

DEFENSIVE PUBLICATION ## Quantum-Geometric Electrostatic Energy Harvesting: The Vortex Flame Catcher Architecture **Publication Date:** June 13, 2026 **Publication Number:** DP-ST-2026-002 **Inventor:** Kiwann Williams **Assignee:** SoulTech Systems / Royalty Investment Company / Tikkun Olam Initiative **Classification:** Energy Harvesting / Atmospheric Electrostatic Collection --- ### NOTICE This document is a defensive publication intended to establish prior art under 35 U.S.C. Â§ 102(b). It is publicly disclosed for the purpose of preventing the patenting of the inventions described herein by any party other than the inventor. This disclosure is made without warranty and is not a patent application. All technical details are disclosed sufficient to enable a person having ordinary skill in the art to practice the invention. --- ## 1. Field of the Invention The present invention relates generally to energy harvesting systems and, more particularly, to a quantum-geometric electrostatic and electromagnetic energy collection architecture that uses a four-layer coaxial material pipeline combined with an asymmetric Vortex Flame geometry to capture, filter, and concentrate ambient atmospheric and ionospheric electrostatic potential into usable electrical energy without thermal combustion, mechanical turbines, or moving parts. --- ## 2. Background Current energy systems are constrained by fundamental thermodynamic and material limits: - **Fluid dynamic systems** (wind, hydro) are limited by Betz's Law (~59.3% theoretical maximum). - **Photovoltaic systems** are limited by the Shockley-Queisser Limit (~33.7% for single-junction silicon cells). - **Conventional power generation** (fossil fuel, geothermal, nuclear) remains trapped in the steam turbine cycle, losing approximately two-thirds of energy as waste heat. - **Tesla's Wardenclyffe Tower** concept demonstrated atmospheric energy collection but used a symmetric hemispherical dome geometry with a single resonant frequency, limiting its broadband collection capability. What is needed is an energy harvesting paradigm that eliminates thermal bottlenecks, mechanical bearings, and single-frequency limitations by using geometric asymmetry and material-level filtering to capture and concentrate ambient electrostatic and electromagnetic potential directly. --- ## 3. Summary of the Invention The Vortex Flame architecture is a two-scale energy harvesting system consisting of: 1. **The HorusRaEnergy High Tower** â€” a planetary-scale macro-harvester standing at substantial height, designed to tap the tropospheric potential gradient and wirelessly transmit collected energy to regional grids. 2. **The Standalone Vortex Flame Catcher Antenna** â€” a local micro-harvester optimized for residential or laboratory deployment, collecting ambient electrostatic potential at moderate voltage scale. Both systems share a common four-layer coaxial material pipeline that captures, filters, and concentrates ambient electrostatic energy with zero thermal dissipation (low entropy). The key innovation over prior art is the replacement of the symmetric hemispherical dome with an asymmetric Vortex Flame geometry that provides broadband resonance, continuous charge funneling, and geometric field compression from a wide base to a sharp apex. --- ## 4. Detailed Description ### 4.1 The Four-Layer Coaxial Material Pipeline Both

