



The Hydrogen Landscape.

Key Players in our Ecosystem



Hydrogen Transport Refueler



Mobile Power and EV Rapid Charging



Mobile Power Generation System

Building a Renewable Hydrogen World Today for a Cleaner, Better Tomorrow

Clean
 Scalable
 Power



renewable-innovations.com



✉ info@renewable-innovations.com

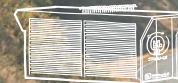
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Rapid EV Charger



Large Scale Primary and Backup Power



Hydrogen Storage

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WHO WE ARE.

PIONEERS AND LEADERS

Renewable and Green Solutions, Products and Services Powered by Hydrogen

The Renewable Revolution

There is a global movement away from carbon-based fuels. The world is beginning to reject the past and embrace the future - it is an energy revolution and the answer is renewable.

Why is it so Important?

This movement can't be ignored as it impacts everyone on the planet. These are critical times and will provide large benefits to us all. We all have a part to play.

The Need

The clock is ticking as the world suffers from over carbonized fuel consumption. Governments, industries, communities, homes and families can all make renewable choices today.

The Future

We have made great progress already as science, technology and politics are beginning to make a genuine shift in thinking. The Renewable Revolution is underway, it is growing, and it has an appetite for innovation and ultimate success.

Our Renewable Power as a Service (RPAAS) provides customers with turnkey, fully managed solutions to accelerate their move to zero-carbon, green power.

We will help you move towards a carbon-free, renewable integrated, energy infrastructure for primary, mobile or backup power needs.

See what the future of independent power generation, storage and management can mean to you, your business and your community.

Global Hydrogen Integration Partners

With a global business pedigree we are able to assist businesses and governments of all shapes and sizes in making the most of the latest Hydrogen technology solutions.

Hydrogen Technology Innovators

Every step we take has been made with ground breaking innovation, new technology application and the stretching of the human spirit. We partner with other world leaders to bring you the best Hydrogen solutions to power your world while creating an improved environment.

We are paving the way to cleaner, safer, and more abundant, energy independent, green world.



Fuel Cell & Hydrogen Energy Association (FCHEA), Director

- Director
- Stationary Power Working Group, Chair
- Government Affairs Committee, Member
- Communications and Marketing Committee, Member



Center for Hydrogen Safety (CHS), Member

- H2 Equipment and Component Failure Rates Committee, Member
- H2 Safety Credential Committee, Member
- Asia-Pacific Hydrogen Safety Conference, Co-Chair



US Hydrogen Roadmap Committee

- US Hydrogen Roadmap Research, Study Team Member
- US Hydrogen Roadmap Steering Committee, Member



US Department of Energy

- Hydrogen & Fuel Cell Technical Advisory Committee (HTAC) (Appointment Only by the DOE / Reports to the Secretary of Energy, 2017-2020)
- National Renewable Energy Lab - Research Partner in collaboration with Daimler and Hewlett-Packard Enterprises
- Intermountain Western Alternative Fuel Corridor, Member



New Zealand Hydrogen Association

- Member

WHERE WE ARE.

We are extending our global reach to better serve our customers.



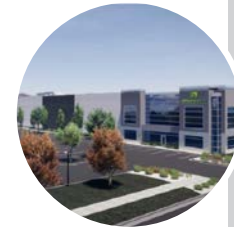
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Renewable Innovations provide design, modeling and production services to deliver Hydrogen Fuel Cell power systems that will make the difference to your business.

Move towards a carbon-free Hydrogen integrated power infrastructure for primary and/or backup power and see what the future of independent power generation, storage and management can do.

Contact us today to find out how to integrate Hydrogen Fuel Cells into power systems for all applications.

renewable-innovations.com



Green, clean technology that can be used anywhere, anytime.

WHAT WE DO.

We create products and solutions to promote a green global economy with life-changing applications and infrastructure.

Renewable Innovations was born out of the need to do something different in the world to reduce carbon emissions while strengthening power independence utilizing Hydrogen and Hydrogen Fuel Cells in a new and exciting way.

Our energy systems are designed as plug and play, green energy solutions. They are scalable and intended for a wide variety of existing applications looking to convert to a carbon-free footprint.

1 EV Rapid Charging System

Hydrogen Fuel Cell powered EV charger with capacity for up to 8 electric vehicles. Up to 700 kW per charge station. Quick to drop-and-go with no utility connection required.

