EnvirOptimus™

Environment & Energy Management Solution

A Unified Digital Twin Platform Driving Intelligent & Optimized Operations

BIM > EEMS > Digital Twin > Asset Maintenance

Buildings | Industrial Plants & Factories | Critical Infrastructure

The Strategic Imperative - Why Transformation is No Longer Optional

A Convergence of Operational Challenges

Modern enterprises are navigating an increasingly complex operating landscape, where multiple pressures intersect: Energy costs continue to rise, without granular visibility into where and how consumption occurs. This lack of transparency limits the ability to control costs effectively.

At the same time, organizations are expected to meet stringent ESG and sustainability targets, requiring accurate measurement, reporting, and reduction of environmental impact capabilities that traditional systems are not designed to deliver.

Operationally, infrastructure ecosystems remain fragmented. Systems such as BMS, SCADA, and MES operate independently, creating data silos that prevent holistic analysis and coordinated decision-making.

Compounding this, maintenance strategies are often reactive. Equipment failures are typically addressed only after they occur, resulting in unplanned downtime, productivity loss, and increased maintenance costs.

Additionally, valuable BIM and design data, rich in asset specifications and system relationships, remains underutilized once construction is complete, representing a missed opportunity for operational optimization.

The Shift Toward Intelligent Infrastructure

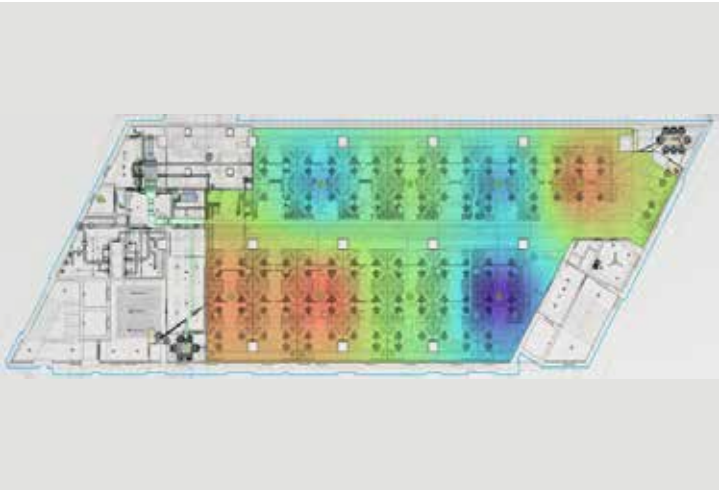
Leading organizations are moving beyond traditional monitoring approaches toward a more advanced paradigm. They are adopting platforms that transform raw data into contextual intelligence, enable predictive decision-making, and create dynamic Digital Twins that evolve alongside the physical environment.

This shift is enabled by integrated platforms that unify design, data, and operations into a cohesive intelligence framework driving greater efficiency, sustainability, and operational resilience.

From Design to Operations. From Data to Decisions. From Monitoring to Intelligence.

In today's complex and energy-intensive environments, organizations need more than monitoring, they need intelligence.

Introducing **EnvirOptimus** - a platform that creates a connected digital ecosystem by unifying design data, real-time operations, and advanced analytics into a Living Digital Twin, enabling continuous optimization, predictive insights, and smarter decision-making.

