

ColTestBed **Entrepreneur Directory**





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CalTestBed

An Initiative to De-Risk Innovations and Accelerate Commercialization.











CalTestBed Facilities





UCI

UC San Diego

UNIVERSITY OF CALIFORNIA





UC SANTA BARBARA



Visit the Facilities Directory

Technology Types

Building Technologies	Hardware or integrated solutions that support energy efficiency in buildings i system optimization, after treatment coatings for fenestration, insulation, and
Energy Efficiency	Hardware or integrated solutions that demonstrate energy efficiency includir cooling, advanced electric heat pumps that use refrigerants with low or zero
Energy Storage	Hardware or integrated enabling technologies for lithium-metal and lithium-s chemistries, enabling technologies for green hydrogen for long duration, ener
Grid Technologies	Hardware or integrated solutions that modernize the electric grid, through en response, distribution energy resource management systems, electric vehicle
Industrial & Agricultural Innovation	Hardware or integrated solutions that work in industrial and/or agricultural co and agricultural processes.
Internet of Things	Hardware or integrated solutions that are used to enable clean energy or ene manipulation, management, movement, control, display, switching, interchang
Material-Based	Hardware or integrated solutions that utilize novel materials to enable clean e
Renewable Generation	Hardware or integrated renewable energy technologies that advance electric heat-exchange, and bioenergy technologies.
Transportation	Hardware or integrated technologies that enable electric and alternative fuel infrastructure.
Water Technologies	Hardware or integrated technologies that embrace forward-thinking applicat including hydro wave, and tidal while advancing clean and safe water goals.

including occupancy-based controls and building management nd building envelopes.

ing appliances, solid-state lighting, non-vapor compression GWP.

-sulfur batteries, Ultra- or super-capacitors, Non-lithium battery ergy storage (including technologies such electrolyzers).

enabling more clean energy and energy efficiency such as demand cle to grid integration, etc.

context to enable clean energy and/or energy efficiency in industrial

nergy efficiency through the automatic acquisition, storage nge, transmission or reception of data.

energy generation or greater energy efficiency.

icity, heat, and/or fuel from renewable sources including solar, wind,

el vehicles, and related electric charging and alternative fueling

ations and solutions that utilize waterflow for energy generation





Alionyx Energy Solutions

UC San Diego: Energy Storage Integration Lab

Point of Contact: Mike Nagus Phone: 403.689.0939 Email: mnagus@alionyx.com Website: https://alionyx.com/

Company Region:

Greater Los Angeles, Los Angeles County

Company Description:

Alionyx Energy Systems (AES) has created a new class of batteries based on redox active polymers to store energy. These polymers, developed and manufactured by AES, are drop-in replacement energy storage materials for existing technologies. It is these proprietary polymers that allow AES to build batteries that set them apart from the competition.

The world is becoming more reliant on lithium, cobalt and other rare earth minerals to satisfy the ever increasing need to store and use energy. AES offers an opportunity to rid batteries of one of their metals which stabilizes the system, allowing for more cycles, longer life and decreasing costs as we replace an expensive, toxic and reactive metal for a polymer.



Mike Nagus CEO Co-Founder



Jasim Uddin Principal Scientist



Zeiad Muntasser CTO/President Co-Founder



Andrew Stewart Principal Scientist

Alionyx Energy Solutions

UC San Diego: Energy Storage Integration Lab

Technology Readiness Level: 5

Technology Type: Grid Technologies

Innovation Description:

AES has developed a novel organic aqueous battery system using our patent pending polymer energy storage materials. AES's first chemistry, Poly-K uses our patent pending Redox active polymer as a potassium ion receptor to store energy. Precursor materials for manufacturing the polymer are ubiquitous and abundant, which makes a material that is both supply chain independent and cost-effective. The system is aqueous and non-toxic so the manufacturing costs are significantly less than competing technologies and the system is inherently safe (non-flammable/no thermal-runaway). Projected costs of this new system at scale are < \$100/kWh. The polymer is also extremely stable, allowing cycles in excess of 13,000 at 100% DOD and 3C rates.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Companies interested in new clean energy technologies for potential acquisition
- Investors interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government officials wanting to learn more about the innovation





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Alionyx currently produces D and pouch cells

R&D Lab in Monrovia, California



Alpine Hydromet

UC Riverside: CE-CERT Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Point of Contact: Anne Heggli Phone: 503.830.1830 Email: anne@alpinehydromet.com Website: https://www.alpinehydromet.com/

Company Region:

Central Valley, Placer County Northern California

Company Description:

Alpine Hydromet's foundation is meteorology and water resource management with over 50 years of combined experience. Alpine Hydromet focuses on improving real-time monitoring solutions for increased reliability and ease of use by researching scientific and technological developments.

Since 2016, we have focused on the development of the Fluidless Snow Pillow (FSP) and Cosmic Ray Detector (CRD) for snow water content monitoring to enhance hydropower generation.



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Alpine Hydromet

UC Riverside: CE-CERT Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Technology Readiness Level: 5

Technology Type: Renewable Generation Hydropower Optimization

Innovation Description:

The Cosmic Ray Detector (CRD) is a unique technology that vastly improves the reliability of snow water content monitoring used for grid-scale energy management and reservoir operations.

Cosmic rays routinely enter the earth's atmosphere sending a shower of passive secondary cosmic radiation into the earth's environment. The cosmic rays penetrate many terrestrial objects including snow, where the signal is weakened based on the quantity of water in the snow, regardless of the phase of the water. The attenuation of the signal through the snowpack measures the quantity of water present in the snowpack.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Companies interested in new clean energy technologies for potential acquisition



Battery Energy Storage Technologies, LLC (BEST)

Battery Energy Storage Technologies, LLC

UC San Diego: Energy Storage Integration Lab

Point of Contact: Sri Narayan Phone: 626.233.4350 Email: sri.narayan@usc.edu Website: www.batteryenergystoragetechnologies.com

Company Region:

Greater Los Angeles, Los Angeles County

Company Description:

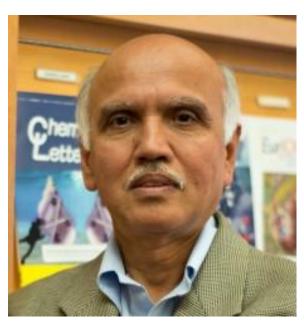
Los Angeles, Los Angeles County Company Description Best Energy Storage Technologies (BEST) is a USC spin-off for the commercialization of durable, inexpensive and scalable organic/inorganic flow batteries for a wide range of energy storage applications.

"The extraordinary durability of the iron/AQDS battery combined with the low cost of materials, presents a unique opportunity for meeting the requirements of "mega"-scale energy storage applications" – Journal of the Electrochemical Society 167 (2020) 060527: DOI: 10.1149/1945-7111/ab84f8



Managing Partners

Prof. Sri Narayan



Prof. Surya Prakash



Dr. Robert Aniszfeld

Battery Energy Storage Technologies, LLC

UC San Diego: Energy Storage Integration Lab

Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

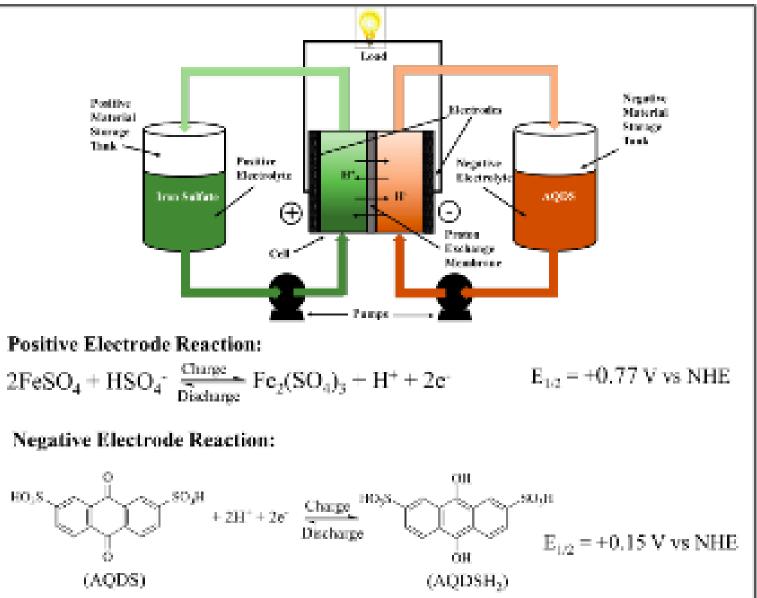
Our innovation is an inexpensive, robust, inherently safe, and sustainable battery solution for long-duration energy storage. Central to this innovation is a water-based redox flow battery (RFB) that uses inexpensive and robust materials such as iron sulfate and an organic substance called anthraquinone disulfonic acid (AQDS).

This new RFB overcomes the principal limitations of lithium-ion batteries, vanadium RFB, and other technologies to deliver an affordable, safe, durable and sustainable solution for behind-the-meter use, microgrids and grid-scale applications.

Our laboratory tests project a lifetime of >20 years and a LCOS of \$0.05/kWh, just 10% of that of SOA lithium-ion batteries

Seeking These Next Level Partners:

- Pilot/demonstration project partner
- Companies interested in new clean energy technologies for potential acquisition
- Investors interested in learning about new clean energy investment opportunities



Iron-AQDS Flow Battery

Blue Frontier



Blue Frontier

UC Davis: Western Cooling Efficiency Center

Point of Contact: Gregory Tropsa Phone: 970.222.2987 Email: Gregory.Tropsa@bluefrontierac.com Website: https://bluefrontierac.com/

Company Region:

Greater Los Angeles, Orange County

Company Description:

Blue Frontier is committed to reducing the carbon footprint of buildings and enabling the costeffective adoption of sustainable energy. Blue Frontier and its industry thought-leading partners have reinvented human comfort to greatly improve occupant health and productivity while slashing the environmental impact of cooling on buildings – a top driver of global electricity demand. Blue Frontier's patented solutions include hyper-efficient compressorless comfort space conditioning, low-cost energy storage, and the Utility Managed Virtual Power Plant. Consumers can expect a 60%-90% reduction in their energy usage. Additionally, embedded energy storage soaks up low-cost and excess renewable energy, then intelligently shifts its use to cool buildings as the sun begins to set, avoiding peak demand charges.

The extraordinary flexibility of our product enables digital service solutions for the grid and behind the meter. These cloud enabled services are based on AI multi-level optimizations and Digital Twin technology. Blue Frontier's digital services leverage our unique capacity to independently control temperature, humidity, and outdoor air ventilation, such that the overall energy required to condition a space can be reduced while the comfort and health of tenants is optimized. Blue Frontier's low-cost, efficient, long-duration energy storage and control optimizes electricity consumption to augment building owner energy bill savings, while at the same time aggregating a dispatchable fleet of units for the benefit of the grid.

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Dr. Daniel Betts, CEO



Greg Tropsa, President



Dr. Matt Tilghman, CTO



Matthew Graham, EVP Engineering

Blue Frontier

UC Davis: Western Cooling Efficiency Center

Technology Readiness Level: 7–8

Technology Type: Energy Efficiency Load Shifting Energy Storage

Innovation Description:

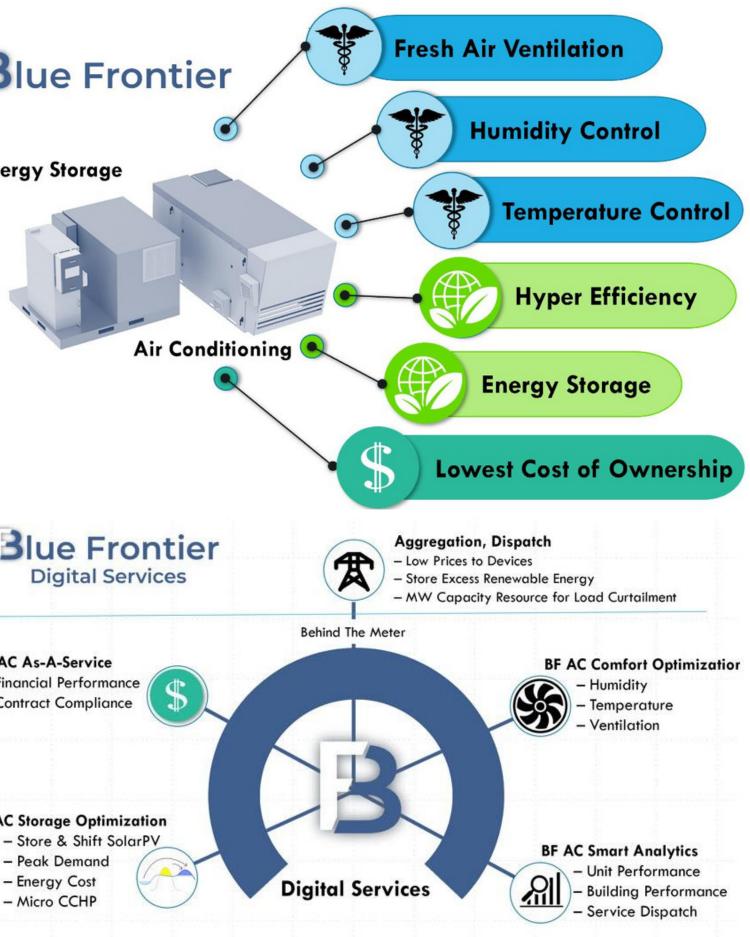
Increasing human comfort and health with a novel hyper-efficient, compressorless commercial building packaged rooftop air conditioning unit with embedded lowcost, long duration energy storage.

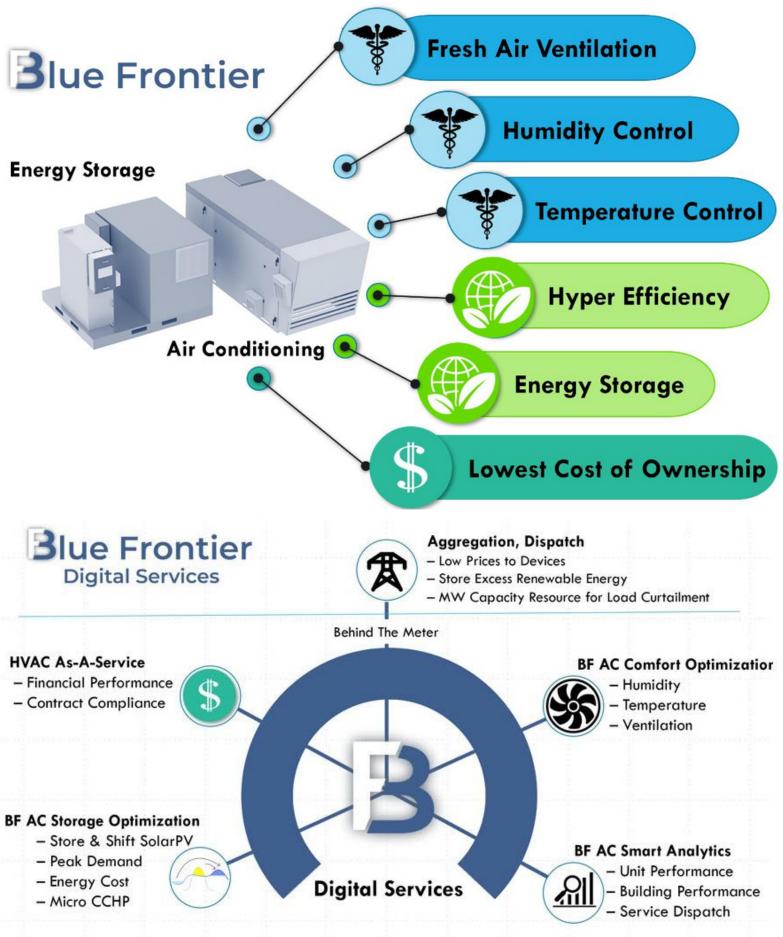
Utility Managed Virtual Power plant digital services that optimize end user savings while being aggregated and dispatched for grid reliability.

Seeking These Next Level Partners:

- Pilot/demonstration project partner
- Companies interested in new clean energy technologies for potential acquisition
- Investors interested in learning about new clean energy investment opportunities
- Government Officials wanting to learn more about the innovation







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Coreshell Technologies, Inc.

Lawrence Berkeley National Lab: Central Computing Facility at MAterial Project

Point of Contact: Jonathan Tan Phone: 415.314.9926 Email: jonathan@coreshelltech.com Website: https://www.coreshelltech.com/

Company Region:

San Francisco Bay Area, Alameda County

Company Description:

Coreshell is solving the key degradation issue in rechargeable batteries with our nanolayer electrode coating technology.

Our unique thin-film electrode coating process enables greater capacity, safer operation & up to 50+% lower cost/kWh batteries for the next generation of electric vehicles & energy storage.



Coreshell Technologies, Inc.

Lawrence Berkeley National Lab: Central Computing Facility at MAterial Project

Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

Coreshell Technologies is solving a fundamental issue in all rechargeable batteries: electrode surface instability. We view this problem as the biggest technical barrier to battery performance improvement - regardless of the chemistry of the anode or cathode. By preventing internal degradation resulting from electrode instability, our technology will enable batteries with significantly reduced cost/kWh, increased lifetime, and improved safety. This would provide the impetus needed for wider deployment of electric vehicles and energy storage, both at utility and residential scale.

Coreshell's unique solution to the problem is a liquid-phase deposition of protective coatings on battery material surfaces to passivate these degrading reactions.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Investors interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government officials wanting to learn more about the innovation

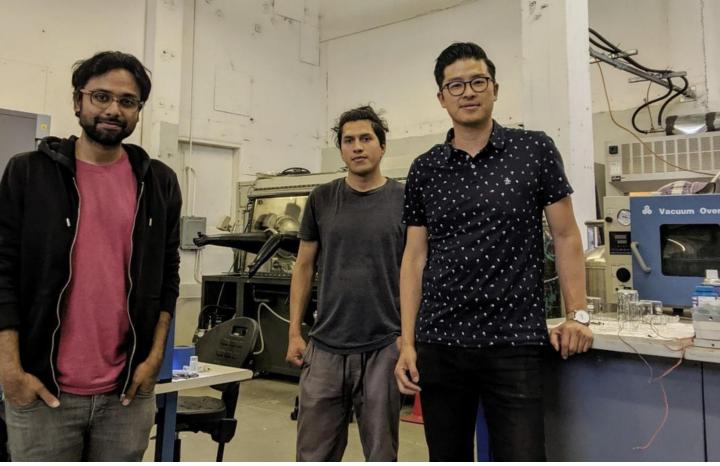


Slow formation



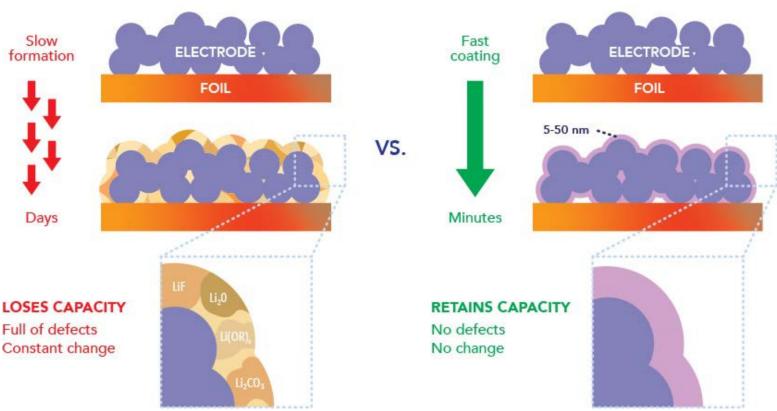
Full of defects

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STATE OF THE ART (SEI/CEI)

CORESHELL'S NANOLAYER



ELEMENT ENERGY



Element Energy, Inc.

UC San Diego: Energy Storage Integration Lab

Point of Contact: Seth Kahn Phone: 650.814.9983 Email: seth@elementenergy.com Website: https://elementenergy.com/

Company Region:

San Francisco Bay Area, San Francisco County

Company Description:

Element Energy's Cell-Level BMS (CLB) utilizes adaptive cell-learning algorithms to improve the safety, energy throughput and lifetime of large lithium-ion battery packs.

We aim to make grid-tied energy storage safer and more dependable, with levelized cost of storage up to 50% lower than is possible with conventional battery management systems (BMS).



Anthony Stratakos, Ph.D., CEO







Seth Kahn, COO

Rainer Fasching, Ph.D., CSO



Yves Saw, Ph.D., CTO

Element Energy, Inc.

UC San Diego: Energy Storage Integration Lab

Technology Readiness Level: 5-6

Technology Type: Energy Storage

Innovation Description:

Element Energy's Cell-Level BMS (CLB) utilizes adaptive cell-learning algorithms to improve the safety, energy throughput and lifetime of large lithium-ion battery packs. This is achieved by providing innovative, independent software control of the charge and discharge of each cell using a proprietary hardware platform that distributes the traditional pack-level DC-DC converter and BMS function out to all cells.

