

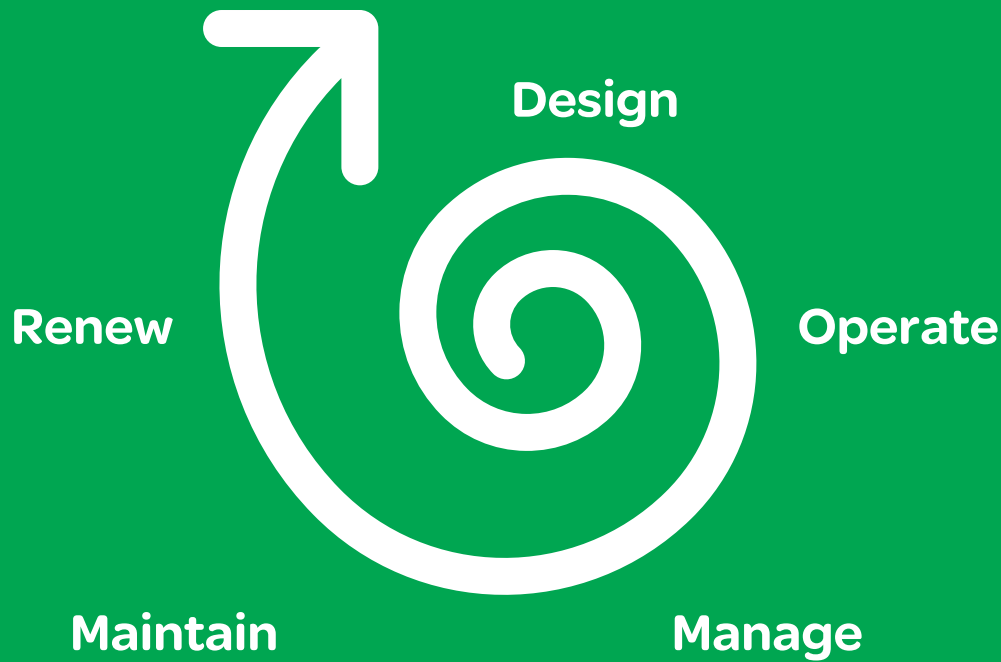


Maximize energy efficiency while achieving overall production objectives.

PlantStruxure PES:
The next generation
of energy-aware
distributed control systems

Make the most of your energySM

Schneider
 **Electric**



With the demands of today's industrial environment, users need a system that must be simple to:

- Design
- Operate
- Maintain

It should also be easy to modify, improve, and expand with:

- Online changes
- Future proof technologies
- Easy interaction with other systems (MES/Energy/Instruments)

The solution:

PlantStruxure PES

PlantStruxure™ PES (Process Expert System) is the innovative process-automation system from Schneider Electric that provides the single global database design and diagnostic features of a Distributed Control System (DCS). The energy-aware architecture allows companies to rapidly design systems, reduce downtime, and increase process and energy efficiency.

Digitize your plant:

- Bring productivity to a whole new level. Smart objects put all data at the fingertips of engineers and operators to help maximize the plant life cycle.
- Reduce time to market! Leverage increased standardization and intensive reuse to reduce engineering time by up to 25%.

Bring intelligence to your operations:

- Use system-wide cross-references to diagnose faster and make better decisions. Help learner teams with process and automation knowledge.
- Automate energy management in process. Provide new insights into plant management to eliminate energy waste at source of overconsumption with savings up to 30%.

Improve efficiency with embedded know-how:

- Use open process libraries to extend and adapt to meet your exact needs.

Enabling intelligent energy management through seamless integration into EcoStruxure™



mains like power and process. This provides both operators and managers with powerful insights on what is happening at different process levels:

Field level: We integrated power and process devices in the same architecture to create an energy-aware infrastructure.

Control level: We integrated process and energy control to enable some powerful functions such as grid level load control, and production load modeling.

