

Public Technical Brief

QuietEdge.ai - Converter-Level Autonomy for AI-Native Power Infrastructure

QuietEdge develops control IP and reference DC power architectures for power systems where conditions change faster than centralized supervision can respond. AI data-center rack power and emerging 800 VDC architectures are the first market.

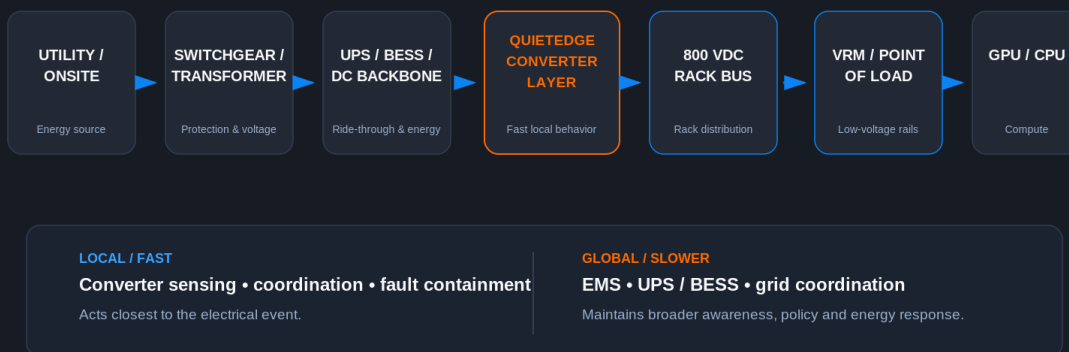
What QuietEdge Is

QuietEdge is a power-controls company. The durable asset is the behavior layer: local sensing, modular coordination, bounded response, and fault-contained operation that can be validated in QuietEdge reference hardware and later licensed into qualified OEM platforms.

- **AI data-center beachhead.** Fast, pulsed compute loads create a timing and transient-control problem in addition to a capacity problem.
- **800 VDC direction.** Higher rack distribution voltage dramatically reduces current for the same delivered power and is becoming an important design direction for next-generation AI racks.
- **Control IP first.** Hardware validates the behavior; firmware, reference architectures, and co-development create the path to scale.
- **Evidence discipline.** QuietEdge distinguishes modeled/simulated results, embedded measurements, hardware validation, and engineering targets.

WHERE QUIETEDGE FITS IN THE POWER CHAIN

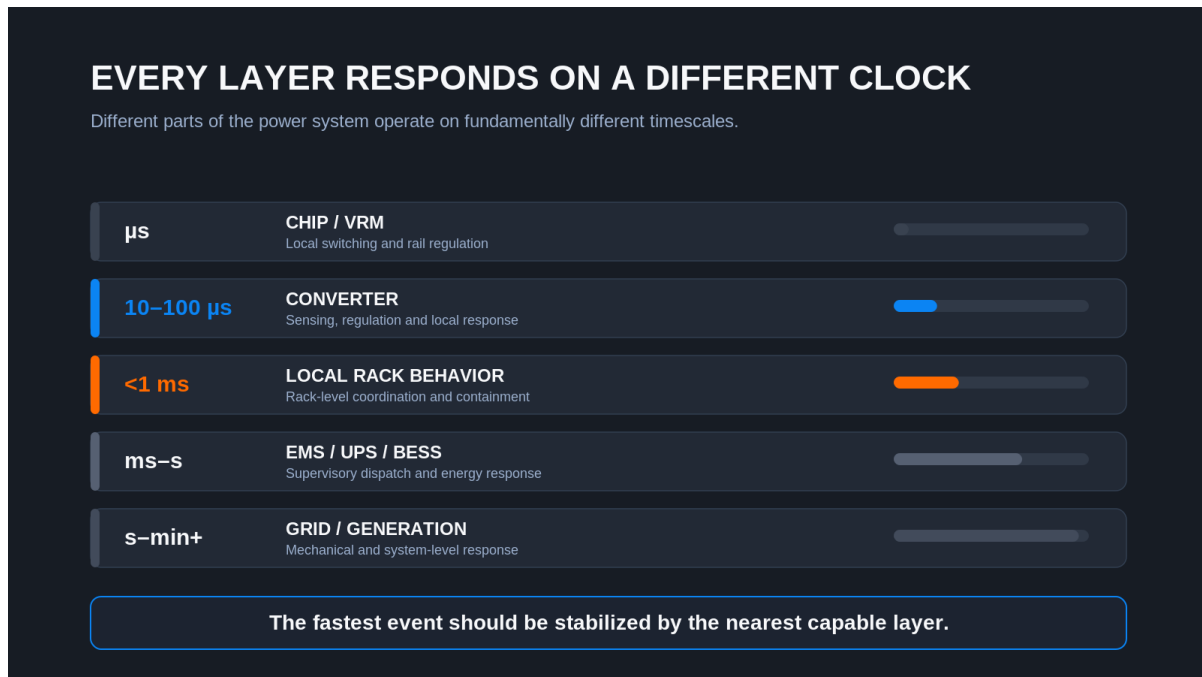
Different layers solve different problems. QuietEdge focuses on the fast behavior nearest the rack.



