

Alionyx Energy

www.alionyx.com

Innovation Description

6

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

CalTestBed Cohort 1

Los Angeles Area

TRL 3

UCSD

Energy Storage
Integration lab

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Seeking These Next Level Partners

TestBeds Pilot/Demo Partners Investors

Government Officials

Alpine Hydromet

www.alpinehydromet.com

Innovation Description

5

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.

CalTestBed Cohort 1

Central Valley Area

TRL 5

UCR

CE-CERT:
Sustainable
Integrated Grid

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Seeking These Next Level Partners

TestBeds

Pilot/Demo Partners

Blue Frontier

<https://bluefrontierac.com/>

Innovation Description

8

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

CalTestBed Cohort 1

D3 Cohort 417

Los Angeles Area

TRL 7

UCD

Western Cooling Efficiency Center

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Seeking These Next Level Partners

Pilot/Demo Partners

Investors

Government Officials



Community Energy

<http://communityenergylabs.co>

Innovation Description

8

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.

CalSEED Cohort 5

CalTestBed Cohort 1

San Diego Area

TRL 2

UCB

Center for the Built Environment

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Government Officials

Coreshell

<https://www.coreshelltech.com/>

Innovation Description

5

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.

CalSEED Cohort 3

CalTestBed Cohort 1

San Francisco Bay Area

TRL 3

LBNL

Central Computing facility at Material Project

Contact

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Seeking These Next Level Partners

TestBeds Pilot/Demo Partners Investors

Government Officials Accelerators/Incubators

Cyclonatix

<https://cyclonatix.com/>

Innovation Description

5

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

CalSEED Cohort 4

CalTestBed Cohort 1

San Diego Area

TRL 5

UCR

CE-CERT: Electric Motor Systems Testing Laboratory

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Accelerators/Incubators
- Manufacturing

Element Energy

<https://elementenergy.com>

Innovation Description

6

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

CalTestBed Cohort 1

San Francisco Bay Area

TRL 5

UCSD

Energy Storage
Integration lab

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Seeking These Next Level Partners

TestBeds Pilot/Demo Partners Investors

Accelerators/Incubators Government Officials



GreenTech Motors

<http://www.greentechmotors.co>

Innovation Description

5

GreenTech Motors' advanced electric motor technology is 68% more efficient than current electric motor standards in reducing motor loss inefficiency. This represents a motor efficiency of 97.7% compared to the current standard of 93% for 20 horsepower (HP) motors.

CalSEED Cohort 3

CalTestBed Cohort 1

Central Valley Area

TRL 4

UCR

CE-CERT: Electric Motor Systems Testing Laboratory

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Accelerators/Incubators
- Government Officials
- Energy Infrastructure Support

Gridware

<https://www.gridware.io/>

Innovation Description

9

Gridware is building real-time 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.

CalSEED Cohort 5

CalTestBed Cohort 1

San Francisco Bay Area

TRL 3

LBNL

Solar Optical
Properties
Laboratory

Contact

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Seeking These Next Level Partners



GridWrap

<https://gridwrap.com/>

Innovation Description

5

GridWrap is developing a novel, lightweight, fast and easy to install, long-lasting, reliable, environmentally friendly, cost-effective structural composite reinforcement system, which will be installed and cured in-place around existing Aluminum Conductor Steel Reinforced (ACSR) transmission lines to increase the electric power capacity and decrease the sag of the power transmission lines. Composite reinforcement system is multilayer hybrid composite system consist of high tensile strength carbon fiber as a structural reinforcement component embedded in basalt fiber as a barrier layer to prevent galvanic corrosion between carbon fiber and metals with low longitudinal coefficient of liner thermal expansion.

CalSEED Cohort 4

CalTestBed Cohort 1

San Diego Area

TRL 5

UCLA

Smart Grid Energy Research Center

Contact

Name	Email	Phone

Seeking These Next Level Partners

Helicoid Industries

<https://www.helicoidind.com>

Innovation Description

9

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

CalTestBed Cohort 1

Los Angeles Area

TRL 2

UCI

Engineering
Laboratory Facility

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Seeking These Next Level Partners

Investors TestBeds Potential Aquisition



KIGT

www.KIGTinc.com

Innovation Description

8

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.