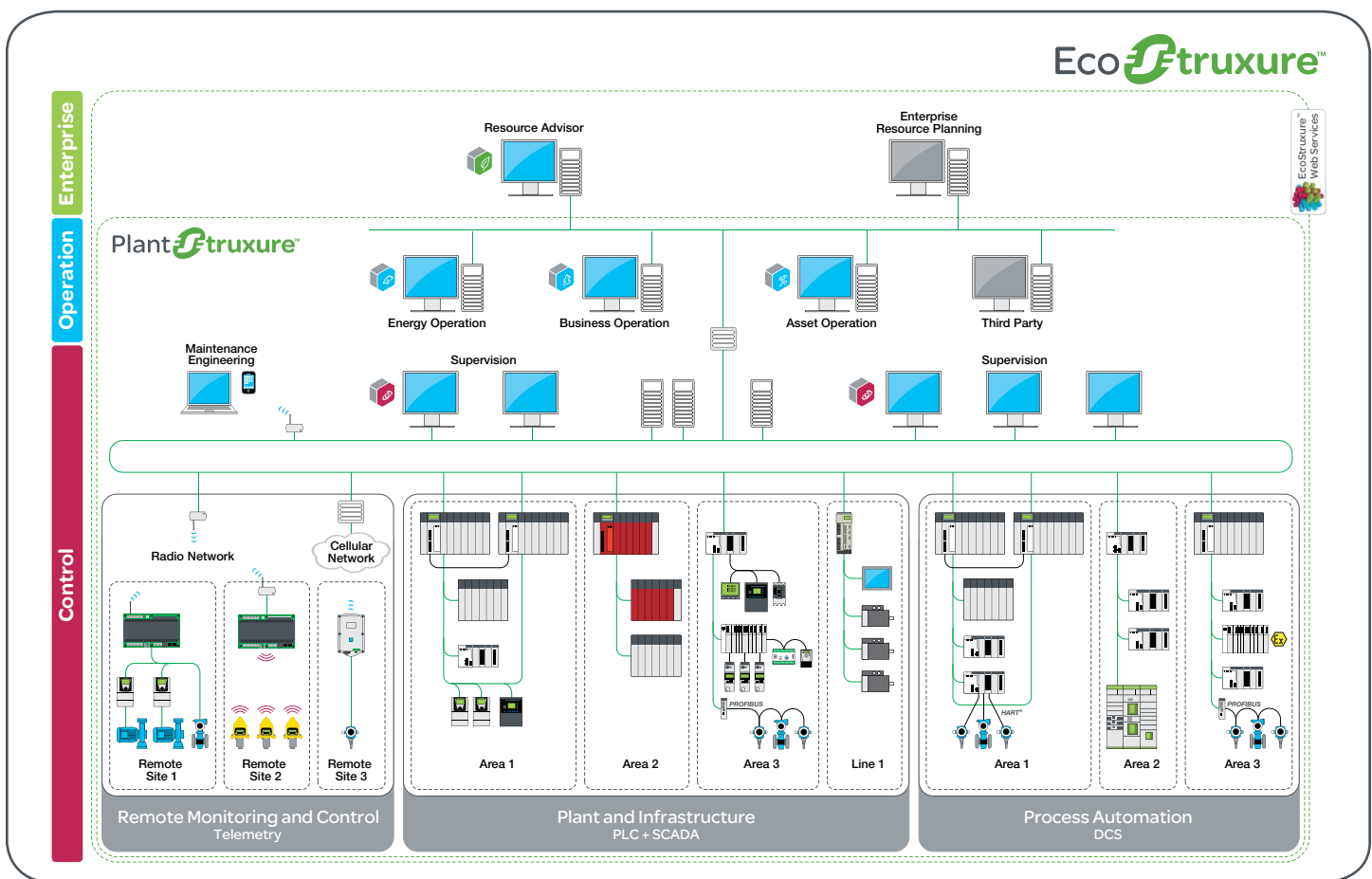
Operations level: We integrated process and energy supervision to make intelligent functions on operator level such as an energy scheduler and multi-level demand response possible.

This integration brings a new level of understanding and visibility of where waste is created in a process. PlantStruxure PES allows customers to embed active energy management in every step of their process to eliminate energy waste and optimize energy consumption.

PlantStruxure™ collaborative and integrated architecture

Schneider Electric™ PlantStruxure is a collaborative and integrated architecture built on best-in-class products and life cycle services, from initial design to modernization. It allows operation optimization by transparently connecting field, process, and enterprise levels. PlantStruxure architecture combines process and power information, helping our customers produce efficiently and safely while contributing to a greener world. It is the key building block of the Schneider Electric comprehensive energy management portfolio, EcoStruxure.

At the heart of PlantStruxure architecture, PlantStruxure PES provides the strong integration of functionalities in a single environment.



Control room

A true, flexible client/server architecture lets you size the system with the right number of work stations depending on the topology and number of users working simultaneously on the control system.

