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A look at Lake Quivira resident Ray Ansari's Hybrid Cube innovation

By Dawn Gabel

With contributions from Lee Stiegemeier, Co-Founder, Circle Sideways

What do you get when you combine a used shipping container, a wind turbine, solar panels and a hydrogen fuel cell? You have a portable containerized power solution that is poised to meet a variety of critical human needs around the globe.

"While I did not invent those things, I came up with the idea of putting them together in a proprietary combination," said Ray Ansari, founder and CEO of HCI Energy, LLC. "My goal is to use this product to help communities solve common problems more cost-effectively and efficiently in everything from disaster relief to telecommunications to military operations."

The Hybrid Cube, as it's called, was developed by Quivira resident Ray Ansari and is now being put into production for use worldwide. In fact, Clay County, Missouri, will be one of the first locations to benefit from the renewable power generated by a Cube. The county plans to use it to provide reliable backup to the telecom infrastructure used by its police force. Ultimately, by ensuring officers have the ability to receive and monitor calls, dispatch radio communications to those in the field and communicate with constant up-time, the region will benefit from improved public safety.

In addition to local interest in the Hybrid Cube, service providers, companies, non-profit organizations and even governments have expressed the desire to leverage the benefits this innovation has to offer.

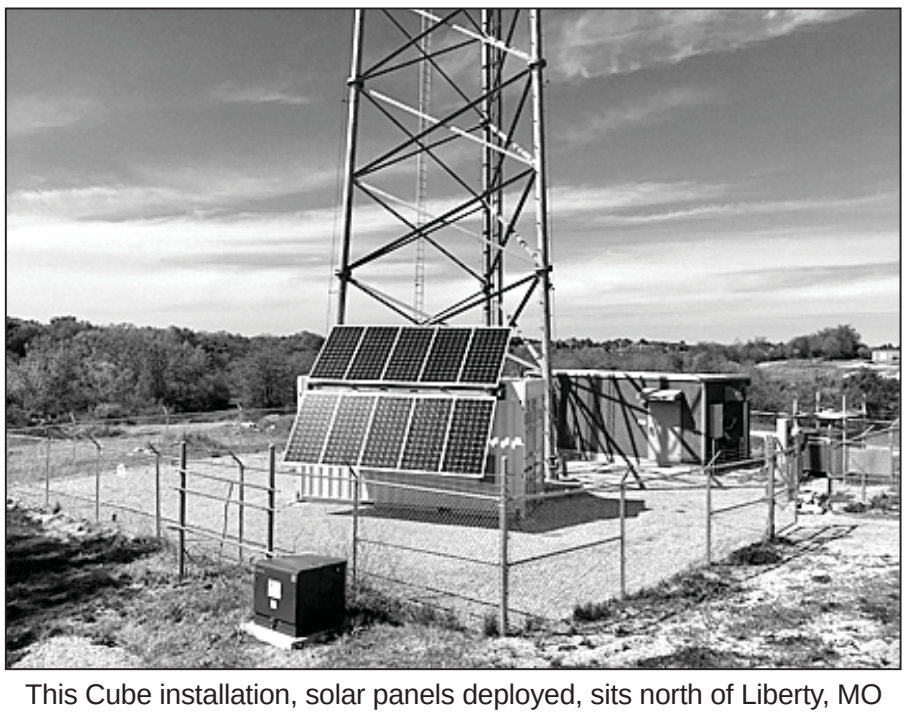
The evolution of the solution

Armed with an electrical engineering degree and an MBA, Ray spent more than two decades traveling the world as an energy industry executive. During those travels, he recognized that while energy was generally available in developed cities, reliable power was rare in remote areas. This is frequently due to a combination of scarce resources, unreliable transportation and complex environmental conditions. Having worked on various wastewater, power and fuel cell-related issues, Ray put his knowledge and experience to work to develop a reliable, reusable energy source that could be self-contained and distributed to even the most remote location for dozens of applications.

