

TerraLIX CATALOGUE

Air-Cooled Fuel Cell Power for
Mission-Critical Applications



Powering the Future with Advanced Air-Cooled Fuel Cell Technology

TerraLIX is an energy innovation company with the core of air-cooled hydrogen fuel cell technology, established in July 2019 in Buan, Korea. The titanium-based HYCUS air-cooled stack platform with core patents applied has applied a closed-cathode structure capable of humidity-free operation to minimize performance deviation between cells and secure differentiated performance and durability from global companies.

The company's stack module architecture can be expanded in both series and parallel configurations, enabling the implementation of multi-stack systems in the hundreds-of-kilowatts class.

Through innovative technologies and strong domestic and international partnership networks, TerraLIX is creating new standards for the hydrogen energy transition.

We don't compete with system builders—we empower them.

TerraLIX is dedicated to one mission: delivering the world's best air-cooled hydrogen fuel cell stacks. Whether you're an OEM, system integrator, or solution provider, TerraLIX's stack gives you the performance, reliability, and engineering support to build your next-generation hydrogen system with confidence.

Looking for the world's most reliable air-cooled hydrogen fuel cell stack?

Contact TerraLIX today with confidence. We're ready to support your business wherever you are.

CEO

Kim Tae-Young



KAIST
Ph.D & EMBA



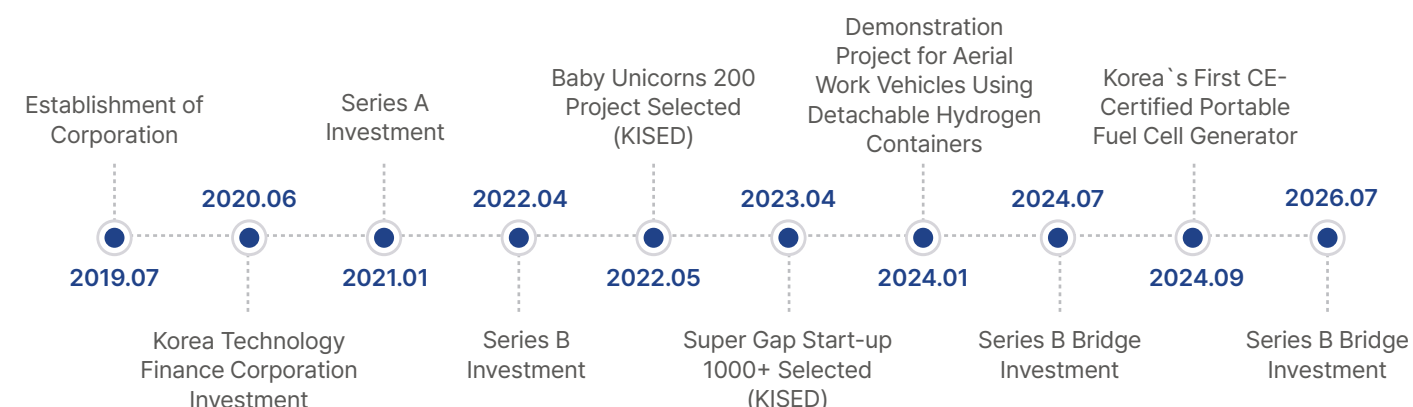
Hyundai Motor Company
Senior Researcher, Fuel Cell Division



Korea Institute of Energy Research
Head, Fuel Cell Research &
Demonstration Center



MAJOR HISTORY



KEY ACHIEVEMENT



Government
Project

Government R&D Subsidy

39 Cases

USD 7.0M



Patent
(Korea)

Registration

28 Cases

Application

14 Cases



Patent
(International)

Registration

8 Cases

Application

20 Cases



Cumulative
Investment

USD

13.3M

Stack

HYCUS N

The HYCUS N SERIES is a compact and lightweight air-cooled PEM fuel cell stack designed for reliable power delivery. Its closed-cathode structure and titanium separators enhance durability, while moisture-free operation eliminates the need for an external humidifier.