No longer must every cell in the pack be charged or discharged at the same rate, or the pack ceases discharging when the weakest cell is depleted, or energy be wasted from fully charged cells so that the others may continue charging.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Investors interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government officials wanting to learn more about the innovation



More Energy Throughput

Battery packs with conventional BMS are limited by the weakest cell. CLB fully utilizes each cell's available capacity, providing the full runtime and total energy capability of the pack. This advantage only grows with time as the cells in packs with conventional BMS age differentially.

Enhanced Lifetime

Our cell management algorithms iteratively monitor, model and manage the operation of each cell in the pack independently, reducing wear and extending the life of each cell and the entire pack.

Improved Safety

Weak or failed cells are isolated while the pack continues to operate. Fault response is up to 100x faster than conventional BMS, providing a quicker and safer resolution to prevent cascading failures.



GreenTech Motors Corporation UC Riverside: CE-CERT Electric Motor Systems Testing Laboratory (EMSTL)

Point of Contact: Burnet D. Brown Phone: 805.405.8199 Email: burnet@greentechmotors.com Website: https://www.greentechmotors.com/

Company Region:

Central Valley, Humboldt County

Company Description:

GTM is a California clean energy company developing high efficiency density (HED) integrated electric motor and drive technologies.

Using advanced aerospace engineering originally developed by engineers at Boeing's Phantom Works research and development test facility, GTM has designed a plugand-play, drop-in-replacement technology that solves the problem of dimensional incompatibility, a problem that has impeded wider efficiency gains and prevented the strengthening of motor efficiency standards.



George Bennett



Dr. Keith Klontz



Dr. Greg Smedley



GreenTech Motors Corporation

UC Riverside: CE-CERT Electric Motor Systems Testing Laboratory (EMSTL)

Technology Readiness Level: 5

Technology Type: Renewable Generation

Innovation Description:

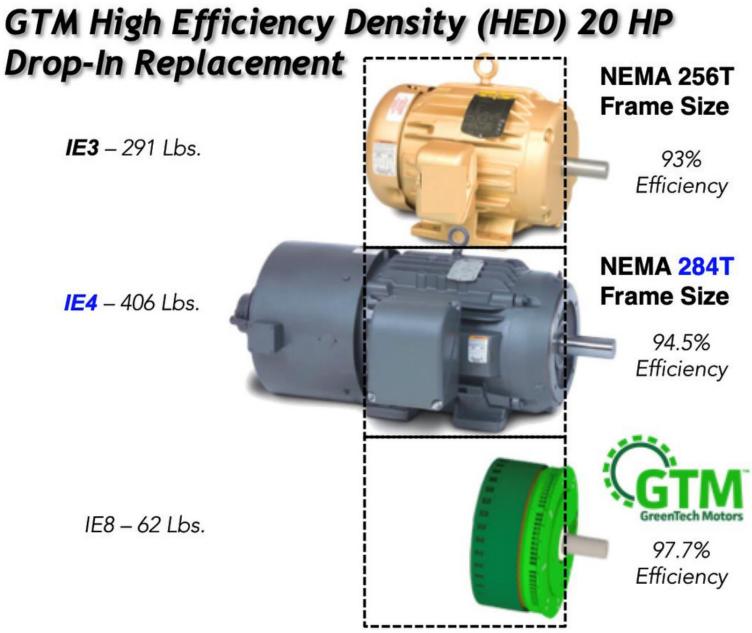
GTM HED motors utilize a combination of proprietary windings, magnetics, and power electronics to produce drop-in-replacement motors that provide unprecedented efficiency (>97.5%) in a smaller (up to 70%), lighter (up to 70%) package compared to conventional motors.

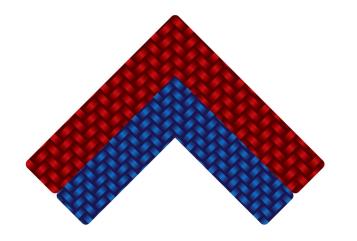
To enhance electrical power efficiency and address other power demand challenges, GTM HED motors facilitate retrofit integration into existing systems as well as OEM applications that demand the combined advantages of high efficiency, small size and light weight. GTM technology is scalable across a wide output range and addresses multiple pain points for customers, energy providers, and societal stakeholders.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Companies interested in new clean energy technologies for potential acquisition
- Investors interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government officials wanting to learn more about the innovation
- Electric utilities with efficiency incentive and rebate programs

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GridWrap Inc.

GridWrap Inc.

UCLA: Smart Grid Energy Research Center

Point of Contact: Dr. Davoud Zamani Phone: 857.756.8465 Email: davoud@aldtechnicalsolutions.com Website: https://aldtechnicalsolutions.com/

Company Region:

Greater San Diego, San Diego County

Company Description:

ALD Technical Solutions is a woman owned clean tech startup founded in 2018 in San Diego California to develop innovative applications of advanced composite materials in clean and renewables energies.

Designation Status:

Woman Owned Small Business (WOSB)



GridWrap Inc.

UCLA: Smart Grid Energy Research Center

Technology Readiness Level: 5

Technology Type: Grid Technologies

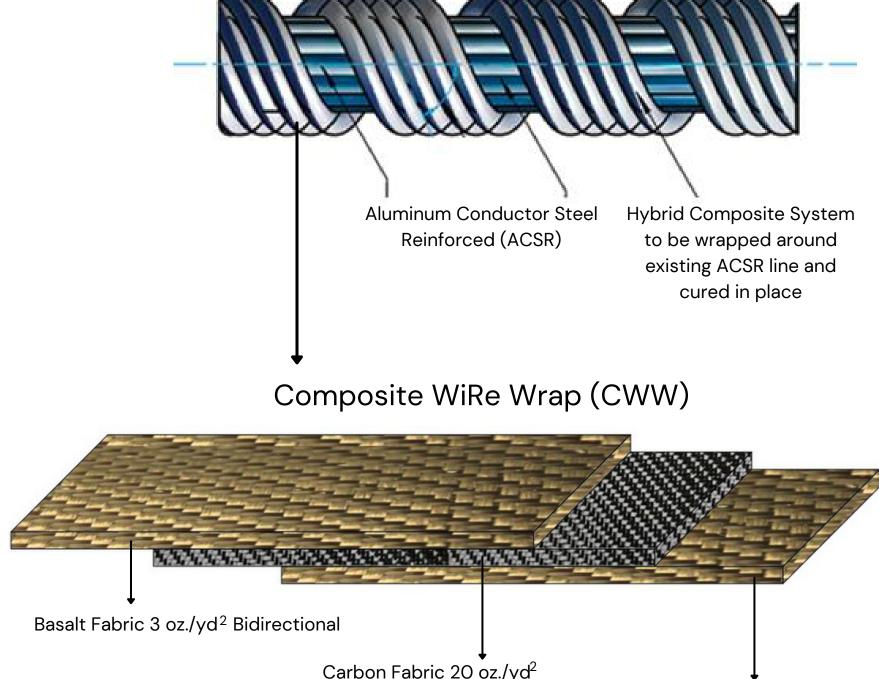
Innovation Description:

ALD Technical Solutions Composite WiRE Wrap (CWW) technology is novel, lightweight, fast and easy to install. The long lasting, reliable, environmentally friendly and cost effective structural composite reinforcement system will be installed and cured in-place around existing Aluminum Conductor Steel Reinforced (ACSR) transmission lines. The purpose is to increase electric power capacity and decrease the sag of transmission lines.

The composite reinforcement system is a multilayer hybrid composite system consisting of high tensile strength carbon fiber as a structural reinforcement component embedded in basalt fiber as a barrier layer to prevent galvanic corrosion between the carbon fiber and metals with a low longitudinal coefficient of liner thermal expansion.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government officials wanting to learn more about the innovation
- Transmission line operators and contributors to partner on an onsite demonstration



Unidirectional

CalTestBed.com

Basalt Fabric 2 oz./yd² Bidirectional



Helicoid Industries Inc.

UC Irvine: Engineering Laboratory Facility

Point of Contact: Chad Wasilenkoff Phone: 604.816.7888 Email: chadw@helicoidind.com Website: https://www.helicoidind.com/

Company Region:

Greater San Diego, Riverside County

Company Description:

Helicoid Industries emulates the incredible strength of the Mantis shrimp and as a result makes composites lighter, stronger, more impact resistant, and all at a lower production cost.

Helicoid is focusing on a Leading-Edge Protection technology that will reduce weight, increase life cycles and increase energy output of wind turbine blades.



Chad Wasilenkoff CEO

A proven leader of a variety of technology companies coupled with an extensive background in capital markets globally. With over 25 years' experience in the composites industry, including leading roles in Sales, Marketing, R&T and Innovation.



William Spathelf CFO

40 years' experience with Citi as a senior international banker. Focus on building and growing businesses, strategy, credit risk mitigation, and financial models.



Pascal Joubert des Ouches President



Doug McCarville CTO

Over 35 years of experience working at Boeing. One of Boeing's most prolific inventors, holding 64 composite-related patents.



Anita Beishuizen Marketing & Communications Director Over 15 years' experience including project

Over 15 years' experience including project management, marketing, finance, investor relations, and communications.



Pascal Scaramuzzino PhD.

Defense Technology Director

20 years' experience in industrial applications, mechanical and ballistic protection, including regional and global leading roles in Sales, R&D, Tech Marketing and Innovation.

Helicoid Industries Inc.

UC Irvine: Engineering Laboratory Facility

Technology Readiness Level: 5

Technology Type: Material-Based

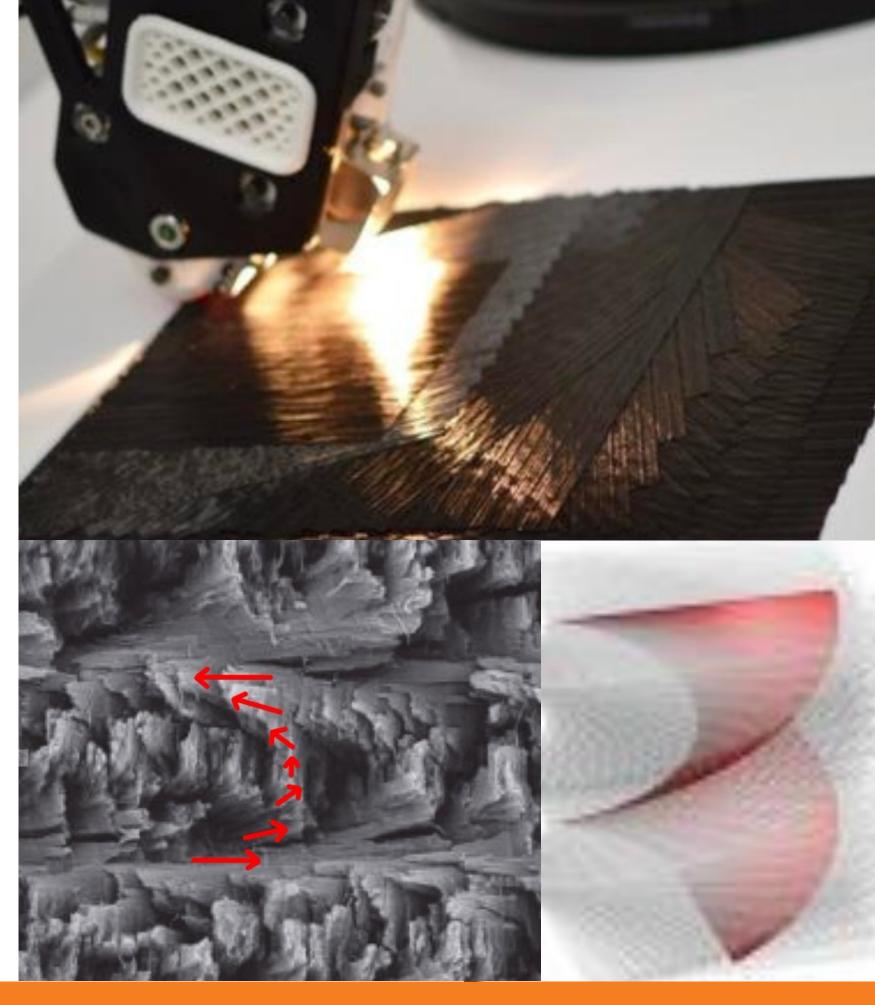
Innovation Description:

Mantis shrimp have an internal structure to protect its hammer-like club that pulverizes prey with incredible speed and force. University of California has spent >11 years and >\$10 million dollars reverse engineering the club and has determined that it is not the material, but the architecture that provides the strength and toughness. The material is organized in sheets of locally parallel fibers that are stacked, and each layer is rotated.

This unique patented architecture is called a helicoid and is ready to commercialize in numerous composite materials. Our first target market will be Leading Edge protection for wind turbine blades

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Companies interested in new clean energy technologies for potential acquisition
- Investors interested in learning about new clean energy investment opportunities







KIGT

UC Riverside: CE-CERT Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Point of Contact: Paul Francis Phone: 909.245.1503 Email: paul@KIGT.co Website: https://www.KIGTinc.com/

Company Region:

San Diego, San Bernadino County

Company Description:

KIGT designs, engineers, and manufactures the pound for pound smallest, smartest, fastest, and most flexible Level 2 Electric Vehicle Charging Station for home, commercial, and fleets.

KIGT's vertically integrated network software Charge Cloud[™] Operating features an intuitive user interface and seamless billing software, with power throttling and Vehicle to Grid (V2G) capability.

Designation Status:

Minority Business Enterprise (MBE)



KIGT

UC Riverside: CE-CERT Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Technology Readiness Level: 9

Technology Type: Transportation

Innovation Description:

KIGT Smart EV Charging Stations include a vertically integrated software platform, which features KIGT's Charge Cloud Operating System Software Network. KIGT created an easy-to-use intuitive user interface, seamless billing software, and mobile app, with back-end grid management administrative software for property owners and utilities.

KIGT's Level 2 hardware is also Vehicle to Grid (V2G) capable, meaning KIGT eChargers can facilitate the bi-directional flow of power from V2G capable EVs back to the grid. KIGT manufactures in Southern California, and we have the capacity to produce several thousand EV charging stations monthly.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Investors interested in learning about new clean energy investment opportunities
- Government officials wanting to learn more about the innovation







V2G 4G

SMART EV CHARGING

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KIGT





Liminal Insights Inc.

UC Davis: Green Technology Laboratory

Point of Contact: Shaurjo Biswas Phone: 734.757.0131 Email: shaurjo@feasible.io Website: https://www.liminalinsights.com/

Company Region:

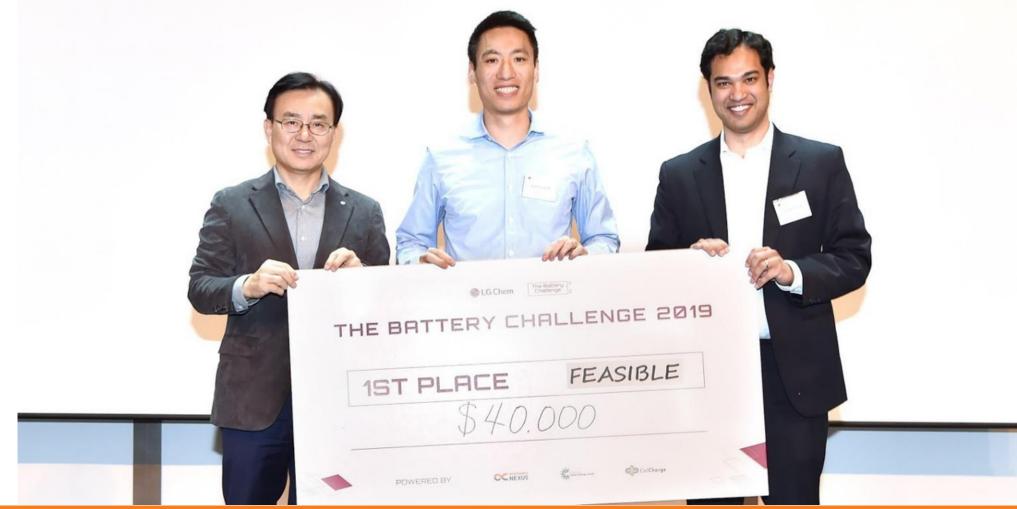
San Francisco Bay Area, Alameda County

Company Description:

Feasible, a pioneer in advanced battery diagnostics using ultrasound and machine learning, was founded and is led by top technologists from Princeton University and moved to the Bay Area in 2016.

We are now accelerating the massive shift to electrified mobility by commercializing a technology that will have a significant, nearterm impact on the cost of batteries. This is crucial for our clean energy future and it's an opportunity to create billions of dollars per year in economic value..





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Table of Content | Cohort 2 >>

Liminal Insights Inc.

UC Davis: Green Technology Laboratory

Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

Feasible's EchoStat Ultrasonic Battery Inspection Platform consists of

(1) Production-Grade Hardware that integrates into any battery production line

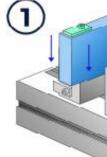
(2) Electronics and Sensors for quickly collecting rich ultrasound data on any type of battery, and

(3) Software Analytics that deliver valuable insights based on data streams from across the production process.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
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- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government officials wanting to learn more about the innovation



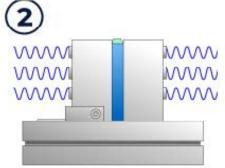


Hardware:

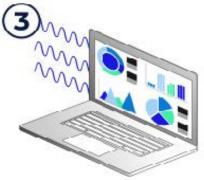
CalTestBed.com



Easily integrates into any production workflow



Ultrasound: Collects multi-dimensional data on any battery, quickly



Analytics: Delivers actionable insights from multiple data streams

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Lucent Optics

Lawrence Berkeley National Lab: FLEXLAB

Point of Contact: Sergey Vasylyev Phone: 916.226.1763 Email: svasylyev@lucentoptics.com Website: www.lucentoptics.com

Company Region:

Central Valley, Sacramento County

Company Description:

Lucent Optics is dedicated to creating impactful technology solutions for energy efficiency and renewable energy.

Our products include ultra-thin and flexible LED lighting panels, daylight harvesting window films, and high efficiency signage.



Lucent Optics

Lawrence Berkeley National Lab: FLEXLAB

Technology Readiness Level: 5

Technology Type: Building Technologies

Innovation Description:

Our novel solar control window film uses printed optical micro-structures to angularity redirect the incident sunlight, rejecting >60% of heat while preserving the view and redirecting the transmitted light deep into the space, enhancing natural lighting levels by 30–50%.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Companies interested in new clean energy technologies for potential acquisition
- Investors interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government officials wanting to learn more about the innovation

treated windows

untreated windows



NEXT Energy Technologies

UC Santa Barbara: Optical Characterization Facility

Point of Contact: Jeffrey Horowitz Phone: 805.233.6993 Email: jeff@nextenergytech.com Website: https://www.nextenergytech.com/

Company Region:

Los Angeles, Santa Barbara County

Company Description:

NEXT is developing game-changing transparent photovoltaic glass that allows architects and building owners to transform windows and glass façades into producers of low-cost, on-site, renewable energy for commercial buildings.

NEXT's technology is enabled by proprietary organic semiconducting coatings that are earth-abundant, low-cost, and non-toxic, and are printed in a high-speed, low-cost, low-energy process to produce beautiful energy-harvesting windows.

Cost competitive with conventional energy sources, NEXT's photovoltaic window technology delivers uncompromised aesthetics while generating low-cost, renewable power at compelling efficiencies. No other BIPV window technology can match NEXT's transparency, aesthetics, cost, and performance attributes.



NEXT Energy Technologies

UC Santa Barbara: Optical Characterization Facility

Technology Readiness Level: 5

Technology Type: Material-Based

Innovation Description:

NEXT Energy makes it easy – and financially attractive – for architects and building owners to specify windows and glass façades that produce near no-cost, on-site, renewable energy for commercial and residential buildings.

NEXT's game-changing photovoltaic window technology delivers architecturally approved color, clarity, and aesthetics while generating renewable power at compelling efficiencies not achieved by other solar technologies.

Seeking These Next Level Partners:

- Pilot/demonstration project partner
- Companies interested in new clean energy tech for potential acquisition
- Investors interested in learning about new clean energy investment opportunities









OnTo Technology LLC

Lawrence Berkeley National Lab: Battery Research & Testing Facility

Point of Contact: Steve Sloop Phone: 541.410.9029 Email: ssloop@onto-technology.com Website: www.onto-technology.com

Company Region:

Bay Area, Alameda County

Company Description:

OnTo develops methods to recycle advanced lithium-ion batteries. This comprehensive, patented suite of technologies improves safety and efficiency in the developing circular economy. Innovations include deactivation/de-powering of batteries to improve safety and cost of transportation and storage; and cathode-healing[™], which is the most efficient recycling method applicable to any electric vehicle chemistry.