QuietEdge complements upstream infrastructure; it does not replace the grid, UPS/BESS or EMS.

Why AI Power Is Becoming a Response Problem

The grid, generators, UPS systems, BESS, facility EMS, converter controls, rack power, and VRMs all operate on different timescales. Central systems remain essential, but the fastest electrical event should be handled by the nearest capable layer.

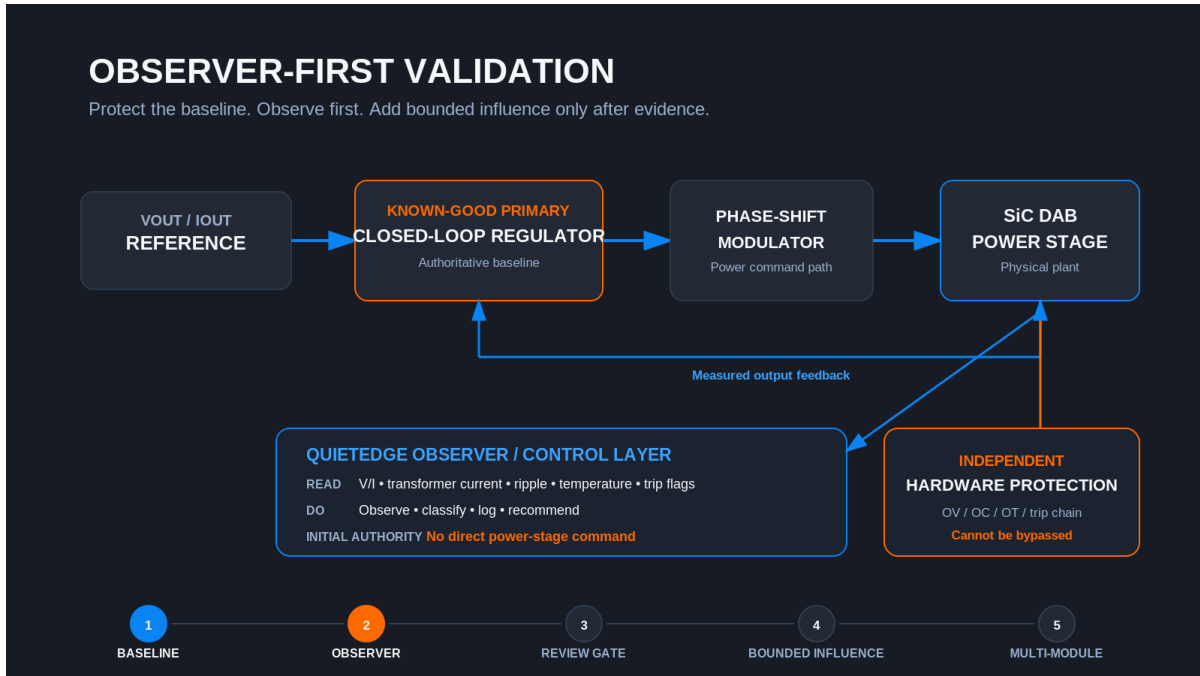


QuietEdge Control Behaviors

- **Self-timing coordination.** Local converter behavior without making one cabinet-wide timing source the critical dependency.
- **Emergent interleaving.** Multiple converters coordinate switching relationships through locally observed shared-bus behavior.
- **Adaptive observation.** Observation becomes denser during changing conditions and lighter during stable conditions.
- **Bounded local response.** Any enabled influence remains constrained by operating limits, independent protection, and the primary regulation path.