TECHNICAL DATA

Product Name		HYCUS N1	HYCUS N2	HYCUS N4
HYCUS N series				
Performance	Rated Power	1.4 kW @ 0.5 A/cm ²	2.0 kW @ 0.6 A/cm ²	4.0 kW @ 0.6 A/cm ²
	Rated Voltage	43.2 V @ 0.5 A/cm ²	51.0 V @ 0.6 A/cm ²	106.0 V @ 0.6 A/cm ²
	Voltage Range	42 ~ 63 V _{dc}	49 ~75.6 V _{dc}	98 ~150.5 V _{dc}
Fuel	Type	Hydrogen		
	Pressure	1 ± 0.2 bar.g		
	Consumption	57 g/kWh		
	Feed (External)	External H ₂ Tank		
	Concentration	≥ 99.9 %		
Physical	Mass	1.2 kg	1.4 kg	2.6 kg
	Number of Cells	60	75	150
	Size (W x L x H) (mm)	215 × 70 × 176	215 × 70 × 213	215 × 74 × 403
	Connection	6 mm tube		
	Vibration	5 ~ 200 Hz, random test, 3-axis for 21 hrs		Test in Progress
	Shock	30 G, 3 axis for 10 times		Test in Progress

Aerial Power for UAV

HYCUS X



The HYCUS X SERIES is a compact fuel cell powerpack engineered for UAVs, mobile systems and demanding environments. Its closed-cathode design delivers reliable operation down to -35°C, with durable titanium separators and no external humidifier required.



TECHNICAL DATA

Product Name		HYCUS X1	HYCUS X2	HYCUS X3	HYCUS X4
HYCUS X series					
Performance	Rated Power	1.25 kW @ 0.5 A/cm ²	1.6 kW @ 0.6 A/cm ²	2.5 kW @ 0.5 A/cm ²	3.5 kW @ 0.6 A/cm ²
	Rated Voltage	43.2 V @ 0.5 A/cm ²	51.0 V @ 0.6 A/cm ²	86.4 V @ 0.5 A/cm ²	102.0 V @ 0.6 A/cm ²
	Voltage Range	42 ~63 V _{dc}	49 ~ 75.6 V _{dc}	84 ~ 126 V _{dc}	98 ~ 151.2 V _{dc}
Fuel	Type	Hydrogen			
	Pressure	1 ± 0.2 bar.g			
	Consumption	57 g/kWh			
	Feed (External)	External H ₂ Tank			
	Concentration	≥ 99.9 %			
Operation	Start/Stop (Auto)	Controls Time, Voltage and Current to Operate (Factory Default)			
	Start-up Time	≤ 60 s			
Environmental / Protection	IP Rating	IP 20			
Physical	Mass	3.1 kg	3.4 kg	5.7 kg	6.3 kg
	Number of Cells	60	75	120	150
	Size (W x L x H) (mm)	290 × 227 × 293	290 × 227 × 331	506 × 227 × 293	509 × 224 × 332
	Power Connection	Installing the XT90-F Connection			
	Battery Connection	Installing the XT30U-M Connection			
	Operating Temperature	-35~ 35 °C			

HYCUS X1

TECHNICAL DATA



Performance	Rated Power	1,250 W
	Peak Power (Duration)	1,450 W (3 sec)
Physical	Mass	3.1 kg
	Size (W x L x H)	290 × 227 × 293 mm
Fuel Supply Conditions	Type	Hydrogen
	Pressure	1 ± 0.2 bar.g
	Consumption	57 g/kWh
	Feed (External)	External H ₂ Tank
	Concentration	≥ 99.9 %
Environmental Operating Conditions	Start-up Temperature	-20 ~ 35 °C
	Operating Temperature	- 35 ~ 35 °C
	Maximum Altitude	6,000 m
	Operating Humidity	0 ~ 90 % R.H.
	FCPM Warranty	3,000 hours
Physical	Communication Protocol	CAN
	Input Electrical Connector	XT30U-M
	Output Electrical Connector	XT90-M

HYCUS X2

TECHNICAL DATA



Performance	Rated Power	1,600 W
	Peak Power (Duration)	2,050 W (3 sec)
Physical	Mass	3.4 kg
	Size (W x L x H)	290 × 227 × 331 mm
Fuel Supply Conditions	Type	Hydrogen
	Pressure	1 ± 0.2 bar.g
	Consumption	57 g/kWh
	Feed (External)	External H ₂ Tank
	Concentration	≥ 99.9 %
Environmental Operating Conditions	Start-up Temperature	-20 ~ 35 °C
	Operating Temperature	- 35 ~ 35 °C
	Maximum Altitude	6,000 m
	Operating Humidity	0 ~ 90 % R.H.
	FCPM Warranty	3,000 hours
Physical	Communication Protocol	CAN
	Input Electrical Connector	XT30U-M
	Output Electrical Connector	XT90-M

