

Singapore Advances Patented Signal Embedded Power Solution to Close the 200-Year Divide Between Electricity and Telecoms

Signal Embedded Power Line (SEPL) embeds real-time control signals within existing power lines

SINGAPORE, April 29, 2025

/EINPresswire.com/ -- Since the early 19th century, electricity and communication have evolved along separate technological paths. While the telegraph introduced the transmission of binary information through wires, energy systems like Volta's battery and Edison's electric grid focused solely on delivering power. These domains remained isolated — power systems could not communicate, and communication systems could not energize.

Today, this historical separation is finally being overcome.

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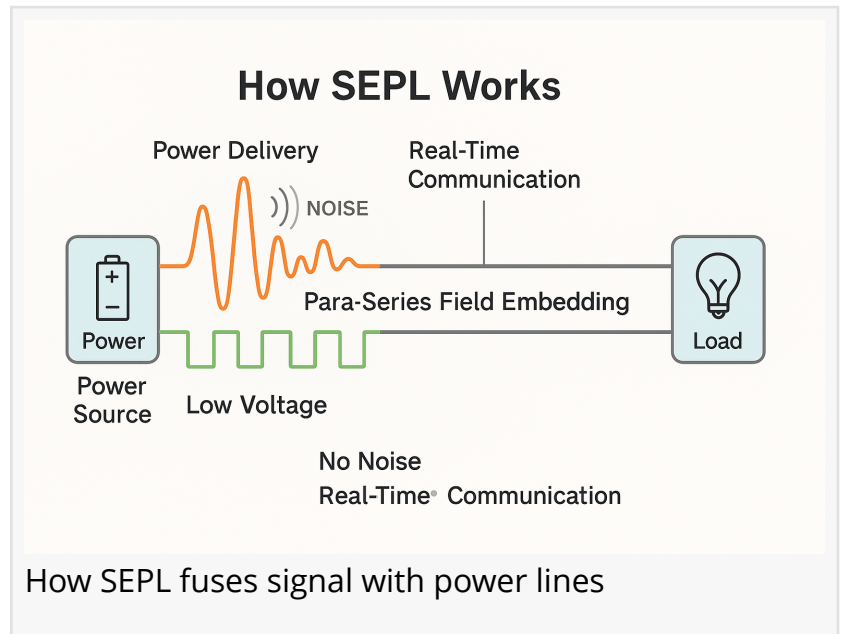
I am grateful to Prime Minister Lawrence Wong for the opportunity to serve. It is heartening to see the PAP leadership demonstrating openness to new ideas that can strengthen Singapore's future.”

Kannappan Chettiar

A groundbreaking innovation called the Signal Embedded Power Line (SEPL) has been formally presented to Singapore's Energy Market Authority (EMA) and national leadership, offering a transformational pathway for energy conservation and infrastructure intelligence.

SEPL enables power delivery and real-time communication to coexist silently over the same conductor — without software, cloud systems, IoT devices, or vulnerable network architectures.

Developed by Singapore inventor [Kannappan Chettiar](#) through globally patented Para-Series Field Embedding technology, the Signal Embedded Power Line (SEPL) resolves the century-old

