



EcoStruxure™  
Innovation At Every Level

Maximize profitability and operational efficiency with EcoStruxure Process Expert

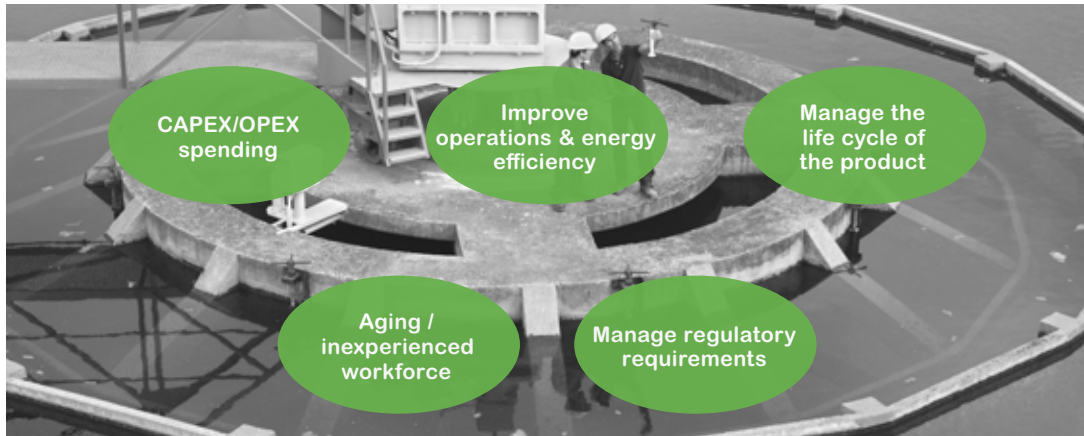
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# Hybrid Industry Market Challenges

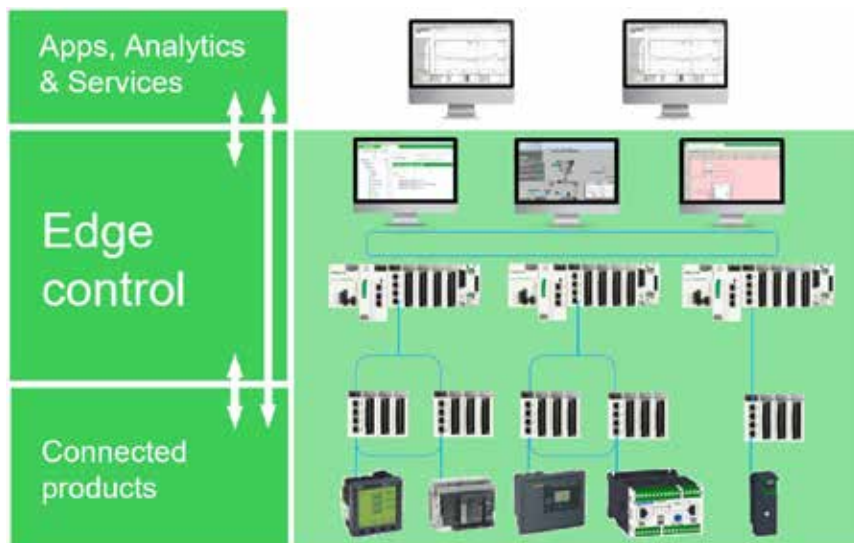
Market trends like agile operations and digitized products (for more product personalization) have increased the demands on automation systems to deliver these complex production requirements. Flexibility is required in the automation system, and of its users, to ensure that continuous operation of the manufactured products are delivered at the expected quality, while optimizing operations, energy efficiency and expenditure. With these evolving process complexities, plant managers are expecting an automation system that is productive in design with a superior operation environment to monitor the process. EcoStruxure Process Expert answers these market challenges.



## Design, engineer and maintain your plant with a single system

EcoStruxure Process Expert is a single automation system to engineer, operate, and maintain your entire plant. The system enables users to achieve operational profitability from design engineering to meeting the demands of modern day production.

The industry-leading EcoStruxure architecture is based on a three-tiered technology stack, bringing energy, automation, and software together.



*EcoStruxure Process Expert is positioned at the Edge Control layer of the EcoStruxure Plant Architecture*

# Maximize your operational profitability

EcoStruxure Process Expert can increase the business results by efficiency improvements in four areas.