HYCUS X3

TECHNICAL DATA



Performance	Rated Power	2,500 W
	Peak Power (Duration)	2,950 W (3 sec)
Physical	Mass	5.7 kg
	Size (W x L x H)	506 × 227 × 293 mm
Fuel Supply Conditions	Type	Hydrogen
	Pressure	1 ± 0.2 bar.g
	Consumption	57 g/kWh
	Feed (External)	External H ₂ Tank
	Concentration	≥ 99.9 %
Environmental Operating Conditions	Start-up Temperature	-20 ~ 35 °C
	Operating Temperature	- 35 ~ 35 °C
	Maximum Altitude	6,000 m
	Operating Humidity	0 ~ 90 % R.H.
	FCPM Warranty	3,000 hours
Physical	Communication Protocol	CAN
	Input Electrical Connector	XT30U-M
	Output Electrical Connector	XT90-M

HYCUS X4

TECHNICAL DATA



Performance	Rated Power	3,500 W
	Peak Power (Duration)	4,150 W (3 sec)
Physical	Mass	6.3 kg
	Size (W x L x H)	509 × 224 × 332 mm
Fuel Supply Conditions	Type	Hydrogen
	Pressure	1 ± 0.2 bar.g
	Consumption	57 g/kWh
	Feed (External)	External H ₂ Tank
	Concentration	≥ 99.9 %
Environmental Operating Conditions	Start-up Temperature	-20 ~ 35 °C
	Operating Temperature	- 35 ~ 35 °C
	Maximum Altitude	6,000 m
	Operating Humidity	0 ~ 90 % R.H.
	FCPM Warranty	3,000 hours
Physical	Communication Protocol	CAN
	Input Electrical Connector	XT30U-M
	Output Electrical Connector	XT90-M

ANY MISSION · ANY ENVIRONMENT · ALWAYS ON

Tactical Power For Defense

MISSION-CRITICAL POWER FOR EXTREME ENVIRONMENTS.



EXTREME TEMPERATURE

RELIABLE PERFORMANCE IN -35°C TO + 35°C



HIGH ALTITUDE

POWER WHERE OTHERS CAN'T



RUGGED & RELIABLE

MILITARY-GRADE DURABILITY

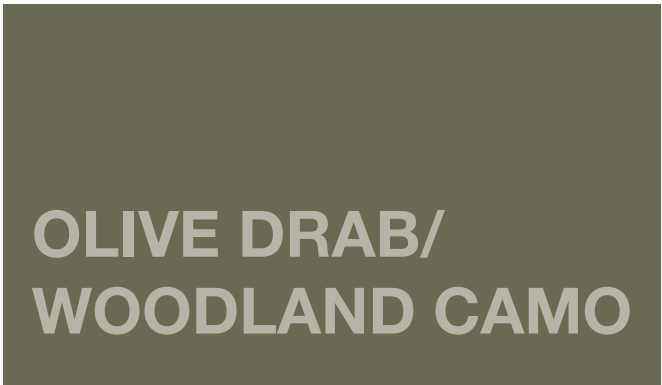


CONTINUOUS OPERATION

POWERING CRITICAL MISSIONS WITHOUT COMPROMISE

CAMOUFLAGE CASE OPTIONS

COLOR CHART



POWER PACK



IN-CASE CONFIGURATION



CLOSED CASE



POWER PACK



IN-CASE CONFIGURATION



CLOSED CASE





Backup Power for AIDC & Edge AI

DION

DION 12 is a planned 12 kW rated closed-cathode air-cooled hydrogen fuel-cell system for AI data-center and edge AI backup power. Parallel operation is intended to support expansion into the hundreds-of-kilowatts class.