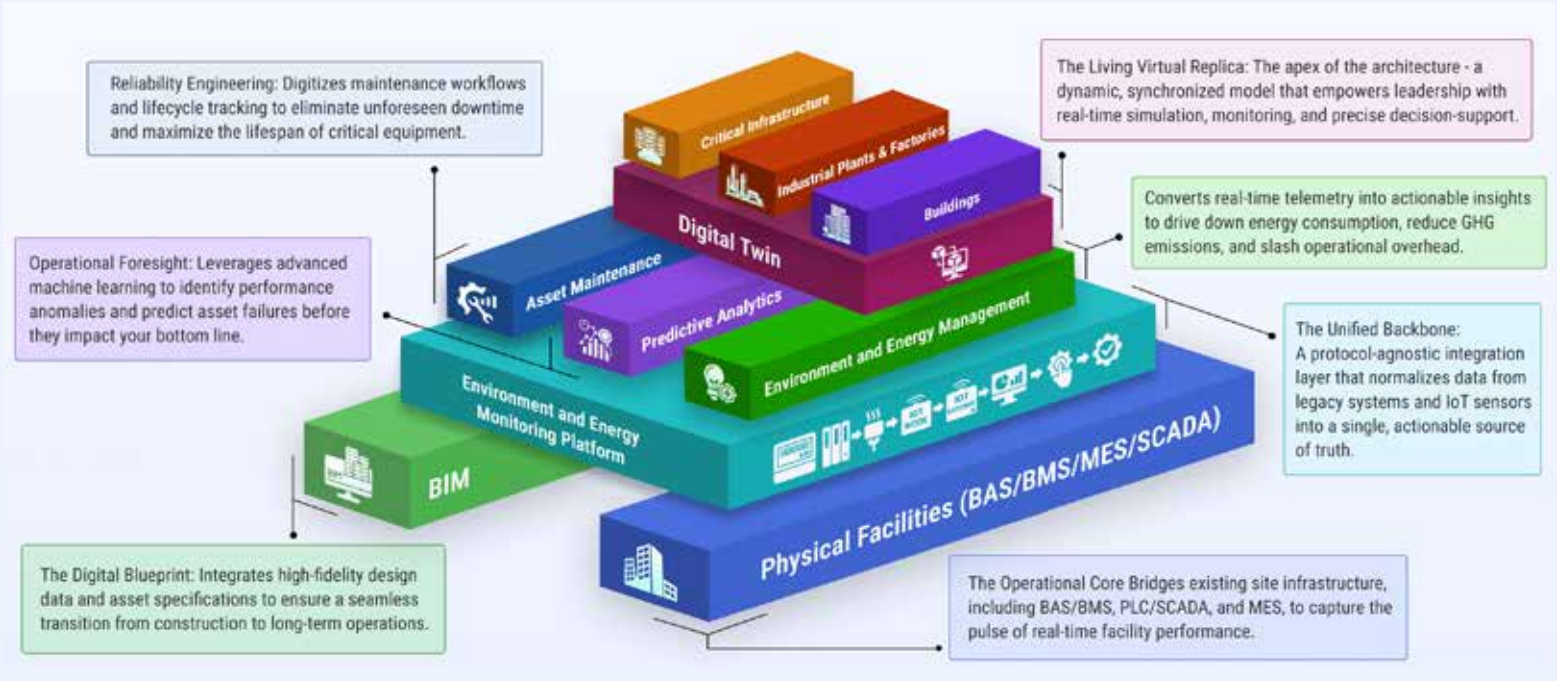


EnvirOptimus transforms static BIM models into dynamic, real-time Digital Twins powered by live data.

Key Capabilities

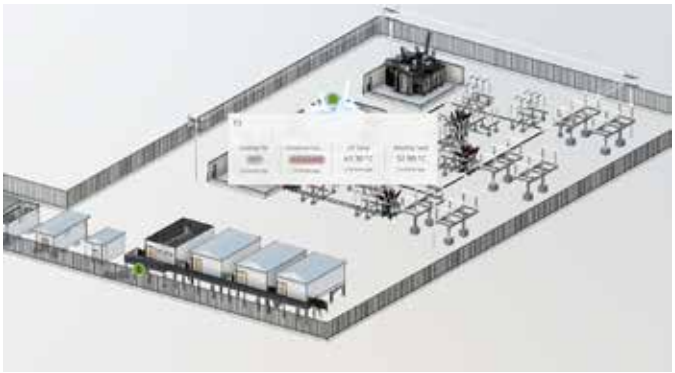
- **Unified command center for decision-making –** Centralize all operational, energy, and environmental data into a single, intuitive platform
- **Real-time monitoring of assets and systems –** Gain continuous visibility into equipment performance, energy usage, and environmental conditions across the facility
- **Scenario simulation and optimization –** Run what-if analyses to evaluate operational strategies and optimize performance before implementation
- **Continuous performance improvement –** Identify inefficiencies and drive ongoing optimization through data-driven insights