Designation Status:

Women Owned Small Business (WOSB)



OnTo Technology LLC

Lawrence Berkeley National Lab: Battery Research & Testing Facility

Technology Readiness Level: 5-6

Technology Type: Energy Storage

Innovation Description:

OnTo's battery deactivation innovation eliminated flammability and reactivity risks in lithium-ion batteries at their end-of-life, or at any time they may be considered a danger. The process can be applied in the field to address identified hazardous batteries, or at a destination facility to eliminate fire and storage risks.

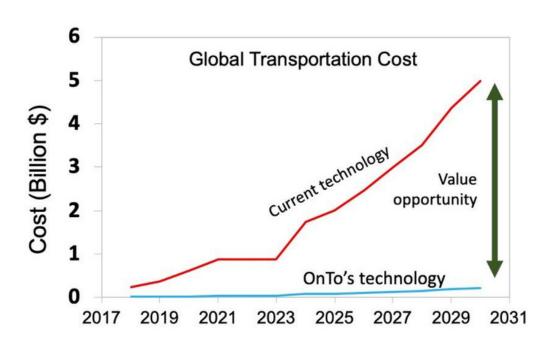
The process uses low cost, benign material to eliminate reactivity inside lithium-ion, lithium metal, alkaline, and metal-hydride batteries. Batteries deactivated with this technology do not react when exposed to heat or other abusive conditions.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Companies interested in new clean energy technologies for potential acquisition
- Investors interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government officials wanting to learn more about the innovation



Battery Deactivation Opportunity



CalTestBed.com

In 2030*: \$5B vs. \$250M

> *Est. global waste tonnage x Class-9 Cost/ton =~ \$5B



Quantum Motors

UC Riverside: CE-CERT Electric Motor Systems

Point of Contact: Reginald Garcia Phone: 760.951.6927 Email: goreggie2@verizon.net

Company Region:

Greater San Diego, San Bernardino County

Company Description:

Future Motors strives to discover new and innovative ways of providing 100% green energy to a world that sorely needs it.

Using new progressive technologies, we strive to replace current inefficient motors with our new patented green motors and batteries.

Future Motors has engineered "A Switch Reluctance Motor" (SRM) that enhances machine performance both at low and high speeds.



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Quantum Motors

UC Riverside: CE-CERT Electric Motor Systems

Technology Readiness Level: 5

Technology Type: Energy Efficiency

Innovation Description:

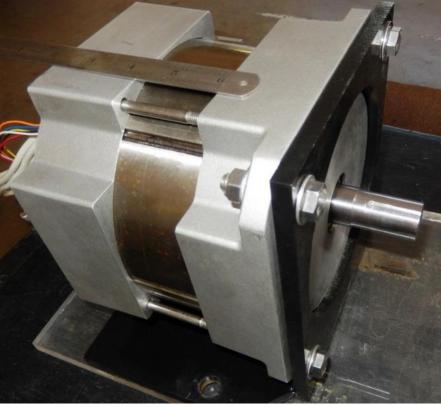
Our motor, software, and battery can make a motor run at minus 67% less energy than today's motor doing the same amount of work. We look forward to testing it thoroughly and introducing it to the world as quickly as possible.

The way the technology works is when the current goes through the coil and the power is disconnected, a radiant energy field is created. An electroradiant event occurs on the collapsing of the electric motor coil. This is a second field that combines with the electric field which gives our motor its efficiencies.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Companies interested in new clean energy technologies for potential acquisition
- Investors interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government officials wanting to learn more about the innovation











ReJoule, Inc.

ReJoule, Inc.

UC Riverside: CE-CERT The Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Point of Contact: Zora Chung Phone: 805.395.9268 Email: zora@rejouleenergy.com Website: https://www.rejouleenergy.com/

Company Region:

Los Angeles, Los Angeles County

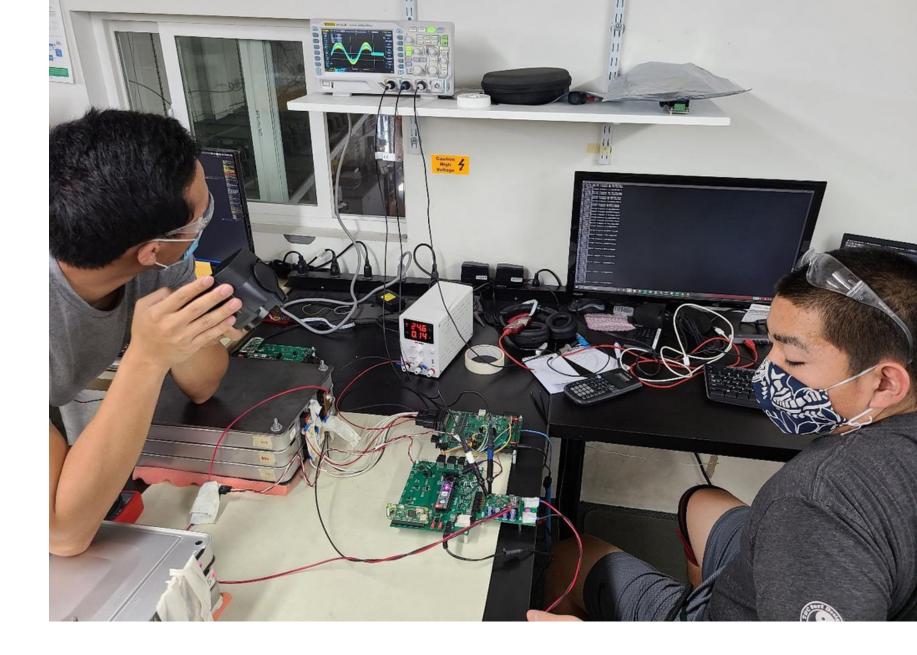
Company Description:

ReJoule's advanced diagnostic platform enables automakers to maximize the value of their electric vehicle batteries.

Our platform enables a fast and more accurate measurement of the battery's health and can dynamically adjust for optimal performance even as it ages. This will help automakers scale their operations from the beginning to the end of the battery's life.

Designation Status:

Minority Business Enterprise (MBE)



ReJoule, Inc.

UC Riverside: CE-CERT The Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Technology Readiness Level: 5

Technology Type: Transportation – Battery Diagnostics

Innovation Description:

Our innovation streamlines health diagnostics across the battery life cycle to dramatically improve long-term life prediction of battery systems. This provides clarity where there was uncertainty and reduces the cost of battery validation, both during development and maintenance.

Our technology leverages a powerful battery characterization technique called electrochemical impedance spectroscopy that, currently, can only be used in a lab setting for single cells. Our solution makes this powerful technique possible at the module and pack level in real-world applications. The technology reveals unprecedented physical insights into the battery in its end application, allowing for a more accurate assessment of battery state-of-health.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Companies interested in new clean energy tech for potential acquisition
- Investors interested in learning about new clean energy investment opportunities
- Government officials wanting to learn more about the innovation



E SMARTV///E

Smartville Inc.

UC Irvine: HIMaC2 Facilities, Engineering Gateway

Point of Contact: Dr. Antoni Tong Phone: 530.304.5193 Email: antoni@smartville.io Website: www.smartville.io

Company Region:

San Diego, San Diego County

Company Description:

Smartville is a clean energy technology company developing hardware, software, and advanced control solutions to enable used electric vehicle batteries to be repurposed for stationary energy storage applications in a manner that overcomes the four primary challenges of this market: cost, scalability, reliability, and safety.



Dr. Antoni Tong CEO



Charlie Botsford, PE Bus Dev & Engineer





Mike Ferry President



Bill Torre Senior Engineer



Grant Berman CFO



David Weisbach, PE Design Engineer



Smartville Inc.

UC Irvine: HIMaC2 Facilities, Engineering Gateway

Technology Readiness Level: 6

Technology Type: Energy Storage

Innovation Description:

Smartville Inc. has completed component-level research and proof-of-concept testing for its Heterogenous Unifying Battery (HUB) system and is currently ready to demonstrate a 100kW/100kWh pilot system using Nissan and Tesla batteries.

The CalTestBed program will provide crucial support in validating key functions of the integrated HUB system including self-learning of battery health parameters, battery life balancing, and energy storage service capabilities. Smartville will achieve these results through innovative modular power converter control, life balancing to optimize battery cell group life cycles, and life cycle extension via improved cell-to-cell uniformity enabled through industry-first hardware functions and battery management algorithm software.

Seeking These Next Level Partners:

- Expert partners to help prepare for scaled-up product manufacturing
- Initial commercial customers for product sales and service: commercial and industrial customers for behind-the-meter energy storage installations and independent power producers seeking low-cost, large-scale energy storage assets
- Investors to provide working capital to achieve manufacturing scale-up





Stasis Energy Group

UC Riverside: CE-CERT: Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Point of Contact: Nick Brown Phone: 714.984.3397 Email: nick@stasisenergygroup.com Website: https://www.stasisenergygroup.com/

Company Region:

Los Angeles, Los Angeles County

Company Description:

Stasis Energy Group is bringing thermal energy storage solutions to commercial HVAC systems.

Stasis develops bio-based thermal energy storage systems (TESS) that retrofit existing roof-top-mounted packaged HVAC systems to replace air conditioning with TESS-cooling during the highest peak demand periods of 4–6 p.m. for small and medium commercial buildings.

Designation Status:

Minority Business Enterprise (MBE)



Stasis Energy Group

UC Riverside: CE-CERT: Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Technology Readiness Level: 7

Technology Type: Energy Storage

Innovation Description:

Stasis's first-of-its-kind Thermal Energy Storage System (TESS) is a thermal battery made of plant-based Phase Change Materials (PCM) that is bolted into the supply ductwork of HVAC systems.

Paired with our proprietary controller, it shifts heating and cooling energy use out of peak periods, saving business owners money on their electric bills.

Our system targets peak demand energy use and reduces cooling-related peak demand charges by up to 50%, costs about \$6,500 for a 5-ton RTU and pays for itself in 5-6 years and provides savings for the life of the unit.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Government officials wanting to learn more about the innovation







System Z

UC Irvine: Grid Evolution Laboratory, Advanced Power & Energy Program

Point of Contact: Paul Donahue Phone: 949.400.6393 Email: paul@neworld.energy

Company Region:

Los Angeles, Orange County

Company Description:

System Z has partnered with Neworld Energy to support the lab testing of The Energy Quarterbackand Microgrid in a Meter.

The Energy Quarterback and patented Microgrid in a Meter enable a fast low-cost upgrade to any solar system.

It unlocks a fully resilient self-sustaining solar microgrid that safely powers a home or building from its installed solar (with or without batteries).





System Z

UC Irvine: Grid Evolution Laboratory, Advanced **Power & Energy Program**

Technology Readiness Level: 7

Technology Type: Internet of Things

Innovation Description:

The Microgrid in a Meter ("MIM") is a patent pending, easy to install device that plugs directly into buildings' Smart meter socket.

MIM immediately transforms the facility's solar and/or battery system into a resilient microgrid that addresses and meets the following California energy challenges:

- 1. Solar systems automatically shut down during grid outages, wildfires, and other PSPS events.
- 2. Solar often over-generates on the grid, creating costly grid imbalances.
- 3. Current backup battery systems require expensive hybrid inverters and electrical rewiring to deliver just a few hours of backup power to a limited number of circuits, devices, and appliances.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/ demonstration project partner
- Government official wanting to learn more about the innovation

MIM Upgrades Every Net Meter to a Microgrid





TAKACHS



Takachar

UC Santa Barbara: Renewable Natural Gas Development Laboratory

Point of Contact: Kevin Kung Phone: 857.600.0981 Email: kevin@takachar.com Website: https://www.takachar.com/

Company Region:

Los Angeles, Los Angeles County

Company Description:

Takachar is focused on dramatically increasing the amount of waste biomass economically transformed into marketable products around the world.

Most crop and forest residues (biomass) are loose, wet, and bulky, making them difficult to collect and centralize. Imagine small-scale, low-cost, portable systems that can be latched onto the back of tractors and pick-up trucks to deploy to rural farms and hard-to-access logging landings to process the locally available residues into higher-value, densified bioproducts before transportation. This can save up to 90% of the logistical costs, dramatically altering the unit economics of biomass conversion.

Designation Status:

Minority Business Enterprise (MBE)



Takachar

UC Santa Barbara: Renewable Natural Gas Development Laboratory

Technology Readiness Level: 5

Technology Type: Renewable Generation

Innovation Description:

Takachar's reactor is based a new chemical variant called oxygen-lean torrefaction, explored during co-founder Kevin Kung's doctoral research, supported by the MIT Tata Center for Technology and Design.

We demonstrated that this process could yield a new class of simplified continuous biomass torrefaction reactors that can operate at steady state and can be tuned to produce products of different qualities desired by different end users.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Companies interested in new clean energy tech for potential acquisition
- Investors interested in learning more about new clean energy investment opportunities
- Government officials wanting to learn more about the innovation
- Regulatory agencies to help facilitate the certification process



twelve



Twelve

Lawrence Berkeley National Lab: The Energy Conversion Group "Fuel Cell and Electrolyzer Testing Facility

Point of Contact: Etosha Cave Phone: 281.235.2314 Email: operations@twelve.co Website: https://www.twelve.co/

Company Region:

San Francisco Bay Area, Alameda County

Company Description:

Twelve has developed a device that recycles CO₂ into costcompetitive chemicals and fuels.

Our technology bolts onto any source of CO₂ emissions, and with only water and electricity as inputs, transforms that CO₂ into some of the world's most critical chemical products.

We can reduce the carbon footprint of the world's heaviest emitters, while creating a new revenue stream from what is discarded today as a waste product.



Twelve

Lawrence Berkeley National Lab: The Energy Conversion Group "Fuel Cell and Electrolyzer Testing Facility

Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

 CO_2 electrolysis combines just three inputs: CO_2 , water, and electricity, and converts them into cost-competitive fuels and chemicals. At a high level, CO_2 electrolysis can be thought of as reversing combustion: it combines CO_2 , water, and energy to produce higher-energy products and pure oxygen.

CO₂ electrolysis can directly convert waste CO₂ emissions to useful fuels and chemicals enabling deeper penetration of renewable electricity into the electrical grid, reducing air, land, and soil pollution associated with conventional chemical and fuel production, and generating revenue in order to lower ratepayer costs.

Seeking These Next Level Partners:

- Pilot/ demonstration project partner
- Government official wanting to learn more about the innovation





UmidaAG

UC Riverside: CE-CERT and the College of Natural and Agricultural Sciences' Agriculture Operations (AgOps)

Point of Contact: Joseph Gallegos
Phone: 562.301.5598
Email: joseph@umidaAG.com
Website: https://www.UmidaAG.com/

Company Region:

Central Valley, Fresno & Stanislaus County

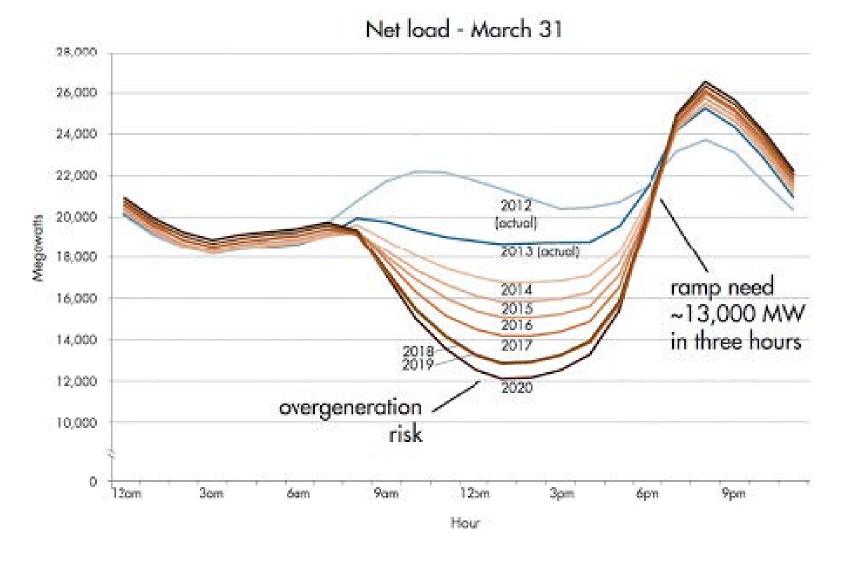
Company Description:

UmidaAG reduces farm irrigation power and water use. We are enabling flexible demand load on 240 terawatt hours of capacity in California alone, a \$7.2 billon dollar untapped overcapacity in the energy wholesale market.

Think of our A.I solution as a marketplace where overcapacity of renewable power can be sold instead of curtail anytime of the day, essentially using the soil as a form of battery or capacitor at a .0125 KWh cost.

Designation Status:

Minority Business Enterprise (MBE)



UmidaAG

UC Riverside: CE-CERT and the College of Natural and Agricultural Sciences' Agriculture Operations (AgOps)

Technology Readiness Level: 7

Technology Type: Industrial & Agriculture Innovation

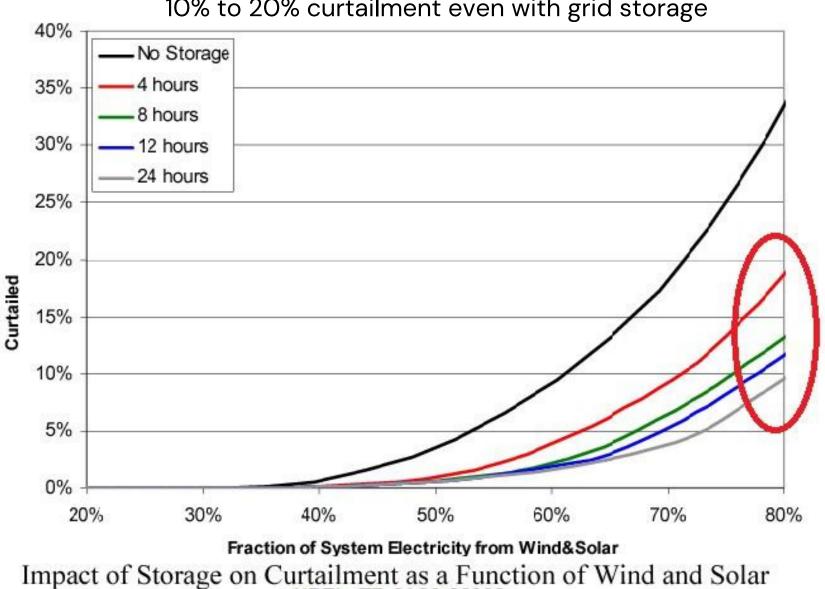
Innovation Description:

We take farm irrigation's heavy 24 to 72 hours of uninterrupted power demand footprint and change it to three 5-minute bursts anytime of the day (Flexible on demand load).

Our CAL-ISO energy grid tool smooths out variable generation spikes and avoids overcapacity curtailment losses.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Investors interested in learning more about new clean energy investment opportunities
- Government officials wanting to learn more about the innovation
- Renewable energy utility plant or off taker with overcapacity/ curtailment issues
- Grid balancing authority with overcapacity/ curtailment losses
- Investors interested in negative wholesale price market arbitrage
- Offtaker with overcapacity/ curtailment financial risk/ losses



10% to 20% curtailment even with grid storage

Impact of Storage on Curtailment as a Function of Wind and Solar NREL TP-6A20-68960



West Biofuels

UC San Diego: Renewable Natural Gas Development Laboratory

Point of Contact: Michael Long Phone: 530.207.5996 ext. 108 Email: Michael.Long@WestBiofuels.com Website: www.westbiofuels.com

Company Region:

Central Valley, Yolo County

Company Description:

WestBiofuels is a provider and developer of thermochemical systems for the conversion of biomass to power, fuels, and chemicals since 2007. In collaboration with national and international R&D partners, such as NREL, CSM, UC San Diego, UC Davis, BEST (Austria), PSI (Switzerland), and TUM (Munich), West Biofuels boasts low-carbon renewables pathways including biomass-based hydrogen, synthetic natural gas, diesel, aviation fuels and chemical alcohol production.

Commercial developments include two community-scale facilities that are currently under construction. West Biofuels offers advanced technologies for reaching a zero-carbon future, reducing threat of wildfires, utilizing agricultural waste biomass, and achieving community and sustainable development goals.



West Biofuels

UC San Diego: Renewable Natural Gas Development Laboratory

Technology Readiness Level: 5-8

Technology Type: Renewable Generation

Innovation Description:

Advanced biomass gasification technology produces high quality producer gas (39% H_2 , 29% CO, 20% CO₂, 9% CH4) suitable for conversion into renewable natural gas (RNG). Fluidized-bed methanation catalyst technology converts all the CO and H_2 in producer gas to RNG without additional H_2 and reduces plant costs.