2 Primary & Backup Power Systems

Hydrogen Fuel Cell powered, power modules up to 1.5 MW per module. Units can be paralleled to reach power levels as high as 100 MW at locations like data centers.

3 Mobile Power Generation System

Hydrogen Fuel Cell powered 180 kW generator with towable battery storage and EV rapid charging.

4 Hydrogen Transport Refueler

Supply of 1,000 kg+ of pure Hydrogen at 700 bar. On-board compression and chilling for efficient delivery.

5 Hydrogen Storage Modules

Storage modules of 1,000 kg to build up your extra Hydrogen gas supply.

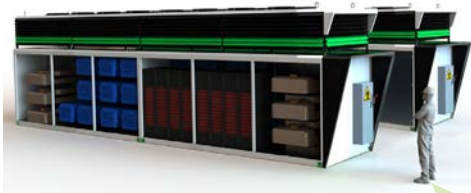
6 Mobile Power, Refueler and Rapid Charger

True Hydrogen multi-tool that is mobile and ready to support both Hydrogen vehicles and applications as well as rapid EV charging.

1 Rapid EV Charger



2 Primary & Backup Power Modules



4 Hydrogen Transport Refueler



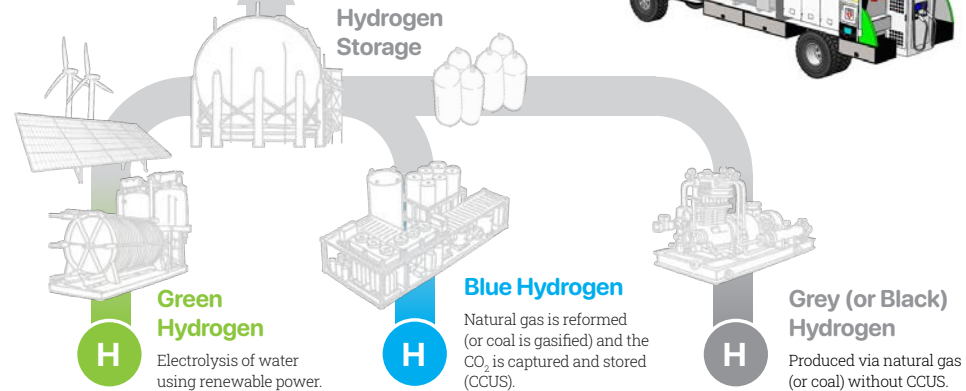
3 Mobile Power Generation System



5 Hydrogen Storage Modules



6 Mobile Power, Hydrogen Refueling, and EV Rapid Charging





UNDERSTANDING EV CHARGING.

20 MIN TO FULL CHARGE

Rapid DC fast charge stations allow you to recharge any EV more quickly!

Electric vehicle ownership is increasing globally and our expectation as customers is to be able to recharge as fast as a standard fuel vehicle. The standard low level domestic charging system is low power and very slow.

A popular view of modern technology is that over time these items will become cheaper to purchase, smaller, lighter, more efficient, and in the case of EVs, to hold more charge and recharge more quickly. History shows us that these things are indeed likely to happen, but today's reality is that we don't have the power capacity and availability to recharge all the EVs we currently have let alone an increased number. Herein lies the problem...

The Grid Gap

In the past, the power offered to consumers through the electricity grid network was available at a minimal level compared to the current need. The energy demands were generally well met with their adequate supply.

Today there are more consumers and consumer needs in which peak demand is higher, than the grid capacity. When demand is greater than supply this creates a shortfall, an incapacity, or a gap in the networks ability to deliver. We call this the **Grid Gap™**.

As this Grid Gap increases there will be major challenges meeting our day-to-day needs and expectations.

Grid Ability Versus Availability

The power battle is between the **ability** our power grid network has to produce electricity and the level of delivery **available** where needed. Domestic and business energy consumers are the casualties of this battle.

Some scenarios include:

- Utility has the ability to produce but can't get the energy to its consumers.
- Utility does not have the ability and there are no options for the consumer.