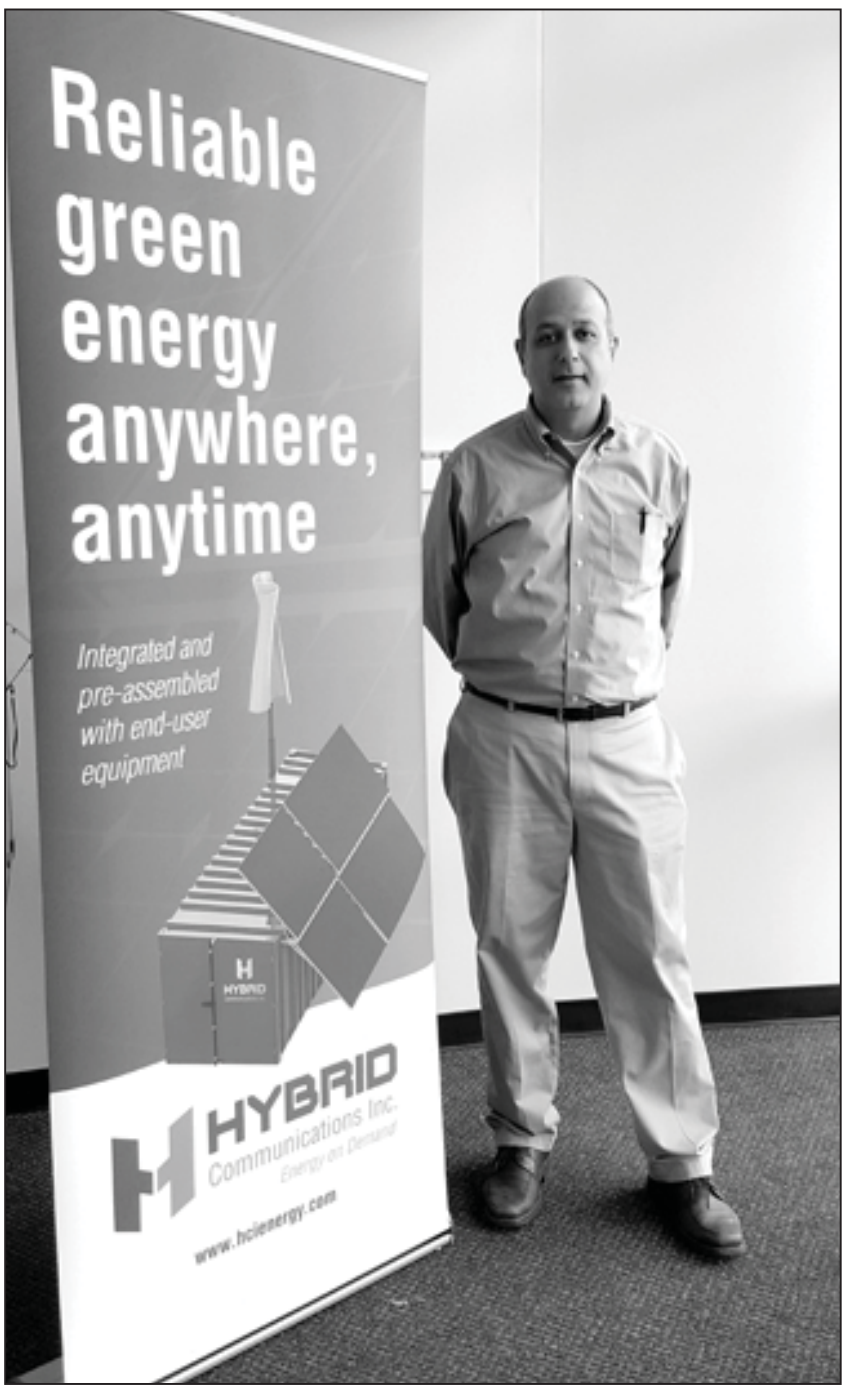
"For the last 12 years I have been designing hydrogen fuel cells. Prior to that, I designed skid-mounted wastewater treatment solutions. With those experiences under my belt, designing the Cube was a logical transition for me. After working to get the initial design just right, I filed a patent for our product and in 2016 the patent was granted," Ray said.

During the much anticipated wait for that exciting news, Ray began building the HCI Energy team and working on a prototype.