Smart devices

Smart devices and instrumentation connected on standard fieldbuses are based on the FDT/DTM technology to provide intelligent and transparent information from plant floor to top floor, including control, supervision, asset management, and MES.

Powerful, scalable controller platform

At the core of the control process, there is a powerful and scalable control platform which enables flexibility in design architectures.

Building energy-aware architectures

These architectures enable you to create native integration of power and energy devices.

Energy-aware architectures

Embedded energy-aware architectures into process control allows companies to rapidly design systems, reduce downtime, and increase process and energy efficiency.

PlantStruxure PES is based on three pillars



A single environment that integrates all key engineering and operation functionalities

1 A system-wide, Ethernet-based, energy-aware architecture

Ethernet technology ensures connectivity, flexibility, scalability, and performance. Connect devices and instrumentation and get the process and energy data needed to make timely decisions and improve total process performance.

2 A powerful and scalable controller platform

PlantStruxure PES supports a range of controllers to meet multiple process needs. The controller platforms are modular, scalable, and redundant, with the ability to add or remove hardware online. They support a full range of input and output modules, along with dedicated communication and fieldbus modules, regulatory control, sequencing, motor control, and connection to motors, or smart devices, and instrumentation.

3 Integrated functionalities in a single environment

PlantStruxure PES integrates the functionalities needed to efficiently manage process and energy usage in a single environment:

- A single, object-oriented database to engineer and maintain systems more quickly and easily
- A powerful operations and navigation environment for real-time monitoring and control of the plant, including alarms, events, and trend data
- Standard interfaces with Historian, MES, and other business systems for fast and easy information exchange
- Open libraries to allow customization of objects for standardization, engineering, and maintenance



PlantStruxure PES

Faster and easier application engineering

PlantStruxure PES improves efficiency throughout the engineering phase, accelerating plant start-up, and minimizing project risks.

Intuitive and modern user interface

PlantStruxure PES provides integrated services to engineer, operate, diagnose, and maintain a control system application in one environment:

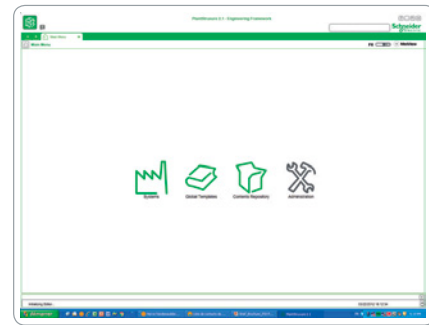
- Application manager describes the equivalent plant hierarchy
- Topology manager describes the overall topology of the system
- Project manager defines the project that runs in the topology

All-in-one configuration

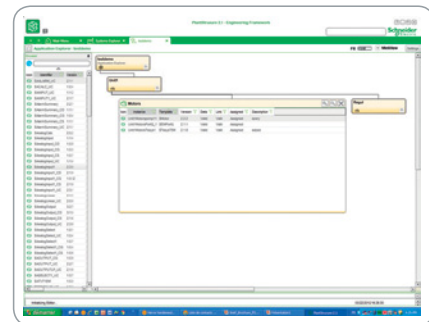
PlantStruxure PES offers all-in-one configuration functionality, allowing faster system design from a single point of data entry. Within the application manager, it is possible to replicate the application as it is in real life, using your own model, the ISA-88 or ISA-95 standards, or any other model of choice. The design can be based on a hierarchical organization according to the P&ID definition, allowing easier evolution of the installation.

Innovative platform

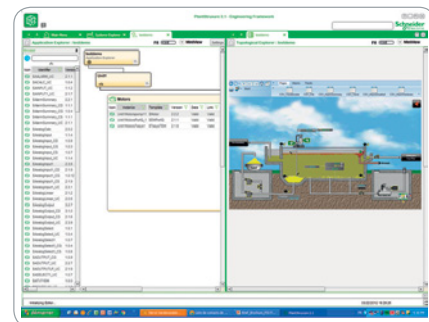
The PlantStruxure PES platform is the key environment that houses the system structure, database, and single object model. The participants are the external components that collaborate with the platform to offer a unified engineering life cycle.