CalTestBed Cohort 1

Los Angeles Area

TRL 8

UCR

CE-CERT:
Sustainable
Integrated Grid

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Seeking These Next Level Partners

TestBeds Investors Pilot/Demo Partners

Government Officials

NEXT Energy

<https://www.nextenergytech.co>

Innovation Description

5

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.

CalTestBed Cohort 1

Los Angeles Area

TRL 5

UCSB

Optical Characterization Facility

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Seeking These Next Level Partners

Pilot/Demo Partners Potential Aquisition Investors

OnTo Technology

www.onto-technology.com

Innovation Description

6

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.

CalTestBed Cohort 1

EV Battery Challenge 2020 (LC

San Francisco Bay Area

TRL 5

LBNL

Battery Research & Testing Facility

Contact

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Accelerators/Incubators
- Government Officials

ReJoule

<http://www.rejouleenergy.com/>

Innovation Description

7

CalTestBed 2020 Innovation: 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.

CalSEED 2018 Innovation: Our innovation is a battery management system (BMS) designed specifically for used electric vehicle (EV) batteries. We use advanced power electronics to cost-effectively evaluate health and extend the lifetime of used EV batteries. Existing commercial technologies are inadequate to monitor vital battery health statistics, while more accurate cutting-edge solutions are prohibitively expensive for large battery packs. Furthermore, used EV batteries' performance is nonuniform, making battery management a challenge. Our proprietary BMS technology offers the lifetime measurement accuracy of the cutting-edge techniques at 1/10 the cost of competitors, and improves pack efficiency to prolong lifetime by 10-15%.

CalSEED Cohort 5

CalTestBed Cohort 1

Los Angeles Area

TRL 5

UCR

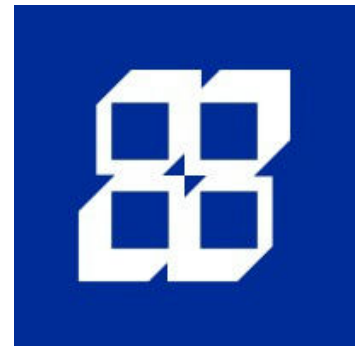
CE-CERT:
Sustainable
Integrated Grid

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Government Officials



Smartville

<https://smartville.io/>

Innovation Description

5

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.

CalSEED Cohort 2

CalTestBed Cohort 1

San Diego Area

TRL 5

UCI

HIMaC2 facilities,
Engineering
Gateway

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Seeking These Next Level Partners

Investors

Manufacturing

Customers

Takachar

<https://takachar.com/>

Innovation Description

6

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.

CalSEED Cohort 3

CalTestBed Cohort 1

Los Angeles Area

TRL 5

UCSB

Renewable Natural Gas Development Laboratory

Contact

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Seeking These Next Level Partners

Pilot/Demo Partners

Government Officials

Potential Aquisition

Investors

Regulatory Agencies

Umida AG

www.UmidaAG.com

Innovation Description

7

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.

CalTestBed Cohort 1

Central Valley Area

TRL 5

UCR

Bourns College of Engineering Center for Environmental

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Government Officials

West Biofuels

<http://www.westbiofuels.com/>

Innovation Description

7

Advanced biomass gasification technology produces high quality producer gas (39% H₂, 29% CO, 20% CO₂, 9% CH₄) suitable for conversion into renewable natural gas (RNG). Fluidized-bed methanation catalyst technology converts all the CO and H₂ in producer gas to RNG without additional H₂ 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.

CalTestBed Cohort 1

Central Valley Area

TRL 5

UCSD

Renewable Natural Gas Development Laboratory

Contact

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Seeking These Next Level Partners

TestBeds Pilot/Demo Partners Investors

Accelerators/Incubators Government Officials

Anthro Energy

<https://www.anthroenergy.com/>

Innovation Description

7

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.

