

TECHNOLOGY TO ASSURE THE FUTURE OF RENEWABLE ENERGY



infinirel.com Santa Cruz CA

Infrastructure Technology Hardware Engineering Moonshots

LEAD INVESTOR



Bradley Allen Taylor Angel investor and AI/ML leader

Bert has built a great team to address a very significant problem in achieving the goals for renewable energy - ensuring inverter reliability. I've experienced these problems in solar deployments for large and rurally deployed industrial IoT, and the impact of inverter failure on generation capacity and plant efficiency is significant. In addition to the problem of identifying inverter failures, the ability to forecast component problems can help ensure service technician and parts are available to restore service and minimize downtime.

Invested \$5,000 this round & \$7,500 previously

[Learn about Lead Investors](#)

Highlights

- 1 \$400K+ in prizes & vouchers from U.S. Department of Energy & California Energy Commission.
- 2 Patents granted for U.S. & key European markets.
- 3 Projected revenue from multi-year service contracts by 2026: \$160 million.
- 4 First customer signed. Three customer LOIs.
- 5 Team of global renewable energy industry veterans with strong track records.
- 6 infiniRel technology increases clean energy reliability, stability & affordability.
- 7 Saves consumers money & decreases CO2 emissions from fossil fuels.
- 8 The system will enable sustainable growth of a trillion-dollar renewable energy market.

Our Team



Bert Wank Founder & CEO



Bert Wank Founder & CEO

Power product innovator with 14 new power product line launches, including the world's first standard Li-Ion safety chip. Co-invented the first early warning system for power electronics.

Renewable energy, electrification, and autonomous transportation are three megatrends that define our future as we fight climate change. Renewables reach a tipping point when they become available, reliable, and affordable. My entire career I have pursued the creation of reliable power systems. Our technology now delivers affordable reliability.



Andreas Schneider Chief Marketing Officer

Generated \$3 billion (and counting) in sales in his career. Director of Global Services for inverter manufacturer acquired by Siemens. Former executive at a Top 100 innovator, where he led major telecom operator transformations.



William Allen VP Operations

Scaled renewable energy plants in China for multiple operations. Built a factory in India with capacity to manufacture \$60 million of equipment annually. Reduced development costs for a Fortune 300 automotive JV by 50%.



Carrie Nikitin Strategic Advisor — Technology Licensing

Five-time CEO, most recently for a technology licensing company specializing in noise filtering. Advisor for Innovation-For-Good, chair of the Sustainable Communities Project, serial entrepreneur with two successful exits.



Jerry Walker Technical Advisor — Power Electronics

Implemented advanced error-correction algorithms for first generation DVDs; designed complex medical instruments; architected a power conversion system to charge and test a large battery network.



Ronnie Pettersson Product Strategy Advisor

Ronnie co-founded Energy Recommerce, Inc. as their CTO, a solar monitoring firm that was acquired in 2009, most recently by Power-One, ABB (now Fimer). At ABB, Ronnie was responsible for ABB's group-wide Industrial IoT platform.



Charles Nunu Policy Advisor

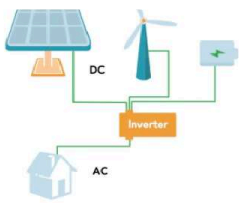
Charles is an experienced trader for renewables in international markets. In 2005, he founded Element Markets, LLC, a renewable energy and emissions-based trading enterprise, and earlier founded an agricultural trading company in Switzerland.

infiniRel's groundbreaking early warning system solves a key problem with renewable energy + electric vehicles: unreliability.

MEGA TRENDS: THE WORLD DOES NOT HAVE ENOUGH RELIABLE RENEWABLES TO MEET NET-ZERO GOALS

By 2050, 2/3 of the world's electricity will come primarily from clean energy, primarily from solar. To avoid blackouts, keep EVs charged, and meet global needs, we must scale production and improve efficiency.*

Source: International Energy Agency (IEA) Net Zero Roadmap 2021



inefficiency is largely due to inverter failure. Inverters convert direct current (DC) — generated by solar panels and stored in batteries — to alternating current (AC), which is what the power grid uses.



When inverters fail at wind, battery and solar plants, non-renewable energy must be combusted to make up the difference.