Hydrogen Solution

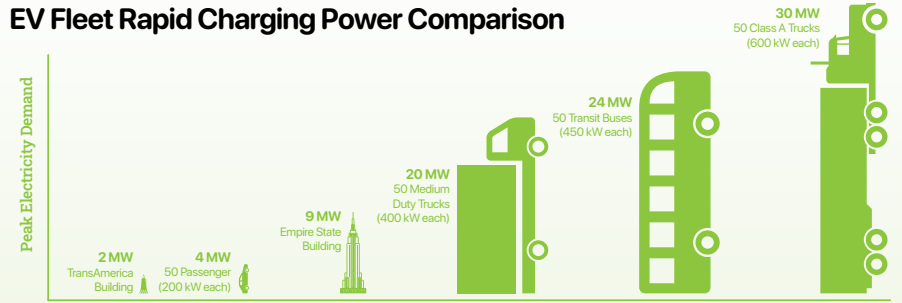
This is a very simplified discussion of the energy challenges faced today, but out of it comes an exciting opportunity for Hydrogen.

Hydrogen power solutions can provide power in places currently hard to service by the energy retailers without environmental impacts or availability issues.

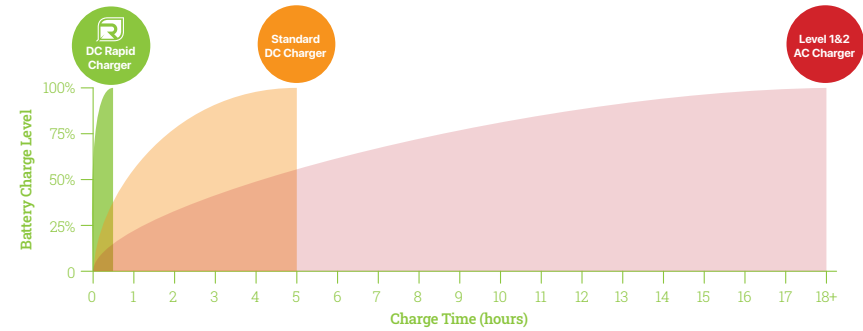
Hydrogen power solutions can also deliver high power needed for EV rapid charge stations regardless of location while also providing grid support and facility backup power.

Plus, the source of energy Hydrogen can be created with excess grid power and very effectively stored for future grid energy needs.

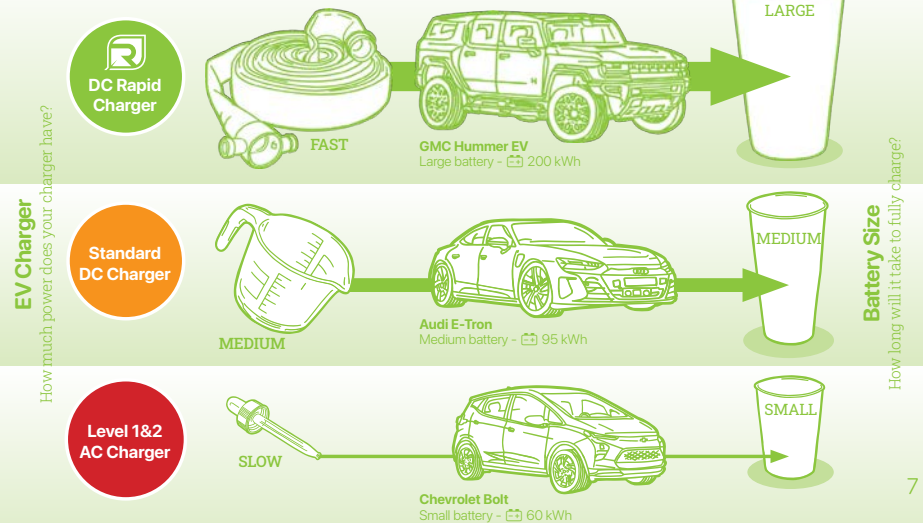
EV Fleet Rapid Charging Power Comparison



Time to Charge



Charger and Battery Size



Renewable power is not confined to roof solar panels and batteries. You can take it on the road too.

MPGS.

MOBILE POWER GENERATION SYSTEM

Rapid EV charging and emergency power, all Hydrogen Fuel Cell powered.

Welcome to the only towable power supply you need as we head towards a renewable energy future. You can replace diesel generators with power systems fueled by green, renewable Hydrogen.

