

The Value of Elemental Machines Integration With Siemens Desigo



At Elemental Machines, we deliver real-time environmental monitoring, utilization tracking, and compliance-ready data solutions that enhance operational efficiency across laboratory, manufacturing, and facility management environments. When integrated with Siemens Desigo, our system offers an unprecedented level of data automation and analytics, providing facilities with deeper insights, improved efficiency, and enhanced compliance capabilities. We can do this through:



1. Real-Time Environmental Monitoring & Compliance

- Seamlessly integrating with Desigo's building automation system to provide continuous monitoring of temperature, humidity, pressure, CO₂ levels, and other critical environmental parameters
- Ensuring compliance with regulatory standards such as GMP, GLP, FDA 21 CFR Part 11, and ISO 17025 by maintaining precise, auditable data logs
- Providing automated alerts for deviations in environmental conditions, ensuring immediate corrective action and preventing costly product loss or compromised research
- Supporting multilocation monitoring with centralized data access, ensuring consistency in quality and compliance across different sites

2. Enhanced Operational Efficiency & Energy Optimization

- Utilizing real-time sensor data to optimize HVAC and energy usage, reducing operational costs while maintaining environmental stability
- Providing facility managers with detailed insights into equipment performance and lab conditions, minimizing downtime and improving operational reliability
- Automating facility workflows by synchronizing environmental controls with occupancy, equipment utilization, and predictive maintenance data
- Integrating with existing laboratory equipment and manufacturing assets, providing a unified monitoring and control system that extends beyond traditional HVAC management

3. Seamless Data Integration & Advanced Analytics

- Integrating directly with Siemens Desigo to enable cross-platform data exchange, providing a single pane of glass view of environmental, equipment, and utilization data
- Enabling predictive maintenance by using historical data trends and AI-driven analytics to foresee potential equipment failures before they occur, reducing downtime and maintenance costs
- Providing machine-learning-driven optimization by analyzing trends in equipment usage and environmental conditions, allowing proactive adjustments to enhance efficiency
- Using advanced data analytics by consolidating environmental and asset utilization metrics into a unified dashboard, allowing stakeholders to make informed operational decisions in real time
- Supporting data logging, visualization, and AI-driven insights that can be customized based on the specific needs of each facility

4. Integration With Specific Lab Devices

- **Incubators** — Continuously monitor and regulate temperature, humidity, and CO₂ levels to ensure optimal conditions for cell cultures, reducing the risk of contamination or experimental failure
- **Freezers & Refrigerators** — Ensure proper storage of reagents, vaccines, and biological samples with real-time temperature monitoring and automated alerts for deviations
- **Balances & Analytical Equipment** — Capture weight measurements and analytical data directly from balances and instruments, reducing manual data entry errors and ensuring accuracy in laboratory processes
- **Fume Hoods & Clean Room Monitoring** — Provide real-time tracking of air quality, differential pressure, and ventilation performance to maintain a safe and compliant working environment

5. IoT-Enabled Deployment Without Major Infrastructure Changes

- Innovative sensors are designed as IoT devices that seamlessly integrate with existing buildings, ensuring easy deployment without the need for major construction projects
- Enabling rapid installation and scalability, allowing facilities to expand monitoring capabilities without significant downtime or cost
- Keeps facility equipment moving by ensuring environmental data and utilization tracking remain intact, allowing flexible lab and facility layouts
- Providing optimum uptime for continuity of operations, ensuring that critical workflows are uninterrupted while maintaining compliance and operational efficiency

Integrating Elemental Machines with Siemens Desigo transforms facility management by providing real-time data insights, improving regulatory compliance, optimizing energy efficiency, and reducing operational risks. This partnership ensures that facilities operate at peak performance while minimizing costs and enhancing sustainability. With automated data capture, intelligent analytics, seamless integration, and IoT-enabled adaptability, Elemental Machines elevates smart building and lab environments to the next level.

About Elemental Machines

Elemental Machines' Intelligent Operations Platform leverages the best of Internet of Things (IoT) technology and custom hardware/software solutions, delivering actionable insights to operators in life sciences, biopharma labs, biobanks, analytical labs, and manufacturing facilities. By connecting the physical and digital worlds, the platform simplifies, optimizes, and augments operations. Leaders in science, facilities, and technology trust Elemental Machines' ecosystem for insights that accelerate innovation, predict outcomes, and shift from reactive to proactive management. With scalable solutions from incubator to enterprise, custom integrations to fit each operation's unique needs, and a wide ecosystem of partnerships, Elemental Machines ensures operational excellence and the future-proofing of lab and manufacturing processes.