*Net Zero by 2050 International Energy Agency (October, 2021)

Our world is going electric – increasingly and rapidly – to slow climate change. So while renewable energy and electric vehicles (EVs) are two keys to the global effort toward net-zero, a major risk of electrification is the unreliability of some components. Renewable energy and EVs both rely on a mission-critical component called an inverter, which can fail without warning, blowing up or catching fire. By avoiding failures, we have more power available, more consistently at stable rates.

The inverter transforms direct current (DC) power generated by solar panels, wind turbines or stored in batteries, to alternating current (AC) to power our homes, businesses and EVs.

- At clean energy plants, inverter failure means a portion of the plant is shut down, causing thousands of dollars of damage to equipment and loss of revenue.
- Dirty energy from non-renewable sources must be combusted to make up the difference.
- EVs will suddenly lose power, causing you to be stranded.

Our Solution

Our infinitely reliable, massively scalable early warning system predicts power electronic failures.

MEET INFINIREL'S EARLY WARNING SYSTEM

It predicts when inverters will fail and improves availability, reliability, affordability of clean energy.

TODAY'S MARKETS



Renewable Energy Plants
Grid reliability and reduced maintenance costs



Microgrids
Stability and affordability of renewable energy



FUTURE MARKETS

EV Chargers

Meet future demand for mass EV & Fleet (Amazon, UPS...etc) charging

EVs



Prevent breakdowns, lower insurance costs, and could save lives

BOTTOM LINE: GRID RESILIANCY + CONSUMER SAVINGS

infiniRel's early warning system is the first of its kind and therefore a game changer. Reliability is critical for long-term success of renewable energy, as we transition to a carbon-neutral world.

Applications:

Utility-scale renewable energy plants

At clean energy plants, ‘infinite reliability’ allows operators to predict when inverters are going to fail and to schedule maintenance on a timely basis. This leads to renewable-energy reliability, availability and affordability for consumers and the grid. We estimate that our system will stop 2,000 metric tons of CO2 per year, per gigawatt hour, from being dumped into the atmosphere – that’s the equivalent to 142 dump trucks full of coal. One gigawatt hour powers 1,600 homes for an entire year.

According to the International Energy Agency (IEA), clean energy must triple by 2030 to curb climate change. Today, cost overruns in operation and maintenance budgets run the risk of stalling the growth of new renewable energy plants because of reduced profitability for investors. Our technology will spur this investment, by reducing downtime events by 75% and maintenance costs by 50%.

Microgrids

Microgrids are self-contained energy production systems that are being developed around the world to ensure that communities, schools, hospitals, industrial parks and EV charging stations, have 100% reliable renewable energy at stable prices. infiniRel’s early warning system will be deployed to ensure grid reliability and consumer rate stability.

EV Chargers

Public EV chargers use electronics to fill an EV with DC power from the AC grid. These chargers are built with the same components as utility-scale renewable energy plants such as solar and wind farms, and are plagued by similar availability and reliability challenges when inverters fail.

The second problem is grid infrastructure. In California alone, the state Energy Commission predicts that by 2030, there will be 7.5 million passenger EVs, and a total of 180,000 electric delivery fleet vehicles, semi trucks and buses on the road. Passenger EVs and delivery fleets need to be charged overnight, while semi-trucks will be rapidly charged along the highway. infiniRel will ensure the reliability of the renewable power systems that will meet this need.

EVs

Inverters are used to power the motor of an EV and, like the ‘check engine’ light on a gas-powered car, infiniRel’s early warning system will warn of the amount of time until an inverter will fail, allowing you to drive your EV to the repair shop instead of breaking down on the highway. Our technology will reduce insurance claims and could save lives.

How it Works

Our predictive technology utilizes AI & IoT.

infiniRel’s Inverter Health Scanner is a hardware-enabled, algorithmically-driven tool that predicts inverter failures. By tapping into the signal structure of each component, infiniRel’s system can tell specifically which are in danger of failing and when, via a customizable dashboard. Like an electrocardiogram

(EKG) for your heart, stress signals are used to calculate an overall risk score.

HOW IT WORKS



Step 1
infiniRel's **Inverter Health Scanner** plugs into inverters and scans signals

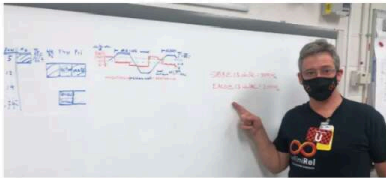


Step 2
The scanner's hardware + software + AI predicts failures



Step 3
A technician repairs inverter components with little or no downtime.

