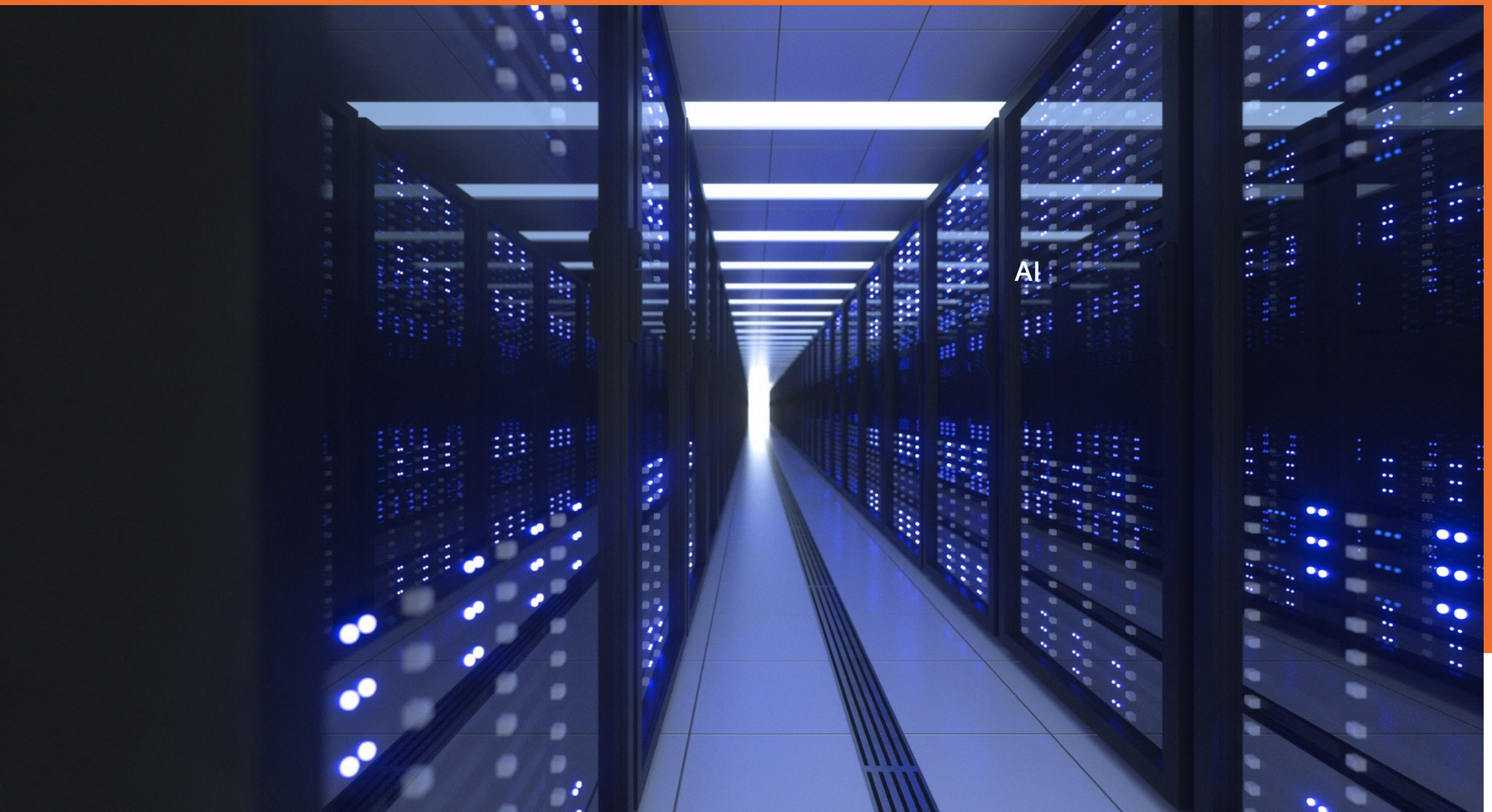
EdgeTunePower

# Data Center Controller | iT-2000




## EMS

Energy-Management-System

+

## PMS

Power-Management-System

+

## PPC

Power-Plant-Controller

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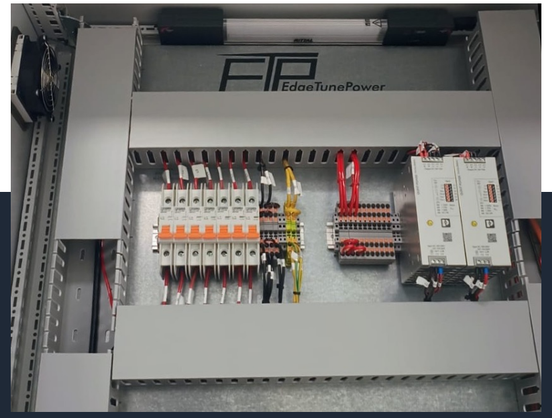
# End-to-End Control System

**Revolutionizing Power Management for Mission Critical and Modern Applications**

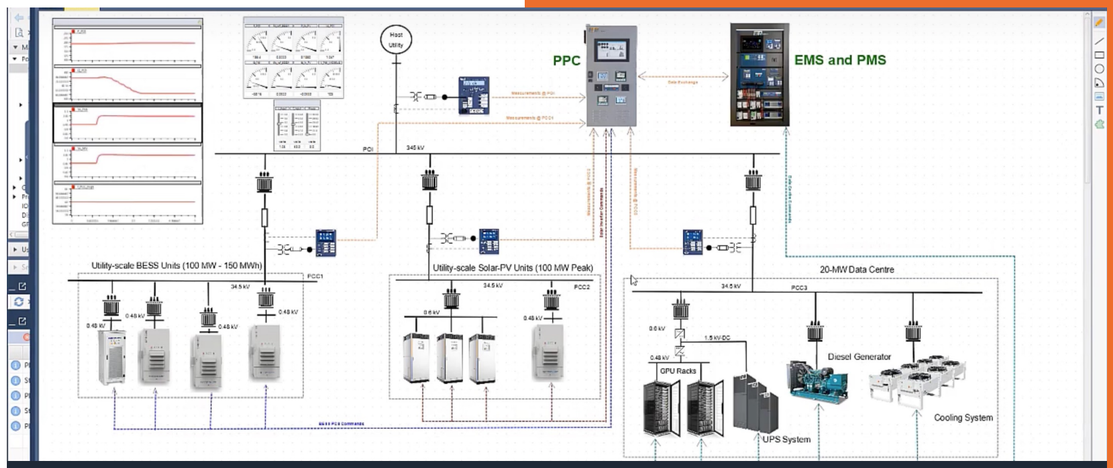
Modern data centers rely on multiple power sources and feeders with different operating requirements. Each feeder must operate autonomously while remaining fully coordinated with the rest of the site. ETP's Data Center Controller delivers this through a hierarchical control architecture that enables independent feeder operation, coordinated site-level control, and scalable expansion for co-location projects or new radial feeders. It also controls tie breakers in high-voltage double-busbar systems, supporting load restoration, Fault Location, Isolation, and Service Restoration functions, and controlled load shedding and curtailment to ensure resilient data center operation.


# TAILORED FOR DIVERSE APPLICATIONS

## Data Centers

- This real-time controller optimizes power flow for high-density IT loads and cooling.
- It provides real-time monitoring of Data Centre GPUs, E-statcom Solutions, UPS System and Backup Generators.
- Its scalable architecture ensures data centers can expand without efficiency loss.




## MW-Level IBR-Dominated Systems

- Balances variable energy inputs from solar, wind, and other renewable sources.
- Provides Virtual Power Plant operations at the POI and PCC for high-voltage systems.
- Damping low-frequency oscillations, SSCI, SSO, and SSR.