These multi-purpose towables are the 'Swiss army knife' of power systems. Packed inside their small footprint is a silent power system that uses Hydrogen Fuel Cells to deliver clean power and the waste exhaust is pure water.

Join multiple units together and you can service much higher power needs as required.

80 kW Fuel Cell

The key to this renewable power source is the Hydrogen Fuel Cell. This proven technology delivers almost silent operation and turns Hydrogen gas into electricity.

At about 400 VDC this is then converted to the required voltage with the on-board inverters and power converters.

180 kW Rapid EV Charger

The MPGS can include a rapid EV charge station on the back. With a single or double power outlet you can recharge EVs at super quick speeds (less than 20 min).

Includes built-in timing and payment system that allows you to generate revenue.

70 kg Hydrogen Tank Included

A large 70 kg storage of Hydrogen is safely built into the MPGS trailer giving you ample energy fuel for your mobile power needs.

The latest technology in gas pressure tanks provides efficient safe storage of this renewable fuel.

180 kWh Lithium-ion Battery

Part of the success of the MPGS is the integrated 180 kWh battery. This provides a powerful and crucial energy reserve that is integral to the high charge capacity. It also forms part of this holistic power source that blends Hydrogen Fuel Cells with batteries and inverters.

Multiple Uses

A portable power supply can be used in a wide variety of situations as well as being stored and maintained for emergencies that could be in any number of locations.

Whether it is an outdoor public event, for carbon-free power to accompany emergency services, a central power source on a construction site or to provide emergency additional power for a critical facility, the MPGS is an ideal match.

Mobile Power Generation System (MPGS)

The MPGS is a unique, towable, Hydrogen powered generator with battery backup.

With a rapid EV charger fitted on the back, you can take this mobile trailer to remote locations where fast or basic charging is needed.

The on-board Hydrogen tanks can be refilled and then the unit can be back out on the road.



Construction

When you need remote power on a construction site, you can still do this with green Hydrogen energy.



Emergency Services

Critical power needs for our emergency services are made carbon-free with minimum noise.



Public Events

Large power needs are achievable with parallel expandability. EV charging also possible and food services can be clean and quiet.



Security and Safety

Emergencies never happen at convenient times, so having a reliable Hydrogen powered supply is crucial.



Keeping electric vehicles on the road longer and recharge times shorter.

RAPID EV CHARGER.

SUPER FAST AND HIGH POWER
With a drop-n-go deployment and a high-power system, you can rapid charge EVs anywhere.

EV charging is a topic on everyone's minds as there are real energy issues at stake in our business and domestic environments.

The main issues include:

- You want to recharge your EV more quickly so you can travel longer distances without lengthy recharge stops.
- You want to provide rapid EV charging but can't upgrade the power supply sufficiently.
- You have space for a rapid EV charge station but not enough local energy supply or the required finances for more.

All of these issues are addressed with the rapid EV charger from Renewable Innovations.

Quick Installation

As a pre-built solution there is a very quick delivery and installation process. Simply provide a level concrete pad and access for delivery and we can deploy very quickly.

No additional utility power required and you will be up and running with up to 8 rapid EV charge outlets. Plus, with our Renewable Power As A Service, we manage every detail.



No Utility Required

All power to operate is included via the on-board Hydrogen Fuel Cells, battery and inverters.

Built-in Hydrogen

The standard Rapid EV Charge Station has 700 kg of integrated Hydrogen storage and this can be upgraded with an additional Hydrogen storage module.

700 kW EV Charger

The powerful fuel cell and battery combination allows for some truly rapid power charging. As vehicle on-board battery sizes increase, rapid charging becomes imperative.

Facility Power

Having this large power source on your property provides the added benefit of a ready-made emergency power supply for your existing facility.

Integrate this with your facility power supply to have a Hydrogen powered UPS system or additional power for peak energy demands.

Rapid Economics

An on-site rapid EV charger also offers additional retail opportunities as the station attracts more customers with lower charging prices, 100% green energy and super quick charge times.

700 kg of Hydrogen gas storage at 700 bar built in to the charge station. Additional Hydrogen storage units can be installed on site and connected.



Hydrogen Fuel Cells, inverters and batteries. Minimum 700 kW fuel cell system with minimum 300 kWh battery array.

Four dual-port rapid EV charge stations scalable up to 700 kW per station. Smart user-interface and point of sale as required with interactive charge status dashboard,

Utility/facility connection, connected as a grid-tie system, as an off-grid supply, or as a UPS for the site..

