SYNEREX™
LABORATORIES, LLC

SYNCHRONIZING THE FUTURE OF POWER

Electrical Current Balancing System (ECBS™) Technology

Revolutionizing Power Quality for Industrial and Commercial Facilities

Patent Protected: U.S. Patent No. 12,375,324 B2

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SYNEREX™
LABORATORIES, LLC

Mission

Synerex Laboratories, LLC is dedicated to revolutionizing power quality through innovative Electrical Current Balancing System (ECBS™) technology. We develop, manufacture, and license advanced solutions that improve electrical network stability and efficiency. Our mission includes creating strategic partnerships with global power quality companies to help drive the market into advanced network-wide solutions for commercial and industrial companies worldwide.

Our Commitment

We are committed to providing cutting-edge power quality solutions that help organizations optimize their electrical systems, reduce energy waste, and improve overall operational efficiency through advanced technology and expert support. We also collaborate with global companies to expand their product and application scope, integrating ECBS™ into diverse systems and solutions.

Our Technology

Our patented ECBS™ technology provides network-wide current balancing capabilities that enhance power quality conditions across industrial and commercial facilities. We combine advanced hardware controls, software analytics, and manufacturing expertise to deliver comprehensive solutions. The technology is designed to create a reliable, network-wide Electrical Current Balancing System using advanced engineering platforms, and it can integrate with other manufacturers' products to accomplish this task.

Master Network Overview

The ECBS™ system integrates at the facility switchgear, balancing Phase A, B, and C across feeders. Each feeder is supported by XECO modules — Rack Systems (capacitance support), Line and Power Filters (harmonic reduction), Switchgear Boosters (voltage stabilization), and Load Controllers (current balancing). Critical loads such as motors, chillers, and medical systems are monitored through Synerex Power Analysis™, which provides network-wide visibility and optimization.

Before/After Network Envelope

Before ECBS™, facilities often suffer from unbalanced phases, poor power factor (≈0.75), high THD (≈15%), and excessive I^2R/core losses. After ECBS™, these are corrected to PF >0.98, THD <5%, balanced phases, and significant efficiency gains.

XECO Modular Ecosystem

At the core is the ECBS™ module, with a modular architecture that integrates Rack Systems, Filters, Boosters, and Controllers, all connected to Synerex Power Analysis™. This hub-and-spoke design ensures scalability for different facility sizes and global applications.

Electrical Network Benefits

- Improved Power Factor (PF correction)
- Reduced Total Harmonic Distortion (THD)
- Lower kVA/kW demand charges
- Enhanced voltage stability
- Reduced I^2R and core losses
- Compliance with IEEE and utility standards
- Increased operational reliability

Technical & Operational

- Extended lifespan of motors, transformers, and switchgear
- Reduced equipment overheating and maintenance downtime
- Better voltage regulation across distributed loads
- Mitigation of nuisance breaker trips and equipment malfunctions
- Greater reliability for sensitive electronics (e.g., medical devices, VFDs, data servers)
- Scalable architecture suitable for single sites or multi-site networks

Financial & Energy Efficiency

- Lower utility penalties from poor power factor and harmonics
- Optimized transformer efficiency with reduced copper & core losses
- Reduced demand charges via peak load balancing
- Lowered total energy consumption across facilities
- Improved ROI from existing electrical infrastructure

Compliance & Risk Reduction

- IEEE 519 and ASHRAE standards compliance
- Helps meet DOE and local utility energy efficiency requirements
- Reduces fire risk from overheated conductors and panels
- Mitigates liability from electrical disturbances impacting critical operations

Strategic & Market Advantages

- Compatible with other OEM equipment for flexible integration
- Supports ESG and sustainability initiatives by reducing wasted energy
- Creates measurable, reportable savings for corporate energy audits
- Strengthens resilience for critical infrastructure (hospitals, data centers, manufacturing)
- Provides a future-proof platform as grid conditions tighten with electrification and AI/data center demand

Implementation Capabilities

Our ECBS™ solutions can be deployed at switchgear, feeders, and across facility networks. Implementation includes hardware (rack systems, filters, controllers, boosters) and software analytics via Synerex Power Analysis™ to deliver real-time monitoring, reporting, and optimization.

Industries & Applications

• Data Centers
• Hospitals and Healthcare Facilities
• Manufacturing Plants
• Utilities
• Commercial Buildings
• Global OEM and licensing opportunities

Why Partner with Synerex?

• Strong patent protection
• Proven field-tested results

• Scalable solutions for global markets
• Opportunities for OEM licensing and strategic partnerships

Synerex Brand Color Guide

Synerex Purple → #6600CC (R:102, G:0, B:204)
Synerex Orange → #FF6600 (R:255, G:102, B:0)
Synerex Teal → #009999 (R:0, G:153, B:153)
Neutral Gray → #666666 (R:102, G:102, B:102)

Contact

Synerex Laboratories, LLC
Email: info@synerex.org
Website: www.synerex.org
Phone: (806) 570-4647