## Reduce project execution time

Reduce engineering of the project by 25%, to get your production started earlier.

| Possible Business Results           |  |
|-------------------------------------|--|
| Efficiency improvement              | EcoStruxure Process Expert contribution  |
| Reduce time-to-market by 25%        | A productive engineering approach to deliver faster  |
| Reduce unplanned downtime to 2%     | Embedded services to move from reactive to proactive maintenance, leading to less maintenance costs                                    |
| Increase the operational visibility | Business intelligence for faster decisions thanks to a comprehensive integration of the process data with apps, analytics and services |
| Reduce energy use by 30%            | Embedded services to compute the energy consumption and master the energy within the plant   |

## Improve profitable reliability

Moving from reactive to prescriptive maintenance can reduce unplanned downtime to almost zero. Downtime costs the average plant 5% of production, so let's conservatively assume increased maintenance maturity can reduce this to 2% unplanned downtime. In addition, maintenance staff could waste less time performing needless maintenance tasks, which could save in maintenance costs

## Improve process visibility

Accessing data and turning it into actionable business intelligence delivers enhanced process visibility, which can result in 0.5 to 3% of revenue improvement a year and 3 to 10% of potential margin impact.

## Improve energy utilization

Mastering and improving your industrial facilities process energy use can yield savings of up to 30% in annual costs.

# Interconnect and manage automation architecture

EcoStruxure architecture and interoperable technology platform bring together energy, automation, and software. It delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity. It opens the digital world to users across key end markets, enabling them to be competitive in today's Digital economy.

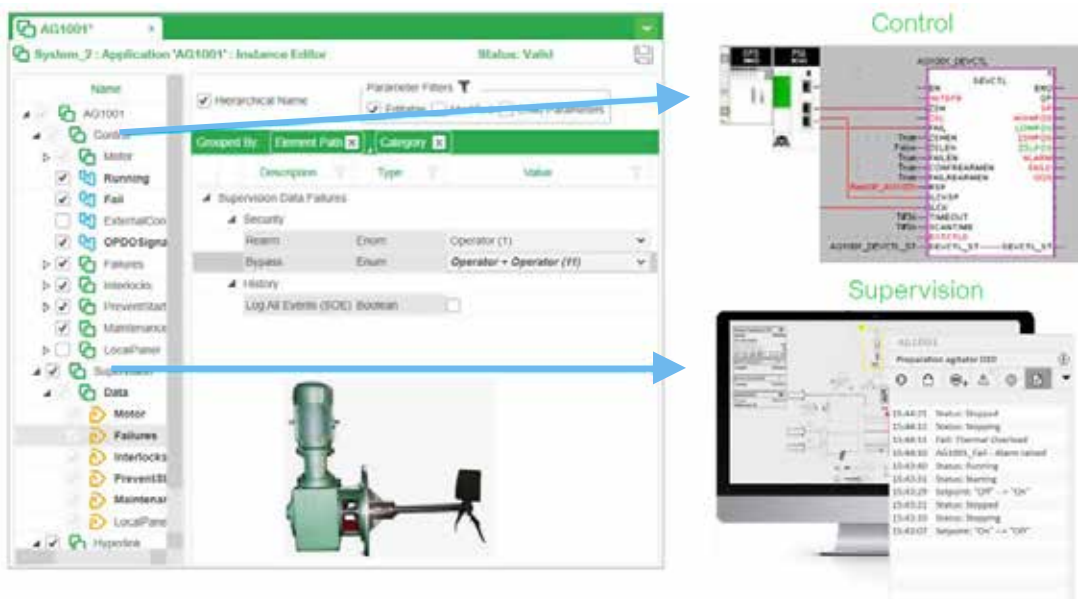
## Improving efficiency, accelerating startup and reducing risk

### A productive engineering approach

EcoStruxure Process Expert is an innovative multi-engineering environment to improve the efficiency throughout the engineering phase of a plant and commissioning, accelerating start-up and minimizing project risk. The engineering environment is scalable with a collaborative architecture that allows multiple engineers to configure a process automation system, from hardware configuration, communication, controls and mimics for the supervision.

### Configure-once philosophy

As an asset centric system, it enables a single-entry point for all configuration for faster system design, reduced errors, system consistency and quality. Asset information data is introduced only once and the design of system follows the Control Instrumentation Diagram, making controls design, installation, and commissioning easier.