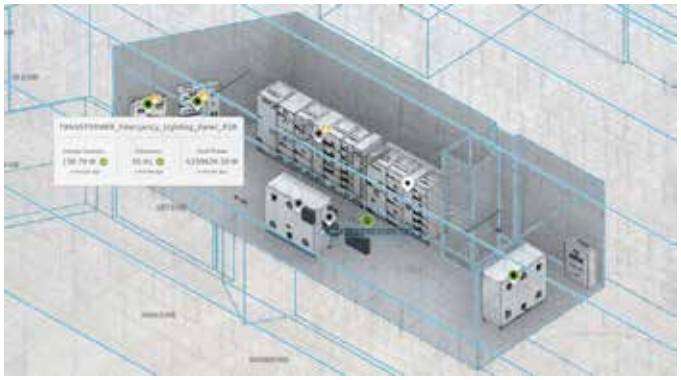
EnvirOptimus Solution – The Digital Backbone
A Layered, Scalable Architecture



1. **Foundation Layer**
   - BIM (Design Data): Asset specifications, layouts, system relationships
   - Existing Systems: BAS/BMS, PLC/SCADA, MES, meters
3. **Digital Twin Layer**
   A living, dynamic virtual replica powered by real-time data and analytics
5. **Customization & Scalability Layer**
   The platform is flexible and adaptable for commercial buildings, industrial plants & factories, and critical infrastructure. It is tailored to meet each facility's unique requirements and use cases, supporting applications such as energy, asset, and environmental management, while remaining scalable across single or multiple sites.

2. **Intelligence Modules**
   - Environment & Energy Management
   - Predictive Analytics (AI/ML-based)
   - Asset Maintenance (CMMS-enabled)
4. **Core Platform: Environment & Energy Monitoring (EEMP)**
   The central integration and intelligence layer:
   - Connects to legacy systems and IoT devices
   - Supports Modbus, OPC UA, BACnet, MQTT, DLMS, SNMP, REST APIs
   - Enables retrofit capability for existing facilities
   - Integrates new sensors, smart meters, and edge devices
   - Normalizes and contextualizes asset-level data





Business Impact
With EnvirOptimus & Digital Twin Enablement

- **Reduction in energy costs –** Optimized consumption, load balancing, and demand management
- **Improved operational efficiency –** Reduced manual effort through intelligent automation
- **Centralized visibility –** Monitor all assets, systems, and zones from a single platform
- **Data-driven decision-making –** Enable faster, informed actions with real-time insights
- **Predictive and proactive operations –** Anticipate issues and optimize performance in advance
- **Reduced downtime and risks –** Minimize failures through early detection and insights
- **Simulation-driven optimization –** Test scenarios virtually to improve efficiency
- **Lifecycle performance management –** Ensure continuous optimization across the asset lifecycle

Connecting the Digital and Physical Worlds

In most facilities, digital models remain underused while physical operations function separately. Connecting both through structured, interoperable data unlocks true operational value.

EnvirOptimus™
enabled Digital Twin
Physical + Digital World

As-Designed

As-Built | As-Operational

The Process

1. **Digital Foundation (BIM & Models)**
   Start with digital assets, such as BIM models, that define the structure, systems, and asset information.

2. **Data Structuring & Interoperability**
   Standardize and organize data to ensure seamless communication across systems, platforms, and stakeholders.

3. **Integration with Physical Systems**
   Connect real-world infrastructure through BAS/BMS, SCADA, IoT sensors, and meters to capture live operational data.

4. **Real-Time Data Flow**
   Continuously stream and synchronize data between physical assets and digital models for accurate, up-to-date insights.

5. **Intelligence Layer (EnvirOptimus)**
   Apply analytics, energy intelligence, and environmental monitoring to transform raw data into actionable insights.

6. **Living Digital Twin**
   Create a dynamic, continuously evolving Digital Twin that bridges the digital and physical enabling monitoring, simulation, and worlds, optimization.

Outcome

A unified ecosystem where design, data, and operations work together, enabling smarter decisions, improved efficiency, and sustainable performance.

From Existing Facility to Digital Twin

No BIM or design data? It's possible.

Even without BIM or design data, creating a Digital Twin is still possible. The journey begins with your existing facility, where no prior digital models are required. Using advanced 3D laser scanning, accurate real-world geometry and asset details are captured and converted into point cloud data. This data is then transformed into a structured, intelligent as-built BIM model through a Scan-to-BIM process.