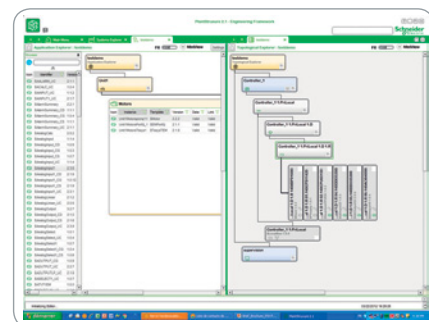
> Single, global, and innovative environment



> System explorer for user-friendly navigation



> Control and supervision with embedded editors



> Contextual menus and services

An object model approach

An object is composed of different elements that contain internal information about it.

These elements offer different points of view of the same object.

Interfaces allow connections between object instances, enabling collaboration between participants while still keeping them decoupled.

A fully sustainable investment

PlantStruxure PES remains adaptable to meet the needs at every stage of the application life cycle.

The original design of the process application can be adjusted at any time, and the system will execute the modifications by propagating the required changes across the plant.

Modifications of an object can be applied to all objects or to the selected instances only, and they are propagated to all related participants (control, monitoring, etc.). System libraries support versioning, verifying consistency and identifying discrepancies between the object and its instances.

Standardize and reuse applications

Approved control system standards reduce development cost, time, and risks. PlantStruxure PES includes a set of object libraries and application templates that help kick-start the design process. The ready-to-use libraries can be modified to suit specific requirements.



Schneider Electric Devices

Drives, motor starters, power meters



Process Equipment

Signal conditioning, process loop, sequence logic, motor control, pumps, valves



Mining

Segment-specific application expertise embedded in dedicated libraries



Cement



Food and Beverage



Water Wastewater



Oil & Gas



Energy Management

Energy consumption, protection relays, dashboards

Applications list continues to be expanded and enhanced by our systems specialists and partners.



PlantStruxure PES brings flexibility

Our system simplifies the implementation of changes in your applications and manages the adjustments required through the plant's life cycle.



We offer dedicated libraries and application templates focusing specifically on energy management to help reduce energy waste at the source of overconsumption.

PlantStruxure PES

Improve process efficiency through real-time information

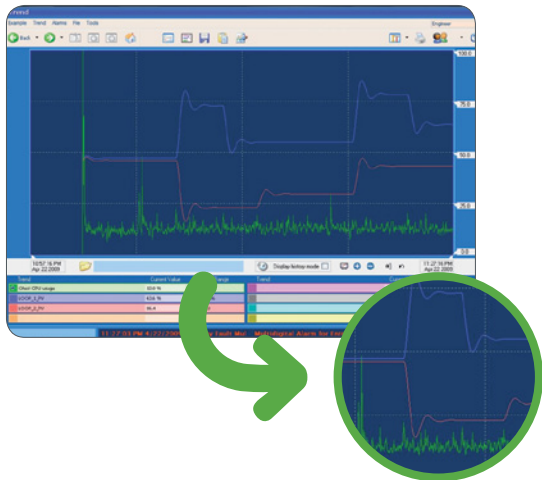
Getting a complete picture of your production process

The ability to provide operators with clear process information is crucial to driving production efficiency. PlantStruxure PES provides a consistent control and operational interface with a real-time view of your process. The system delivers operators all the data they need to make timely and accurate decisions.

Key Distributed Control System (DCS) operator functionality is available in PlantStruxure PES, including:

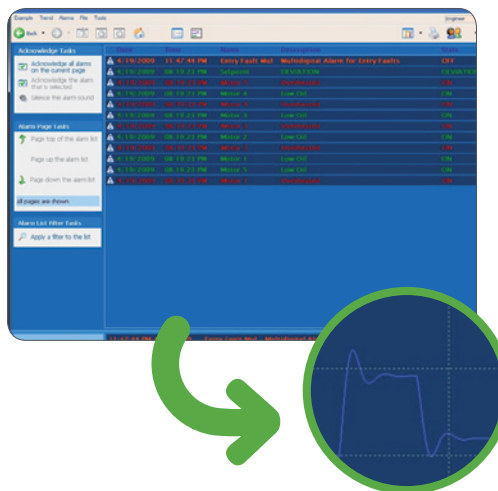
Trending

Trends are a seamless combination of real-time and historical data. When users view a trend page, they can monitor the current activity as it happens and simply scroll back through time to view the trend history. The distributed trending system handles large numbers of variables without compromising performance or data integrity. Operators can choose from a selection of pre-configured trend pages that provide clear data representation with customizable views for quick and simple trend analysis.