MODULAR & SCALABLE POWER

1 X DION12	10 X DION12	20 X DION12
12 kW	120 kW	240 kW

DION System Specifications

Item	Specification
Rated System Power	12 kW
Configuration	4 × DION3 Fuel Cell Modules
Controller	Integrated Controller (up to 4 modules)
System Voltage	DC 48 V / AC 220 V
Rack Size	19-inch Rack, 48U
Installation	Indoor

DION3 Module Specifications

Item	Specification
Rated Power	3.5–3.7 kW
Rated Voltage	100–105 V
Fuel	Hydrogen
H ₂ Supply Pressure	2 barg
H ₂ Consumption	57 g/kWh
H ₂ Purity	≥ 99.9%
Weight	30 kg
Dimensions (W × L × H)	483 × 600 × 311 mm

Tactical Power for Defense

HYCUS XR2



HYCUS XR2 is a compact 1.5 kW fuel cell power system engineered for mobile and portable applications. Its closed-cathode, air-cooled design delivers reliable, moisture-free operation with durable titanium separators, CE compliance and a stack life of up to 3,000 hours.



TECHNICAL DATA

Product Name		HYCUS XR2
Performance	Rated Power	1.5 kW
	Max. Power	2.0 kW
	Voltage Range	50 ~ 55 V _{dc}
	Exhaust Gas	Vapor, hydrogen and mixed gas
	Battery (Not included)	48 V battery
Fuel	Type	Hydrogen
	Pressure	1 ~ 2 bar.g
	Consumption	57 g/kWh
	Feed (External)	External H ₂ Tank
	Concentration	≥ 99.9 %
Operation Maintenance	Start/Stop (Auto)	Controls Time, Voltage and Current to Operate (Factory Default)
	Start-up Time	≤ 60 s
	IP Rating	IP 20
Physical	Mass	55 kg
	Size (W x L x H)	830 × 400 × 400 mm
	Communication	CAN Bus
	H ₂ Gas Connection	Quick connect
	Power Connection	Installing the XT90-F connection
	Battery Connection	Installing the XT60-F connection
	Vibration	10 ~ 190 Hz, 0.75 ~ 2.5G, 3-axis for 2,000 cycles
	Shock	3.5G and 5G (vertical), 30 Hz, 3-axis for 2,000 cycles
Environmental Operating Conditions	Operating Temperature	-35 ~ 35°C
	Start-up Temperature	-20 ~ 35°C
	Place of Installation	Outdoor only

Tactical Power for Defense

HYCUS XB2

HYCUS XB2 is a compact 2.0 kW hydrogen fuel cell APU engineered for vehicle-mounted auxiliary power applications. Its closed-cathode, air-cooled design delivers quiet, moisture-free and reliable operation in sub-zero conditions, with 48 V battery integration, CAN communication and zero local emissions.