CalTestBed Cohort 2

San Francisco Bay Area

TRL 5

LBNL

Green Technology Laboratory

Contact

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Seeking These Next Level Partners

TestBeds Pilot/Demo Partners Investors

Government Officials

EH Group

<http://www.ehgroup.ch/>

Innovation Description

9

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.
- EH Group's fuel cell stack means simplifying the complete fuel cell system- leading to higher overall system efficiencies with fewer components and lower costs

CalSEED Cohort 4

CalTestBed Cohort 2

Central Valley Area

TRL 3

UCI

National Fuel Cell Research Center

Contact

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Government Officials

Enzinc

<https://enzinc.com/>

Innovation Description

9

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.

CalSEED Cohort 5

CalTestBed Cohort 2

San Francisco Bay Area

TRL 4

UCR

CE-CERT:
Sustainable
Integrated Grid

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Government Officials

Lucent Optics

<http://www.lucentoptics.com/>

Innovation Description

6

Our novel solar control window film uses printed optical micro-structures to angularly 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%.

CalSEED Cohort 1

CalTestBed Cohort 1

Central Valley Area

TRL 3

LBNL

FLEXLAB

Contact

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Accelerators/Incubators
- Government Officials

Noon Energy

<https://www.noon.energy/>

Innovation Description

5

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.

CalSEED Cohort 3

CalTestBed Cohort 2

San Francisco Bay Area

TRL 3

UCI

Advanced Power and Energy Program

Contact

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Seeking These Next Level Partners

Pilot/Demo Partners

Investors

Paulsson

<http://paulsson.com/>

Innovation Description

9

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.

CalSEED Cohort 4

CalTestBed Cohort 2

Los Angeles Area

TRL 2

UCSD

UC Riverside CE-CERT

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Seeking These Next Level Partners

TestBeds Pilot/Demo Partners Investors

Accelerators/Incubators Government Officials

Power Grab

<https://powergrab.co/>

Innovation Description

5

Introducing the world's first modular solar photovoltaic awning for single-story structures.

Modular means it can be any size that suits your budget and needs.

It attaches securely to wall studs, avoiding the roof and all the issues that come with it:

- No leak anxiety
- No roof replacement
- No voided warranties
- No looking at panels on your roof

Originally Portable Solar

CalSEED Cohort 4

CalTestBed Cohort 2

San Francisco Bay Area

TRL 2

UCLA

Smart Grid Energy Research Center

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Seeking These Next Level Partners



Sylvatex

www.sylvatex.com

Innovation Description

5

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.

CalTestBed Cohort 2

D3 Cohort 22-2

San Francisco Bay Area

TRL 5

UCR

CE-CERT:
Sustainable
Integrated Grid

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Seeking These Next Level Partners



Tectonicus

www.solar-river.info

Innovation Description

7

Tectonicus Constructs LLC. is developing structural solutions to support PV panel arrays over irrigation canals. Designed to be competitive with land-based systems, these **Canal Spanning Solar Projects (CSSP)** represent a unique opportunity for farmers and irrigation districts to upgrade their infrastructure, reduce energy costs, and generate clean power without disrupting precious agricultural land.

- Our structures are designed to span across canals supporting PV arrays without using up your active croplands or roadways. This will allow you to turn your unused land or canal right-of-way into year-round income generation.
- Our structures are designed to give you the highest power generation for the lowest cost and to be installed in a wide range of canal widths and orientations.
- Additional benefits include:
 - Improved PV performance and reduced PV degradation due to water cooling (1.9% energy boost observed in our lab study)
 - Reduced canal evaporation and temperature (48% reduction in evaporation observed in our lab study, 10deg temp reduction)
 - Reduced Algae Growth (83% reduction observed in our lab study)
 - Ability to locate power generation near pumps and existing power infrastructure
 - Co-location avoiding Environmental Impacts Studies, Interconnection queues, line upgrades, and other typical delays

CalTestBed Cohort 2

Central Valley Area

TRL 5

UCM

Advanced Solar Technologies Institute

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Seeking These Next Level Partners

Pilot/Demo Partners Accelerators/Incubators

Government Officials

UCAP Power

www.ucappower.com

Innovation Description

9

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.

CalTestBed Cohort 2

San Diego Area

TRL 7

UCSD

UC San Diego: Zero Net Energy Warehouse: Battery

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Accelerators/Incubators
- Investors
- Manufacturing

Automat Solutions

<https://www.automatsoln.com/>

Innovation Description

8

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.