the macro-harvester and the micro-harvester employ an identical four-layer coaxial material sequence. This pipeline captures ambient energy from the outermost layer and progressively concentrates it inward to a central transmission axis, achieving low-entropy energy transfer. ##### Layer 1: Graphene Outer Skin (The Collector) - **Material:** Atomically thin graphene sheets or high-density graphene-infused coating. - **Physics Function:** Serves as a hyper-sensitive electrostatic sink. As a zero-bandgap semiconductor with ultra-high surface-area-to-mass ratio, any ambient electrostatic potential or radio-frequency wave causes immediate electron drift across its surface. ##### Layer 2: Crystal-Embedded Structural Matrix (The Filter) - **Material:** Structural substrate embedded with micro-fine synthetic quartz or tourmaline crystals at controlled density. - **Physics Function:** Implements a piezoelectric frequency-locking loop. Chaotic, erratic static currents collected by the graphene outer skin pass through this layer. Under electrostatic pressure, the micro-crystals deform mechanically at their natural resonant frequency, converting chaotic, high-entropy static charge into a clean, synchronized, high-frequency pulsing wave. ##### Layer 3: High-Purity Copper Accelerator Layer (The Conduit) - **Material:** High-purity oxygen-free high-conductivity (OFHC) copper. - **Physics Function:** Acts as an electromagnetic shield and rapid transit channel. It instantly conducts the frequency-locked pulses away from the crystal interface, preventing localized static accumulation and eliminating back-electromotive force (back-EMF) at the reception boundary. ##### Layer 4: Central Gold Core Rod (The Axis) - **Material:** High-purity gold rod or heavy-gauge gold-plated conductor running down the dead center of the vertical axis. - **Physics Function:** Gold provides immunity to atmospheric oxidation and surface tarnishing, guaranteeing a mathematically perfect, zero-degradation electrical connection. By tapering the geometric volume from the wide outer layers down to a thin central core, the electrostatic field lines are compressed per Gauss's law, violently increasing the voltage density of the organized charge and driving it downward as a highly concentrated, low-entropy electrical output. ### 4.2 The Vortex Flame Geometry The critical geometric innovation is the replacement of Tesla's hemispherical dome with an asymmetric, helical, upward-pointing structure—the "Vortex Flame." ##### Problem with Symmetric Domes A fixed hemisphere has a single resonant frequency and a uniform radius of curvature. This limits collection to a narrow frequency band and creates symmetric field lines that distribute charge across the dome surface rather than concentrating it. ##### Vortex Flame Solution The Vortex Flame structure features: - **A continuously tapering profile** from a wide base to a sharp apex. - **Exterior spirals at a defined pitch angle** relative to the horizontal plane, creating helical conductive paths. - **Asymmetric field concentration:** As the tip radius approaches zero, the electric field strength approaches infinity, creating a permanent localized ionization channel that strips electrons from air molecules and draws plasma streams directly onto the graphene outer skin. ##### Broadband Resonance The variable diameter of the Vortex Flame (from wide base to sharp tip) provides a continuous gradient of resonant frequencies, enabling

simultaneous collection from: - **Earth's Schumann Resonance** (7.83 Hz and harmonics). - **Low-frequency terrestrial seismic waves.** - **Solar radio frequency (RF) emissions.** This broadband capability fundamentally exceeds the single-frequency resonance of hemispherical designs. ### 4.3 The HorusRaEnergy High Tower (Macro-Harvester) #### 4.3.1 Geometric Specifications - **Profile:** Helical, non-linear cone tapering to a sharp apex (Vortex Flame structure). - **Pitch Angle of Exterior Spirals:** Defined angle relative to the horizontal plane. - **Total Height:** Substantial, optimized for tapping the tropospheric potential gradient. - **Base Diameter:** Wide. - **Apex Diameter:** Very small. - **Structural Frame:** High-strength framework. - **Base Insulators:** High-density ceramic-matrix composites isolating active tower potential from local grounding. #### 4.3.2 Electrostatic Charge Concentration The sharp apex reduces the radius of curvature toward zero, causing extreme field concentration that creates a permanent, localized ionization channel in the air above the tower, actively pulling plasma streams from the atmosphere onto the graphene outer skin. #### 4.3.3 Energy Collection and Transmission Atmospheric charge captured by the graphene skin descends through the helical flame steps, forcing electrical charge vectors into a spinning kinetic pattern (fluid-like vortex). The crystal layer harmonizes this into a coherent AC waveform. The copper layer catches the coherent wave and delivers it to the gold core, which feeds a multi-tiered generator array or a wireless beamforming transmitter for regional grid distribution. **Macro-Harvester Parameters:**