Rapid EV Charger

As the name suggests, this unit allows EV drivers to recharge their vehicle in around 20 minutes rather than hours.

Fueled by Hydrogen, this is a truly renewable energy supply with no carbon footprint.

The built-in **Smart Charge system** provides quick customer connection, identification and EV charge management.

Units are delivered and installed ready to go with built-in Hydrogen storage.

Simply plug in, be amazed and refill with Hydrogen as you need more.



SCALABLE POWER.

HYDROGEN POWER MODULE 1.5 MW

Carbon-free, scalable, on-line UPS or primary power system.

Hydrogen Fuel Cell power modules are reliable and deliver a zero carbon footprint when operating, making them well suited to many power services.

Because these power modules have their own Hydrogen fuel as part of the system, they can be installed anywhere, making large scale power available to remote locations minimizing cabling infrastructure.

Primary Power

With a continuous or refilled supply of Hydrogen, the fuel cell power modules can deliver continuous power to your facility. The built-in management system manages the individual cells as needed during the power delivery cycles.

Backup and UPS Power

Hydrogen Fuel Cells are always on-line, requiring no switching and making them ideal for emergency power systems.

Scalable Solutions

Fuel cell modules are scalable and available in a range of standard sizes - 250 kW, 750 kW, and 1.5 MW. (The 1.5 MW module is shown below.)

Alternatively, you can have a custom module(s) system designed to meet your precise needs.

Hydrogen Fuel Cells, each supplying a minimum of 80 kW giving a total of 1.76 MW.

High efficiency heat exchangers and connections to facility exchangers if needed.

Add additional power modules to increase energy capacity.

Inverters to deliver the required power output(s).

720 kWh lithium-ion battery array providing continual power and high efficiencies.

Hydrogen Power Module 1.5 MW

Quick to deploy and scalable to any power requirement, this power module is powered by Hydrogen Fuel Cells with built-in inverters and support battery storage. Connect to your facility for primary, load-shedding or UPS power. Just add Hydrogen you're ready to go.

RENEWABLE INNOVATIONS
EMPOWER 1.5 MW SCALABLE ENERGY MANAGEMENT SYSTEM



Data Centers

Fuel cell power modules are ideal for data center UPS power as they are on-line and can be installed externally very quickly or internally if needed and connected to existing HVAC (super-computer cooling systems). They have low to no noise during operation and the stored fuel supply will last indefinitely without degrading.



Commercial

Business offices, warehouse, machinery, airports, etc. can all make good use of fuel cell power modules to provide, carbon-free power.

There is no need to use diesel generators any more for either remote power, UPS systems or peak load supplementation.

They also make great additional on-site power for rapid EV charging.



Retail

Retail stores and retail parks can make good use of fuel cell power to deliver carbon-free energy to all the core facility power needs.

Often there are very large roof spaces that can be used to generate solar electricity which can feed into the energy management system.

Additional Hydrogen Storage

Hydrogen Fuel Cell power modules can run for as long as you can supply them with Hydrogen. You can increase your storage supply of Hydrogen at any time with the addition of extra Hydrogen storage modules.



Once installed there are a number of ways we recommend keeping them full.

First, use on-site Hydrogen generation with green energy sources (like solar, wind, hydro, or thermal). This green Hydrogen is compressed, chilled and fed into your Hydrogen store.

Your second option is to use our transport refueler to deliver green Hydrogen from another generation site and refill your Hydrogen storage units.

Hydrogen Usage Calculator

Based on a continuous load, the fuel cell module will consume the following maximum amounts of Hydrogen fuel over these different periods.

Load	30 min	1 hour	2 hours	6 hours	12 hours	24 hours
1.5 MW (max)	50 kg	100 kg	200 kg	600 kg	1,200 kg	2,400 kg
1 MW	34 kg	67 kg	134 kg	400 kg	800 kg	1600 kg
500 kW	17 kg	34 kg	67 kg	200 kg	400 kg	800 kg
250 kW	9 kg	17 kg	34 kg	100 kg	200 kg	400 kg
100 kW	4 kg	7 kg	14 kg	40 kg	80 kg	160 kg

Power duration with Hydrogen loss

If there is a loss of the Hydrogen supply, the system batteries can run the UPS system at full load for about 30 minutes while the supply is restored.