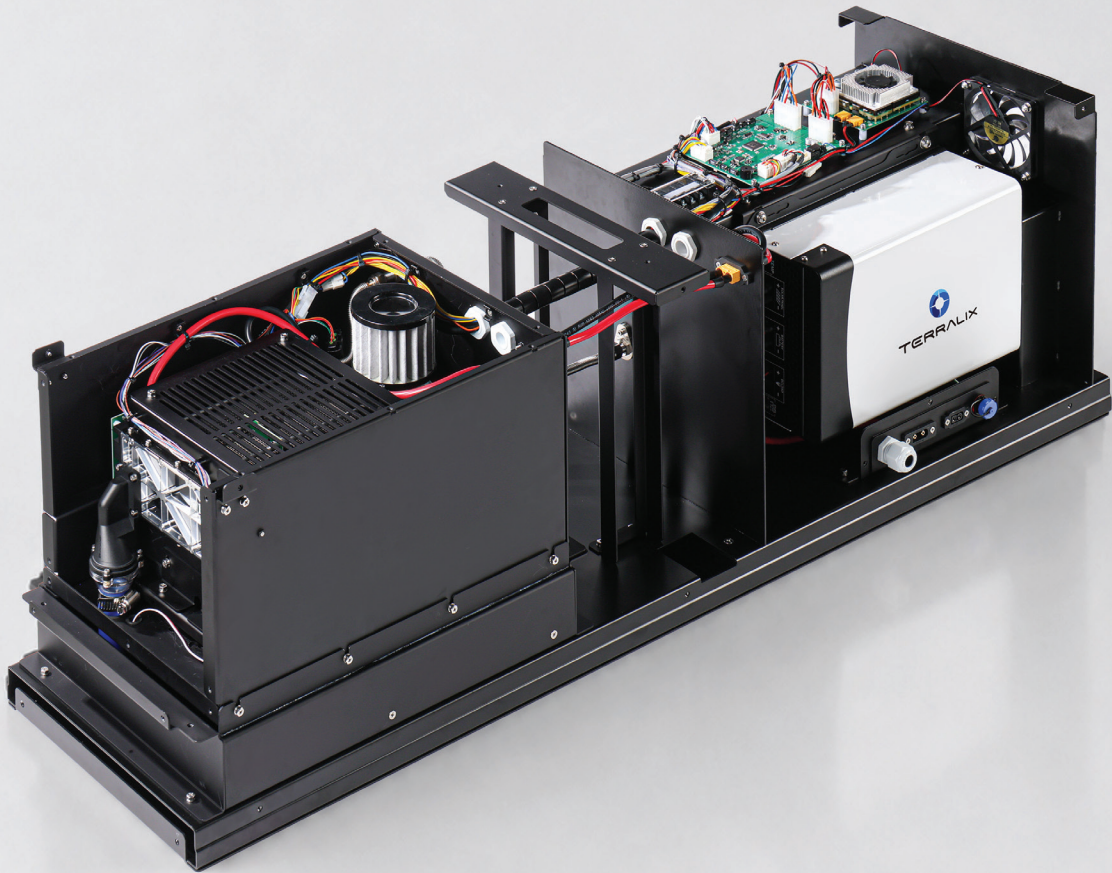
TECHNICAL DATA

Product Name		HYCUS XB2
Performance	Rated Power	2.0 kW
	Max. Power	2.5 kW
	Voltage Range	56 ± 2 V _{dc}
	Exhaust Gas	Vapor, hydrogen and mixed gas
	Battery (Not included)	48 V battery
Fuel	Type	Hydrogen
	Pressure	1.5 ~ 3 bar.g
	Consumption	57 g/kWh
	Feed (External)	External H ₂ Tank
	Concentration	≥ 99.9 %
Operation Maintenance	Start/Stop (Auto)	Controls Time, Voltage and Current to Operate (Factory Default)
	Start-up Time	≤ 80 s
	IP Rating	IP 44
Physical	Mass	Approximately 80 kg
	Size (W x L x H)	1,126 × 460 × 493 mm
	Communication	CAN Bus
	H ₂ Gas Connection	Quick connect
	Power Connection	Installing the power connector of electric vehicle
	Vibration	KGS AH372 Random test 5–500 Hz, 1 h/axis, RMS (Vertical: 1.08 g, Longitudinal: 0.76 g, Transverse: 0.21 g)
Environmental Operating Conditions	Operating Temperature	–35 ~ 35°C
	Start-up Temperature	–20 ~ 35°C
	Place of Installation	Outdoor only

For Golf Cart

HYCUS XM1

The Golf Cart Module is a compact 1.5 kW fuel cell power system engineered for golf cart applications. Its closed-cathode, air-cooled design delivers reliable power generation with efficient hydrogen consumption. The module supports a 48 V battery system and CAN communication for easy integration into golf cart power systems.