## Central Repository

EcoStruxure Process Expert centralizes all system configuration in a global and single database. This single database enables active services to share information across all automation system components as well as share real-time engineering data with all the users. This centralized repository for the whole system makes engineering and maintenance easier.

## Concurrent Engineering

Multiple design teams can work in parallel during the engineering phase, which reduces design time and cost dramatically. EcoStruxure Process Expert enables concurrent engineering in the same system with consistency management. The transparent check-in/check-out mechanism optimizes engineering design, and shares, in real time, all the work performed across the different engineering workstations.



## Comprehensive change tracking

EcoStruxure Process Expert provides out-of-the-box engineering traceability and revision control by recording any system configuration changes. This feature helps to support the verification of changes to comply with the requirements of regulated industries.

|   | Start Time          | Elapsed Time | Message  | Action                     | User Name             |
|---|---------------------|--------------|--|----------------------------|-----------------------|
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|   | 02/09/2019 18:05:19 | 00:00:01     | StationNode is closed                          | Open Refine Online Editor  | System                |
| ▶ | 02/09/2019 17:54:56 | 00:00:44     | Open Refine Online Editor (Completed)          | Open Refine Online Editor  | Schneider (schneider) |
| ▶ | 02/09/2019 17:54:38 | 00:00:01     | Close Control Project Editor (Completed)       | Close                      | Schneider (schneider) |
| ▶ | 02/09/2019 17:53:30 | 00:00:39     | Open FBD Section Editor (Completed)            | Refine                     | Schneider (schneider) |
| ▶ | 02/09/2019 17:35:33 | 00:00:43     | Deploy Built Project (Completed)               | Deploy Built Project       | Schneider (schneider) |
| ⚠ | 02/09/2019 17:20:59 |              | Please verify if your extensions are installed |                            | Schneider (schneider) |
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## An Object Base Automation System

### Standardization driven Automation System

An end-to-end automation object model to drive standardization across plants and enterprise. With ready-to-use process application libraries, standards can be established resulting in reduced engineering, plant operator training and maintenance tasks. An open object model approach to reduce project and operation cost, driving consistency and quality. Additionally, the openness of the automation platform, enables encapsulation of customer standards in application assets, which are created once as templates, and re-used consistently across the plant and multiple enterprise sites.



The model represents the physical equipment, containing all the different points of view of the equipment: control logic, graphical representation, data acquisition, alarms, trends, system security, access control, external interfaces, etc.

### Save you time and cost

- Centralized hardware and software configuration is uniform throughout the platform
- A single, global database and configure-once philosophy
- Pre-configured, tested and validated application template to simplify asset configuration
- Reuse of existing application templates to simplify the duplication of equipment

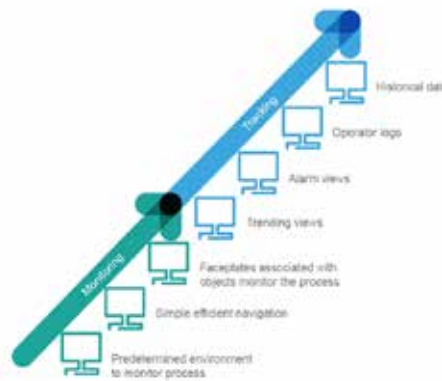
# Running the plant at the peak performance

Over the past few decades, industrial trends have created a universal set of challenges for process control. Today's operators work in more centralized operating rooms, are responsible for more areas of the plant, and have more graphics, alarms, and data available to them than ever before. The consequence is the additional effort to filter the information to process into decision.

It is admitted that abnormal situation of an automation system is resulting by 40% from human errors.

## A predefined environment based on Situational awareness concepts

Situational awareness design of the operational environment delivers the ability to identify, process and analyse the critical elements of information about what is happening with regards to the automation system. The ability to provide operators with clear process information is crucial to driving production efficiency. EcoStruxure Process Expert provides a consistent control and operational interface with a real-time view of your process. The system delivers operators all the services and data they need to make timely and accurate decisions.



## Easily monitor the process

The layout of the operation workspace with menus, contextual sub-menus and banners enable the operator to access the data easily.

The color code information related to the criticality of alarms and the filtering based on equipment speed up the operator analysis and the decision.