Next, systems such as BAS/BMS and SCADA/MES are integrated, along with IoT sensors and smart meters, to enable real-time data capture. Finally, with EnvirOptimus, the facility evolves into a Living Digital Twin providing real-time monitoring, energy insights, predictive analytics, and optimized operations.

Outcome

A connected, intelligent, and future-ready facility - even without existing BIM or design data.

EnvirOptimus is built for adaptability and future-readiness, making it ideal for retrofitting into facilities of any age or type with minimal infrastructure disruption. As a Digital Twin–enabled platform, it supports a wide range of industrial protocols, ensuring seamless integration across systems and creating a connected, intelligent operational environment.

EnvirOptimus continuously monitors critical environmental and operational parameters such as greenhouse and hazardous gases, temperature, humidity, noise, vibrations, and equipment health indicators. By combining real-time data with digital twin context, it creates a dynamic, continuously updated representation of the facility.

Through smart IoT nodes and gateways, data is captured, structured, and analyzed in real time. Interactive dashboards and Digital Twin visualizations deliver actionable insights, enabling predictive maintenance, simulation-driven optimization, and improved environmental compliance.

With a strong focus on environmental awareness, operational resilience, and sustainability, EnvirOptimus empowers organizations to operate smarter, safer, and greener driven by living Digital Twin intelligence.

What EnvirOptimus Integrates

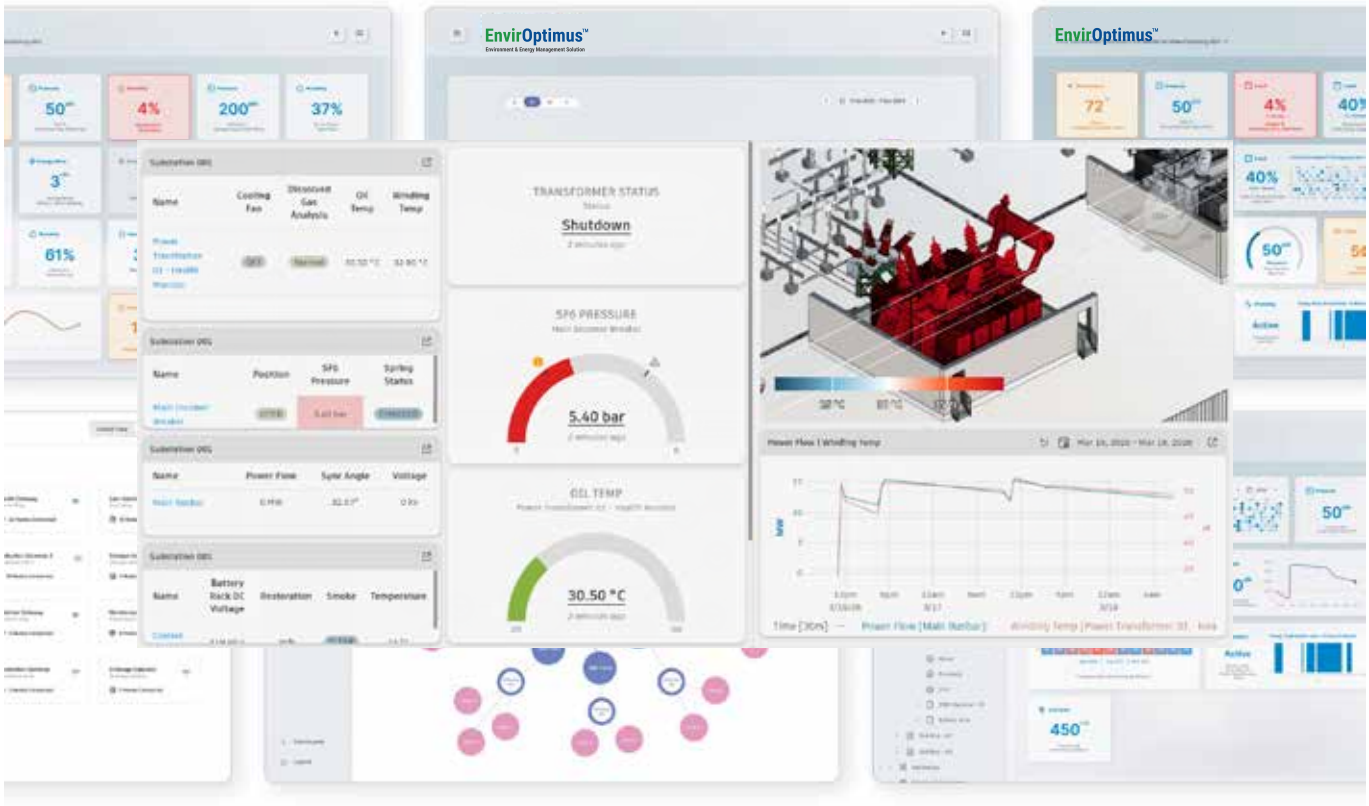
- **Environmental Parameters:** Temperature, Humidity, Particulate Matter (PM), Greenhouse Gases (CO_2, N_2O, CH_4, …), Hazardous Gases (CO, NO_2, H_2S, NH_3, Cl_2, O_3, VOCs …)
- **Industrial Parameters:** Noise, vibration, pressure, water/air flow, gas emissions etc.
- **Predictive Equipment Maintenance:** Early detection of failures in industrial machinery, and critical assets
- **Energy Sources:** Grid power, solar, diesel generators, HVAC systems
- **Energy Consumers:** Industrial machinery, HVAC systems, Elevators, Lighting, Healthcare Equipments etc.