BUILT IN THE LAB, TESTED IN THE FIELD



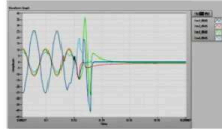
Above: Bert explains the accelerated inverter life testing process.



Left: Our intern Jack tests a prototype component.



Field test of the infinirel prototype at a solar farm.



infinirel's **Inverter Health Scanner** capturing the failure data, just before an inverter failed in the lab.



Inverter testing at Sandia National Labs.

Our Traction

Accelerated and technically validated, we have our first customer and are prepared to go to market.

MARKET + TECHNICAL VALIDATION

- Large solar plant test, 2019.
- First signed customer: Global solar farm owner with over 2 gigawatts under management.
- Three LOIs from utility-scale solar and micro-grid developer.
- LOI awaiting funding to build commercial version of infinirel's Inverter Health Scanner.

\$225,000

American-Made Solar Challenge prize & voucher
U.S. Department of Energy

\$150,000

CalSEED grant
California Energy Commission

\$20,000

Cleantech Open prizewinner

\$10,000

Startup Monterey Bay prizewinner



infinirel won more than \$400,000 in prizes, awards, and grants, including the U.S. Department of Energy sponsored American-Made Solar Challenge in 2020. Recently, we were awarded a \$150,000 CalSEED grant from the California Energy Commission. We have a binding pilot test agreement with a well-known globally-expanding energy service provider, and have three additional clients in the pipeline. A voucher from the Department of Energy enabled us to test our system at Sandia National Labs, the technical authority for solar reliability. Future-forward, we'll continue to apply for funding opportunities like

Our Game Plan

OUR FIRST MARKETS:

The infiniRel team is well connected in the renewable energy ecosystem.

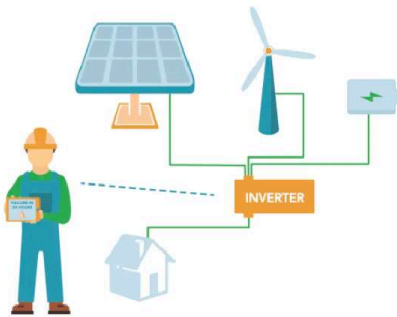
We'll begin with U.S. **microgrid developers** and **solar producers** (who often own wind farms & battery storage facilities as well).

Projected revenue from **multi-year service contracts**: **\$160 million by 2026.**

PHASES 1 & 2



WE'RE STARTING WITH SOLAR FARMS AND MICROGRIDS



According to a 2018 study by Sandia National Laboratories, 89% of maintenance events at photovoltaic (PV) plants or solar farms are caused by inverter failure.

Our solution will:

- Increase clean energy output
- Reduce maintenance costs
- Lower financial risk
- Extend inverter life
- Decrease e-waste

Utility scale solar farms

One of the most at-risk markets is utility-scale solar farms, where operations teams face major challenges related to the failure of mission-critical components. Unexpected maintenance costs have driven some to bankruptcy, just as the rapid growth of renewable energy markets makes reliability more critical than ever.

Microgrids

Microgrid developers have their finger on the pulse of the renewable energy industry and recognize that infiniRel is the solution to key improvements in reliability and affordability. Through infiniRel's network, introductions have been made to developers and they now are building infiniRel multi-year service contracts into their budgets.

What's Next?

From there, we'll move into wind, battery storage and e-mobility/e-transport markets. infiniRel can be indispensable to slowing the negative impacts of climate change.

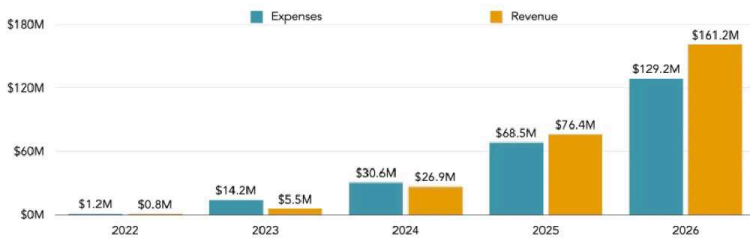
Europe will be the second target market after the US, due to its growing share in the global solar marketplace and its large base of installed (aged) inverters. Then we'll expand worldwide to the Asia-Pacific Rim, MENA, and South America.

Business Model & Scalability

Once funded: We're only six months from revenue.

