air System	Consumption 7 Nm^3/h at 10 barg (to be supplied by the customer)

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	Oxygen Processing System
Emergency Shutdown System	Hydrogen Purification System (SAE J2719 September 2011)
Overpressure Relief System	Water Treatment System
Redundancy on Critical Safety Parameters	Extreme Environmental Conditions Package (Low and High Temp)
Uninterruptible Power Supply (UPS)	Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)
Heat Management (No Cooling Water is Needed)	Instrumentation Air System
Virtual Private Network (VPN) connection	Nitrogen System
	Heat Recovery System
	Medium Voltage Connection

GreenH Electrolysis

Main Characteristics	EL200N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	1
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	200 Nm^3/h (430 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	15 - 40 barg (217-580 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	3 x 400 VAC ± 10% (3Ph+N) / 3 x 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	1,030 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	5.1 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 15" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	40 ft container (12.0m x 2.4m x 2.9m) (39.4ft x 7.9ft x 9.5ft)
Approx. Weight	18,000 kg (39,683 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 / NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min
Nitrogen System	For each purge, consumption is <0.2 kg at 3 barg (to be supplied by the customer)
Instrumentation Air System	Consumption 7 Nm^3/h at 10 barg (to be supplied by the customer)

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	Oxygen Processing System
Emergency Shutdown System	Hydrogen Purification System (SAE J2719 September 2011)
Overpressure Relief System	Water Treatment System
Redundancy on Critical Safety Parameters	Extreme Environmental Conditions Package (Low and High Temp)
Uninterruptible Power Supply (UPS)	Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)
Heat Management (No Cooling Water is Needed)	Instrumentation Air System
Virtual Private Network (VPN) connection	Nitrogen System
	Heat Recovery System
	Medium Voltage Connection

GreenH Electrolysis

Main Characteristics	EL400N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	2
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	400 Nm^3/h (860 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	15 - 40 barg (217-580 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	3 x 400 VAC ± 10% (3Ph+N) / 3 x 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	2,060 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	5.1 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 15" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	2 x [40 ft container (12.0m x 2.4m x 2.9m) (39.4ft x 7.9ft x 9.5ft)]
Approx. Weight	38,000 kg (83,775 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 / NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min
Nitrogen System	For each purge, consumption is <0.2 kg at 3 barg (to be supplied by the customer)
Instrumentation Air System	Consumption 7 Nm^3/h at 10 barg (to be supplied by the customer)

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	**Oxygen Processing System**
Emergency Shutdown System	**Hydrogen Purification System (SAE J2719 September 2011)**
Overpressure Relief System	**Water Treatment System**
Redundancy on Critical Safety Parameters	**Extreme Environmental Conditions Package (Low and High Temp)**
Uninterruptible Power Supply (UPS)	**Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)**
Heat Management (No Cooling Water is Needed)	**Instrumentation Air System**
Virtual Private Network (VPN) connection	**Nitrogen System**
	Heat Recovery System
	Medium Voltage Connection

GreenH Electrolysis

Main Characteristics	EL600N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	3
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	600 Nm^3/h (1,290 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	15 - 40 barg (217-580 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	3 x 400 VAC ± 10% (3Ph+N) / 3 x 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	3,100 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	5.1 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 15" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	2 x [40 ft container (12.0m x 2.4m x 2.9m) (39.4ft x 7.9ft x 9.5ft)]
Approx. Weight	45,000 kg (99,207 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 / NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min
Nitrogen System	For each purge, consumption is <0.2 kg at 3 barg (to be supplied by the customer)
Instrumentation Air System	Consumption 7 Nm^3/h at 10 barg (to be supplied by the customer)

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	Oxygen Processing System
Emergency Shutdown System	Hydrogen Purification System (SAE J2719 September 2011)
Overpressure Relief System	Water Treatment System
Redundancy on Critical Safety Parameters	Extreme Environmental Conditions Package (Low and High Temp)
Uninterruptible Power Supply (UPS)	Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)
Heat Management (No Cooling Water is Needed)	Instrumentation Air System
Virtual Private Network (VPN) connection	Nitrogen System
	Heat Recovery System
	Medium Voltage Connection

GreenH Electrolysis

Main Characteristics	EL800N
Electrolysis Type	PEM (Proton exchange membrane, caustic free)
Number of Cell Stacks	4
Hydrogen Gas Production	
Max. Nominal Hydrogen Flow	800 Nm^3/h (1,726 kg/day)
Hydrogen Flow Range	10 -100%
Operating Pressure	15 - 40 barg (217-580 psig)
Hydrogen Purity (before Gas Purification)	> 99.9% ; < 25 ppm O_2; H_2O saturated
Hydrogen Purity (after Gas Purification)	99.999%; < 5 ppm O_2; < 5 ppm H_2O
Electrical Requirements	
Voltage	3 x 400 VAC ± 10% (3Ph+N) / 3 x 480 VAC ± 10% (3Ph+N)
Frequency	50 Hz ± 5% / 60 Hz ± 3%
Power (BoP + Stack)	4,130 kW
Stack Consumption (*)	4.7 kWh/Nm^3 H_2
AC Power Consumption (BoP + Stack) (*)	5.1 kWh/Nm^3 H_2
Feed Water - Demi Water (optional Water Treatment Plant is not included)	
Consumption	< 1 L/Nm^3 H_2
Conductivity	> 10 MΩcm (< 0.1 uS/cm); TOC < 30 ppb
Pressure	2-3 barg (29-43 psig)
Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Control System	
PLC	Fully automated and unattended with 15" color touch screen
Communication	Modbus TCP/IP or Profinet (RJ45 port)
Environmental Conditions	
Ambient Temperature Range	+5 °C to +45 °C (+41 °F to +113 °F)
Humidity	0 to + 95% (non-condensing)
Air Ventilation	Available from a non-hazardous area
Installation Area	Indoor/Outdoor
Dimensions and weight	
Dimensions (LxWxH)	2 x [40 ft container (12.0m x 2.4m x 2.9m) (39.4ft x 7.9ft x 9.5ft)]
Approx. Weight	48,000 kg (99,207 lb)
Standards & Regulations	
Compliance	CE, ISO 22734-1 / NFPA 2-2016 & NFPA 70
Other Characteristics	
Duty Cycle	100% (24/7)
Start-up Time (from Stand-by)	< 1 sec
Cold Start Time	< 5 min
Nitrogen System	For each purge, consumption is <0.2 kg at 3 barg (to be supplied by the customer)
Instrumentation Air System	Consumption 7 Nm^3/h at 10 barg (to be supplied by the customer)

(*) Electrical consumption at maximum current density and operating pressure at the stack; thus is reduced if those are not required.

Included	Additional Options
Hydrogen Cooling System	Oxygen Processing System
Emergency Shutdown System	Hydrogen Purification System (SAE J2719 September 2011)
Overpressure Relief System	Water Treatment System
Redundancy on Critical Safety Parameters	Extreme Environmental Conditions Package (Low and High Temp)
Uninterruptible Power Supply (UPS)	Hydrogen Mass Flow Measure & Purity Measure (H_2O & O_2 Sensors)
Heat Management (No Cooling Water is Needed)	Instrumentation Air System
Virtual Private Network (VPN) connection	Nitrogen System
	Heat Recovery System
	Medium Voltage Connection