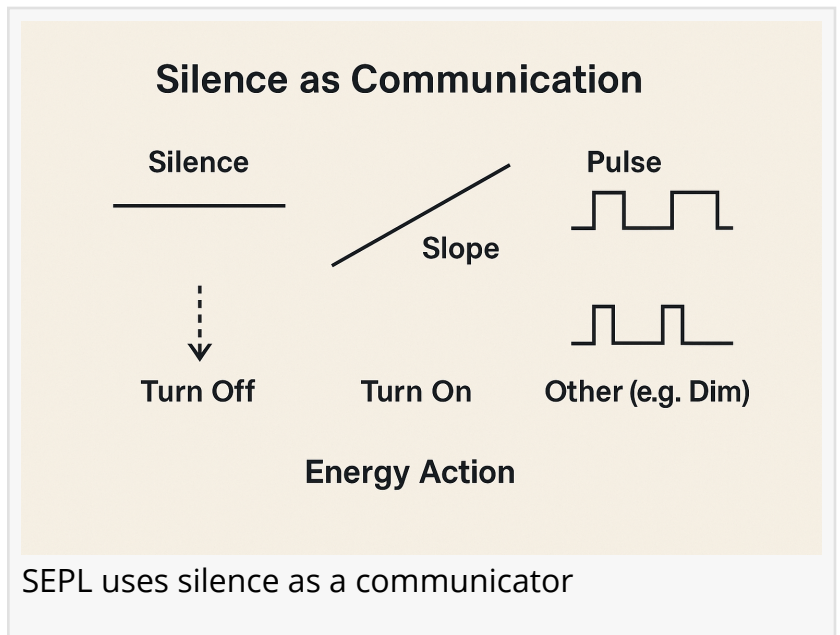


divide that kept energy and communication systems isolated due to electrical noise interference.

Kannappan, Founder of Switching Battery® Inc., also pioneered the [Switching Battery® Dynamic Para-Series Connections](#) — innovations now recognized with [patents granted across the United States](#), Europe, India, China, and other leading jurisdictions.

SEPL represents a world-first breakthrough:

A system that allows power delivery and real-time communication to coexist silently over the same conductor — without software, cloud systems, IoT devices, or cybersecurity vulnerabilities.



□ How SEPL Works: The Para-Series Magic

SEPL operates on a breakthrough para-series architecture:

- In Parallel Mode (minimum ~4V): Analog signals are embedded deep within the flow, silently and without disruption. This simultaneously enables real-time control, cell balancing, and communication pulses.
- In Series Mode (e.g., 12V or 20V for LED streetlights): Power is delivered efficiently to loads like lighting systems and appliances.
- Micro-Switching Magic: The system intermittently shifts — for just milliseconds — between series and parallel states, embedding signals during normal power delivery without visible interruption. This allows embedded intelligence without needing internet, cloud commands, or additional wiring.

□ Why It Matters:

- Energy Conservation and Dynamic Control: SEPL allows streetlights to be turned on/off, dimmed, or adapted to weather conditions. Future possibilities include “dancing streetlights” for pedestrian guidance, or emergency warnings without new infrastructure.
- True Infrastructure Integration: Unlike Internet-based IoT controls, which require costly, unreliable, and complex networks, SEPL rides silently inside existing power lines — no internet towers, no firmware updates, no maintenance burden.
- Historic Electrical Barrier Broken: Traditionally, power lines and telecommunications could not be merged due to electrical noise disrupting signal quality.

SEPL overcomes this century-old limitation using the ocean metaphor:

- At the surface, waves and tsunamis create noise — but deep below, the ocean remains still and calm.

SEPL hides its signals deep within the energy flow, where noise cannot interfere. This miracle-like breakthrough transforms how cities, grids, and even remote villages can communicate with their energy systems — cheaply, reliably, and beautifully.

□ Singapore: The First to Lead?

The potential impact for Singapore alone is extraordinary:

- Annual savings exceeding S\$1.6 billion through immediate energy conservation.
- Deployment cost estimated at S\$84 million, achieving payback within three months.
- Retrofittable to existing infrastructure, offering rapid national deployment without disruption.

Following an official request for technical specifications by EMA, a formal briefing offer has been extended. Public documentation of the proposal and technical overview has been made available to ensure transparency and public trust.

In response to the government's request for technical specifications, Kannappan said, "I am grateful to Prime Minister Lawrence Wong for the opportunity to serve. It is heartening to see the PAP leadership demonstrating openness to new ideas that can strengthen Singapore's future."

About Kannappan Chettiar

Kannappan Chettiar is the Founder of Switching Battery® Inc., inventor of multiple energy system patents, and author of Switching Battery Dynamic Para-Series Connections. His life's work bridges technology, natural law, and universal flow to create resilient, sustainable energy systems for the 21st century and beyond.

"Someday, every battery will be a Switching Battery® — and every current will carry both power and wisdom."

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