Adding H₂ from the electrolysis of water (solar power to gas) all the CO₂ in the producer gas can be converted to RNG and output doubled, increasing efficiency and the GHG reduction potential. Optimizing methanation catalyst and operating conditions are required to maximize RNG production from the CO and CO₂ in producer gas.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/ demonstration project partner
- Investors interested in learning more about new clean energy investment opportunities
- Accelerator/ incubator that supports the commercialization of clean energy technologies
- Government official wanting to learn more about the innovation











Anthro Energy

Lawrence Berkeley National Lab: Battery Research and Testing Facility

Point of Contact: David Mackanic Phone: 919.622.3825 Email: david@anthroenergy.com Website: https://www.anthroenergy.com

Company Region:

San Francisco Bay Area, Santa Clara County

Company Description:

Anthro Energy is developing advanced battery materials to revolutionize energy storage. Our mission is to utilize cutting-edge polymer engineering techniques to create next generation batteries. By improving the materials inside lithium ion batteries, we aim to enable products that are safer, higher performance, and more functional. If Anthro Energy's batteries are successfully commercialized, we will engender an accerleation of electrification and an increase in safety of energy storage.



Anthro Energy

Lawrence Berkeley National Lab: Battery Research and Testing Facility

Technology Readiness Level: 5

Technology Type: Material-Based

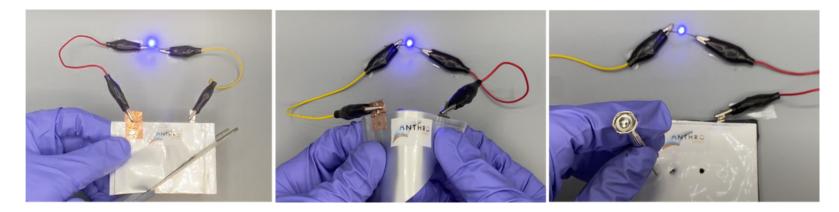
Innovation Description:

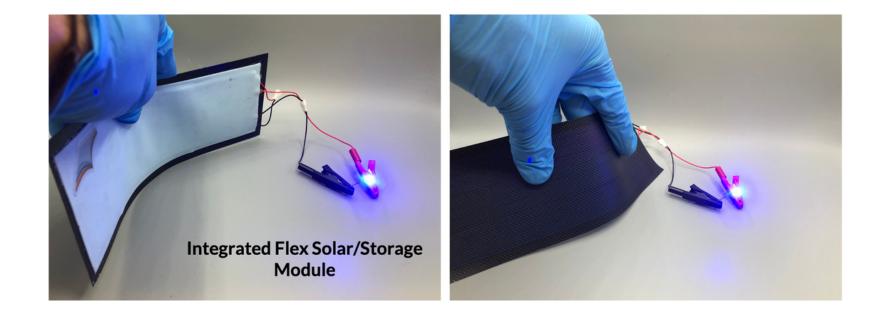
Anthro Energy uses advanced polymers to develop a robust LIBs. Our cell is structural, impact resistant, deformable, flexible, and safe. Compared to existing batteries, our cells can be used in locations that experience impact, stress, or deformation. Our prototype is a 500 mAh, 3.8V multi-layer pouch cell fabricated by our pilot manufacturing partner, the Battery Innovation Center. This pouch contains proprietary Anthro Energy polymers as a non-flammable electrolyte/ separator. The cell features an innovative binder and novel current collectors that impact additional safety and structural integrity. We will subject our prototype to significant battery stress testing to highlight our value proposition.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Investor interested in learning about new clean energy investment opportunities
- Government official wanting to learn more about the program









Community Energy Labs

UC Berkeley: Center for the Built Environment

Point of Contact: Tanya Barham Phone: 866.578.7118 Email: tanyab@communityenergylabs.com Website: https://communityenergylabs.com/

Company Region:

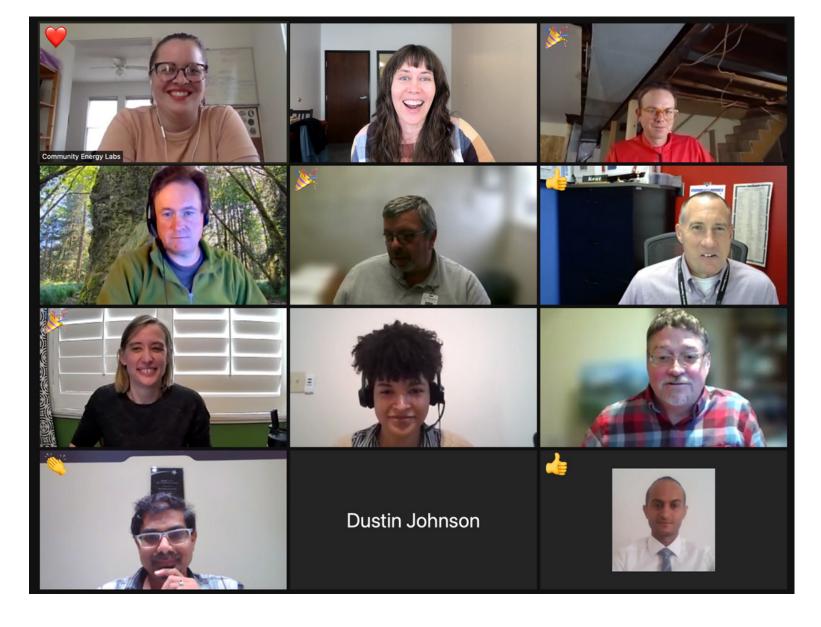
Greater San Diego, San Diego County

Company Description:

Community Energy Labs (CEL) is a woman-owned and led energy technology company with a mission to enable affordable decarbonization of community buildings by 2030. CEL's core Alpowered clean building control concept was one of only 12 regional winners of CleanTech Open's 2020 international accelerator. It was the overall winner in the 2020 Madrona Venture Labs Go Vertical challenge and was recently selected to participate in EPRI's 2021 IncubateEnergy cohort. As background, CEL emerged from the non-profit PECI as a nimble social enterprise with a suite of grid-edge and community-centric IT approaches to climate adaption, local empowerment, and clean energy. CEL brings nearly \$1.5M in intellectual property value, market research, and project development work funded by and performed at PECI between 2016 and 2019.

Designation Status:

Women Owned Small Business (WOSB), Women's Business Enterprise (WBE)



Community Energy Labs

UC Berkeley: Center for the Built Environment

Technology Readiness Level: 5

Technology Type: Building Technologies

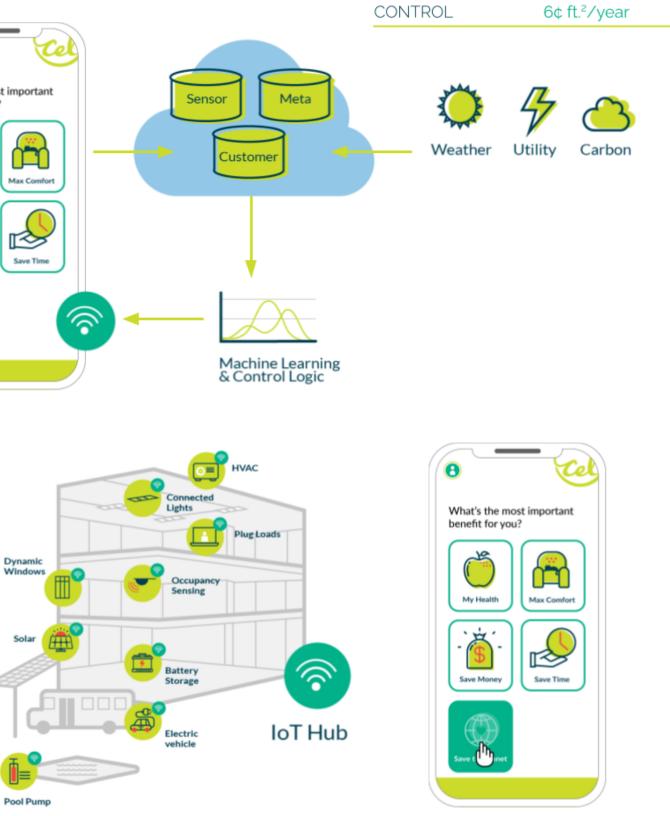
Innovation Description:

Community Energy Labs is bringing to market the first truly scalable AI-powered clean building control platform. Geared for schools, municipal and public building operators who find it complex, frustrating, and expensive to meet new building energy goals, we install wireless sensors, equipment controllers, and use cloud-based software powered by datadriven energy models and machine learning. We autonomously predict and efficiently control how and when new and existing building equipment is operating so that more of it is powered by renewables. Building owners see higher levels of energy savings, lower carbon and up-front cost than expensive upgrades or DIY.

Seeking These Next Level Partners:

- Testbed Facilities interested in partnering
- Pilot/demonstration project partner
- Company interested in new clean energy technology for potential acquisition
- Investor interested in learning about new clean energy investment opportunities
- Government official wanting to learn more about the program
- We're hiring for machine engineers, data scientists, field engineers, and project managers









Cyclonatix

UC Riverside: CE-CERT: Electrical Motor Systems Testing Laboratory

Point of Contact: Jae Lim **Phone:** 714.501.8143 Email: jyl.cyclonatix@gmail.com

Company Region:

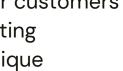
Greater San Diego, Riverside County

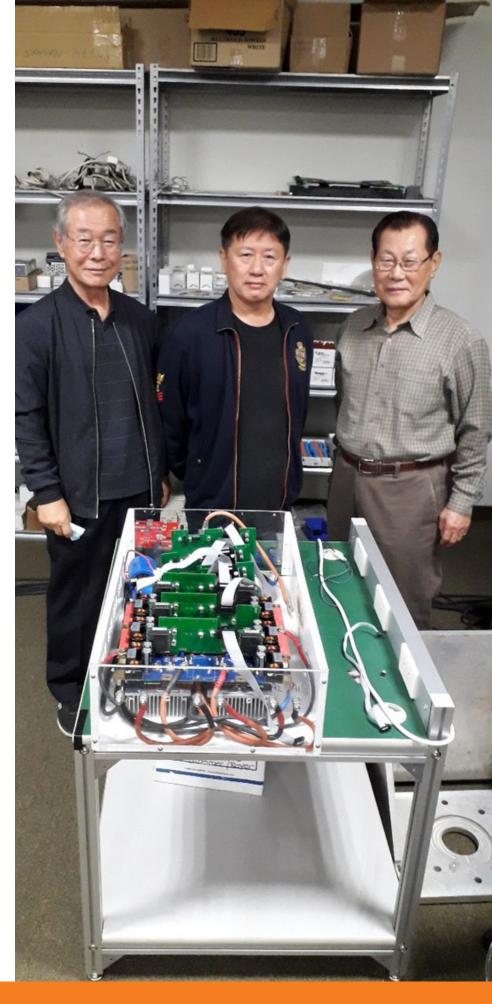
Company Description:

The goals of Cyclonatix, Inc. are: 1) To be developing the best performing motor technology, 2) To be serving our customers with the best quality products at economy price, 3) To be benefiting back to local communities and be supporting disadvantages communities. Cyclonatix, Inc. has been developed and will soon manufacture and market our unique Brushless DC motor/controller systems which are very highly efficient, speed-torque controllable, low cost, compact size, and operable with AC or DC power source. Our business will promote our clients' businesses of manufacturing machines, for example of air-compressor, air-conditioning and pumps, by supplying top performance motor system at an inexpensive price to solve the problems of their existing AC motors. Our company will also create hundreds of local jobs which will benefit local communities including disadvantaged/ low-income communities. The high efficiency of our product will lower power consumption and demand charge which will lead to lower electricity bill and ultimately help decrease economic burden for individuals and businesses. Our motor system demonstrates excellent energy saving capability and is an optimal fit for electric vehicles and solar systems and will therefore help increase access to clean energy and reduce air pollution.

Designation Status:

Minority Business Enterprise (MBE)





Cyclonatix

UC Riverside: CE-CERT: Electrical Motor Systems Testing Laboratory

Technology Readiness Level: 5

Technology Type: Energy Efficiency

Innovation Description:

Our innovation is a very unique high-efficiency, low-cost, non-REM-magnet Brushless-DC motor/controller-system, perfect for heat pump/HVAC, air compressor, pump and electric vehicles. Differentiated from other motors:

- 1. Partial-Square-Wave to eliminate Back-EMF problems at Pole-Changing-Area and bad effect of Power-Factor thus to maximize Efficiency and maximize cooling need
- 2. Spoke-shape-Magnetic-Array in Rotor to maximize Flux Concentration for maximum Torque and Efficiency
- 3. Advancing timing of excitation to raise RPM rapidly to much improve efficiency and torque
- 4. Minimal impact of power factor because our motor is intrinsically DC machine
- 5. Easy scalability/ low cost due to compact size, simple PWM control and minimal cooling needs

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Company interested in new clean technology for potential acquisition
- Investor interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- OEM/license manufacturing
- Joint Venture partners





EH Group Technologies, Inc.



EH Group Technologies, Inc.

UC Irvine: National Fuel Cell Research Center (NFCRC)

Point of Contact: Christopher Brandon Phone: 805.886.4318 Email: cbrandon@ehgroup.ch Website: https://www.ehgroup.ch

Company Region:

Greater Los Angeles, Santa Barbara County

Company Description:

EH Group aims to become a leading player in the emerging hydrogen economy, by making fuel cells a more efficient and cost effective solution for decarbonised future. Our value proposition is to fulfill the following objectives:

- An innovative fuel cell technology, based on a wholly redesigned microstructure that delivers a power density of 1.5–2 times that of leading competitors' products;
- A transformative assembly and production by process innovation which aims to radically reduce the price of fuel cells;

• A greatly simplified fuel cell system with less parasitic loads (thereby cheaper and more efficient). Our product will therefore directly address the challenge of current unsustainable or pollutive technologies that power our economy, but that are unfit for purpose in our times. For example, long term energy storage, as well as commercial transport that require extended use, range, and/or heavy payloads are primed for disruptive decarbonization that cannot be met by batteries alone (trucks, buses, trains, construction equipment, ferries, etc.). These are just some of the markets that are poised to benefit from the widescale implementation of our innovative FC technology.



EH Group Technologies, Inc.

UC Irvine: National Fuel Cell Research Center (NFCRC)

Technology Readiness Level: 7

Technology Type: Energy Storage

Innovation Description:

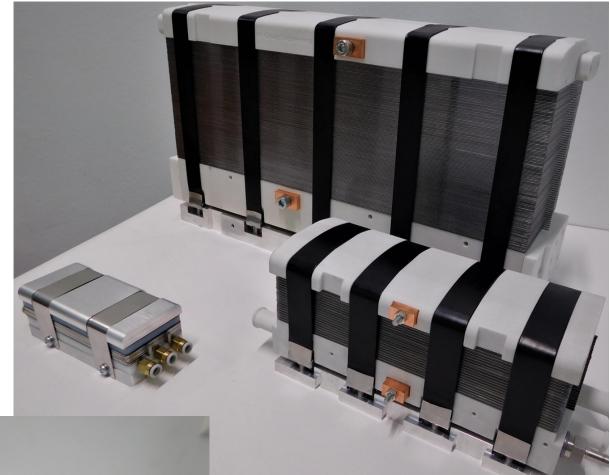
EH Group's core innovative fuel cell technology under development is based on:

- A uniquely simplified and re-designed fuel cell stack at the microstructure level, making it significantly (1.5–2X) more compact, lightweight and efficient.
- The invented technology allows our fuel cells to operate with minimal effects of gravity and in any orientation, and scales up to 250kW modules
- Our innovatively designed fuel cell stack means that we are consequently able to simplify the complete fuel cell system– leading to higher overall system efficiencies with fewer components and lower costs.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Company interested in new clean energy technologies for potential acquisition
- Investor interested in learning about new clean energy investment opportunities
- Government officials wanting to learn more about the program







ENZINC



EnZinc, Inc.

UC Riverside: CE-CERT SIGI

Point of Contact: Michael Burz Phone: 301.312.4780 Email: mburz@enzinc.com Website: https://www.enzinc.com/

Company Region:

San Francisco Bay Area, Contra Costa County

Company Description:

EnZinc, Inc. aims to accelerate the worldwide adoption of green renewable energy technologies by delivering a safe, low cost, high performance battery using the common and recyclable material zinc.





EnZinc, Inc.

UC Riverside: CE-CERT SIGI

Technology Readiness Level: 5

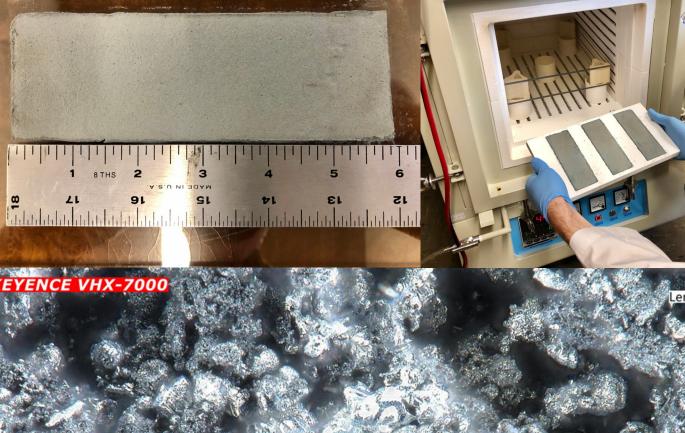
Technology Type: Energy Storage

Innovation Description:

EnZinc, in collaboration with the Naval Research Laboratory, has developed a breakthrough zinc sponge anode that delivers a rechargeable, recyclable battery with the energy of Li-ion, the low cost of lead-acid, and is safer than either. EnZinc's nickelzinc battery is inherently scalable, therefore for risk management, we will start with a modest application and build from there. We will design an e-bike battery that can be scaled for larger applications. EnZinc will design, build, laboratory test, using CalTestBed awarded laboratory, and subsequently field test the prototype battery with California's largest e-bike manufacturer.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Company interested in new clean energy technologies for potential acquisition
- Investor interested in learning about new clean energy investment opportunities
- Government official wanting to learn more about the program



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EvolOH, Inc.

Lawrence Berkeley National Lab: Fuel Cell and Electrolyzer Research & Testing Facility

Point of Contact: Jimmy Rojas **Phone:** 619.751.9978 Email: jimmy@evoloh.com Website: https://evoloh.com/

Company Region:

San Francisco Bay Area, San Mateo County

Company Description:

We make low-cost electrolyzers for hydrogen production. Our team includes former industry executives and some of the best scientists in the field. We were recently awarded a multi-million dollar grant from Bill Gates' Breakthrough Energy as well as government grants to scale up our electrolyzer and demonstrate it with our partners. While we focus on lowering CapEx, we also optimize for ease of manufacturability, easy of deployment and low maintenance.











AEM R&D at Georgia Tech 3 years FuelCell Energy

Georgia Tech





Allan MacKenzie Chairman of NEXT Hydrogen

CalTestBed.com

Jimmy Rojas, PhD

MIT, Stanford; Co-invented IP for Accion Systems (raised \$80m)



Art Shirley, PhD **Chief Development Officer**

30+ years, Hydrogen Industry ex-VP Hydrogen Product Line, Air Liquide







Scott Blanchet **Chief Operating Officer** 25+ years, Fuel Cell Industry ex-CTO, Nuvera Fuel Cells



Garrett Huang, PhD

Breakthrough Energy Ventures

fuelcellenergy



Philipp Muscher, PhD

Materials Science expert

Stanford University

Dr. Arun Majumdar Founded ARPA-E



William Fuglevand Founder, ReliOn (acq'd by Plug Power)



Naomi Boness, PhD ex-Chevron; RNG Coalition

EvolOH, Inc.