Digital Twin Driven Compliance & Certifications

- **ISO 14001 - Environmental Management System** Automates monitoring of greenhouse gases, air quality, hazardous gases and objectives providing real-time alerts and supporting sustainability initiatives through energy optimization strategies
- **ISO 50001 - Energy Management System (EnMS)** Monitors real-time energy use (grid, solar, diesel), detects inefficiencies, and ensures regulatory compliance

Customizable Intuitive Dashboards

Access real-time data through a modern web-based user interface that offers a range of charts, graphs and tables for easy visualization.



EnvirOptimus is your partner in driving sustainability goals, and enabling safer, smarter operations. As a Digital Twin enabled platform, it goes beyond monitoring to create a living, data-driven representation of your facility. From conducting in-depth on-site assessments to identifying improvement opportunities in environmental performance and asset health, EnvirOptimus delivers contextual, real-time insights.

Its data-powered analytics and predictive maintenance capabilities, enhanced by Digital Twin intelligence, help optimize operational efficiency while minimizing environmental impact. Through continuous monitoring, simulation, and intelligent refinement, EnvirOptimus enables ongoing improvement, supports compliance, and delivers long-term sustainable value across your facility.

Neil Automation

Neil Automation Pvt. Ltd.
Pride Parmar Galaxy, 8th Floor, 10/10 + A, Sadhu Vaswani Chowk, Pune 411001, India
Inquiry : eems@neilautomation.com | **Tel:** +91 86000 26806

Neil Automation is a wholly owned subsidiary of Neilsoft, that is focused on providing Automation & Sustainability Solutions for Manufacturing Plants, Large Buildings, and Industrial Facilities. The USP of Neil Automation lies in leveraging the latest technologies and evolving cost-effective solutions for the Automation & Sustainability goals of organizations.

Neilsoft, established in 1993, is a global Engineering Services & Solutions company, headquartered in Pune, India addressing clients in Manufacturing, Construction, and Process Industries.

India Sales Offices

Bangalore
405/406, Embassy Centre
11, Crescent Road
Kumara Park (E)
Bangalore 560001
Tel: +91 80 2226 7786

New Delhi
605, Chiranjiv Tower
43, Nehru Place
New Delhi 110019
Tel: +91 11 4108 6157
Tel: +91 11 4108 6158

Mumbai
411, Rupa Solitaire
Building A1, Sector 1
Millennium Business Park
Mahape, Navi Mumbai 400710
Tel: +91 22 27780373
Tel: +91 22 27780370 / 71

Ahmedabad
Westgate, Block E – 5th Floor
True Value by Westgate
Sarkhej–Gandhinagar Highway
Makarba, Ahmedabad 380051