The Hydrogen powered data center is green on the inside and on the outside too.

HYDROGEN REFUELER.

MOBILE SUPPLY & DELIVERY

For efficient Hydrogen transport to refuel and resupply to any location.

- 1,000 kg+ Storage
- Hydrogen Fuel Cell Powered Delivery
- On-board Compression and Chilling



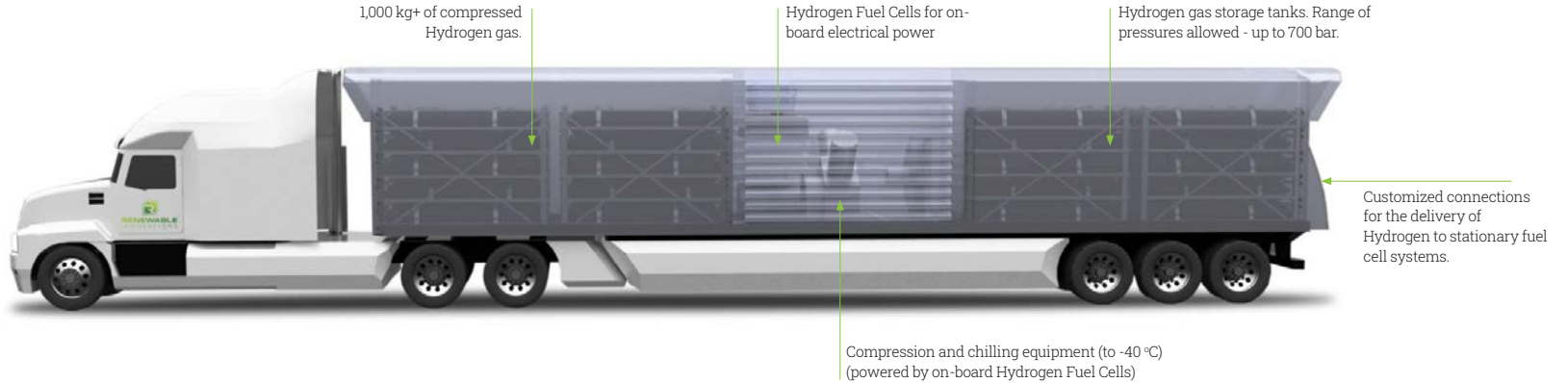
H2 Refueler

The transport refueler can hold a minimum of 1,000 kg of Hydrogen at a pressure of up to 700 bar (enough to power a Rapid EV Charger for days.)

The trailer technology includes built-in compression and chilling equipment (powered by the on-board Hydrogen Fuel Cells), as well as various options for delivery connections.

Use the H2 Refueler to refill stationary Hydrogen storage units, heavy transport and machinery powered by Hydrogen or other Hydrogen consumers needs.

Different trailer sizes available based on the exact customer requirements.



Effective delivery of renewable Hydrogen to locations all over the country. Built-in high pressure storage, compression, and delivery interfaces.



GREEN COMMUNITY GARDENS, POWER, AND MORE.

THE BIGGER PICTURE

Bringing everything together for a cleaner, better life. Turning grid generation into parks and gardens.

Renewable Innovations is working with community developers to use our Hydrogen Fuel Cell systems to power all-in-one Greenhouse Grids™.

These beautiful large greenhouses grow useful plants and use the exhaust pure water from our fuel cell systems to sustain these year-round gardens as well as providing power for neighborhoods.

These projects are focused on directly improving individual lives in a manner that they can see and hear. **We are turning the idea and aspiration of greener living into reality.**

It is easy for every citizen to see how green, renewable power systems can fit into their daily lives. Whatever industry they work in, they can see that whether it's eliminating the diesel back-up systems, or powering entire office communities without tapping into the utility grid, or helping IT firms meet their decarbonization goals, or powering a film shoot in the middle of the desert, this project can help the entire landscapes move to a renewable and independent energy future.

These solutions are scalable to fit into the smallest starting project with easy growth points to fill large cities, communities and regions.