Observer-First Hardware Validation

QuietEdge's current validation strategy is intentionally conservative: establish a known-good baseline, add QuietEdge first as a read-only observer, review the evidence, then introduce only bounded and reversible influence before progressing to multi-module shared-bus tests.

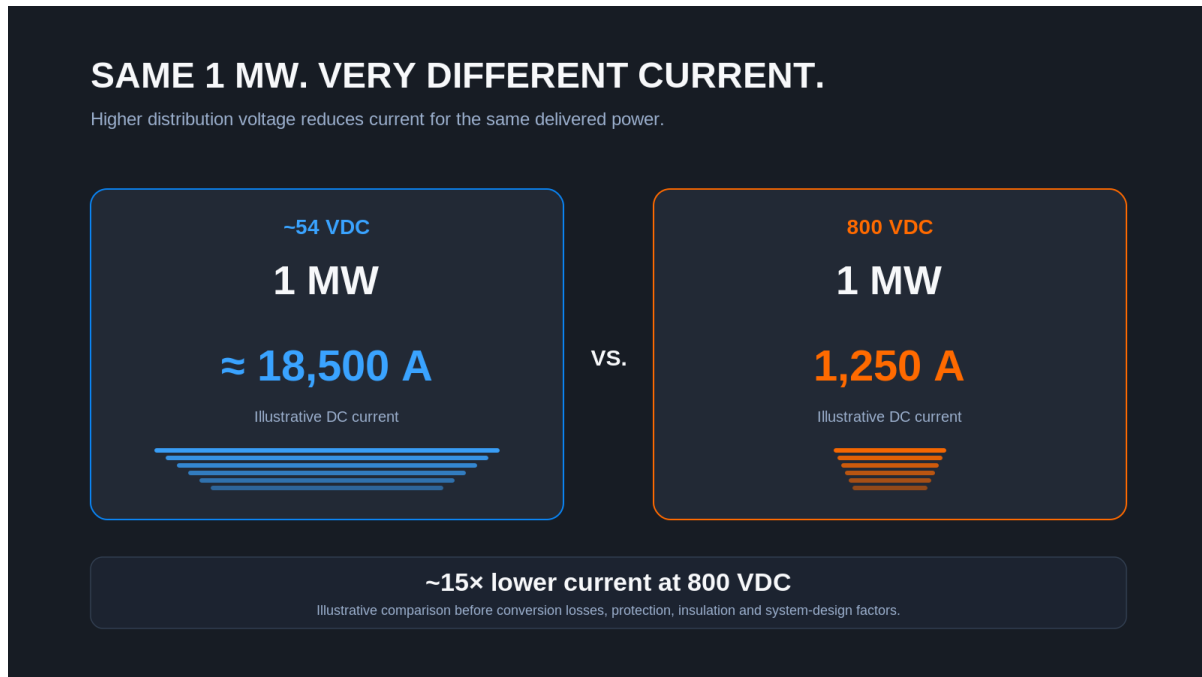


Current Public Evidence Position

Evidence class	Current public position
Patent pending	Core modular DC power architecture, decentralized interleaving, hot-swap phase acquisition, and safety-gated supervisory guidance.
Embedded / measured	Control code has executed in target-class real-time processing environments; execution timing is not the same as full power-system response.
Hardware validation	Staged SiC dual-active-bridge validation is underway, using baseline-first and observer-first methodology.
Engineering targets	Multi-module shared-bus coordination, ripple, transient response, fault behavior, thermal performance, EMI, and production qualification remain validation objectives.

Why 800 VDC Matters

For a fixed power level, current falls as voltage rises. This is not a QuietEdge invention; it is the underlying physics driving the industry's move toward higher rack distribution voltages.



Commercial Integration Paths

- **Control & firmware licensing.** Integrate QuietEdge behavior into qualified OEM power-conversion platforms.
- **Reference architecture.** Use a QuietEdge-developed DC power architecture as the basis for qualified engineering and manufacturing.
- **Co-development.** Adapt the control layer to partner rack-power, SST, DC/DC, UPS/PCS, or adjacent high-dynamic power platforms.

QuietEdge does not claim commercial field deployment, OCP certification, or completed full-system bench validation. Detailed engineering materials and NDA-controlled data are available to qualified partners.