CalTestBed Cohort 3

San Francisco Bay Area

TRL 7

UCD

Green Technology
Laboratory

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Seeking These Next Level Partners

Investors

Government Officials

Dakota Energy

www.dakotaenergysystems.co

Innovation Description

8

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.

CalTestBed Cohort 3

Central Valley Area

TRL 6

UCR

CE-CERT: Water Energy Nexus

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Seeking These Next Level Partners

Delphire

www.delphiretech.com

Innovation Description

8

The Sentinel FD3 system provides on-the-edge AI monitoring to protect electric utilities and fire-vulnerable communities while reducing wildfire impacts. This real-time system detects and reports fires in the incipient phase with a visual image for rapid human confirmation (under two 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. Delphire's 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.



CalTestBed Cohort 3

Los Angeles Area

TRL 6

LBNL

Connected Devices Lab

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Seeking These Next Level Partners

Pilot/Demo Partners TestBeds



Hago Energetics

<https://hagoenergetics.com/>

Innovation Description

5

Hago's prototype is a trailer-sized unit that converts organic waste materials to green hydrogen. They take biogas input from a dairy farm, landfill gas facility or wastewater treatment plant and convert this input to hydrogen and carbon. They use this with the aid of an inexpensive carbon catalyst. Hago's intent with CalTestBed was to test both the hydrogen and carbon that result from this process to optimize product sales to industry and farms.

CalSEED Cohort 5

CalTestBed Cohort 3

Central Valley Area

TRL 4

UCI

Advanced Power and Energy Program

Contact

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Seeking These Next Level Partners

Investors

Hydroplane

hydroplane.us

Innovation Description

7

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.

CalTestBed Cohort 3

Los Angeles Area

TRL 7

UCI

Advanced Power & Energy Program

Contact

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Seeking These Next Level Partners

- Supply Chain Partners
- Energy Infrastructure Support
- Aviation and Transport Testing

ONYX POWER

www.onyxpower.io

Innovation Description

7

The ONYX Rhino is a 4kW / 6kWh rugged mobile battery that outputs 120V and 240V and charges from a 120V outlet or solar. The ONYX Manta is a portable scalable 550W 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.

CalTestBed Cohort 3

Los Angeles Area

TRL 7

UCR

CE-CERT:
Sustainable
Integrated Grid

Contact

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Seeking These Next Level Partners



Pace Controls

<https://pacecontrols.com/>

Innovation Description

6

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.

CalTestBed Cohort 3

Out of State

TRL 6

LBNL

FLEXLAB

Contact

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Seeking These Next Level Partners

Pilot/Demo Partners



PARC (SRI)

<https://www.sri.com/research/fu>

Innovation Description

5

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.

CalTestBed Cohort 3

San Francisco Bay Area

TRL 5

UCB

UC Berkeley:
Controlled
Environment

Contact

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Seeking These Next Level Partners

Pilot/Demo Partners

Prabhu Energy Labs

www.prabhuenergy.com

Innovation Description

6

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.

CalTestBed Cohort 3

Los Angeles Area

TRL 5

UCD

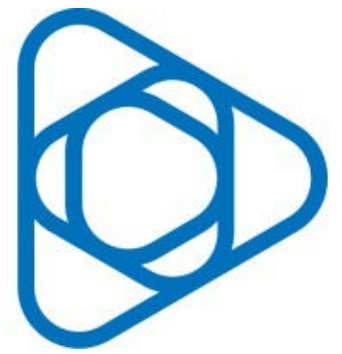
STEEL Lab

Contact

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Seeking These Next Level Partners

Pilot/Demo Partners



Pulsenics

<https://www.pulsenics.com/>

Innovation Description

5

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.

CalTestBed Cohort 3

D3 Cohort 22-1

Out of State

TRL 5

UCSD

Zero Net Energy Warehouse: Battery Energy Storage

Contact

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Seeking These Next Level Partners

Safi Organics

safiorganics.co.ke

Innovation Description

6

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.

