Mainspring

The new power generation standard for biogas projects

LA County ATAS Presentation
Sept 2023

About Mainspring

Delivering a new category of power generation	Stanford University origins, now commercially scaling
Proven solutions	Local, dispatchable, clean, firm power at utility scale with industry-leading reliability
Blue-chip customers	Fortune 500 companies and leading utilities
Experienced energy-focused team	Leaders from SunPower, Tesla, Honeywell, Invenergy, and Alliant Energy
Strong financial backing	Investors include Khosla Ventures, Bill Gates, AEP, Lightrock, and NextEra


HQ in Menlo Park, CA

Full solution offering for biogas to power

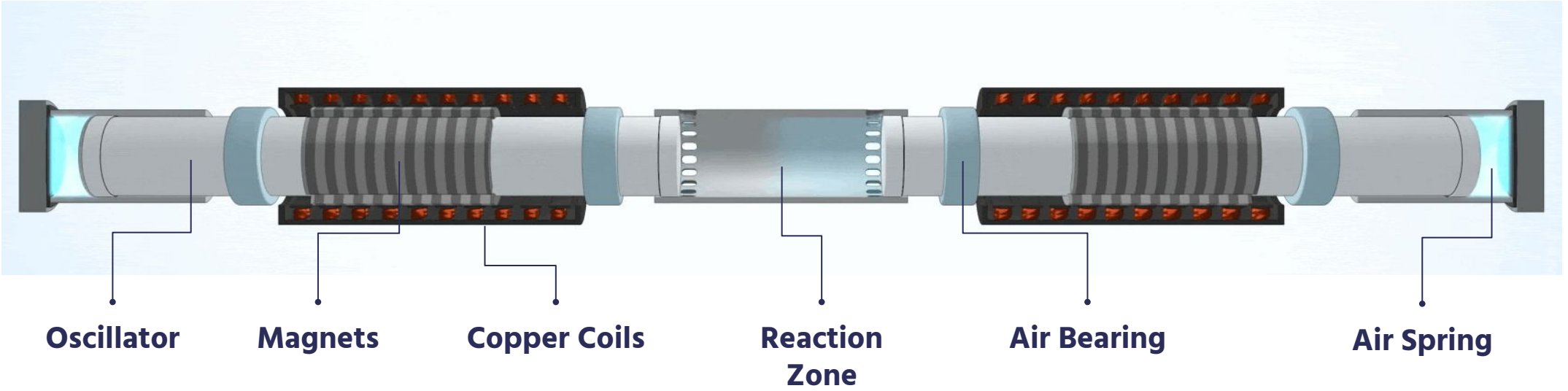
Product

- **Scalable** - 230 kW per box, multiple boxes to meet any load
- **Fuel flexible** - runs on variable methane, H_2S & H_2O content Or natural gas, propane, hydrogen and ammonia.
- **Resilient** - grid parallel and islanded operation
- **Near-zero emissions** - permittable anywhere
- **Easy installation** - UL listed product and grid-tie inverters
- **CHP capability** - exhaust heat supplied to process

Services

- **O&M services** - 24/7 monitoring, all inclusive service
- **Financing** - zero-money down, offered through NextEra
- **EPC services** - design, construction, and commissioning
- **Fuel supply support** - sourcing through preferred partners
- **Biogas cleanup -** leverage our network of partners