Lawrence Berkeley National Lab: Fuel Cell and Electrolyzer Research & Testing Facility

Technology Readiness Level: 5

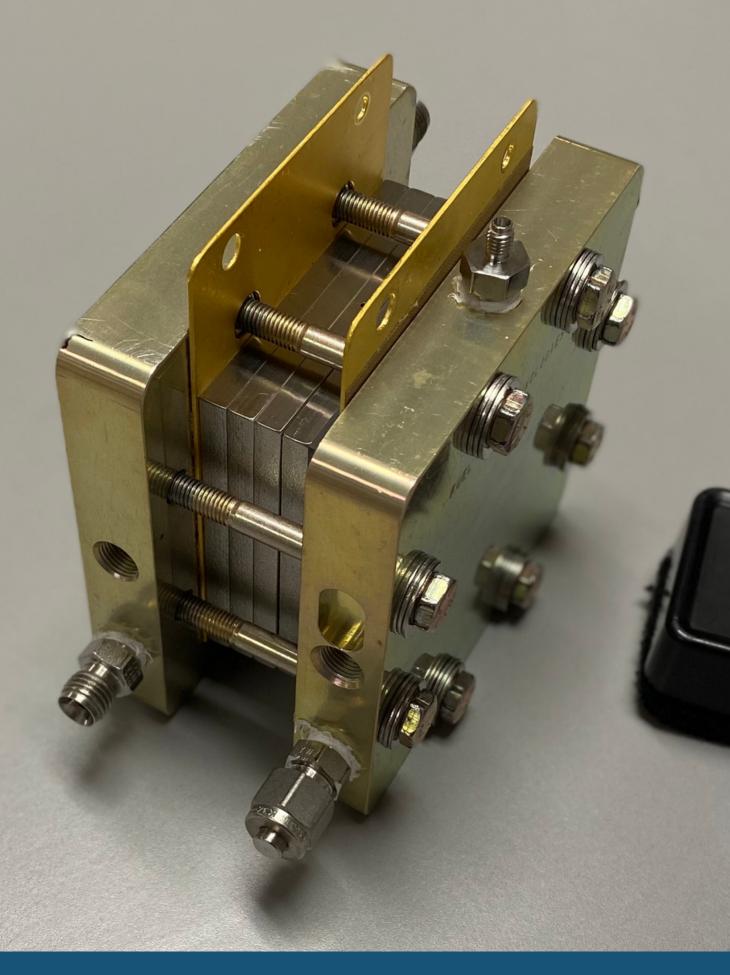
Technology Type: Energy Storage

Innovation Description:

Our proprietary Anion Exchange Membrane (AEM) electrolyzer technology produces green hydrogen from renewable electricity. Our electrolyzer is an entirely novel solidstate device that eliminates the use of corrosive liquid electrolyte and expensive metallurgy. By reducing bill-of-materials cost by 6x, EvolOH enables a path toward \$1 per kg which is a key price-point to enable widespread adoption of green hydrogen.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Investor interested in learning about new clean energy investment opportunities
- Government official wanting to learn more about the program



Gridware[®]



Gridware Technologies, Inc.

Lawrence Berkeley National Lab: Solar Optical Properties Laboratory

Point of Contact: Timothy Barat Phone: 916.947.9747 Email: tim@gridware.io Website: https://www.gridware.io

Company Region:

Central Valley, Sacramento County

Company Description:

Gridware Technologies, Inc. aims to prevent catastrophic failures by building a highly adaptable platform capable of answering any question about critical infrastructure to create a future where sub-urban wildfires are a thing of the past.





Gridware Technologies, Inc.

Lawrence Berkeley National Lab: Solar Optical Properties Laboratory

Technology Readiness Level: 5

Technology Type: Internet of Things

Innovation Description:

Gridware is building real-health monitoring devices for individual utility poles. Our technology catches and predicts grid equipment failures that lead to catastrophes like wildfire ignitions. Gridware identifies the highest risk components/ poles so that scarce maintenance and inspection resources can be efficiently allocated. By operating independently of the grid in an always-on fashion, we continue to report faults even during power shutoffs and extreme weather events, day and night. Utility companies can be confident in the health and resiliency of their infrastructure through the data and insights our solution provides.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Government official wanting to learn more about the program







Icarus RT, Inc.

UC San Diego: System Integration

Point of Contact: Mark Anderson Phone: 760.889.1327 Email: manderson@icarusrt.com Website: https://icarusrt.com

Company Region: Greater San Diego, San Diego County

Company Description:

Icarus RT, Inc.'s core mission is to safely empower its team, customers, and community with more reliable, less expensive, and cleaner global energy. To that end, Icarus is steadfast in its commitment to produce game-changing technology through innovation and focus.





Icarus RT, Inc.

UC San Diego: System Integration

Technology Readiness Level: 6

Technology Type: Renewable Generation

Innovation Description:

Icarus RT is an advanced engineering firm developing Quartet, a novel hybrid Photovoltaic/ Thermal (PV/T) solar plus cogeneration system that cools PV panels, collects, and stores waste heat energy to generate hot water. Heat extractors attach to the back of standard PV panels while cooling fluid flows through the extractor. This lowers PV panel temperature and heats cooling fluid. The cooling fluid gets an additional thermal boost by passing through solar thermal collectors. The heated fluid is then stored to generate hot water for domestic use.

Seeking These Next Level Partners:

- Company interested in new clean energy technologies for potential acquisition
- Investor interested in learning about new clean energy investment opportunities
- Government official wanting to learn more about the program









Noon Energy, Inc.

UC Irvine National Fuel Cell Research Center: Advanced Power and Energy Program (APEP)

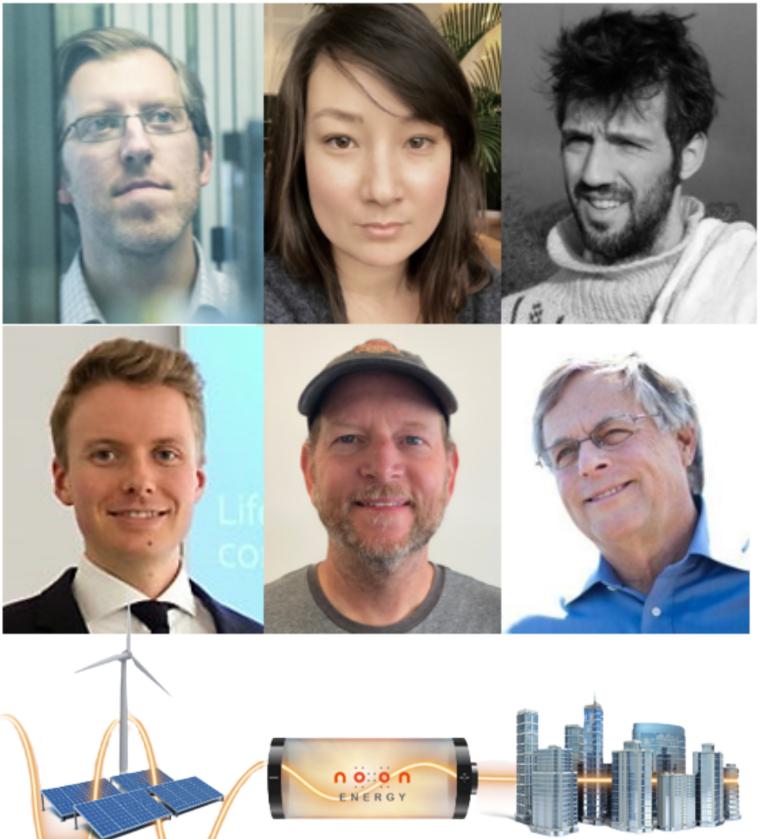
Point of Contact: Chris Graves Phone: 650.308.9001 Email: chris@noon.energy Website: https://www.noon.energy

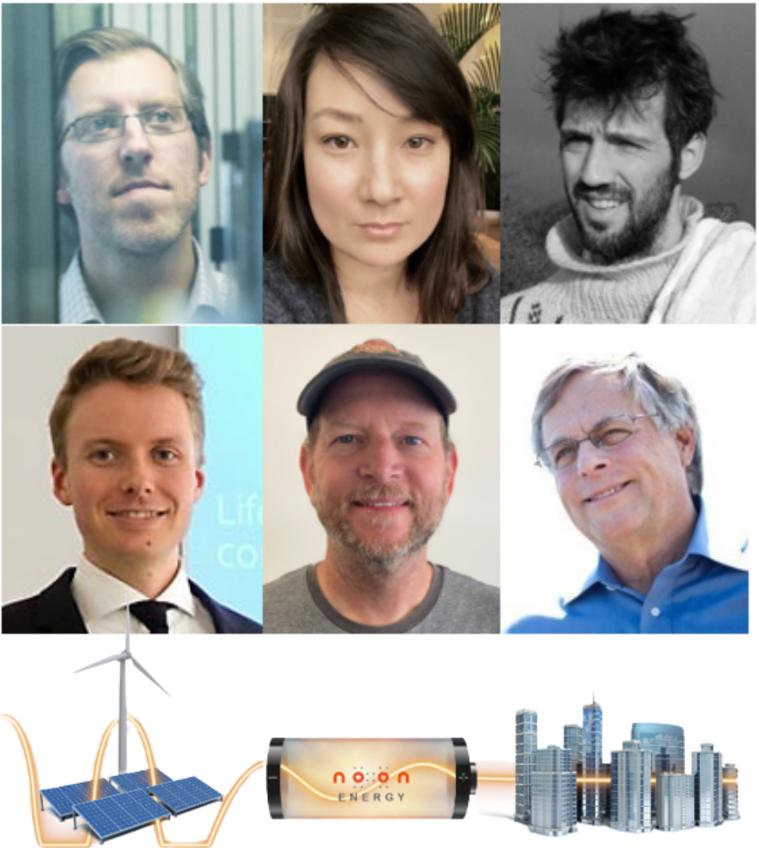
Company Region:

San Francisco Bay Area, Santa Clara County

Company Description:

Noon Energy's mission is to develop breakthrough low-cost energy storage technology that enables 100% renewable energy. This mission to make intermittent solar and wind power available 24/7 year-round will improve access to clean energy within disadvantaged and low-income communities, reduce carbon emissions globally, and eliminate the need for rare mineral mining, all accelerating us to the sustainable energy we need. By providing inherently low cost, safe, and compact energy storage using only earth-abundant, non-toxic materials, Noon's new battery technology promises an ideal solution for California ratepayers to fulfill California's state mandate of 100% carbon-free electricity by 2045.







Noon Energy, Inc.

UC Irvine National Fuel Cell Research Center: Advanced Power and Energy Program (APEP)

Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

Noon's new carbon-oxygen battery will cost-effectively turn intermittent solar and wind electricity into on-demand power. It uses ultra-low-cost storage media, storing energy by splitting CO2 into carbon and oxygen and recombining them in discharge mode. Noon Energy has leveraged investor funds along with federal and state grants to advance this long-duration storage technology. Lab scale units require 3rd party testing to confirm system roundtrip efficiency, energy density, cycling duration, and storage capacity. Noon will utilize CalTestBed for lab scale 3rd party validation testing on completed units and additional characterization, while working under the CEC BRIDGE to scale for field-testing.

Seeking These Next Level Partners:

- Pilot/demonstration project partner
- Investor interested in learning about new clean energy investment opportunities





Parthian Energy

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Parthian Energy

Lawrence Berkeley National Lab: Battery Research & Testing Facility

Point of Contact: Michelle (Mahshid) Roumi Phone: 626.755.7776 Email: mroumi@parthiannrg.com Website: https://parthianenergy.com

Company Region:

Greater Los Angeles, Los Angeles County

Company Description:

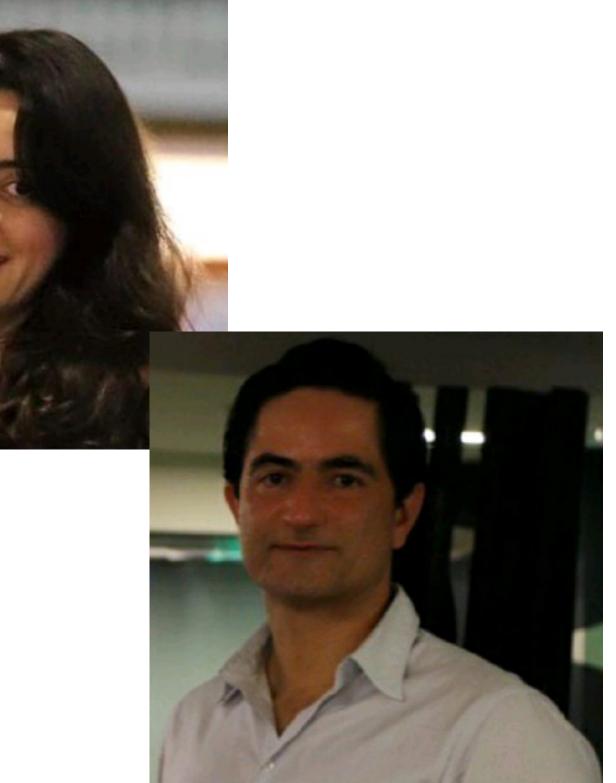
Parthian Energy's goal is to solve current cost and safety challenges to the widespread adoption of lithium-ion batteries in motive and stationary energy storage applications through the successful commercialization of Parthian Electromagnetic Sensor (PES) technology. PES is a rapid battery diagnosis platform, developed by the founders at Caltech.

Designation Status:

Women Owned Small Business (WOSB), Women's Business Enterprise (WBE)



CalTestBed.com





Parthian Energy

Lawrence Berkeley National Lab: Battery Research & Testing Facility

Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

PES is a rapid battery diagnosis platform, which converts a battery's electromagnetic signature into a 2D contour map. It uses proprietary patternmatching algorithms to detect defects and damage within the battery, while inuse or during manufacturing. PES, which works on both cell and module levels, is chemistry and size agnostic, and it works with any battery format. It is the only cost-effective solution that we are aware of that is capable of direct and immediate detection of micro-short circuits and other battery faults- well before traditional measurement technologies are able to register the problem.

Seeking These Next Level Partners:

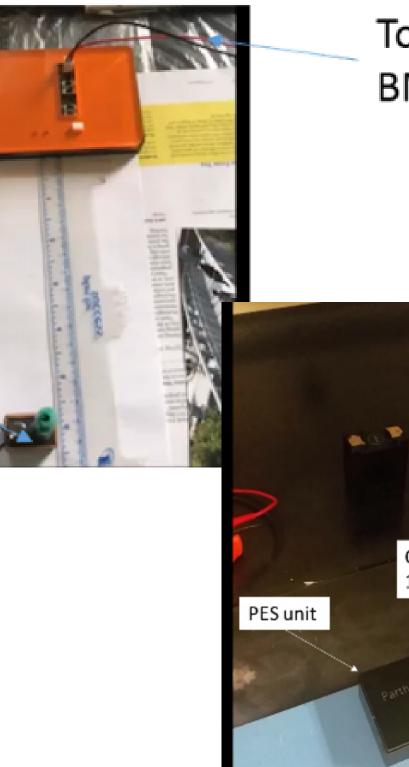
- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Company interested in new clean energy technologies for potential acquisition
- Investor interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government official wanting to learn more about the program

Our sensor

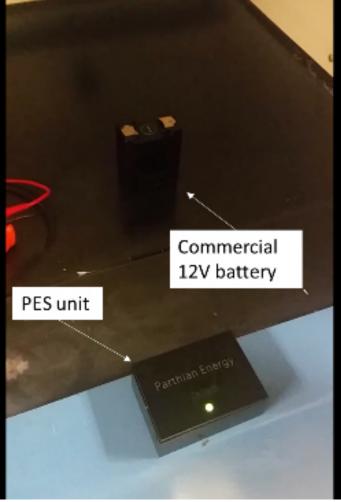
battery

CalTestBed.com

Parthian sensor



To the BMS







Paulsson, Inc. (PI)

Paulsson, Inc.

UC San Diego: Pinyon Flat

Point of Contact: Bjorn Paulsson Phone: 310.780.2219 Email: bjorn.paulsson@paulsson.com Website: https://paulsson.com

Company Region:

Greater Los Angeles, Los Angeles County

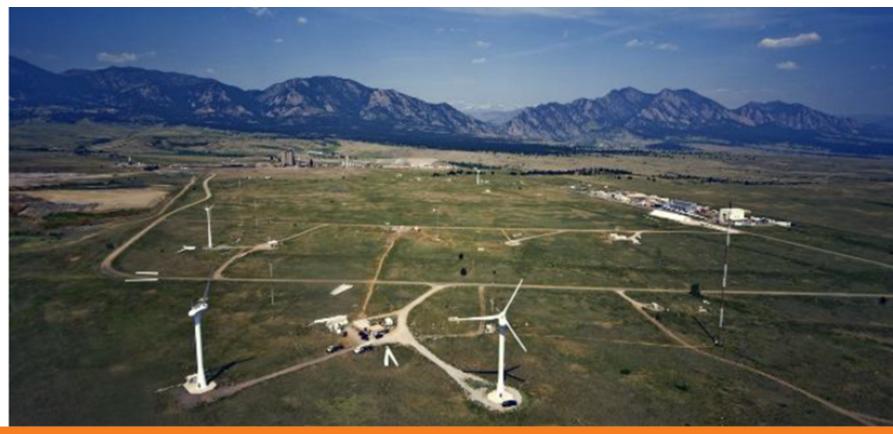
Company Description:

Provide robust, accurate and cost-effective all-optical pressure, vibrational, temperature, and strain sensors to characterize and monitor the subsurface and subsurface installations to significantly increase production of safe geothermal energy, assure permanent sequestration of CO2 and safeguard underground storage of natural gas and natural gas mixed with hydrogen.



Björn Paulsson, Ph.D. **CEO & President**

40 years of experience in Borehole Seismology





Ruiqing He, Ph.D. Vice President of Geophysics



Mike Wylie, Ph.D. **Principal Systems** Engineer

15 years of experience in geophysical data processing

10 years of experience in optical sensing development

Paulsson, Inc.

UC San Diego: Pinyon Flat

Technology Readiness Level: 5

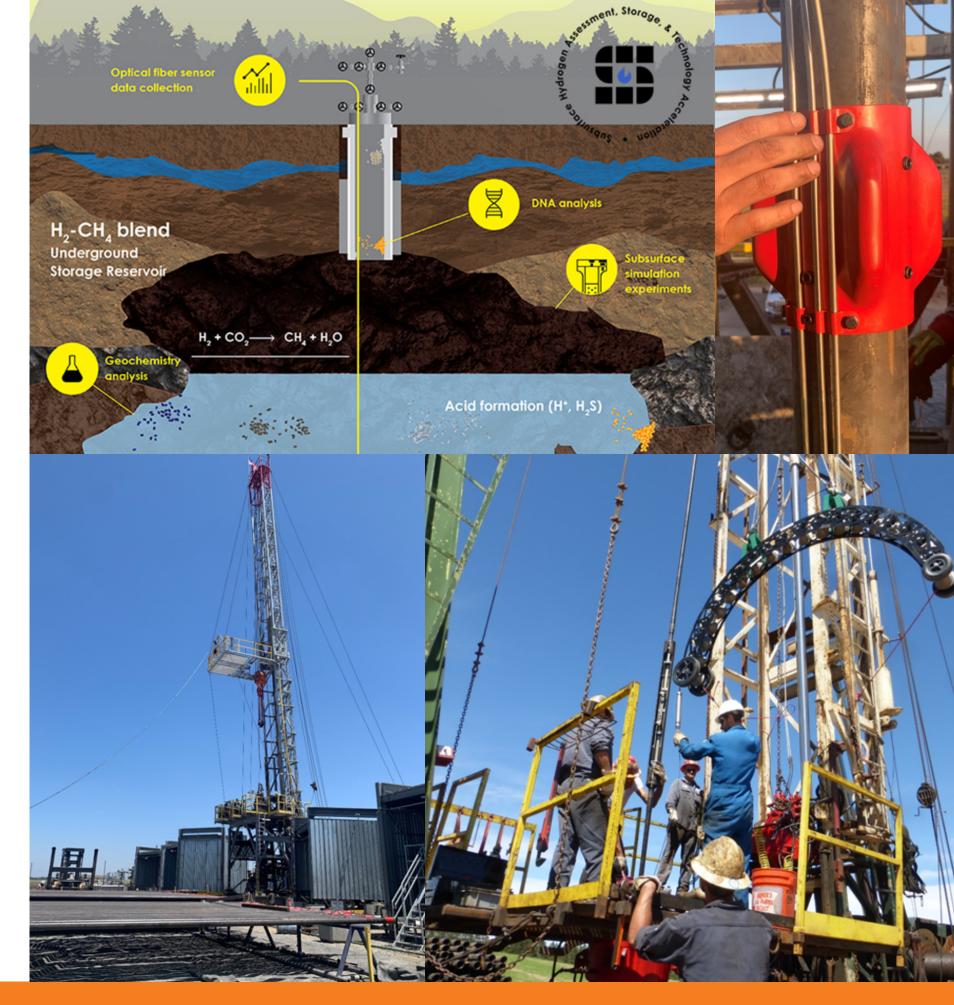
Technology Type: Renewable Generation

Innovation Description:

Paulsson, Inc. has invented and is developing high-temperature fiber-optic pressure sensor array technologies that can be developed and operate in geothermal boreholes at 650°F. The array can also be incorporated with other fiber-optic sensors providing high resolution recording of temperature, acoustics and strain. Currently, there are no pressure sensors for geothermal wells so this development will fill a much needed technical and operational need for the geothermal industry by generating real time actionable data, processed by machine learning, to provide guidance for fluid injection and extraction, reservoir stimulation, and accurate characterization for Enhanced Geothermal System (EGS) reservoirs.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Investor interested in learning about new clean energy investment opportunities
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government official wanting to learn more about the program



CalTestBed.com

portable solar



Portable Solar, Inc.

UCLA: Smart Grid Energy Research Center (SMERC)

Point of Contact: Dennis Nickerson Phone: 305.798.8241 Email: dennis@portablesolar.io Email: https://www.portablesolar.io/

Company Region: Central Valley, Monterey County

Company Description:

Portable Solar employs novel designs of thermoplastics technology to create PV panel mounting systems that the end-user can assemble in about an hour, place on the ground and call an electrician. Bypassing rooftops and the labor-intensive installer model that has dominated residential solar leads to installed costs per Watt about half the industry average.