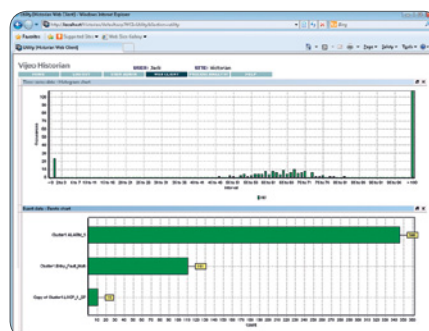
Advanced alarms and events

An efficient alarm tool allows users to quickly identify and isolate faults within the system or process, thereby reducing plant downtime. The PlantStruxure PES alarm system is fast and reliable, providing detailed information about the status of your plant. Alarms are displayed on dedicated alarm pages, with the most recent alarms visible at all times in the alarm banner on every page. Working in conjunction with the controller, alarms are precisely time-stamped — to one millisecond where available. This accuracy can be essential when differentiating between alarms that occur in rapid succession, such as with intelligent motor control centers (IMCC).



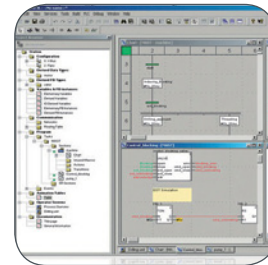
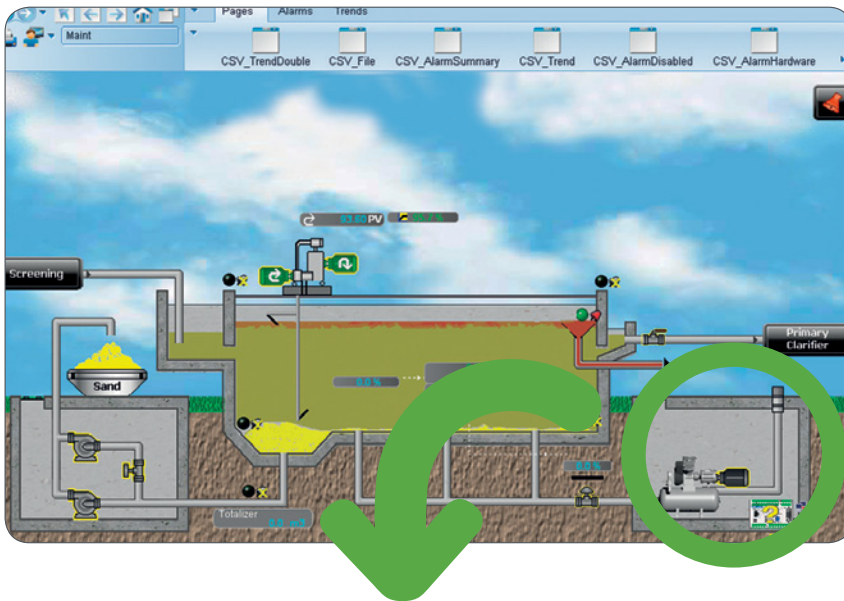
Historian

PlantStruxure PES collects process, quality, and energy data from your plant and generates detailed reports to help decision making. PlantStruxure PES connects to production and business systems including Historian, to ensure that the right people have access to the information. This is made possible by combining real-time production data with the easy and secure accessibility of the system database.



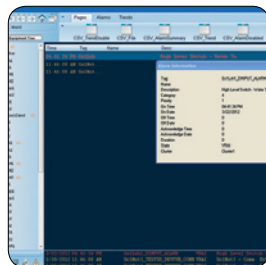
PlantStruxure PES enables fast detection of issues and an intuitive user experience

Click on any animated symbol on the display to directly access object faceplates. Each faceplate provides basic object information (also indicated by the status icon on the object) along with a wealth of other data, such as monitoring parameters, interlocks, alarms, and others.



Instant access to animated program

Also access to relevant documents, variable states, and all other object elements.



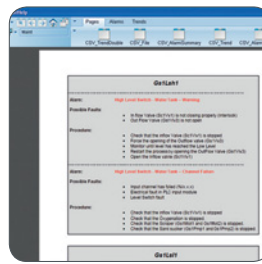
Contextual alarm help

Each alarm can be linked to contextual online alarm help that gives the operators all the relevant information to help them identify and remove the cause of the disturbance.



Alarm analysis

Each alarm can be linked to an analysis window that shows the operators all relevant live and archived information that can be helpful in diagnosing its cause, enabling them to better understand the process event.