## High-Availability Power Control

- Real-time coordination of utility, generators, and BESS
- Fast response to IT and cooling load transients
- Seamless grid-connected and islanded operation

## Behind-the-Meter Optimization

- Peak shaving and demand charge reduction
- Intelligent dispatch of on-site energy resources
- Power quality and stability for sensitive equipment

## Scalable & Future-Ready

- Modular architecture for phased data-center expansion
- Supports AI, HPC, and high-growth load profiles
- Designed for inverter-dominated power systems

# IT-2000 FOR DATA CENTERS

## RELIABLE POWER CONTROL FOR MISSION-CRITICAL LOADS

The iT-2000 Platform delivers integrated EMS + PMS + PPC control to ensure reliable, efficient, and scalable power management for modern data centers with high-density and dynamic loads.


# COMPREHENSIVE CONTROL SYSTEM

## EMS (Energy Management System):

Employs advanced optimization algorithms to balance energy flow efficiently, reducing waste and lowering costs. This ensure that energy is directed to where it is needed most, enhancing overall system performance.

## PMS (Power Management System):

Focuses on maintaining operational continuity through real-time load balancing and adaptive control mechanisms. It prevents downtime even during peak power demands or sudden fluctuations.

## PPC (Power Plant Controller):

Manages seamless coordination between energy generation, storage systems, and loads (dynamic/static). This ensures stability even when integrating intermittent renewable energy sources like solar or wind and intermittent data centers.


# ENHANCED RELIABILITY THROUGH HIL TESTING

Our data center real-time controller  is rigorously validated using Hardware-in-the-Loop (HIL) testing with an RTDS real-time simulator, enabling realistic emulation of power system dynamics and ensuring reliable performance under dynamic operating conditions. This approach:

- Identifies potential risks and inefficiencies before deployment.
- Enhances system resilience for critical operations like data center management.
- Reduces implementation risks and guarantees optimized performance.
- Incorporating communication latencies during pre-field testing for interconnection to SCADA systems and IBR control systems.

**By integrating the iT-2000, a data center can achieve up to a reduction in energy costs while improving system reliability and resiliency.**


# SUSTAINABILITY AND ENERGY EFFICIENCY

## Renewable Energy Integration:

Smoothly incorporates solar, wind, and other renewable sources to reduce reliance on fossil fuels.

## Energy Savings:

High-efficiency power flow and cooling solutions reduce energy consumption and operational costs.

## Carbon Footprint Reduction:

Optimized energy usage minimizes environmental impact.

# CYBERSECURITY AND REGULATORY COMPLIANCE

## Cybersecurity:

Implements advanced measures to protect systems from potential cyber threats.

## Regulatory Compliance:

Meets evolving industry standards and future interconnection requirements.

## Disaster Recovery:

Maximizes data and operational continuity during unexpected disruptions.

# KEY BENEFITS AT A GLANCE

The ETP real-time controller (iT-200) is designed for the challenges of today and the opportunities of tomorrow. Its modular and flexible design ensures that your operations can scale with ease, adapting to new technologies and energy needs. Whether you're managing a state-of-the-art data center or a renewable-powered industrial facility, the iT-2000 empowers you to operate with efficiency, reliability, and sustainability.

## For Data Centers:

- Maximized uptime for mission-critical applications.
- Proactive monitoring and predictive maintenance to minimize operation disruptions.
- Tailored power flow management for high-density IT environments.

# Real-Time Power System Testing with iT-2000

**SEL - RTAC**

**SEL - 2488 GPS**

**IBR and DER Controllers**

Data exchange between the simulator and Device Under Test (DuT) occurs via:

- Industrial Communication Protocols (e.g., IEC-61850)
- Analog and Digital I/O
- Fiber Optic connections.

**iT-2000**

**(EMS+PPC+PMS)**

The control commands (or setpoints) and protection trip signals, issued by the DuT, are sent back to the real-time simulator

A wide range of electric grid signals, such as voltage, current, and breaker status, is sent to the DuT.

**Protection Relays**

**Real-Time Simulator:**
A real-time simulation shows a complete power system model, including DERs, electrical machines, loads, and transmission and distribution equipment.

**Monitoring Devices**

The dynamic performance of a wide range of embedded control and protection components (i.e., DuT) is verified

EdgeTunePower

# CONTACT US

## GET YOUR FREE DEMO TODAY AND EXPLORE OUR ENERGY SOLUTIONS!

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