Portable Solar, Inc.

UCLA: Smart Grid Energy Research Center (SMERC)

Technology Readiness Level: 5

Technology Type: Renewable Generation

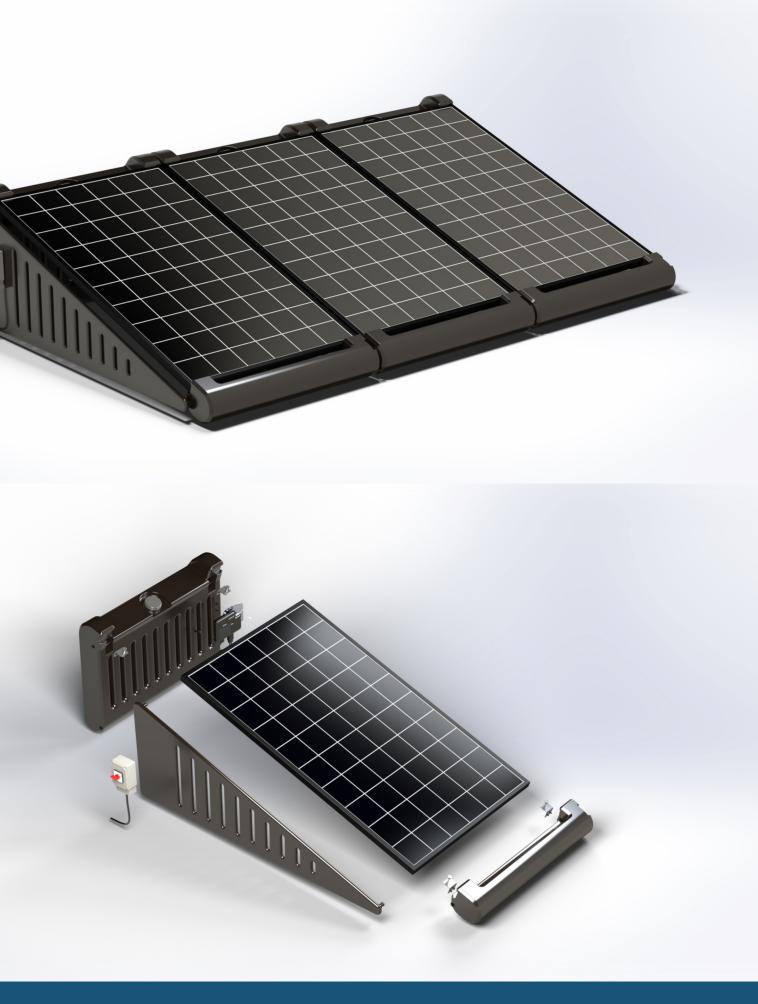
Innovation Description:

We cut the \$/Watt cost of residential solar in half by substituting racking systems and teams on the roof with a UL-compliant chassis that securely holds a panel in place, is shipped direct to the doorstep, and can be assembled by anyone in under an hour. Since the bulk of our cost consists of modules and inverters- which are often not affixed to the roof- both renters and homeowners alike will now have a viable low-cost solar option.

Seeking These Next Level Partners:

- Pilot/demonstration project partner
- Company interested in new clean energy technologies for potential acquisition
- Investor interested in learning about new clean energy investment opportunities
- Government official wanting to learn more about the program
- Leasing companies









Sylvatex, Inc.



Sylvatex, Inc.

UC Riverside: CE-CERT: Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Point of Contact: Virginia Klausmeier Phone: 415.662.3835 Email: admin@sylvatex Website: https://www.sylvatex.com

Company Region:

San Francisco Bay Area, San Francisco County

Company Description:

Sylvatex (SVX) is a climate tech company utilizing sustainable chemistry and materials science to accelerate the shift to electrification of transportation by increasing production throughput while lowering the cost and carbon footprint of the biggest bottleneck in the lithium-ion battery, the cathode.

Sylvatex's mission enables the shift to a 100% renewable energy future through biobased chemistry and materials science innovation.

Designation Status:

Women Owned Small Business (WOSB)







Sylvatex, Inc.

UC Riverside: CE-CERT: Sustainable Integrated Grid Initiative (SIGI) Test Laboratory

Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

SVX's sustainable platform (MicroX™) affords a breakthrough process to synthesize high-Ni cathodes. This technology is designed to integrate into the current cathode manufacturing process. It uses a single reactor to complete the one-pot cathode precursor synthesis affording a uniform dispersion of lithium and transition metal cations, shorter reaction time, and lower energy consumption. In this proposed CalTestBed program, we plan to leverage CalTestBed's resources to characterize SVX's high-Ni cathodes' electrochemical performance and demonstrate the commercial feasibility and scalable production of SVX innovation.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot and demonstration project partner
- Investor interested in learning about new clean energy investment opportunities







TECTONICUS



Tectonicus LLC

UC Merced: Advanced Solar Technologies Institute (UC Solar)

Point of Contact: Ben Lepley Phone: 520.342.8945 Email: ben@tectonicus.com Website: http://tectonicus.com/

Company Region:

Greater Los Angeles, Los Angeles County

Company Description:

Techtonicus Constructs LLC is an agriculture, research, and prototyping firm, whose mission is to make the biggest impact to reducing climate change possible through creative and deployable solutions. We at Techtonicus feel that some solutions to climate change are not necessarily high tech or difficult, they are just augmentations on available technologies, or implementations thereof. We feel that these creative ideas and solutions could be at any scale, any location, and any budget. Currently, we are focused in the realms of solar energy and its application to pumping water and reducing the water-energy footprint. Transporting water across the western US is the single biggest energy user, thermal energy production is single biggest user of water in the western US, we aim to help solve this inefficient and carbon intensive water-energy loop.



valblle sollutiioms





Tectonicus LLC

UC Merced: Advanced Solar Technologies Institute (UC Solar)

Technology Readiness Level: 5

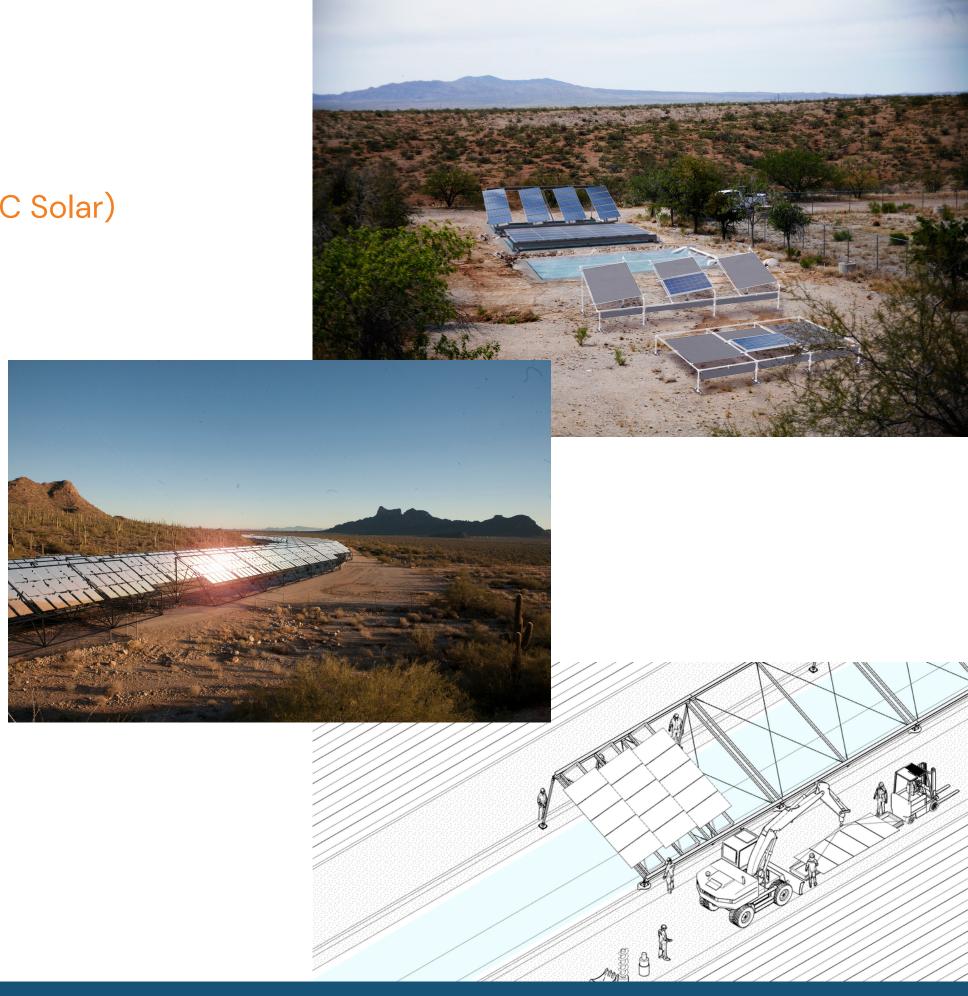
Technology Type: Industrial & Agricultural Innovation

Innovation Description:

If Solar River structures are deployed along canals that have significant water pumping or other agriculture industry electric loads nearby, the strain on local or regional grids will be reduced by shortening the transmission length and amounts. This direct conveyance of generation to usage on an agricultural scale not only reduce costs for grid upgrades, but if co-located next to hydro-water storage facilities could greatly flatten the duck-curve by pumping water for storage or agricultural usage when the sun is shining, and feeding into the grid when peak demands are present.

Seeking These Next Level Partners:

- Pilot/demonstration project partner
- Accelerator/incubator that supports the commercialization of clean energy technologies
- Government official wanting to learn more about the program



POWER[™]



UCAP Power, Inc.

UC San Diego: Zero Net Energy Warehouse: Battery Energy Storage Systems – Module Level

Point of Contact: Troy Brandon Phone: 858.204.6267 Email: troy@ucappower.com Website: https://www.ucappower.com

Company Region:

Greater San Diego, San Diego County

Company Description:

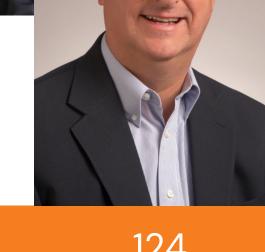
UCAP Power, Inc. brings commercially available Ultracapacitor technology into the mainstream. The founders, proven leaders formerly from Maxwell Technologies' leadership and product management teams, formed UCAP Power after Maxwell's recent acquisition by Tesla. UCAP Power develops innovative, adaptable products for a range of applications that make it easier for our clients to choose superior power storage solutions. The company's near-term profitability focuses on cultivating existing pipelines of opportunity and leveraging deep relationships established during management experience at Maxwell and other industry leaders. Presently, profit targets include "retrofit" replacement strategies for lead-acid battery technology in wind energy, transportation, and generator reserve power.





CalTestBed.com





UCAP Power, Inc.

UC San Diego: Zero Net Energy Warehouse: Battery Energy Storage Systems – Module Level

Technology Readiness Level: 7

Technology Type: Energy Storage

Innovation Description:

HIGH POWER, LONG LIFE: Rated >2,000 amps of instantaneous power. Designed for typically 15+ years of maintenance-free life in most backup and starting applications.

SAFE & SUSTAINABLE: Much safer and more environmentally friendly than typical batteries. Over the operating lifetime, each POWERBLoK[™] can eliminate the need for several lead-acid battery replacements.

MODULAR & SCALABLE: Easily customize power and energy as needed by connecting modules in series or parallel, up 150 volts.

EASY CONVERSION: Smaller, lighter, and much more powerful than comparable lead-acid batteries. The integrated charger plugs into universal AC or 24V DC sources common in renewable systems.

Seeking These Next Level Partners:

- Testbed facilities interested in partnering
- Pilot/demonstration project partner
- Company interested in new clean energy technology for potential acquisition
- Investor interested in learning about new clean energy investment opportunities
- Accelerator/incubators that supports the commercialization of clean energy technologies
- OEM/license manufacturing
- Joint Venture partners



CalTestBed.com











Automat Solutions

UC – Davis Green Technology Laboratory

Point of Contact: Jason Wang Phone: 510.220.1387 Email: jwang@automatsoln.com Website: www.automatsoln.com

Company Region:

San Francisco Bay Area, Alameda County

Company Description:

Automat Solutions, Inc. (Automat) was founded with a mission to accelerate material innovation and disrupt the lithium battery market. The company employs automated artificial intelligence (A.I.) and high-throughput robotic experimentation workflows to efficiently identify ideal electrolyte chemistries that enable high performance and high energy density lithium batteries. We envision to create a more energy efficient world and healthier environment by creating novel chemistries that enable higher performance battery solutions and following our core values, FAST: Fulfillment, Accountability, Service to Customers, Together.

Designation Status:

Minority Business Enterprise (MBE)



Dr. Leon Wang: Materials Founder CEO/CTO

- 15+ years on battery and electrochromic materials
- Manger and technical leader at Bosch/Seeo
- Sr. Director at Heliotrope
- Tsinghua University/Brookhaven National Lab



Dr. Jason Wang: Robotic HT Founder COO/CFO

- 20+ years of high throughput development
- Director at Symyx/Freeslate
- President of CASPA/SVSTA
- Founder of Eutomation, Inc.
- Peking University/Syracuse University



Patrick Pan: VP of Manufacturing

- 30 years experience on manufacturing and BD
- Founder of STB Group, SDT
- Co-founder of Guangzhou Sitbo Electromechanical Equipment Co., Ltd
- Central South University/Cal State/ PKU Business School

Automat Solutions

UC – Davis Green Technology Laboratory

Technology Readiness Level: 6

Technology Type: Material-Based

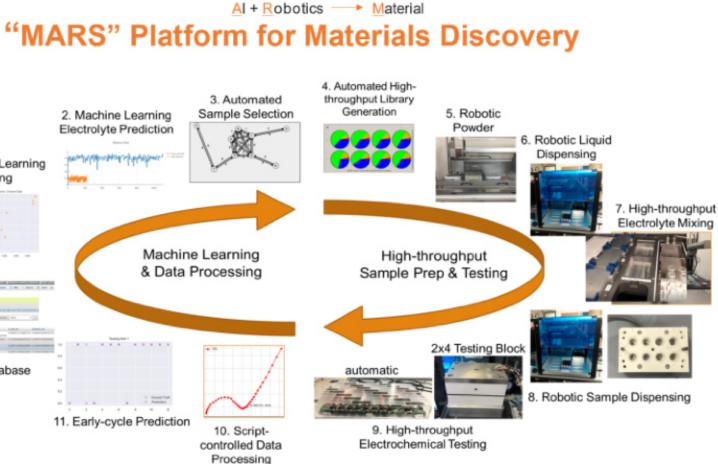
Innovation Description:

The electrochemical System (E-Chem System) can measure material samples (i.e., electrolyte) properties such as conductivity, and EIS with a throughput of up to 32 samples at once, with a matrix-based 4x8 well block with built-in electrodes. The block is integrated with a metal frame and special designed PCB boards connection box with pins aligned for each well. The box is then connected to a potentiostat which can perform EIS measurements for each sample. The process is automated using an automatic switchbox paired with a control software capable of programming channel changes as measurements are completed for each sample.

Seeking These Next Level Needs:

- Series A fundraising to support our products scale up.
- Marketing and customers reaching for our electrolyte products.
- Industry scale manufacturing setting up.

CalTestBed.com



Automat Materials Innovative AI Robotics-driven System (MARS)



Dakota Energy Systems

UC Riverside: CE-CERT

Point of Contact: David Hertzberg Phone: 480.215.1354 Email: dhertzberg@dakotaenergysystems.com Website: www.dakotaenergysystems.com

Company Region:

Central Valley, Shasta County

Company Description:

Dakota Energy Systems will introduce micro-hydro power generation to the world as the third leg of alternative energy. We will do this by harvesting existing inherent energy from fluids that flow through countless miles of pipelines. Our team will be made up of the best and brightest minds working together to bring the world one of the most demanded commodities; carbon free, dispersed, safe, continuous alternative energy.



Dakota Energy Systems

UC Riverside: CE-CERT

Technology Readiness Level: 7

Technology Type: Water Technologies

Innovation Description:

Dakota Energy Systems, developed and deployed a patented technology that harvests energy from closed loop fluid flow systems called a Hydroelectric Power System or HEPS. These HEPS work in conjunction with pressure reducing valves to reduce the water pressure by absorbing the water flow enough to reduce its pressure to a usable pounds per square inch. The HEPS harvests inherent energy by flowing the water through a turbine that reduces the water's pressure while harvesting electricity. Our technology can be used in municipal and private water grids, oil and gas pipelines and commercial and industrial buildings.



Dakota Energy Systems

Our HEPS generates on-site clean electricity from pressurized steam flowing through a distribution system.

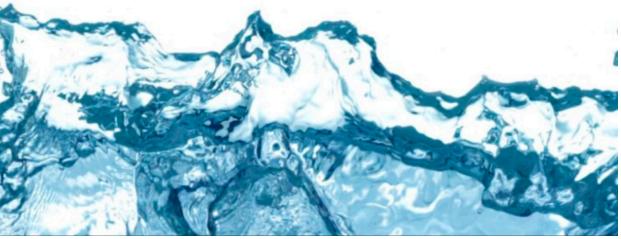


Skid Design 150 kw turbines or larger

Wide Range of Steam Flow 6,000 lbs/hr or larger

Wide Range of Steam **Pressure Differential of 75 PSIG or higher**

Contact a solutions professional today PO Box 5309 Peoria AZ 85385 #623.440.5799 www.dakotaenergysystems.com







Delphire

UC Riverside: CE-CERT: Electrical Motor Systems Testing Laboratory

Point of Contact: Gilberto DeSalvo Phone: 626.399.7019 Email: gdesalvo@delphiretech.com Website: www.dakotaenergysystems.com Company Region: Greater Los Angeles, Los Angeles County

Company Description:

Delphire is dedicated to preventing and containing wildfires by providing actionable real-time information from remote and dangerous locations. Delphire's innovative technology, the "Sentinel: Wildfire AI" (Or "Sentinel") prevents the damage caused from these electric grid-related fires by providing customers with a real-time, Artificial Intelligence (AI)-based detection system that reports fires in their earliest stages and provides a visual image for confirmation from anywhere.





Dr. Gilberto DeSalvo, PhD FOUNDER AND CEO

Haochen Pi, MS SOFTWARE ENGINEER



Aratrika Ghatak, M.Eng. SYSTEMS ENGINEER

Delphire

UC Riverside: CE-CERT: Electrical Motor Systems Testing Laboratory

Technology Readiness Level: 6

Technology Type: Grid Technologies

Innovation Description:

Our Sentinel FD3 system provides on-the-edge AI monitoring to protect electric utilities and fire vulnerable communities while reducing wildfire impacts. Our real-time system detects and reports fires in the incipient phase with a visual image for rapid human confirmation (under 2 minutes from ignition). It is functional even in areas with no cellular communications (satellite modem) with a power envelope easily satisfied by a solar panel and battery. Our modular system leverages multiple sensor combinations (visible & IR images, air quality, and environment data) through edge-based AI to analyze the sensor data and detect smoke or flames in seconds with low false alarm rates.

Seeking These Next Level Needs:

- Validation of power generation system for 24/7/365 operation.
- Relationships are sought with utilities that pilot emerging wildfire technologies.
- Connectivity and industrial controls functionality can be extended to other remote applications.

CalTestBed.com

The Delphire Sentinel FD3[™]



MORE THAN JUST A CAMERA. WE KEEP WATCH FOR YOU 24/7.



HAGO ENERGETICS FOR AN ABUNDANT FUTURE

Hago Energetics

UC Irvine: Advanced Power & Energy Program

Point of Contact: Wilson Hago **Phone:** (805) 400-4196 Email: wilson@hagoenergetics.com Website: https://hagoenergetics.com/

Company Region:

Greater Los Angeles, Ventura County

Company Description:

Hago Energetics is driven by a deeply rooted commitment to creating sustainable solutions to the climate crisis. Founded in 2017 the company continues working towards developing and implementing technology to covert biowaste products into needed products, such as biochar and green hydrogen. Our company has steadily worked on the creation of solutions for farms, wastewater treatment plants, and other sectors looking to lower their carbon footprint. We also continue expanding our team and partnerships so that together we can be part of worldwide decarbonization.

Designation Status:

Minority Business Enterprise (MBE)





Wilson Hago, PhD Founder, CEO



Cynthia Saenz VP Strategy



Randal Hatfield, PhD

John O'Connell, PhD **Chemical Engineer**



Stephen Markscheid Advisor



Biodigester (source of biogas)

Hago Energetics

UC Irvine: Advanced Power & Energy Program

Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

Our prototype is a trailer-sized unit that converts organic waste materials to green hydrogen. We take biogas input from a dairy farm, landfill gas facility or wastewater treatment plant and convert this input to hydrogen and carbon. We use this with the aid of an inexpensive carbon catalyst. Our intent with CalTestBed is to test both the hydrogen and carbon which result from this process to optimize product sales to industry and farms. We are also interested in analyzing the catalyst, which is the core of our innovation.