Available alarm information

Priority, category, time stamping, etc.

PlantStruxure PES

Making energy actionable

PlantStruxure PES gives you the power to embed Active Energy Management into processes. By combining energy and process data in one system, this revolutionary system helps users reduce energy consumption and waste for a positive real-time impact on process efficiency.

Schneider Electric complements this offer with a full range of energy and sustainability services at every stage of the energy management life cycle.

Energy Management Life Cycle

Schneider Electric leverages energy and sustainability solutions at every stage of the energy management life cycle. Comprehensive energy management is a tremendous asset, allowing our customers to redirect resources to their core businesses.

Concern	Benefit
What is my strategy?	Make a comprehensive plan that fits business goals and chart progress.
How do I buy?	Negotiate the best terms with every supplier and minimize risk.
How do I control?	Monitor operations to ensure reliability, uptime, power quality, and billing accuracy.
How do I optimize?	Execute targeted efficiency projects with ROI that can be proven.
How am I performing?	Use robust support services and reporting software to ensure optimum performance.



→ 1 Audit and measure

Measure your electrical energy flows.

- Power metering and monitoring is a simple solution that provides field operators with an initial understanding of energy flow.
- PlantStruxure PES provides the level of energy intelligence and control needed to support strategic decisions and establish best energy practices.

Measure your process variables.

- PlantStruxure PES is built on open standards providing industry-leading integration of measurements from field instrumentation to other field devices.
- Connectivity across the entire process provides effective measurements that enable more accurate assessments.

→ 2 Optimize

Optimize the usage of energy in your process.

- PlantStruxure PES delivers insightful diagnostics and metrics to help verify the reliability of current operations and reveal energy inefficiencies across multiple sites. This helps manage your existent capacity, defer new capital investments, and strengthen energy procurement for your operations.
- Use integrated intelligent software solutions to quantify energy waste in the process and identify continuous improvement projects.

Automate your process to optimize results.

- Our state-of-the-art PlantStruxure PES integrates controllers, operating and monitoring systems, and networks into a seamless architecture that makes it easy to get a complete view of your energy use.

Further optimize your process performance.

- Use Advanced Process Control to optimize and sustain yield variability, productivity, raw material consumption reduction, and CO₂ emission reduction.

→ 3 Monitor, maintain, improve

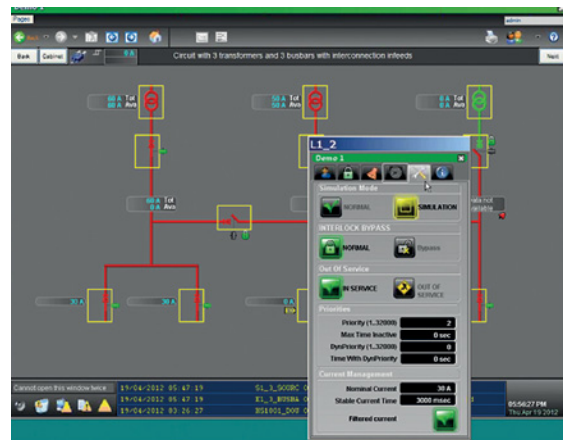
Track energy usage.

With our integrated energy management functionalities, it is now possible to make effective decisions about energy use and allocation in full alignment with business KPIs.

- Enterprise-level, energy-focused business intelligence software solutions
- Load shedding for peak hours
- Energy supplier allocation

PlantStruxure PES allows visualization and optimization of production and energy use in real time, connecting the plant's field, process, and enterprise levels allowing for easy energy monitoring. It also greatly reduces energy waste at the source of overconsumption by automating processes and making energy more productive.

PlantStruxure PES turns intelligent energy into a key performance indicator, making hard decisions easier.



For example, the PlantStruxure PES Low-Voltage Power Control (LVPC) library provides a full set of objects (source generators, bus bars, bus couplers, etc.), their related control, and associated faceplate. This library provides monitoring capabilities with single-line diagrams that represent the power network of the plant. It also offers additional capabilities such as shutdown of less critical loads in case of emergency. This helps ensure that power plant systems can withstand an emergency with minimal impact.



The PlantStruxure PES LVPC library can be complemented by dashboards showing electrical consumption, production, energy cost, water consumption, plant availability, and much more.

For more information, visit
www.schneider-electric.com/us
and enter key code **w578v**.

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