CalTestBed Cohort 3

San Francisco Bay Area

TRL 6

UCSB

Center for
Agroecology &
Sustainable Food

Contact

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Seeking These Next Level Partners

Sea Dragon Energy

<https://www.seadragon.energy/>

Innovation Description

5

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

CalSEED Cohort 6

CalTestBed Cohort 3

San Diego Area

TRL 5

UCSD

Zero Net Energy Warehouse: Battery Energy Storage

Contact

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Seeking These Next Level Partners

Energy Infrastructure Support

SolarFlexes

<https://www.solarflexes.com/>

Innovation Description

6

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.

CalSEED Cohort 3

CalTestBed Cohort 3

Los Angeles Area

TRL 4

UCSD

Powell Structural
Engineering
Research

Contact

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Seeking These Next Level Partners

Manufacturing

Stasis Group

<https://www.stasisenergygroup.com>

Innovation Description

8

Acquired 2022 - Mini-doc subject

Energy-optimizing controls, simple bolt-in installation for existing, inefficient RTUs, and a five-year payback on investment via lower operational costs. It's that simple.

CalSEED Cohort 5

CalTestBed Cohort 1

Central Valley Area

TRL 6

UCR

CE-CERT:
Sustainable
Integrated Grid

Contact

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Seeking These Next Level Partners

True Balancing

www.truebalancing.com

Innovation Description

6

Greater capacity and longer life. With tier-1 batteries, we estimate a capacity increase of between 5% and 10% and an increase in battery life of approximately 20%. You can achieve these improvements without any change to your battery manufacturing processes. It just requires a simple change to your BMS electronics.

Get data on cell impedance. True Balancing can capture impedance on a cell-by-cell basis in real-time while the battery is charging, discharging or idle – including DC resistance, AC impedance from 1Hz up to 10kHz, static impedance and dynamic impedance. This provides valuable information from batteries in the field about cell health and cell aging.

Lower production costs. True Balancing compensates for differences in cell characteristics, so your cells do not need to be so closely matched. If cell characteristics don't need to be so closely matched, manufacturing costs can be lower.

Battery performance can rise by one tier. If you use True Balancing, your tier-2 batteries will perform similarly to tier-1 batteries that have existing balancing technology.

CalTestBed Cohort 3

San Diego Area

TRL 5

UCSD

Breakthrough electronic systems to manage batteries

Contact

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Seeking These Next Level Partners

Pilot/Demo Partners

Wild Technologies

<https://wildenergy.io/>

Innovation Description

5

Wild Technologies aims is to develop lithium-ion battery solutions that help reduce the complexity of converting typically fossil fuel propulsion systems to cleaner electric propulsion systems.

There does not exist an off-the-shelf battery pack solution that is cost effective, easy to integrate, highly customizable and easy to manufacture for e-mobility companies. Most e-mobility companies (boats, tractors, caravans, etc.) don't have the internal resources (financially or technically) to develop a fully custom battery pack and therefore rely on off-the-shelf solutions.

Wild Technology is developing much simpler and cost-effective battery pack with significantly fewer components that makes it much easier to integrate into a wider array of vehicles.

CalTestBed Cohort 3

Los Angeles Area

TRL 5

UCI

National Fuel Cell Research Center

Contact

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Seeking These Next Level Partners

WonderWindow

<https://wonderwindow.net>

Innovation Description

8

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.

CalTestBed Cohort 3

Central Valley Area

TRL 7

LBNL

FLEXLAB

Contact

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Seeking These Next Level Partners

Pilot/Demo Partners

Government Officials

Investors



XENDEE

<https://xendee.com/>

Innovation Description

8

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.

CalTestBed Cohort 3

San Diego Area

TRL 6

UCSD

Zero Net Energy Warehouse: Battery Energy Storage

Contact

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Seeking These Next Level Partners

Pilot/Demo Partners

Xponent Power

<https://xponentpower.com/>

Innovation Description

6

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 to disrupt the status quo in the solar industry, and enable a wide range of additional applications such as military, emergency relief, and residential power.

The first market segment being served by the company’s solar technology platform is recreational vehicles. To address the power needs of the RV industry, Xponent™ Power offers Xpanse™; a stylish, compact, and retractable awning with solar panels for RV motorhomes that deploys at the touch of a button and provides abundant power on the go.