Seeking These Next Level Needs:

- Funding for field mobility demonstration
- Scaleup of present reactor by 100x
- Additional personnel for scaleup



Hago Reactor





Hydroplane Ltd.

UC Irvine: Advanced Power & Energy Program

Point of Contact: Dr. Anita Sengupta Phone: 818.796.9134 Email: anita@hydroplane.us Website: https://hydroplane.us/

Company Region: Greater Los Angeles, Los Angeles County

Company Description:

Hydroplane is developing a modular 200-kW (270 hp) hydrogen fuel cell powerplant for the general aviation and regional transportation. The company's novel electric propulsion powerplant, funded by the U.S. Air Force's prestigious Agility Prime Program and led by space program veterans, will replace combustion-piston driven engines in aircraft. Hydroplane's novel powerplant is specifically designed for aviation as it is lightweight, has a compact form factor, is highly durable, and emits only water. The powerplant also provides a significant increase in endurance over battery-powered alternatives. Hydroplane is on track to fly its demonstrator aircraft in 2023.

Designation Status:

Minority Business Enterprise (MBE) Women's Business Enterprise (WBE) Women Owned Small Business (WOSB)



Dr. Anita Sengupta **CEO/Founder**



CEO/Founder Dr. Anita Sengupta is a former NASA aerospace engineer, commercial pilot, engineering professor, rocket scientist, and green transport entrepreneur. She has developed technologies electric propulsion technologies that have enabled the exploration of deep space, ground transport with the hyperloop, and emission free aircraft, for over two decades.



Hydroplane Ltd.

UC Irvine: Advanced Power & Energy Program

Technology Readiness Level: 7

Technology Type: Transportation

Innovation Description:

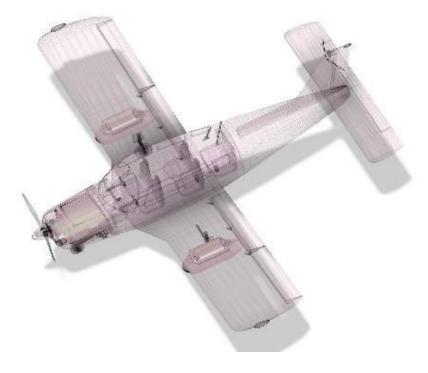
The prototype is a novel modular 200 kilowatt (150 KW net) H2-fuel cell-based powerplant. It includes a low temperature polymer electrolyte membrane fuel cell stack and balance of plant hardware – electric air compressor, control electronics, and software. We have a parallel path approach for development. We have two 100 KW stacks to be integrated with our custom balance of plant for a TRL 6-7 ground and flight demonstration. We also have a custom 200 KW output fuel cell stack for a ground TRL5-6 demonstration. The 200 KW stack consists of custom bipolar plates, thermal management system, and membrane electrode assembly.

Seeking These Next Level Needs:

- Certification Testing Facilities for Aviation and Transport Commercialization
- Connections to California Energy Ecosystem for infrastructure support
- Connections to California Energy Ecosystem for supply chain partners









ONYX POWER LLC

UC Riverside CE-CERT DERL

Point of Contact: Debarshi Das Phone: 602–318–6232 Email: debarshi@onyxpower.io Website: www.onyxpower.io

Company Region:

Greater Los Angeles, Los Angeles County

Company Description:

ONYX POWER ("ONYX") is a minority-owned small business that designs and manufactures zero-emissions, rugged and portable power equipment – a replacement for gas and diesel generators.

Designation Status:

Minority Business Enterprise (MBE)



ONYX POWER LLC

UC Riverside CE-CERT DERL

Technology Readiness Level: 7

Technology Type: Energy Storage

Innovation Description:

The ONYX Rhino is a 4kW / 6kWh rugged mobile battery that outputs 12OV and 24OV and charges from a 12OV outlet or solar. The ONYX Manta is a portable scalable 55OW nameplate solar system. When combined, the ONYX Rhino and ONYX Manta serve as a "Rugged Mobile Nanogrid" for deployable zero-emissions power during prolonged emergencies, disaster response, and remote / off-grid use. The ONYX Manta pairs with and recharges the ONYX Rhino for extended use, thereby directly replacing small gas generators.











PACE AI

Lawrence Berkeley National Lab: Solar Optical Properties Laboratory

Point of Contact: Tom Mills Phone: 877.722.3482 Email: tommills@pacecontrols.com Website: https://www.pacecontrols.com/



Tom Mills, BSE ChE, MBA CEO

Company Region:

Greater San Diego, San Diego County

Company Description:

- Edge AI/ML, easily installed, complementary and additive to any BAS
- Next gen PACE5 suite dev with Verizon Open Development, OEM partners
- Utility-rebated under energy efficiency, DR, RCx, DI, OBF programs
- Munich Re-backed 3 year Savings Warranty on EE savings (electric and gas)
- Next gen suite and AI/ML adds new DER, VEN, VPP capabilities
- OEM partnering for new IIoT process applications, white label and licensing programs and co-development
- Participation in WFD programs (HVAC and building trades)
- Vs. carbon credits -- cut and track carbon and cost, with verifiable results



Ric Kolk, MS EE SVP ENGINEERING & TECHNOLOGY



PACE AI

Lawrence Berkeley National Lab: FLEXLAB

Technology Readiness Level: 6

Technology Type: Building Technologies

Innovation Description:

PACE AI: a breakthrough, proven, highly scalable edge+cloud suite to reduce climate change, build a smarter grid, cut industrial energy waste, and save money – in Smart Grid, Smart Buildings, and Smart Cities. Current-generation PACE4 suite routinely delivers 20%–30% HVACR edge AI/ML savings over BAS, now with Munich Re-backed 3-year energy savings warranty.

Seeking These Next Level Needs:

- Added electric and gas utility, ESCO partnering for EE/DR/ADR deployments
- Large-scale VPP demonstration with ESS partner
- Collaboration around additional insuretech applications

PACE Node & PACE AI – 20%+ Easy, Rebated Efficiency Savings, With 3 Year Savings Warranty



45 minute installation

Cell/WiFi/+ connection

30%-80%+ utility incentives



Part of SRI International

PARC

UC Berkeley: Controlled Environment Chamber, Center for the Built Environment

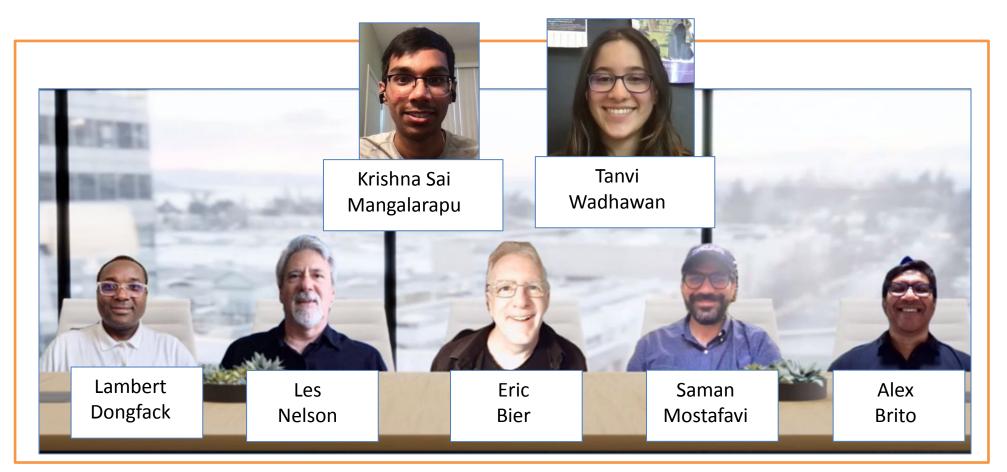
Point of Contact: Dr. Eric A. Bier Phone: 650-859-5163 Email: eric.bier@sri.com Website: http://www.parc.com/

Company Region:

San Francisco Bay Area, Santa Clara County

Company Description:

PARC, now part of SRI International, has been at the heart of some of the most important technological breakthroughs of our time. Practicing open innovation, PARC provides custom R&D services, technology, intellectual property, and innovation best practices to Fortune 500 companies, startups, and government agencies. Organizations around the world value us for our scientific rigor, IP portfolio, commercialization capabilities, and comprehensive research facilitiesresources found nowhere else in a single organization.



PARC

UC Berkeley: Controlled Environment Chamber, Center for the Built Environment

Technology Readiness Level: 5

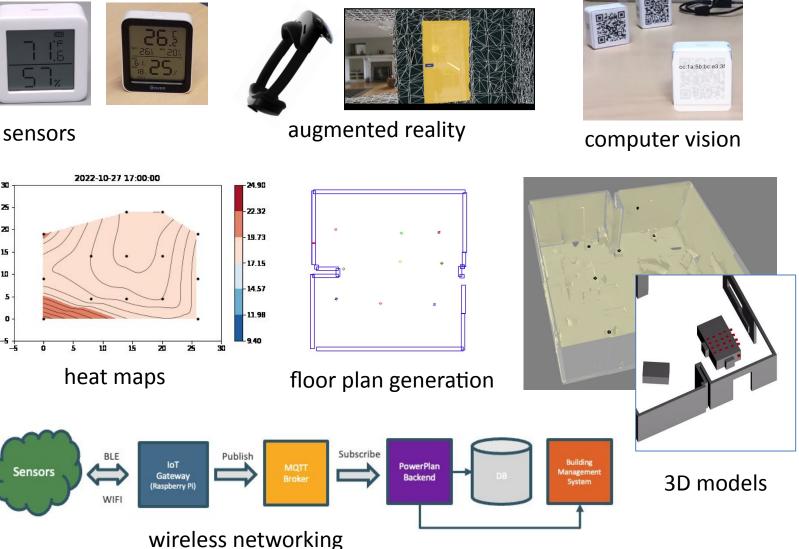
Technology Type: Renewable Internet of Things

Innovation Description:

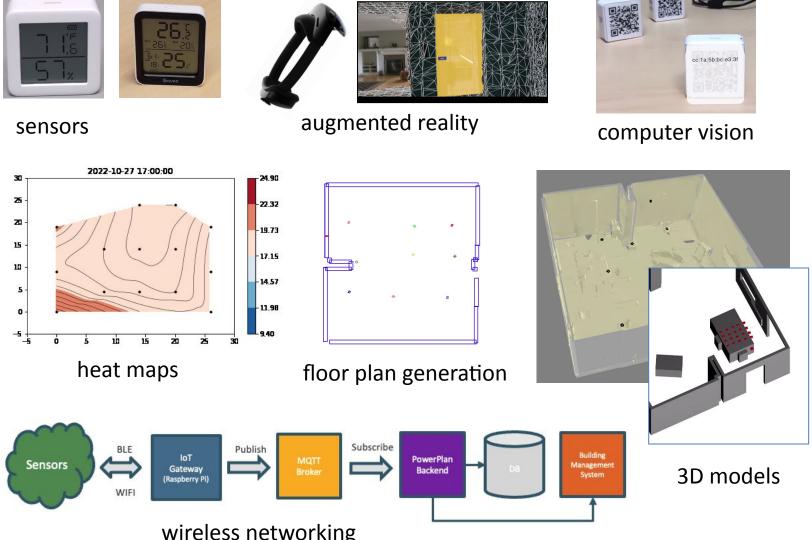
A sensor commissioning and optimization system that commissions many sensors per zone (e.g., dozens) at high speed and low cost. It uses augmented reality and wireless networking to capture building geometry, floor plans, sensor positions, and sensor network addresses in a single session. Raspberry Pi-based hubs read from tens of sensors each, including sensors for temperature, humidity, and IR. Custom infrared sensors achieve increased responsiveness to temperature changes. Algorithms generate sub-zone building models, determine optimal positions for sensors and actuators, and control buildings to achieve comfort locally while minimizing overall energy consumption.

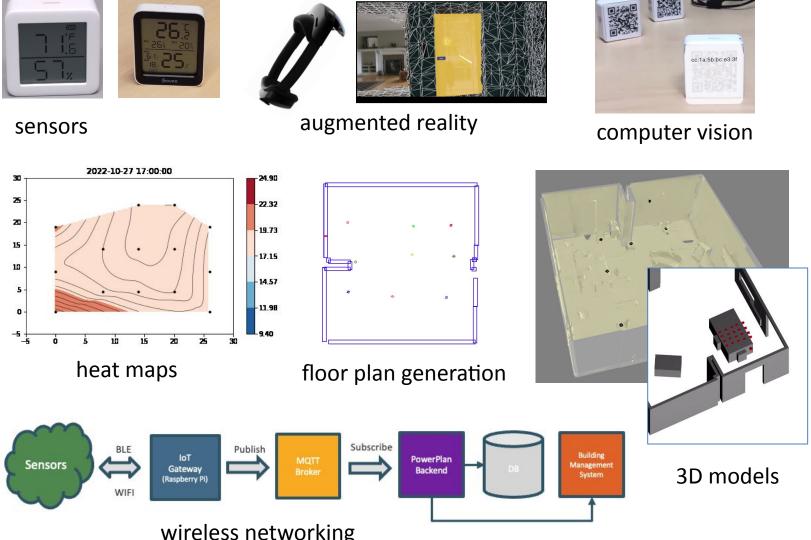
Seeking These Next Level Needs:

- Added electric and gas utility, ESCO partnering for EE/DR/ADR deployments
- Large-scale VPP demonstration with ESS partner
- Collaboration around additional insuretech applications













Prabhu Energy Labs

UC Davis: STEEL Lab

Point of Contact: Edan Prabhu Phone: 949-636-7023 Email: edan.prabhu@prabhuenergy.com Website: https://www.prabhuenergylabs.com/

Company Region: Greater Los Angeles, Orange County

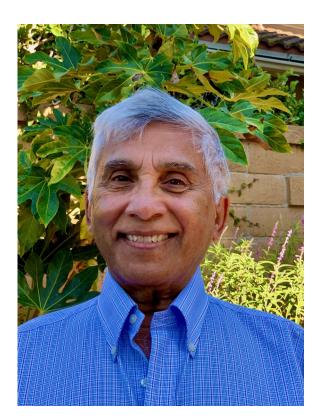
Company Description:

Prabhu Energy Labs aims to be the world leader in scrubbing methane emissions from the atmosphere, combating climate change and accelerating the transition to a sustainable energy future.

A primary accelerant of climate change, methane has up to 84x the warming potential of CO2 in the first 20 years. Our Oxiperator will help remove "weak methane" which makes up more than half the world's annual methane emissions. We will start by deploying Oxiperators to consume weak methane escaping from California's oilfields, gas wells, and landfills and convert it to clean, reliable electricity, where possible.

Designation Status:

Minority Business Enterprise (MBE)



Edan Prabhu Founder & CEO



Monica Prabhu Commercialization & Communications

Prabhu Energy Labs

UC Davis: STEEL Lab

Technology Readiness Level: 5

Technology Type: Renewable Generation

Innovation Description:

The Oxiperator is an all-metal, porous heat exchanger that oxidizes weak methane without generating NOx. The Oxiperator consumes methane emissions as weak as 0.3% volume (mixed in air) and can power a gas turbine at concentrations as low as 1.5%. Additive Manufacturing enables the use of very thin, high temperature metals and precise design to minimize materials and optimize performance and mass production. A 20,000 cfm unit, packaged and run from a 40 foot shipping container, can power a 2 Megawatt gas turbine or destroy 1,000 tons of methane per year. Even larger units are feasible.

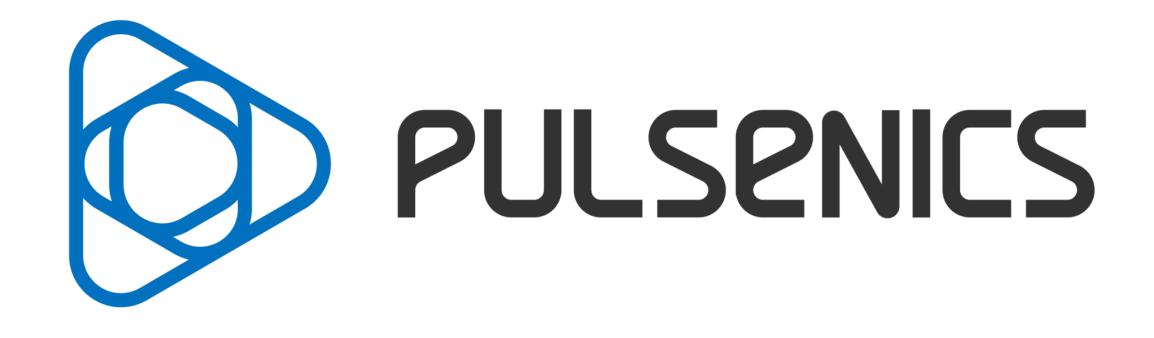
Seeking These Next Level Needs:

- Methane sources
- 3D manufacturing
- Impact / cleantech VC



CalTestBed.com





Pulsenics Inc.

UC San Diego: Center for Energy Research – Energy Storage Innovation Laboratory

Point of Contact: Mariam Awara Phone: 647.877.2470 Email: mariam@pulsenics.com Website: www.pulsenics.com

Company Region: San Francisco Bay Area, Alameda County

Company Description:

Pulsenics was borne out of 10 years of Research and Development into Electrochemical Optimization Techniques, culminating in the invention of the Pulsenics core technology that enables in-situ characterization of industrial-scale electrochemical technologies. Pulsenics' mission is to provide the tools to drive the electrochemical industry towards a more sustainable and efficient reality.



Essam Elsahwi CEO



Ben Maxwell

СТО



Mariam Awara COO

Pulsenics Inc.

UC San Diego: Center for Energy Research – Energy Storage Innovation Laboratory

Technology Readiness Level: 5

Technology Type: Internet of Things

Innovation Description:

The Pulse Probe is hardware that performs in-situ characterization of electrochemical stacks without requiring stack shut-down or disruption. The Pulse Probe works using the principles of electrochemical impedance spectroscopy, a non-invasive diagnostic technique to isolate contributors of performance losses for an electrochemical cell. Pulsenics' innovation enables the application of impedance spectroscopy on electrochemical stacks experiencing industrial power levels, which had never been done before.

The Pulse Probe has the potential to abate over 800 million tonnes of CO2/year by effectively monitoring and managing the performance of electrochemical systems in operation.







Safi Organics Ltd.

UC Santa Barbara: TEMPO Shared Analytical Facility

Point of Contact: Samuel Rigu Phone: 857.600.0981 Email: safi.organics.kenya@gmail.com Website: safiorganics.co.ke

Company Region:

San Francisco Bay Area, Contra Costa County

Company Description:

MIT spinout Safi Organics uses farmers' crop residue to make an organic fertilizer that can increase yields and improve soil health. Safi Organics solution comes from first decentralizing the production of fertilizers. Most fertilizers in Africa are produced at scale in centralized facilities and then imported to rural areas. This leaves the farmer paying for the cost of transportation on top of production. Safi Organics produces fertilizers locally turning farm waste into a product called Safi Sarvi.

Designation Status:

Minority Business Enterprise (MBE)





Safi Organics Ltd.

UC Santa Barbara: TEMPO Shared Analytical Facility

Technology Readiness Level: 6

Technology Type: Industrial & Agricultural Innovation

Innovation Description:

Safi Sarvi is a locally produced carbon-negative fertilizer that has been shown to improve yields by up to 30% for smallholder farmers. By eliminating the need for long-distance fertilizer transportation, the company not only significantly reduces costs but also provides farmers with a higher-quality product. Furthermore, farmers who utilize this product can generate an additional 20–30% income through increased harvests.



SURVIS





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65-85 Inganitos Inganitos 10316, Kinisyopi 756 282 642 Iganica.co.ka	Processed and publics by Soft Organics R.O. Box 173 - 20319 Kinger Cell: +25+736 202 642 www.selforgaries.co.le
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Sea Dragon Energy Inc.

UC San Diego: Center for Energy Research – Energy Storage Innovation Laboratory

Point of Contact: Stefan Sillen Phone: (540) 233–1099 Email: stefan.sillen@seadragon.energy Website: https://www.seadragon.energy/

Company Region: Greater San Diego, San Diego County

Company Description:

Sea Dragon Energy, Inc. (SDEI) is a cleantech developer focusing on technology that will help reap the potential of distributed energy sources. Our aim with Lynx mPower is to optimize the use of self-generated and stored energy for the benefit of the consumer and the society at large, and to pave the way for affordable energy storage solutions that can scale over time. In short:

- Get more out of your residential energy system
- Reduce overall energy consumption and save CO2 & cost
- Increase flexibility and resilience during outages
- Participate in demand/response schemes



John Kohut Chief Executive Officer



Stefan Sillen President & COO



Roger Lenard Chief Technology Officer

Sea Dragon Energy Inc.