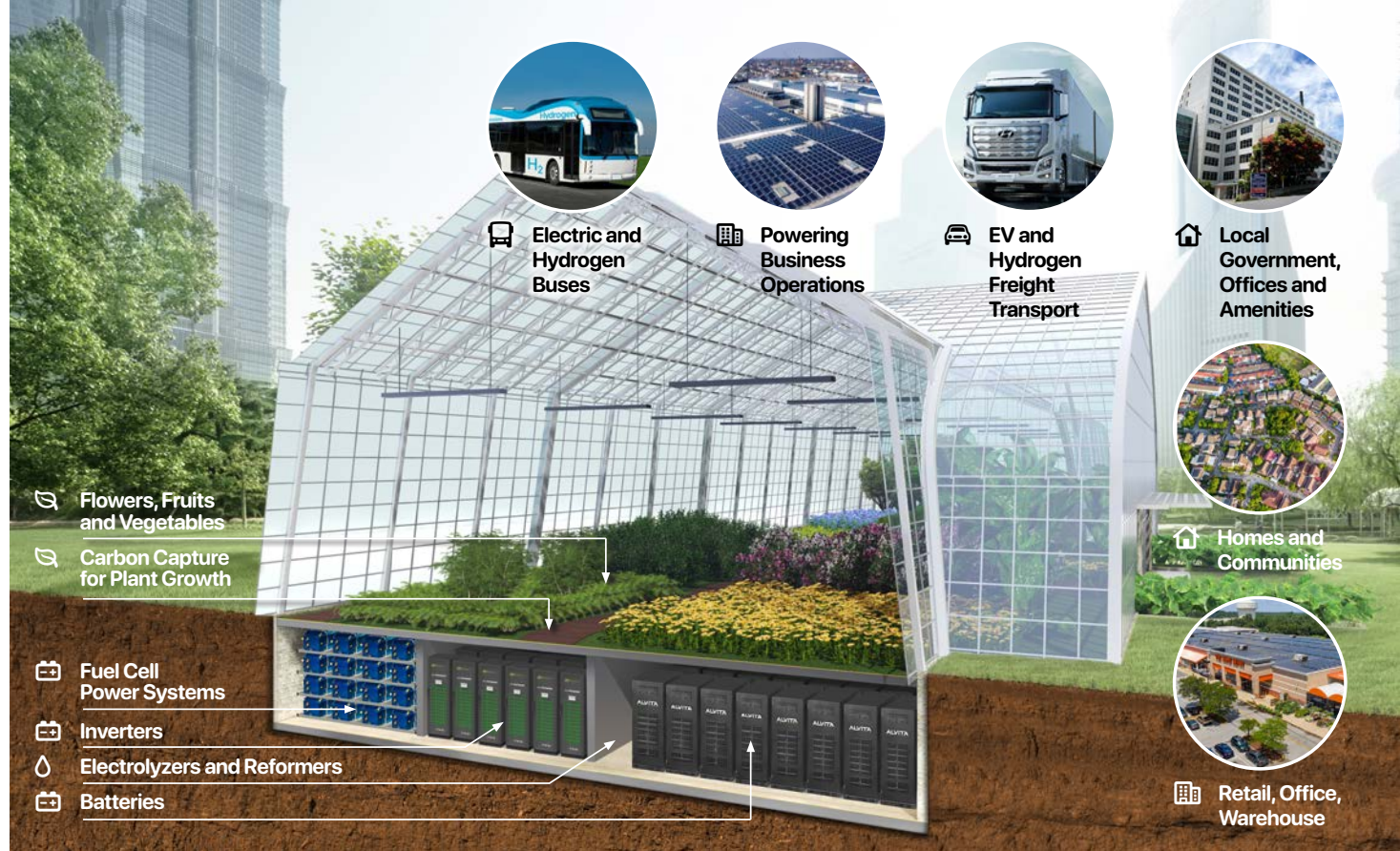
Here at Renewable Innovations, we are working every day to build Hydrogen-based applications to move the dream of a carbon-free future to a reality.

Welcome to the Clean, Green Scalable future. A positive change in living for us now and for all future generations on this beautiful planet Earth.