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.

CalTestBed Cohort 3

San Francisco Bay Area

TRL 6

UCR

CE-CERT:
Sustainable
Integrated Grid

Contact

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Seeking These Next Level Partners

TestBeds Investors

ChargePodX

<https://www.chargepodx.com/>

Innovation Description

6

ChargePodX invented Level 2.5 charging to provide Level 3 DC Fast Charging experience on Level 2 (240V AC) infrastructure. Additionally, our patented portable design bypasses the lengthy construction process associated with fixed charging stations. Our approach not only speeds up EV adoption but also provides a flexible, efficient, and eco-friendly charging solution.

CalTestBed Cohort 4

Los Angeles Area

TRL 6

UCR

CE-CERT: Electric Drive Vehicle Testing Laboratories

Contact

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Seeking These Next Level Partners

Enventix

<https://enventixinc.com/>

Innovation Description

7

Enventix, Inc. is a climate tech company taking an innovative approach for the sustainable production of hydrogen, biofuel blend stock, and climate-friendly farming products, including wood vinegar and biochar. Our unique method utilizes a thermocatalytic pyrolysis-reformer pathway to transform lignocellulosic feedstocks to valuable products.

CalTestBed Cohort 4

San Francisco Bay Area

TRL 7

LBNL

Joint BioEnergy Institute (JBEI)

Contact

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Seeking These Next Level Partners

Investors

Evoelectric

<https://evoelectricnow.com/>

Innovation Description

7

The hardware/software solution enables the retrofit of existing combustion engine commercial vehicles with a new battery-electric powertrain. Evoelectric has established core product specifications and verified our product performance with early pilot empirical use case data. The pilots have showcased various peak and transient use cases under the specification as well as some early continuous performance trends. The product will undergo additional use case exploration to define normal use cases and provide the basis for durability and longevity performance. A candidate vehicle is ready for testing and mileage accumulation to measure durability and support warranty.

CalTestBed Cohort 4

Los Angeles Area

TRL 7

UCR

CE-CERT: Electric Drive Vehicle Testing Laboratories

Contact

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Seeking These Next Level Partners

- TestBeds
- Pilot/Demo Partners
- Potential Aquisition
- Investors
- Government Officials

Flex Power Control

<https://flxpwr.com/>

Innovation Description

6

Flex Power Control has developed a revolutionary Vehicle to Home (V2H) product called the Smart Power Integrated Node (SPIN). The 10kW bidirectional charging system, which can go up to 30kW, features both ongrid and offgrid operation to enable whole-home backup using an electric vehicle. The system's advanced power electronics can manage all DC loads at home, including solar, stationary storage, and an EV with bidirectional CCS charging. The integrated software enables operation in a blackout or can respond to grid signals for export power if requested.

CalTestBed Cohort 4

Los Angeles Area

TRL 6

UCD

California Lighting Technology Center

Contact

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Seeking These Next Level Partners

Investors

Accelerators/Incubators

Kfobix

<https://www.kfobix.com/>

Innovation Description

6

Kfobix invented a superhydrophobic nanocomposite coating, which is lightweight, low-cost, durable, and be easily applied via airbrush or drone to prevent ice formation on power lines and wind turbines, thereby enhancing electrical distribution safety and renewable energy efficiency. Our material is a composite matrix with polymeric and nanoparticular ingredients; it satisfies a micro/nano surface roughness to obtain superhydrophobic prospects without using fluorinated chemicals. The light transmittance of our product is around 80% and it has a durability of up to 4 years on surfaces applied within the targeted sectors.

CalTestBed Cohort 4

San Francisco Bay Area

TRL 6

UCI

Institute for Design and Manufacturing Innovation

Contact

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Seeking These Next Level Partners

TestBeds

Investors

McEachern

<https://mcelabs.com/>

Innovation Description

7

The GridSweep instrument is a hardware technology (integrated with firmware and software) that enhances grid reliability, efficiency and solar deployment capacity. GridSweep measures the stability of distribution grids that have inverter-based resources: solar power inverters and battery storage inverters. Using a subsynchronously modulated electric heater, GridSweep probes a 120-volt outlet at one location on the distribution grid, while simultaneously measures the voltage changes at a different location on the distribution grid, at parts-per-billion resolution. If the stability is high, more solar power can be added to this feeder. Thus, GridSweep technology is an enabling technology, that increases solar power deployment.