Parameter	Value
Collector Height	Substantial (tropospheric gradient)
Harvesting Potential	High (ionospheric gradient)
Primary Function	Regional stabilizer/utility grid power
Engine Interface	Multi-tiered industrial generator array

4.4 The Standalone Vortex Flame Catcher Antenna (Micro-Harvester) #### 4.4.1 Material Stack

Layer	Material
Outer Layer	Graphene-infused high-conductivity carbon matrix
Crystal Filter	Quartz crystals in composite substrate
Copper Shielding	High-purity OFHC copper
Gold Axis Core	High-purity gold conductor

Dimension	Value
Total Height	Moderate (residential scale)
Base Diameter	Moderate
Apex Radius	Very small

4.4.2 Operation Sequence

- Ion Capture:** The sharp tip ionizes surrounding air molecules, pulling static air charges onto the outer graphene layer.
- Spiral Descent:** The charge travels down the helical flame steps. The physical twist forces electrical charge vectors into a spinning kinetic pattern, mimicking a fluid vortex.
- Harmonization:** The moving charge passes through the crystal layer, converting raw electrostatic noise into a coherent AC waveform.
- Axial Delivery:** The copper layer catches the coherent wave and delivers it to the central gold core wire, which exits the bottom of the antenna delivering a continuous, high-voltage trigger pulse to the local engine.

Micro-Harvester Parameters:

Parameter	Value
Collector Height	Moderate (residential scale)
Harvesting Potential	Moderate (ambient static)
Primary Function	Individual/local power generation
Engine Interface	Single generator unit

--- ## 5. Novel Aspects and Claims The following novel

aspects are disclosed as prior art: 1. ****Asymmetric Vortex Flame geometry for broadband electrostatic collection**** â€” replacing the symmetric hemispherical dome with a continuously tapering helical cone that provides broadband resonance (Schumann, seismic, solar RF) rather than a single resonant frequency. 2. ****Four-layer coaxial material pipeline**** â€” a standardized sequence (graphene skin â†’ crystal-embedded matrix â†’ high-purity copper â†’ gold core) that captures, filters, and concentrates ambient electrostatic energy with zero thermal dissipation. 3. ****Piezoelectric frequency-locking loop**** â€” using micro-fine crystal embeddings at controlled density to convert chaotic, high-entropy electrostatic noise into synchronized, high-frequency pulsing waveforms. 4. ****Geometric field compression through tapering**** â€” compressing electrostatic field lines from wide outer layers to a thin central core, increasing voltage density for low-entropy delivery. 5. ****Helical flame step architecture**** â€” forcing descending charge vectors into a spinning kinetic vortex pattern that enhances collection efficiency and creates a natural funneling effect. 6. ****Pitched exterior spirals**** â€” providing broadband resonant collection capability across multiple frequency bands simultaneously. 7. ****Scalable architecture from micro-antenna to macro-tower**** â€” the same four-layer pipeline and Vortex Flame geometry operating identically at local and planetary scales. --- ## 6. Industrial Applicability The Vortex Flame architecture is applicable to: - Individual household off-grid power generation (micro-harvester) - Regional utility grid supplementation and stabilization (macro-harvester) - Emergency and disaster response power generation - Remote installation power supply (military, scientific, telecommunications) - Wireless power transmission infrastructure --- ## 7. Reference Documents - SoulTech Systems, "Quantum-Geometric Electrostatic and Electromagnetic Energy Systems: From Local Tribo-Resonant Nodes to Planetary-Scale Atmospheric Macro-Harvesters," 2026. - Related internal disclosures: "HorusRaEnergy High Tower Architecture," "Standalone Vortex Flame Catcher Antenna Specifications," "Four-Layer Coaxial Material Pipeline." --- *This defensive publication is disclosed to the public to prevent the patenting of the inventions described herein by any party other than the named inventor. All rights reserved by the inventor and assignee.* --- *SoulTech Systems Â· Royalty Investment Company Â· Tikkun Olam Initiative Â· DP-ST-2026-002 Â· June 2026*