UC San Diego: Center for Energy Research – Energy Storage Innovation Laboratory

Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

mPower is a circuit management system that allows the user to control the circuit breakers remotely via an app. The system consists of two modules; 1) a Really Sensor (RS-module) that is snapped into the existing panel and connected to the circuit breaker allowing the user to control the circuit breaker, and 2) a Master (M-module) that connects to the RS-module via mesh Bluetooth and to Amazon Web Services via Wi-Fi. The two basic functionalities include turning on/off the circuit breaker remotely and monitoring the energy usage on a circuit breaker level.

Seeking These Next Level Needs:

- Testing: function, performance & endurance → Certification → Beta
- Develop MVP roadmap & product suite
- Implement go-to-market strategy → develop channel partners & strategic partnerships
- Software development, implementation & integration (also with backend)



Standard **Circuit Breaker**

CalTestBed.com

Lynx mPower

Lynx mPower in a nutshell

Turns any existing Circuit Breaker Panel into a "smart" panel

Simple 'snap-in' installation

Remotely select which circuits turn on and off

Integrated AI/ML analytics to preserve energy and optimize use of self-generated and stored energy

Improves the economic value of your installed system

Affordable, Flexible and Smart Energy Management



SolarFlexes

UC San Diego: Power Structural Laboratories – Large High–Performance Outdoor Shake Table (LHPOST)

Point of Contact: Dave Lutian Phone: (203) 260–7292 Email: dave@solarflexes.com Website: www.solarflexes.com

Company Region:

Greater Los Angeles, Los Angeles County

Company Description:

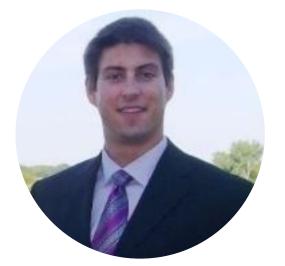
SolarFlexes is developing smart, prefabricated solar arrays that are built on an automated manufacturing line and delivered to a project site 90% complete.

Turn-key arrays are dropped in with a forklift, reducing construction costs and timelines by up to 75%. Automated manufacturing enables a product design that reduces structural steel by over 50% compared to other trackers.



Dave Lutian Founder & CEO







Matt Angle Mechatronics Engineer

Mike Orazietti Mechanical Engineer

SolarFlexes

UC San Diego: Power Structural Laboratories – Large High-Performance Outdoor Shake Table (LHPOST)

Technology Readiness Level: 6

Technology Type: Renewable Generation

Innovation Description:

Our prototype is a prefabricated section of PV solar array. The array consists of eight utility-scale (72-cell) PV modules that are mounted in a one-in-portrait (1-P) configuration to our rack & frame structure and packaged onto a pallet for shipment. Traditional trackers typically use a torque tube as their primary structural member, but our rack & frame structure is unique as the primary structural member is a triangular-section foldable truss. This is not only lighter and stiffer than a torque tube, but allows us to fully factory-assemble the prefabricated array section and fold the truss into the PV modules for high-density shipment.

Seeking These Next Level Needs:

- Expand automated manufacturing capabilities
- Demonstrate scalability through larger projects
- Mature Health Monitoring Al/machine learning algorithms







True Balancing LLC

UC San Diego: Center for Energy Research – Energy Storage Innovation Laboratory

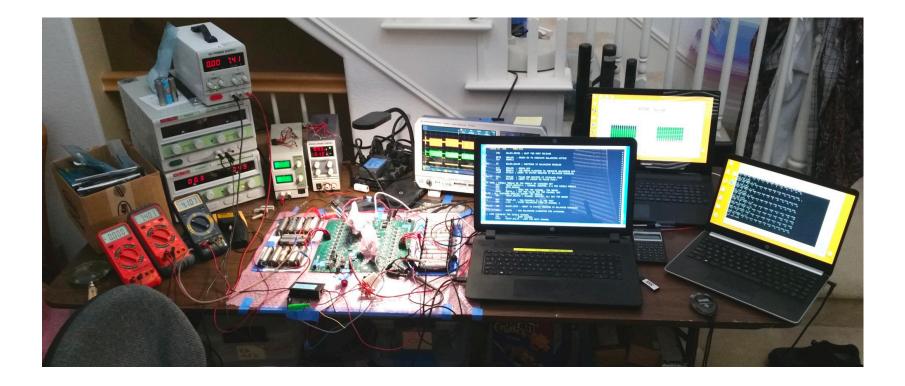
Point of Contact: Clint O'Conner Phone: 520.342.8945 Email: clint@truebalancing.com Website: www.truebalancing.com

Company Region: Greater San Diego, San Diego County

Company Description:

True Balancing is a new technology for managing charge, discharge and balancing in large battery packs, particularly lithium-ion. It sets a new standard for the level of battery performance that can be achieved with battery management electronics.

True Balancing reduces battery cost, extends battery life, increases the available capacity of the battery, and provides real-time data on impedance of cells in the series stack. This can lower total cost of operation for power generation systems that rely on large battery packs for energy storage (such as solar and wind farms). It also lowers the environmental footprint of the battery system and reduces maintenance costs. Finally, it provides a viable path to 2nd life applications of used lithium-ion battery packs in energy storage systems.





True Balancing LLC

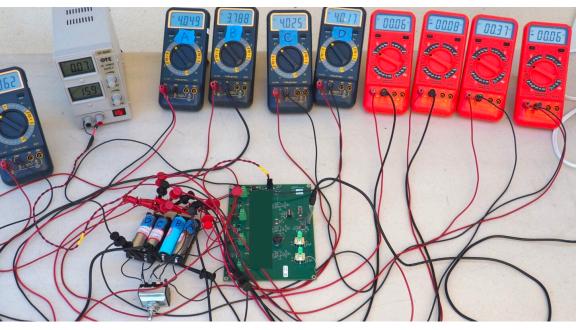
UC San Diego: Center for Energy Research – Energy Storage Innovation Laboratory

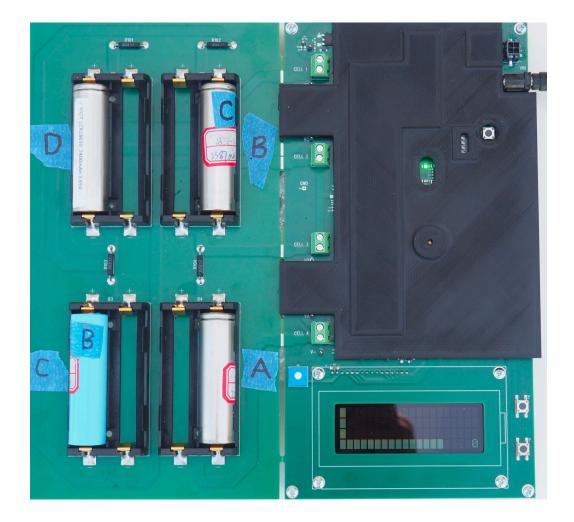
Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

The system to be tested consists of fully functional True Balancing modules. The modules are PCBs that can be connected directly to the battery pack. Each module manages charge, discharge and balancing of 12 cells in series. The modules can be connected in series to manage larger batteries – 10 modules connected in series can manage a battery with 120 cells. The modules can operate autonomously as a standalone system; they don't need to be connected to a BMS. True Balancing Gen 4 is designed with safety level equivalent to FDA Class III medical devices and/or ASIL D for automotive.







Wild Technologies

UC Irvine: Horiba Institute for Mobility and Connectivity (HIMaC)

Point of Contact: Justin Rodenburg Phone: 303-579-2685 Email: justin@wildenergy.io Website: wild---energy.com

Company Region:

Greater Los Angeles, Los Angeles County

Company Description:

Wild Technologies is a battery pack supplier formed by the twin brothers Riley and Justin Rodenburg. Their electrical engineering background and prior experience at Bollinger Motors and Rivian Automotive, respectively, have provided them with the unique insights and experience to design a battery pack that is 20% cheaper with 40% fewer parts than the industry leaders. The company's battery pack, the wildONE, is easier to integrate, customize, and manufacture than any other battery pack on the market.



Justin Rodenburg. **Co-founder**, CTO



Riley Rodenburg. Co-founder, CEO



Wild Technologies

UC Irvine: Horiba Institute for Mobility and Connectivity (HIMaC)

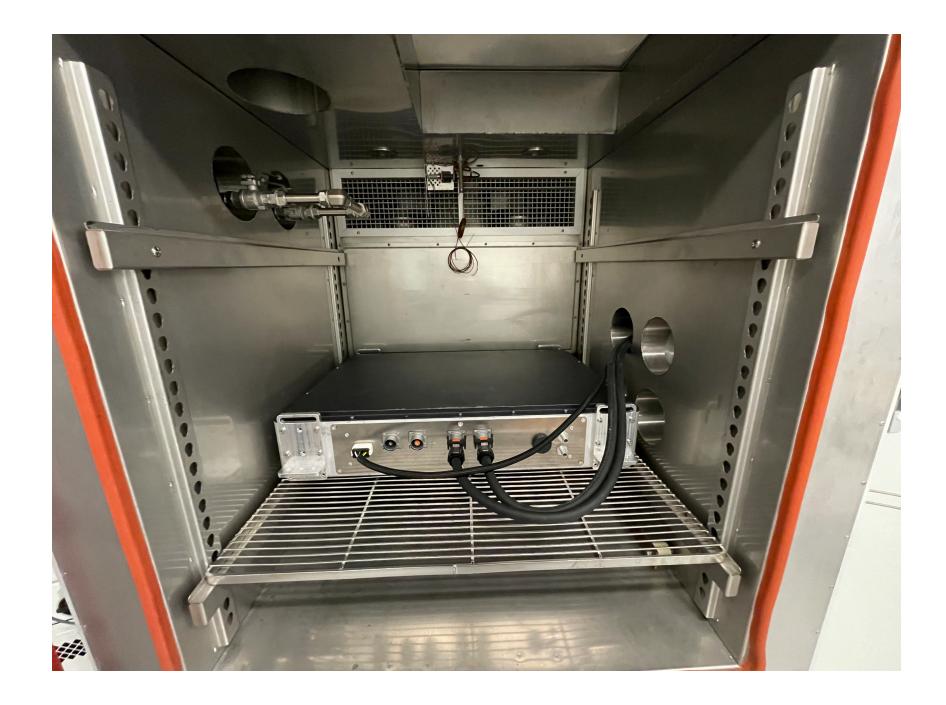
Technology Readiness Level: 5

Technology Type: Energy Storage

Innovation Description:

We are aiming to test the production version of our first product, a 53kWh lithium-ion battery pack specifically designed for the electric marine space.

Our battery pack has 40% fewer parts, is 20% less expensive and 15% more energy dense than our nearest competitors: Rivian and Tesla.





WonderWindow



WonderWindow

Lawrence Berkeley National Laboratory FLEXLAB

Point of Contact: Mark Isaacs Phone: 228 363 2529 Email: mark@wonderwindow.net Website: https://wonderwindow.net

Company Region: San Francisco Bay Area, Solano County

Company Description:

WonderWindows are multi-pane acrylic windows that are designed to be easily assembled from pre-cut parts by makers with scissors, high bond tape and a paint-on edge coating. A protective outer glazing layer can be easily replaced to give the windows durability and reparability. CEO/Founder Mark Isaacs and 3 Founding members of the Bay St Louis, Mississippi Makers Workshop. Lee Arie Simms has been named 2023 State Youth of the Year



WonderWindow

Lawrence Berkeley National Laboratory FLEXLAB

Technology Readiness Level: 7

Technology Type: Building Technologies

Innovation Description:

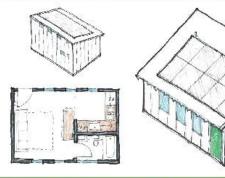
WonderWindows are multi-pane acrylic windows that are designed to be easily assembled from pre-cut parts by makers with scissors, high bond tape and a paint-on edge coating. A protective outer glazing layer can be easily replaced to give the windows durability and reparability.

Widely available white plastic diffusing grids between the outer glazing layers offers the prospect of enhanced solar control and improved daylighting. The multiple glazing layers act as structural diaphragms of a box beam, making for a structural window that can act as a sheer-resistive panel in framed buildings. These enhanced capabilities will be established through CalTestBed.

Seeking These Next Level Needs:

- New construction demo buildings
- Marketing & continuing education support
- Makers Workshop hosts

Net Zero Energy AFFORDABLE HOME D.I.Y. KITS



280sf Accessory Dwelling Unit



wonderwindow.net











XENDEE

Lawrence Berkeley National Laboratory FLEXLAB

Point of Contact: Michael Stadler Phone: 510.375.8459 Email: mstadler@xendee.com Website: https://xendee.com

Company Region: Greater San Diego, San Diego County

Company Description:

Xendee is a leading company specializing in Microgrid and Electric Vehicle (EV) charging infrastructure solutions. Their comprehensive platform offers end-toend design, planning, and control capabilities for the efficient deployment of Distributed Energy Resources (DERs). Xendee's user-friendly interfaces, APIs, databases, and AI-driven features streamline the entire process, significantly reducing project implementation times and costs for EVs, Microgrids, and DERs. Impressive results have been observed in optimized US Department of Defense (DoD) installations, where engineering costs accounted for less than 1% of the total project costs. Xendee's Microgrid controller, backed by robust mathematical principles, ensures optimal real-time operation for achieving desired outcomes.

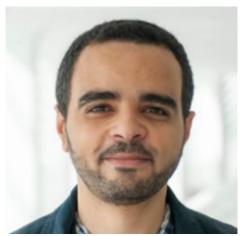


Dr. Michael Stadler Xendee СТО





Dr. Zack Pecenak, Xendee Sr. Director Product



Dr. Mahmoud Saleh Xendee Sr. Microgrid Engineer

Dr. Muhammad Mansoor, UCSD **Project Scientist**



Dr. Jan Kleissl UCSD Professor



XENDEE

Lawrence Berkeley National Laboratory FLEXLAB

Technology Readiness Level: 5

Technology Type: Grid Technologies

Innovation Description:

XENDEE Operate is a plug-and-play hardware solution that allows the deployment of microgrids within hours rather than weeks or months. XENDEE Operate plugs into the customer network and then interfaces directly to available distributed energy resources (DERs) through standard communication protocols such as IEEE 2030.5. XENDEE Operate contains a smart public data acquisition, optimization, and control logic that allows optimizing the DER scheduling given local and real-time information. XENDEE Operate can save customers millions of dollars on their electricity costs as compared to the business-as-usual scenario.

Seeking These Next Level Needs:

- System integration. For effective scaling of the controller technology standardized communication protocols need to be deployed and tested.
- Forecasting accuracy. To achieve the highest level of return, multi-day forecasts for renewable output and loads need to be developed and tested.
- Multi-technology hardware. Interactions between multiple DER technologies need to be tested (PV, EV, batteries, fuel cells, etc.)

XENDEE

OPERATE - San Rafiel Business Park Onsite Manger: Mike O'Neil

Active Distributed Energy Resources:



Battery Bank 1 | 300kW Contribution: 80kW



Natural Gas Gen | 2G AVUS Contribution: 500 kW



Parking Lot Solar | 500kW Contribution: 320kW



North Field Solar | 120kW Contribution: 0kW



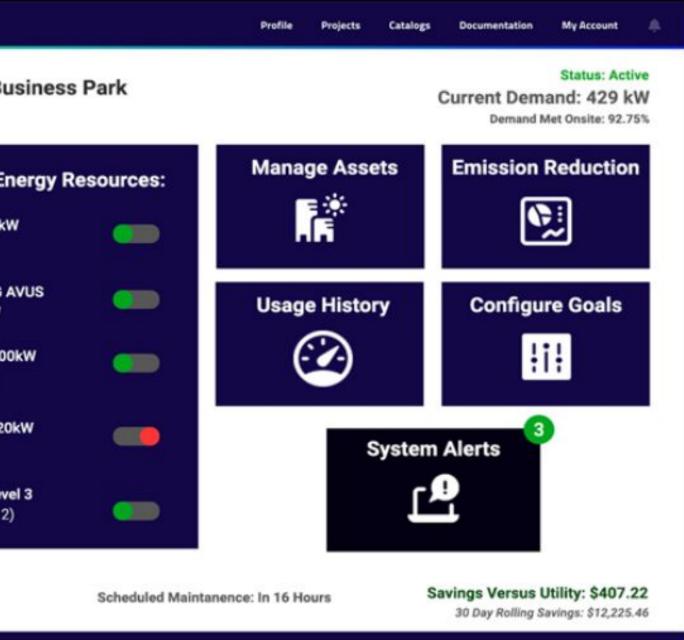
EV Charging Bay | Level 3 Active Chargers: (7/12)

Daily Energy Cost: \$521.54 30 Day Rolling Total: \$16,502

XENDEE

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CalTestBed.com









Xponent Power

Lawrence Berkeley National Laboratory FLEXLAB

Point of Contact: Rohini Raghunathan Phone: 415–301–8425 Email: rraghunathan@xponentpower.com Website: www.xponentpower.com

Company Region: San Francisco Bay Area, Alameda County

Company Description:

Xponent[™] Power is a disruptive renewable energy company with a mission to enable widespread solar adoption in markets that cannot be served by traditional solar solutions.

The core of Xponent[™] Power's innovation is a versatile and patented retractable solar technology platform that is poised enable a wide range of applications including recreational vehicles, military, emergency relief, and residential power.

Based in Fremont, CA; Xponent[™] Power comprises a team of solar and RV industry veterans with over 100 years of combined experience in the solar and RV industries.



Rohini Raghunathan CEO



Shashwat Kumaria Product Development



Vivek Phanse Operations



Xponent Power

Lawrence Berkeley National Laboratory FLEXLAB

Technology Readiness Level: 6

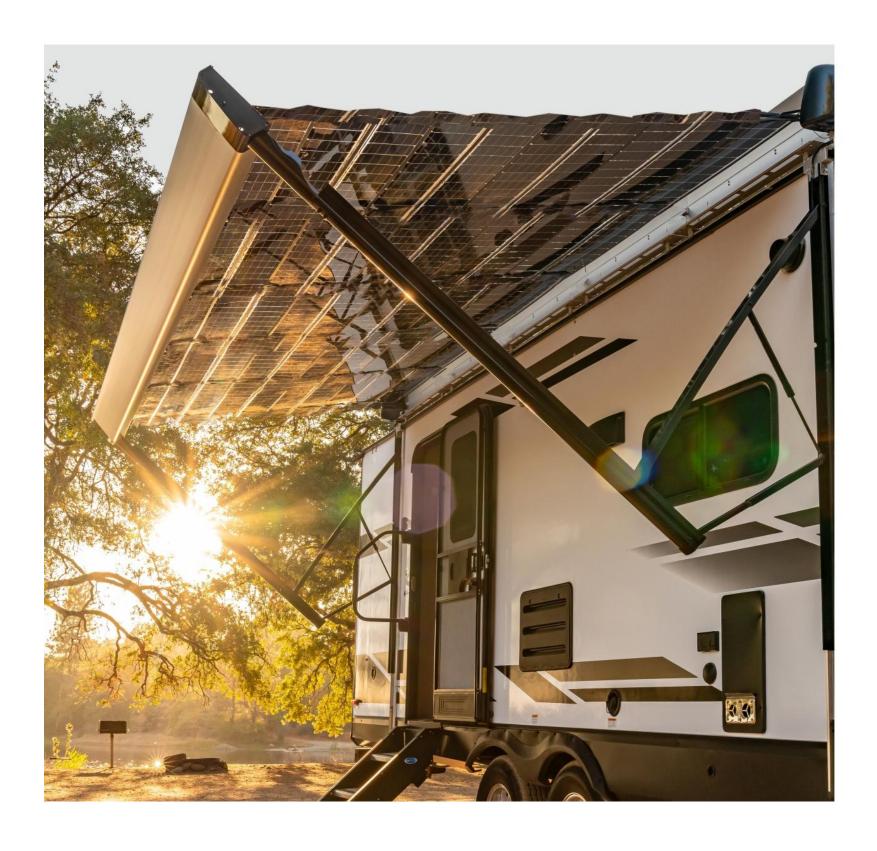
Technology Type: Grid Technologies

Innovation Description:

Xponent[™] Power has developed Xpanse[™]; an intelligent, sensor enabled, compact and retractable solar awning that deploys at the touch of a button and provides abundant power that can be deployed in a variety of applications that have previously been inaccessible to traditional solar solutions due to lack of roof space. The solar awning can be used in residential applications like apartments, condominiums, tiny homes and ADUs, and mobility applications like RVs, emergency response vehicles, and military applications. medical mobile vans, etc., offering the opportunity to electrify transportation as well as provide backup power.

Seeking These Next Level Needs:

- Product testing and qualification through a full range of expected conditions
- Funding for Operations setup and production start



CalTestBed.com



CalTestBed

a: 436 14th Street Suite 1220, Oakland, CA 94612 e: info@caltestbed.com w: <u>www.caltestbed.com</u>



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