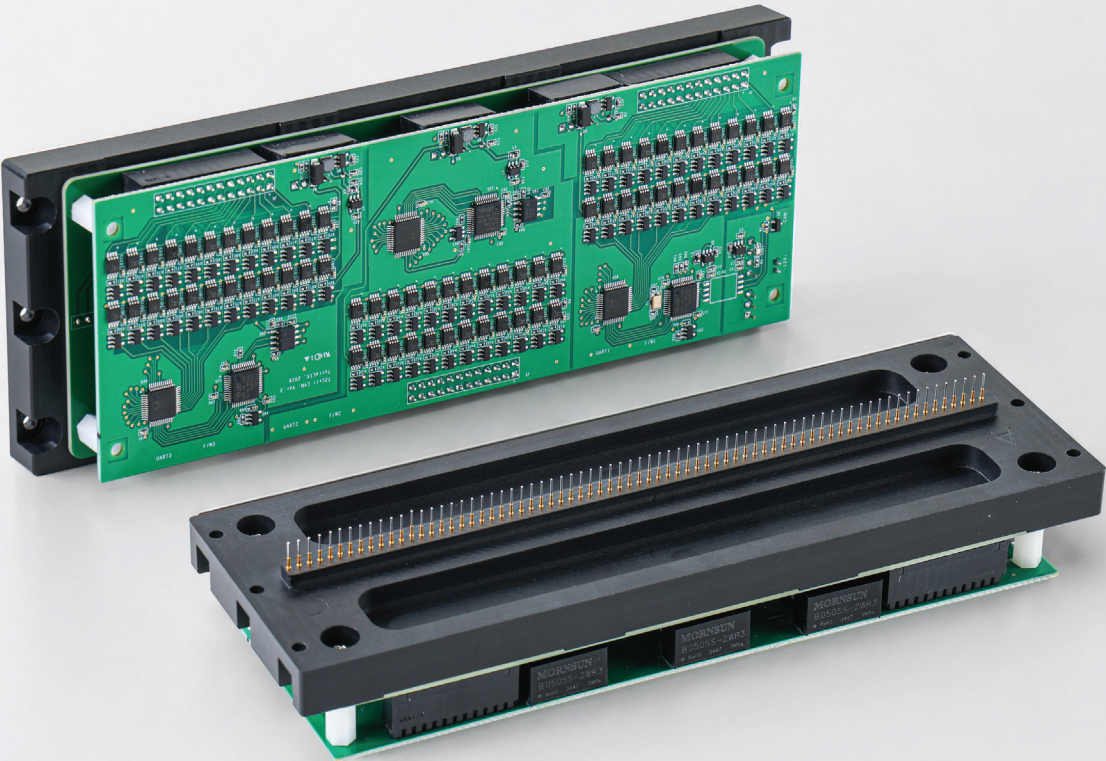
TECHNICAL DATA

Product Name		HYCUS XM1
Performance	Rated Power	1.5 kW
	Voltage Range	56 ± 3 V _{dc}
	Exhaust Gas	Vapor, hydrogen and mixed gas
	Battery (Not included)	48 V battery
Fuel	Type	Hydrogen
	Pressure	2.0 ± 0.5 bar.g
	Consumption	57 g/kWh
	Feed (External)	External H ₂ Tank
Operation Maintenance	Concentration	≥ 99.9 %
	Start/Stop (Auto)	Controls Time, Voltage and Current to Operate (Factory Default)
	Start-up Time	≤ 85 s
	IP Rating	Test in progress, Target Min. IP24
Physical	Mass	Approximately 45 kg
	Size (W x L x H)	1,197 X 297 X 337 mm
	Communication	CAN Bus
	H ₂ Gas Connection	Tube Fitting (3/8 inch Lok-Fitting)
Environmental	Power Connection	XT90E-M
	Operating Temperature	-35 ~ 35°C
	Start-up Temperature	-20 ~ 35°C
	Place of Installation	Outdoor only

For Fuel Cell Stack

Cell Voltage Monitoring(CVM)

The CVM Module is a compact cell voltage monitoring device designed for fuel cell systems. It provides real-time voltage measurement for up to 72 individual cells with high accuracy and fast sampling. With CAN communication and multiple channel configurations, the module can be easily integrated into various fuel cell systems for reliable cell voltage monitoring.



TECHNICAL DATA

Product Name		Cell Voltage Monitoring (CVM)	
Voltage Measurement	Cell Voltage Measurement Range	0 ~ + 1.2 V	
	Cell Voltage Measurement Accuracy	±5 mV	
	Sampling Rate	20 ms	
	Number of Voltage Channels	48 / 60 / 72	
Physical	Mass	48 cell	53 g
		60 cell	60 g
		72 cell	70 g
	Size (W x L x H)	48 cell	65 × 127 × 14 mm
		60 cell	65 × 158 × 14 mm
		72 cell	65 × 187 × 14 mm
	Communication	CAN Bus	
Environmental Operation Condition	Operating Temperature	-35 ~ 50°C	
	Supply Voltage	+12 V _{dc}	
	Isolation(DC)	1.5 kV _{dc}	



www.terralix.com

**Yesterday's choices created today.
Today's technology defines tomorrow's order.**

The Perfection of Air-Cooled Fuel Cell Technology



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