Historically, when remote, off-grid users needed reliable power, they



This Cube installation, solar panels deployed, sits north of Liberty, MO



Ray Ansari, founder and CEO of HCI Energy

installed an environmentally hostile diesel generator, which required a continuous supply of diesel fuel and consistent technical support. This ongoing requirement for fuel and technical support presented inherent problems with system reliability and greatly increased total cost of ownership. Perhaps most significantly, when fuel or support was compromised, power ceased.

Therefore, Ray designed the Hybrid Cube to utilize readily available renewable wind and solar energy to feed the onboard battery storage. Additionally, it can combine components from a variety of manufacturers and run on natural gas, hydrogen, methanol or methane, depending on what is most readily available to the customer and the installation location's fuel infrastructure. By housing the components in a standard ISO shipping container, the Cube is highly portable via standard international transportation channels and protocols.

In his travels around the globe, Ray spent a great deal of time in Southeast Asia, including Indonesia, China, India and the Philippines. While there he realized the Cube would have even broader appeal if it could be modified to address needs beyond power production. Utilizing his background in the wastewater industry, he designed a drinking water and wastewater package that could be integrated within the Cube's footprint. This flexibility is part of its desirability from a broad array of potential customers.

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Ray looks at simplifying products for simplifying life

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Ray noted, "What we have created is called a hybrid package, and it is really nothing new. However, we utilize off-the-shelf products and integrate them into a package that can provide reliable power, clean drinking water and sewage treatment to end users, all while reducing fuel consumption, capital costs and the need for ongoing technical support. Our specialty is truly the integration of components in a controlled environment."

An added benefit of this controlled environment is the Cube's ability to retract its wind turbine and solar panels during inclement weather, while the fuel cell and generator provide continuous power. This automation protects the solution from potential damage by storms or high winds. The containerized design also minimizes the potential for theft.

In addition to reliable clean energy, the Hybrid Cube has another byproduct--American jobs. HCI Energy is working to develop strategic partnerships with U.S. companies to create manufacturing jobs that take care of every step of the process, from design and development to installation and operation.

A fit for numerous situations

To say that the applications for this product are vast is an understatement. First, the shipping container design ensures the Hybrid Cube can be transported via truck, rail, ship or even helicopter. That makes remote locations a non-issue for the solution. If disaster hits, and even the most accessible location becomes inaccessible due to destruction, the Hybrid Cube can literally be a lifesaver.

Ray stands next to a Cube under construction

"In Greensburg, Kansas, when the EF5 tornado ripped through the town in 2007, rescue workers and townspeople had to drive for hours for hotel stays. In a similar instance, a Hybrid Cube energy package would allow cleanup crews to remain close by, using portable housing," Ray explained.

Insurance companies and FEMA (the Federal Emergency Management Association) are interested in this solution for its many applications. FEMA, for example, could choose to install and secure these units prior to a hurricane coming ashore. After the storm passes, the units would automatically open up and start providing power and drinking water for the people whose lives are affected. Similarly, if natural gas and diesel lines are shut down due to an earthquake, the Hybrid Cube could have a major impact in a population's ability to quickly recover.

Meanwhile, government officials in Canada have connected with Ray to address excess spending required to deliver water to native populations in remotely located communities in the Yukon. Many of the locations have been using gas wells that have gone dry, so now they have very few diesel-powered generators running to make do. In fact, the lack of power has made it so that about 180 communities in North America don't have a wastewater treatment plant that runs consistently, thereby creating health issues.

Groups like Asia Development Bank and World Bank also see the Hybrid Cube as a solution to water purity and scarcity issues, in addition to the need for reliable, clean power in remote locations and small villages.

Currently, several models of the Cube exist for use "out of the box" to address various needs, but the HCI Energy team can completely tailor an energy package for a specific customer as needed.

"All of my life I have looked at simplifying products for simplifying life," Ray shared. "After working on projects to address the aftermath of natural disasters or improve conditions in unreliable grid or off-grid regions, I'm proud that HCI Energy stands to make a positive global impact in the lives of so many. This is truly a dream come true."

To follow Ray and the HCI Energy team's journey, visit hcienergy.com.

LQ Triathlon Planning Meeting

Wednesday, May 10,'

7 p.m. - Clubhouse

Please join us as we start the wheels turning for the Annual Lake Quivira Triathlon to be held on September 2.

Your help is needed in making this an amazing Triathlon!