CalTestBed Cohort 4

San Francisco Bay Area

TRL 7

UCR

Field Testing and HiL Testing of Smart Grid Monitoring and

Contact

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Seeking These Next Level Partners

Nelumbo

<https://www.nelumbo.io/>

Innovation Description

5

Nelumbo surfaces provide resistance to frost formation and enhance frost shedding on the outdoor heat exchanger for residential heat pumps. Frost formation and periodic defrost contribute to the lack of wider heat pump adoption. Design consolations are embedded into heat pumps to mitigate the determinantal frost effects. Nelumbo materials increase heat pump operating time in frosting conditions, decrease the time required for defrost, and more importantly can enable the use of more efficient heat transfer surfaces that are currently unable to be utilized in commercial heat pump products because of their susceptibility of frosting induced performance degradation.

CalTestBed Cohort 4

San Francisco Bay Area

TRL 5

UCD

Western Cooling Efficiency Center

Contact

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Seeking These Next Level Partners



Relyion Energy

<https://www.relyionenergy.com/>

Innovation Description

6

Relyion's innovation is a pioneering energy storage system utilizing repurposed electric vehicle (EV) batteries, aimed at extending their lifecycle and reducing environmental waste. This prototype, at Technology Readiness Level (TRL) 6, integrates second-life EV batteries into a scalable system, enhanced by advanced control algorithms and machine learning for optimized performance. It offers a sustainable, cost-effective solution for energy storage, crucial for supporting the transition to renewable energy and electrification of transportation. This approach not only addresses the growing demand for efficient energy storage but also promotes a circular economy by minimizing battery waste.

CalTestBed Cohort 4

San Francisco Bay Area

TRL 6

UCR

CE-CERT:
Distributed Energy
Resources

Contact

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Seeking These Next Level Partners

Tyfast

www.tyfast.energy

Innovation Description

5

Tyfast mission is to obsolete diesel in heavy duty vehicles used in construction, mining, trucking and defense. We aim to accomplish this with a high-performance lithium ion batteries that delivers higher power, longer life, high energy and enhanced safety. This high-performance lithium ion battery is enabled by Tyfast's novel LVO anode that has faster lithium transport for higher power, lower volume change for longer cycle life and is made using 100% domestically sourced raw materials.

CalSEED Cohort 5

CalTestBed Cohort 4

San Diego Area

TRL 4

UCSD

Contact

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Seeking These Next Level Partners



Twelve

<https://www.opus-12.com/>

Innovation Description

4

CO₂ electrolysis combines just three inputs: CO₂, water, and electricity, and converts them into cost-competitive fuels and chemicals. At a high level, CO₂ electrolysis can be thought of as reversing combustion: it combines CO₂, 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.

CalSEED Cohort 1

CalTestBed Cohort 1

San Francisco Bay Area

TRL 3

LBNL

Chu Labs

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Seeking These Next Level Partners

Pilot/Demo Partners

Government Officials

Evoloh

www.origen.energy

Innovation Description

5

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

CalTestBed Cohort 2

CalTestBed Cohort 4

San Francisco Bay Area

TRL 5

LBNL

Fuel Cell and
Electrolyzer
Research & Testing
- ...

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Seeking These Next Level Partners

TestBeds Investors Government Officials

UNIGRID

<https://www.unigriddbattery.com/>

Innovation Description

4

UNIGRID's mission is to put safe, sustainable, affordable, sodium-based energy storage into every home. These sodium-based batteries, utilizing abundant materials, will stabilize the grid, increasing its resilience during peak electricity usage hours. This will in turn allow the accelerated adoption of solar and clean energy generation. Ultimately, we want to push back against the effects of climate change, reduce energy related pollution and emissions, and improve access to clean, reliable electricity for all.

CalSEED Cohort 4

CalTestBed Cohort 4

San Diego Area

TRL 3

UCSD

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Seeking These Next Level Partners

Pilot/Demo Partners