The faceplate is how operators interact with assets. Each faceplate is embedded with:

- A user interface for an operator to monitor the assets
- Visibility into which missing interlocks are causing problems
- Status and information about the assets
- Parameters associated with the assets (e.g. PID)



# Empower your workforce to make business decisions

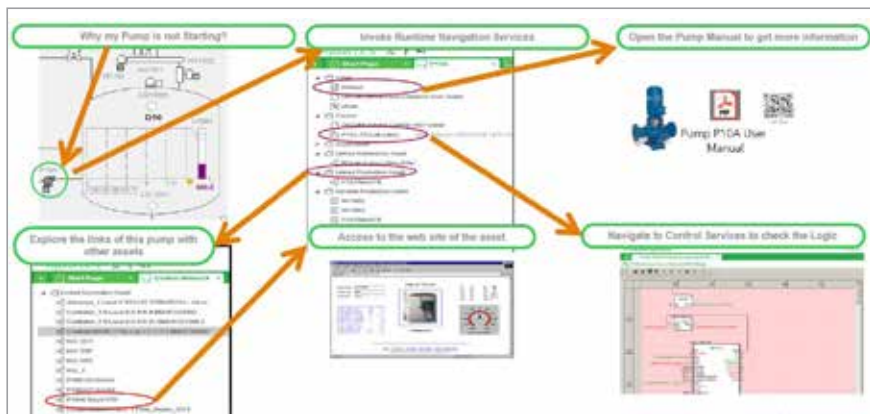
Allow plant staff to continuously improve operations ensuring the right people have the right information in the right form at the right time.

Put real time plant operating information in the hands of those who need it the most.

## Digitize plant operations, Get the information at your fingertips

With EcoStruxure Process Expert, the right person gets the right information at the right time. Problems can be diagnosed and solved faster. You can access any data in real time for any asset or equipment in your system. This includes the control device running in the controllers, all documentation, event historian, asset management, and internet links.

The advanced diagnostic with Runtime Navigation Services is a native service provided by EcoStruxure Process Expert Objects during runtime. These powerful diagnostic services allow the user to access different points of view for each asset, including monitoring control logic, documentation, topological localization, alarms and trends. This innovative service reduces commissioning time, as well as downtime, by quickly identifying the root cause of any issues





## Enhance Alarm Management

An efficient alarm management allows operators to distinguish critical alarms from routine alarms, and take timely corrective action, thereby reducing plant downtime.

The layout of the operation workspace delivers the alarm information at a glance and the EcoStruxure Process Expert alarm system provides you detailed information about the status of your plant.

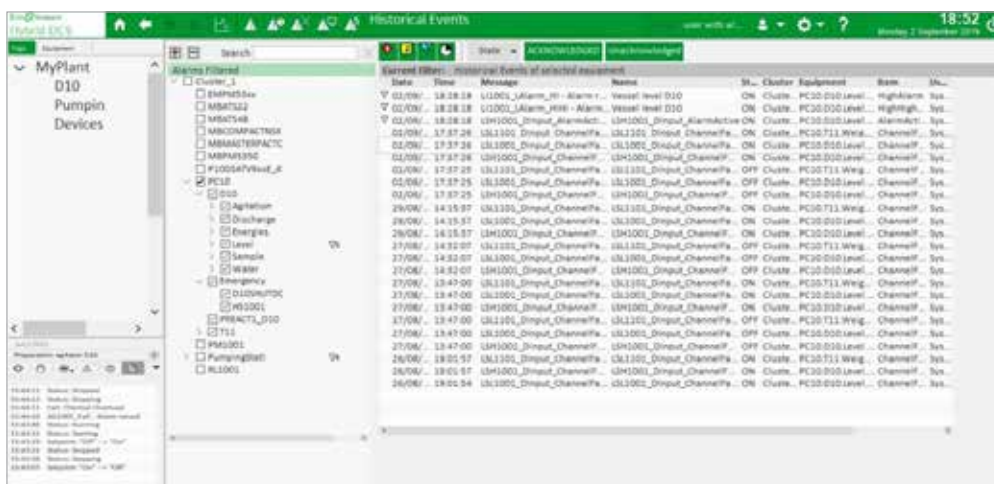
Alarms can be filtered according to the equipment hierarchy and severity, with alarm-based navigation, enabling the operator to easily zoom into an area of the plant.