All-in-one

There are key renewable networks that can be designed to help introduce some of these renewable energy features. These include:

- Amazing gardens for produce, flowers, etc. that can also be used for year-round parks and playgrounds.
- Greenhouse system with solar power generating Hydrogen and fuel cells providing power and contributing to the water needs.
- Local domestic homes with solar installations donate some of their off-peak power to the community for generating more Hydrogen.
- Retail parks and business use roof top solar to supply off peak energy to the community power supply.
- Transport systems are upgraded to full EV vehicles and fast charged with Hydrogen Fuel Cell powered rapid charge stations.
- Additional satellite electrolyzing centers are created and more Hydrogen is produced and stored.
- Businesses, offices and local government amenities switch to Hydrogen Fuel Cell powered UPS backup power and peak load shedding.
- More locations offer fuel cell powered EV rapid charge stations.
- New Hydrogen generation centers are created and distribution networks upgraded.
- Transport fleets up upgraded to Hydrogen gas powered fuel cell vehicles.
- Retail operations become completely powered with Hydrogen while also providing Hydrogen fuel and EV rapid charging.



Flowers, Fruits and Vegetables

Carbon Capture for Plant Growth

Fuel Cell Power Systems

Inverters

Electrolyzers and Reformers

Batteries

Electric and Hydrogen Buses

Powering Business Operations

EV and Hydrogen Freight Transport

Local Government, Offices and Amenities

Homes and Communities

Retail, Office, Warehouse

The clock is ticking and we are responding. The Renewable Revolution is here to stay, grow, and succeed.



Rooftop Solar from Homes



Electric and Hydrogen Ferries

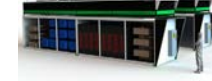


Electric and Hydrogen Domestic Vehicles



Electric and Hydrogen Trains

SPECIFICATIONS.



Hydrogen Transport Refueler

- 1,000 kg Hydrogen (minimum)
- 700 bar Hydrogen tanks
- Built-in compression and chilling
- Compression and chilling services are Hydrogen Fuel Cell powered
- Environment - Temperature: -40 °C to +45 °C. Humidity: 0-95 % (non-condensing). Altitude: <1,500 m above sea level

Mobile Power and EV Rapid Charging

- 80 kW Fuel Cell
- 180 kW Inverter
- 180 kWh Lithium-ion battery array
- Up to 70 kg Hydrogen gas
- 180 kW DC EV fast charger
- Can connect to a facility for backup power
- Can connect to utility for grid services
- Outputs can be paralleled
- On-board Hydrogen gas for refilling other tanks
- Inline vehicle battery management
- Refill from any Hydrogen fueling station
- Environment - Temperature: -40 °C to +45 °C. Humidity: 0-95 % (non-condensing). Altitude: <1,500 m above sea level

Mobile Power Generation System

- 80 kW Hydrogen Fuel Cell
- 180 kW Inverter
- 180 kWh Lithium-ion battery array
- 70 kg Hydrogen gas
- 180 kW DC EV fast charger
- Can connect to a facility for backup power
- Can connect to utility for grid services
- Outputs can be paralleled
- Environment - Temperature: -40 °C to +45 °C. Humidity: 0-95 % (non-condensing). Altitude: <1,500 m above sea level

Rapid EV Charger

- 700 kg Hydrogen (minimum)
- 700 bar Hydrogen tanks
- 500 kW up to 700 kW power
- 4 dual port DC EV fast chargers with point-of-sale option
- Utility interface for backup or bi-directions utility connection
- Optional canopy
- Optional lighting package
- Environment - Temperature: -40 °C to +45 °C. Humidity: 0-95 % (non-condensing). Altitude: <1,500 m above sea level

Hydrogen Power Modules 1.5MW

- Voltage output(s) - Customer specified
- Frequency output(s) - Customer specified
- UPS - In-line operation (always on)
- Grid-tie (if required)
- Scalable - Combine with other fuel cell modules to increase total power
- Fuel type - Hydrogen (99.999 % pure)
- Input fuel pressure - 7 to 11 bar
- Battery array - Customer specified
- Heat management - Exhaust to atmosphere or capture and convert for facility HVAC.
- Environment - Temperature: -40 °C to +45 °C. Humidity: 0-95 % (non-condensing). Altitude: <1,500 m above sea level
- Installation - Internal or external to the facility.

Hydrogen Storage

- Up to 1,000 kg per 20 foot container
- Independent of or in conjunction with RI products
- 700 bar maximum pressure
- Can be paralleled to meet the site needs

Imagine a Clean,
Green Energy
Future.
Stop Imagining.
We're Doing It.

