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Hillcrest Publishes Technical Paper on 99%+ Efficient Single-Stage ZVS Architecture for Next-Generation 800V AI Data Centers

VANCOUVER, BC — July 20, 2026 — Hillcrest Energy Technologies Ltd. (CSE: HEAT) (OTCQB: HLRTF) (FRA: 7HI) ("Hillcrest" or the "Company") today announced the release of a Company-authored technical paper, *"Simplified 800V Power Supply Architecture for 99%+ Efficient Data Centers"*.

AI data centers are shifting from today's 400V AC power systems to a new 800V DC standard that can deliver power more efficiently. This shift is still in its early stages: it is being piloted and standardized through the Open Compute Project (OCP), an industry group that sets technical specifications for data center hardware.

Hillcrest's paper compares two ways to build the power supply for an 800V data center: a more complex two-stage design, and a simpler single-stage design built on the Company's proprietary zero-voltage-switching (ZVS) technology. The main industry concern with moving to a single-stage design is safety: removing a conversion stage also removes a layer of isolation that has traditionally helped contain electrical faults. The paper addresses this directly. Its single-stage design keeps both galvanic isolation barriers a data center requires (one at the medium-voltage transformer, one at the IT rack) and adds dedicated fault-management functions to take over the protective role the removed stage used to serve. In simulation, this design also converted power more efficiently than the two-stage alternative. Hillcrest's ZVS PCS1000, the Company's prototype power supply unit, is built on this same single-stage design.

Read the technical paper [here](#).

Key Findings: Single-Stage vs. Two-Stage 800V Architecture

- **Efficiency improvement:** The single-stage ZVS architecture is modeled at approximately 99% AC-DC conversion efficiency (up to 99.2%), compared with 98% for the more conventional two-stage 800V design. That is a greater than 1 percentage point improvement at the power-conversion stage.
- **Reduced complexity, maintained safety isolation:** The single-stage design eliminates an intermediate 800V-to-800V isolated DC-DC conversion stage present in the conventional two-stage 800V design, while preserving two full galvanic isolation barriers (one at the medium-voltage line-frequency transformer and one at the IT-rack DC-DC converter), consistent with datacenter safety requirements.
- **Lower component count and cooling load:** By reducing conversion stages, the architecture lowers component count relative to the conventional two-stage architecture alternative, which the paper links to improved reliability and reduced cooling requirements.

PCS1000: Built on This Single-Stage ZVS Architecture

Hillcrest's ZVS PCS1000 is the Company's prototype power supply unit built on the single-stage ZVS architecture analyzed in the paper. As a result, the PCS1000 is designed to capture two distinct, stacking layers of benefit: the advantages of single-stage conversion evaluated in the paper (efficiency, component count, cooling), and additional advantages specific to the ZVS topology used to implement that single stage¹. These are benefits a single-stage design using conventional hard switching would not achieve:

- Higher switching frequency without a switching-loss penalty: Because ZVS switches at zero voltage, the PCS1000 can operate at 48kHz (roughly four times the frequency of conventional hard-switched converters), without incurring the switching losses that frequency increase would normally introduce.
- Lower EMI and simpler filtering: The higher switching frequency, combined with ZVS controls, reduces electromagnetic interference relative to hard-switched designs, simplifying input filter requirements and easing grid and EMC compliance.
- Reduced thermal stress and improved reliability: Lower switching losses reduce junction temperatures and thermal cycling in the PCS1000's power semiconductors, supporting the reliability and lifetime demands of continuous datacenter operation.

"This paper validates the single-stage approach on its own merits. What makes the PCS1000 different is that it doesn't just remove a conversion stage — it does so using Hillcrest's ZVS technology, so we capture the single-stage gain and the switching-frequency, EMI, and reliability benefits that come from how we implement it. The PCS1000 platform offers a versatile power conversion solution that can be deployed across a wide range of DC electrification applications." said Emanuel Serban, VP of Engineering at Hillcrest.

About the ZVS PCS1000

The PCS1000 is a prototype ZVS power supply unit developed by Hillcrest for 800V datacenter sidecar power racks, designed to convert 400/480V AC facility power directly to 800V DC for delivery to the IT rack in a single conversion stage. The unit is being designed for modular, N+1 redundant deployment, supporting scaling from single-unit installations to multi-megawatt sidecar configurations for high-density AI compute pods. The PCS1000 is currently in the prototype stage.

Investor Marketing and Distribution Services

Hillcrest is also pleased to announce it has retained Outside the Box Capital Inc. to provide investor marketing and distribution services.

Outside the Box Capital Inc., located at 2202 Green Orchard Place, Oakville Ontario L6H 4V4, will provide services including the publication and dissemination of information about the Company on social media and other community-driven platforms, such as Reddit, Discord, Telegram and Twitter.

The company's CEO, Jason Coles (jason@outsidethebox.capital and 289-259-4455) will lead the investor marketing services for Hillcrest. Outside the Box Capital Inc. is at arm's length from the Company.

¹ [Hillcrest-True-ZVS-Article-Nov-24-2025.pdf](#)

In consideration of the Services to be performed between July 20, 2026, and September 30, 2026, the Company has agreed to pay \$50,000, plus applicable taxes.

About Hillcrest Energy Technologies Ltd.

Hillcrest Energy Technologies Ltd. is a Canadian clean technology company developing advanced power conversion technologies and digital control systems for next-generation energy applications, including AI datacenters, energy storage, microgrids, and electric-vehicle powertrains. The Company's proprietary Zero Voltage Switching (ZVS) technology has been independently validated at the facilities of global automotive OEMs and Tier One suppliers. For more information: <https://hillcrestenergy.tech/>

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Some of the statements contained in this news release are forward-looking statements and information within the meaning of applicable securities laws. Forward-looking statements and information can be identified by the use of words such as "expects," "intends," "is expected," "potential," "suggests" or variations of such words or phrases, or statements that certain actions, events or results "may," "could," "should," "would," "might" or "will" be taken, occur or be achieved. This forward-looking information is provided as of the date of this news release. The forward-looking information reflects our current expectations and assumptions and is subject to a number of known and unknown risks, uncertainties and other factors, which may cause actual results, performance or achievements to be materially different from any anticipated future results, performance or expectations expressed or implied by the forward-looking information. No assurance can be given that these assumptions will prove correct. Forward-looking statements are subject to a variety of risks and uncertainties which could cause actual events or results to differ from those reflected in the forward-looking statements, including, without limitation: risks related to receiving all regulatory approvals; risks related to failure to obtain adequate financing on a timely basis and on acceptable terms; political and regulatory risks; risks related to the maintenance of stock exchange listings; and other risks and uncertainties related to the Company's business detailed elsewhere in the Company's disclosure record. Additional information on these and other risk factors can be found in the Company's continuous disclosure documents available under its profile on SEDAR+ at www.sedarplus.ca. Accordingly, readers should not place undue

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