## Track activity within the system

The operator log enables a plant manager to track all the commands performed by an operator. Information logged:

- Change of process values
- Bypass of interlock conditions
- User activities, like:
  - Manual reset following a failure
  - Consignment of a device; device simulation
  - Change of command mode, Operator-to-Program mode, or reverse



# EcoStruxure Process Expert Process libraries

EcoStruxure Process Expert brings out of the box reusable process libraries specifically designed to reduce engineering costs, risk and time to operation. These libraries embed the know-how of years of experience delivering solution on hybrid Industries, and have been tested, validated and documented.

The process library is designed to provide the components that are required to engineer the core of the automation process. In addition, these libraries enable the integration of Schneider Electric and third-party devices via different open protocols. Automation infrastructure objects extend the functionality beyond the classical automation layer to integrate smart connected products and software applications within Edge Control. This brings the IIoT from concept to reality within the distributed control system.

|   |  |
|---|--|
| Schneider Electric motor and drive management | <ul style="list-style-type: none"> <li>• Motor Starters (TesySU &amp; TesysT ranges)</li> <li>• Progressive Starters (Altistart)</li> <li>• Variable Speed Drives (Altivar ranges)</li> </ul>  |
| Schneider Electric power management           | <ul style="list-style-type: none"> <li>• Circuit Breakers (Masterpact &amp; Compact ranges)</li> <li>• Protection Relays (Sepam ranges)</li> <li>• Power Meters (PM ranges)</li> <li>• Smart UPS, Harmonic Filter</li> </ul>   |
| Connecting through industrial networks        | <ul style="list-style-type: none"> <li>• Ethernet I/P &amp; Modbus TCP</li> <li>• Modbus Serial, Profibus, HART</li> </ul>   |
| Analog Devices                                | <ul style="list-style-type: none"> <li>• Analog Input (direct, processed or multiple)</li> <li>• Analog Output (actuators, control valves, motorized valves, pulse width)</li> <li>• Analog Control (PID, ramp, split range, ratio, ramp, lead-lag, 3-step)</li> </ul> |
| Digital Devices                               | <ul style="list-style-type: none"> <li>• Digital Inputs (limits or other discrete sensors)</li> <li>• Motors (direct, dual direction, dual speed, variable speed)</li> <li>• Valves (analog position and/or limit switches)</li> </ul>                                 |
| Process Templates                             | <ul style="list-style-type: none"> <li>• Flow Control</li> <li>• Pump Set Management</li> </ul>  |
| Sequence Templates                            | <ul style="list-style-type: none"> <li>• Sequence Management (ISA88 - sequencing)</li> <li>• Process Management (ISA — equipment module)</li> <li>• Batch Integration (InBatch phase management)</li> </ul>  |

## Hybrid Industry-specific libraries

Additionally, to the general-purpose process library, EcoStruxure Process Expert complements its expertise in hybrid industries with a set of ready to use libraries to specific industries such as water and waste water treatment, cement, mining and Food & Beverage.



# Ready-to-use libraries for energy management and process control

EcoStruxure Process Expert has dedicated libraries for power and energy management and advanced process control. They can be combined with the general purpose and industry-specific libraries to build applications with a consistent look and feel.

The Energy Management Library offers monitoring and measurement of electrical and non – electrical process objects. The aggregation of energy (water, air, gas, electricity and steam) at each level delivers information to users about the energy consumption data.

Low Voltage Power Control (LVPC) Library provides the ability to monitor the energy situation in low voltage power circuits in a plant and retain the available energy for the most critical loads by shedding the least critical ones.

Advanced Process Control Library targets monitoring and controlling complex processes, like a furnace, in the plant.



## Typical applications

### Mining Minerals Metals



- Cement
- Mining
- Glass
- Burners, Boilers, Furnaces and Compressors

### Power Generation



- Hydro Power
- Biomass
- Concentrated Solar

### Water & Waste Water Treatment Plant



- Desalination Plant
- Water Treatment Plant
- Waste Water Treatment

### Oil & Gas



- Small OnShore
- Production Plant
- Tank Farms
- Compression Station

### Food & Beverage



- Liquid Food
- Grain
- Oil
- Agro Business (Silos, Sugar)

### Chemicals



- Distillation
- Tank Reactor

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