

Singapore Can Cut S\$1.66 Billion in Annual Energy Waste says Impact Entrepreneur

Signal Embedded Power Line from Switching Battery Inc Offers Cyber-Secure Demand-Side Response Without Internet, IoT, or Software

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/EINPresswire.com/ -- As Singapore prepares for upcoming national elections, one local innovation offers a powerful opportunity to deliver on climate pledges, reduce grid waste, and protect energy infrastructure — immediately.

The Signal Embedded Power Line (SEPL) promises to save S\$1.66 billion or about 10% of its 55 TWh/year electricity use for the city-state, with an investment cost of only \$84 million that will pay for itself in 3 months.



The Power Guardian uses real-time analog filtering

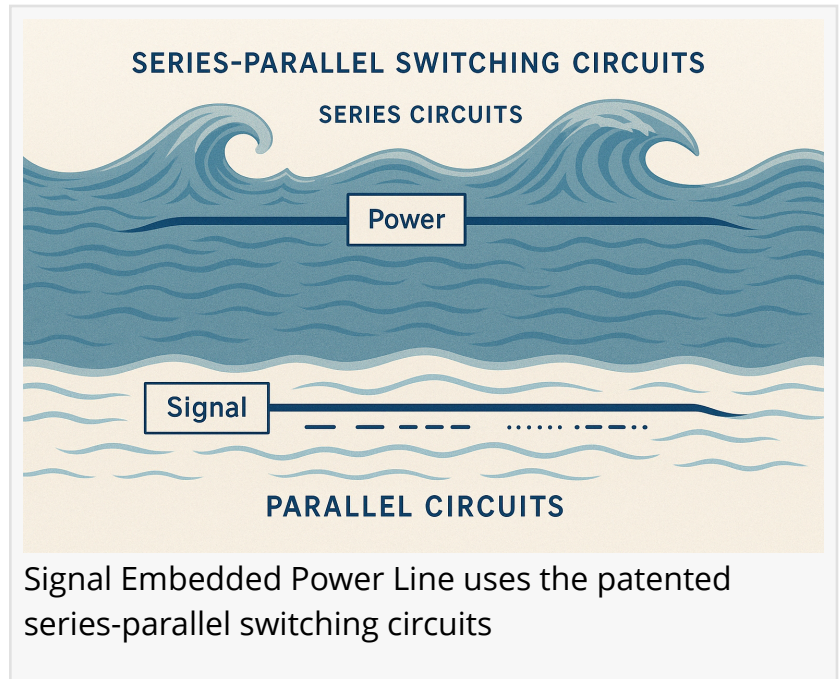
Developed by Singapore-born impact entrepreneur [Kannappan Chettiar](#) — the Quantum Flow Resonator (QFR) is the world's first analog demand-side response (DSR) technology that resonates without any software, cloud, or internet dependency — eliminating cybersecurity risk while saving billions in energy for Singaporeans.

"Our patented [Series-Parallel Switching Circuit](#) is like the sea waves where power flows with ripples and noise on the surface in series, but signals are embedded calmly below in parallel near the sea bed," says Dr Ermanno Pinotti, Chief Scientist of Switching Battery Inc., the company behind SEPL technology.

"Since the 19th century, electricity and communication have evolved along separate technological paths," says Kannappan — the founder and inventor of Switching Battery. "With SEPL, demand-side response in power generation is instant with our Quantum Flow Resonator

that uses our globally patented technology."

"Most of us forget to turn off our lights and fans — so I worked on an energy conservation device that took me 20 years," says Kannappan who holds double masters in law including one from Berkeley Law School. "I accidentally discovered that my invention did many unexpected things like DSR and cleaning up dirty electricity due to electromagnetic interference — that affects man and machines equally," says Kannappan.



Kannappan obtained his sixth US patent recently for "[Simultaneous Parallel Charging in Uninterruptible Series Discharging Energy Storage Systems](#)," which is another first as Singapore schools have traditionally taught that you can't have both series and parallel in a single circuit. "I am proudly the first to have achieved this impossible feat as I used a novel Node Fusion

Technology - to connect the positive and negative nodes instead of just the batteries," says Kannappan.

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Dr. Ermanno Pinotti

The National Opportunity

- Singapore's electricity use: 55.4 TWh/year
- Projected energy savings: 5.54 million MWh/year
- Annual cost reduction: S\$1.66 billion
- Technology cost (residential rollout): Under S\$84 million
- Payback period: Less than 3 months

Unlike stabilizers or IoT-based demand solutions, QFR

filters and harmonizes power at the source using a hardware-only design. It responds in real time to grid conditions by embedding soft-current signals into parallel voltage — triggering appliances to turn on, off, or dim based on energy resonance.

Grid Resilience Without Digital Risk:

QFR offers a secure, scalable way to:

- Reduce reliance on expensive cloud and data networks
- Strengthen Singapore's power grid against cyber threats
- Achieve national climate goals without adding digital complexity
- Support demand-side control without smart meters or firmware

It is ideal for deployment in:

- Public housing (HDBs)
- Government buildings and public lighting
- Offices, retail, and high-load equipment
- Mission-critical infrastructure where software risk is unacceptable

A Timely Opportunity for National Leadership

Singapore has the chance to lead the world in post-digital energy systems — by choosing a technology that requires no apps, no code, and no compromise.

With elections approaching and the SG Green Plan 2030 under scrutiny, QFR offers the government a powerful win: delivering sustainability, savings, and security — in a single, locally developed innovation.

Kannappan K Chettiar

Switching Battery Inc.

+1 831-643-5919

kc@switchingbattery.com

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