Core technology enabling flexibility & performance

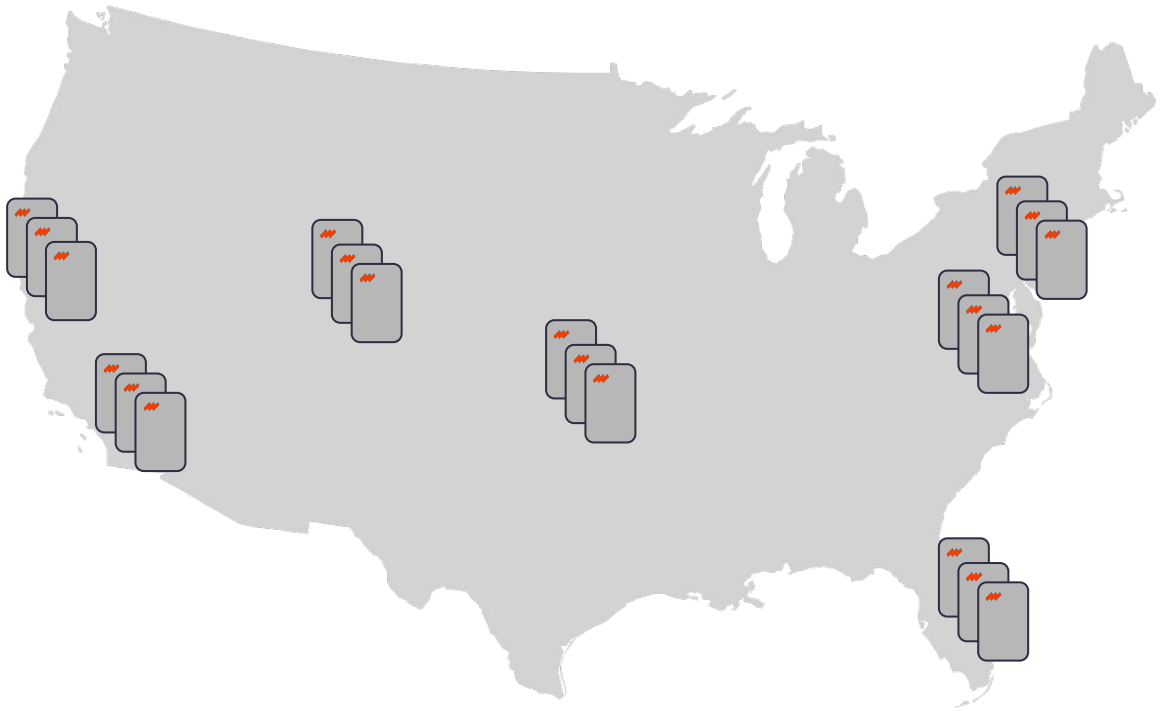


- **High Efficiency** enabled by direct conversion of linear motion into electricity
- **Fuel Flexibility & Dispatchability** enabled by power electronics & software control of oscillators motion
- **Low Maintenance & High Reliability** enabled by only two moving parts
- **Ultra-Low Emissions** enabled by low-temperature, non-combustion reaction without a flame or burning

Video: mainspringenergy.com/technology/

Proven commercial results for top-tier customers

Rapidly Expanding Nationwide Footprint



In-Field Power Generation Experience

20+ Years Core Run Time	3+ Years Customer Operation	Availability Beats Industry Averages

Kroger · Lineage · PROLOGIS · NapaSan · FPL · PG&E · American Electric Power · NextEra Energy Resources

Linear Generators outperform across all value drivers

	Linear Generators	Hydrogen-fed Fuel Cells	NG-fed Fuel Cells	Turbines	Engines
Cost	✔				
Low CAPEX	✔			✔	✔
Low OPEX	✔				
Fuel Efficiency	✔	✔	✔		
Emissions Profile	✔	✔	✔		
Dispatchability	✔	~		✔	✔
Fuel Flexibility	✔			~	~

Linear generators and fuel cells are eligible for up to 30% ITC

Case Study Napa Sanitation District

Resilience

Providing renewable power and resilience during grid shutdowns or outages for wastewater collection and treatment

Problem

- **Reduce cost and increase resilience** for an essential public service to the local community
- Contribute to organization's Climate Change Mitigation Plan
- **Increase utilization of anaerobic digester**

Solution

- Utilize Linear Generator to more efficiently convert biogas from anaerobic digester into clean power and to provide resilience during grid outages
- **Increase biogas production by accepting more deliveries of waste fats, oils and grease as fuel for the linear generator and the facility's existing cogeneration system**

Impact

Higher facility reliability	Lower greenhouse gas emissions	Significant cost savings compared to the grid

"The linear generator is an important component of our Climate Change Mitigation Plan. The addition of this Mainspring unit to our plant will help us meet our clean energy goals, reduce greenhouse gas emissions, and create operational efficiencies."

Tim Healy, General Manager, NapaSan

Mainspring

Thank you

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Case Study Leading Dairy Developer

Monetization

Clean, onsite energy generation using biogas for a leading dairy digester developer in California

Problem

- Determine highest value end-use of available biogas beyond the capacity of RNG upgrading equipment for pipeline injection
- Minimize emissions to meet compliance requirements and maximize value of LCFS credits

Solution

- Deploy four linear generators at initial site
- Produce electricity from biogas directly, both to power facilities in parallel with the grid and to operate independently from the grid for clean resilient power at remote dairies

Impact

Maximizes overall LCFS project economics	Provides immediate cost savings compared to grid	Near-zero NOx emissions

"This project extends our success in landfill biogas into dairy, the leading agricultural commodity in California. These operations significantly reduce California's dairy methane emissions and help make California dairies among the most sustainable in the world."

Jim Dawe, Chief Commercial Officer, Mainspring Energy

Case Study Yolo County Landfill

Emissions

Clean on-site power generation using 100% landfill biogas

Problem

- Reduce methane emissions from landfill facility
- Reduce taxpayer expenses through on-site power generation
- Evaluate new technologies for future large-scale deployment

Solution

- Successful 3-month pilot using on 100% landfill biogas
- Linear generator ran while sitting on a flatbed truck - providing flexibility and mobility

Impact

Proven ability to convert variable biogas to electricity onsite

Reduced methane emissions from facility

"We are excited to partner with Mainspring and continue to demonstrate production of renewable electricity using a new and innovative technology that has the potential to increase efficiency of electricity production and reduce air emissions."

Ramin Yazdani, Director of Integrated Waste Management (former) , Yolo County

Case Study Prologis

Speed

Clean, on-site EV charging infrastructure and prime power generation for a global leader in logistics real estate

Rendering of 9 MW truck fleet EV charging microgrid

Problem

- Rapidly deploy 10MW of EV charging infrastructure for tenants at CA port
- Local utility unable to meet power requirements in target timeframe

Solution

- A fast, local, low-cost, clean microgrid to support the transition to net-zero emission transportation
- Twelve Mainspring Linear Generators paired with ~6MW / 18MWh of storage
- Ultimate flexibility after utility interconnection for continued self generation, cost savings from peak-hour shaving, and/or revenues from wholesale market participation

Impact

Reduced time for new power from nearly 36 months to 9 months

Lower cost power than from the utility with clean resilience

"I spoke at #ACTExpo23 this week about bridging the gap of waiting for utility interconnections using our self-generation solutions that can also support grid resiliency later. Here are 5 things I hope people took away from the discussion ... 3. To meet heavy energy demands in small spaces, consider high-energy-density sources like bioenergy ... 5. Plan for future roles for self-generation after utility connection is established, such as emergency backup power and participating in resiliency programs where they exist."

JT Steenkamp, Director, Infrastructure Projects and Technology, Prologis