Projected revenue in 2026: \$160 million

HIGHLY PROFITABLE + SCALABLE BUSINESS MODEL



- Proven business model in the energy and telecom industries
- Recurring revenue from multi-year service contracts

infiniRel's business model is grounded in multi-year Service-Level Agreements, a successful model adapted from the telecom industry, which demonstrated that uptime can be achieved to 'five nines' or 99.999%. Every solar plant and microgrid is unique and carries different risks, costs and failure rates, and our tiered pricing - based on our risk analysis of the systems' production and inverter health - allows customers to build our fixed fees into their maintenance budgets. We maximize our impact by first understanding the customer's situation, then quoting our solution in \$/megawatt, while considering the age and size of the plant.

When our client experiences a gratifying ROI and rapid payback, they are likely to continue with our annual service for the remainder of the system's lifecycle. It is clear that our service immediately translates to lower operational costs, increased operational stability, and higher revenues. Better margins means more investment in clean energy and lower reliance on the need to burn fossil fuels.

COMPETITION

infiniRel produces actionable data. Data from companies that monitor renewable energy and manufacture inverters is useless for predicting failure.

Feature	infiniRel	Monitoring Companies	Inverter Manufacturers
AI-generated actionable data	✓	✗	✗
Instant failure prediction system	✓	✗	✗
Manufacturer nonspecific	✓	✗	✗
First independent measurement	✓	✗	✗

U.S. patent 9,880,228B2 and European patent EP2649717

Companies that monitor inverter data are good at aggregating numbers, whereas infinirel extracts and processes signatures in real time, building its own database through AI, and allowing operators to make informed decisions pre-failure. What's more, our US and European patents ensure our technology is ahead of the competition.

Our Team

GLOBAL INNOVATORS & PIONEERS

GLOBAL INNOVATORS & PIONEERS DECADES OF EXPERTISE



Bert Wank
CEO
Semiconductors



William Allen
VP Operations
Manufacturing



Andreas Schneider
CMO
Renewable Energy & Telecom



Carrie Nikitin
Strategic Advisor
Technology Licensing



Jerry Walker
Technical Advisor
Power Electronics



Ronnie Petterson
Product Strategy Advisor



Charles Nunu
Policy Advisor

Track records of leadership and innovation in tech industries.

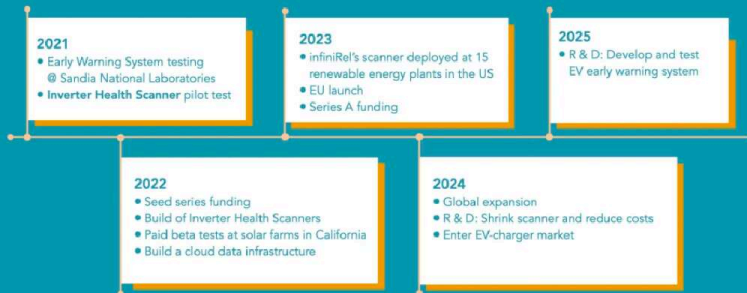
infiniRel's team members are veterans from the solar, semiconductor, automotive and telecom industries, who have demonstrated expertise in reliability.

What's next?

THE FUTURE

A clean tech innovation: Mass EV charging and protection for all who commute in EVs or flying taxis.

ROADMAP TO INFINITE RELIABILITY:



Why invest in us?

Together we can benefit everyone and help our planet stay cool.

INVEST IN TECHNOLOGY TO MAKE CLEAN ENERGY DOMINANT

- We're raising **\$1 million**
- Once funded, our technology will make renewable power more reliable within that year
- **Profitable in Year 3** after funding
- Then we'll break into the \$100 billion EV market, maximizing exit potential.

Reserve your spot in the round.

Anyone can invest: wefunder.com/infinirel

HELP US FUND:



Build Inverter Health Scanner + beta test in the field



Build a cloud data infrastructure system to manage and visualize data



Validate business model for 15 renewable



Your investment will help us complete testing on our early warning failure system and bring it to commercialization which, in turn, will increase uptime at solar plants and reduce our reliance on fossil fuels. After closing initial sales and proving the success of both our technology and our business model, we'll raise equity to help scale up the business and scale down the size of our early warning system. Then we will enter the e-mobility markets.

Downloads

[One Page Summary 2 5 22 infinirel.pdf](#)

[infinirel Crowdfunding Pitch Deck 3 3 22.pdf](#)