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Compatibility, Migration

1. I am an existing End- User customer. Can I upgrade an existing control system to EcoStruxure Process Expert?

An upgrade from an existing "standalone" control system to EcoStruxure Process Expert requires a certain degree of re-engineering of the control system in EcoStruxure Process Expert. There is no tool to provide this upgrade automatically. But Schneider Electric provides services offer to perform that upgrade.

Note that when performing such an upgrade, the objective would be to do more than a 1 for 1 code migration, and to upgrade the simple "flat" code to the object-oriented structure from EcoStruxure Process Expert, which will enable you to benefit of additional functionalities such as navigation services."

2. I am an existing end user or system integrator and I have built my control standards using UAG. For my next project, I would like to maintain these standards. Is it possible for me to convert them to use with EcoStruxure Process Expert?

Yes, this is possible although there is no "push of the button" automated tool available. The standards must be converted into EcoStruxure Process Expert objects. Schneider Electric can provide a Service to allow a painless conversion from UAG standards to EcoStruxure Process Expert standards. This needs to be analysed case by case. Anyway, the evolution cost from UAG to EcoStruxure Process Expert will be lower than to any competitor offer.

Features - Deployment and Execution

3. How will the user diagnose an issue on a running system and resolve it with EcoStruxure Process Expert?

Through the status of the objects that are displayed on pages of the operator station, the operator gets a first level of diagnostic. He can be helped through the object faceplates, which can provide additional information about failure conditions and interlocks that are not fulfilled to run the process correctly. The Situational Awareness library provides contextual information that helps the operator to focus on the essential information on the screen, like alarms with the criticality, abnormal situation.

Then advanced diagnostic feature can provide additional help to diagnose the process. This service to diagnose the control system is called "Navigation Services". EcoStruxure Process Expert can provide navigation services in Operation, enabling access to any information related to a graphical element selected on a SCADA page that represents an object instance. With this service, the user accesses the program that controls these objects (control facet), to "navigate" from one object instance to another that is linked to the selected one, access to documents. All the alarms are organized in a tree reflecting the application description, helping the user to identify which area of the control system is arising; the failure or warning.

4. Do I have to stop my Operating System while upgrading it?

Yes, it is necessary to stop the system to upgrade EcoStruxure Process Expert to a newer version. EcoStruxure Process Expert provides the tools to migrate the application to newer versions with a minimum of effort.

5. Can I prepare the modifications (Version N+1) of a running control system while it is running the Version N to deploy later?

Yes, it is possible. EcoStruxure Process Expert allows you to plan modifications and deploy them later, it is also possible to perform on-line modifications. The user can prepare the modifications in their office, creating the version N+1 of the application. Then they go on site and connect the engineering station to the controller (to the version N). "Deploy changes" command allows the user to connect in on-line mode and perform the updates in the controllers. The user can decide to deploy all the changes or only a subset of them (the user has the list of changes and they can decide what must be downloaded). Another way is to prepare the modifications on site with the engineering station while EcoStruxure Process Expert is running and deploy the changes at the appropriate point in time.

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6. What are the possibilities for online changes to the hardware configuration?

On-line modifications of the hardware are possible when the controller accepts them and is supported by Control Expert. EcoStruxure Process Expert can accept on-line changes to the hardware configuration of a controller, but this is not fully mastered by the system platform. Manual interaction is required to reproduce in the topology of EcoStruxure Process Expert exactly with all the modifications that were done during a refinement with Control Expert. The operating mode will be enhanced to completely handle the changes from EcoStruxure Process Expert, in a later version.

7. What are the tools proposed by EcoStruxure Process Expert to perform on line debugging?

EcoStruxure Process Expert relies on the services embedded in the software participants without restriction. For example, debug services of Control Expert can be used from EcoStruxure Process Expert environment. In addition, embedded simulation capabilities in the object libraries, combined with object faceplates in supervision pages, enable you to emulate part of the process without real hardware. In addition, EcoStruxure Process Expert adds new services as navigation services in the application from the SCADA and filtering of the alarm according to the application tree, which eases the debug during commissioning.

8. Is it possible to jump from an alarm to the graphical page where is located the object origin of this alarm?

This feature is available with the new generation of General-Purpose Library.

9. Is it possible to upload the EcoStruxure Process Expert control project from the controller (it's running so it's the right version) and apply the required modifications?

Uploading is not the recommended strategy and so it is not available by the software environment. The high-level application / topology / object structure and references that EcoStruxure Process Expert builds would be lost.

EcoStruxure Process Expert maintains the reference, which is the last version that has been downloaded to the controller. EcoStruxure Process Expert will only download changes that have been made compared to this reference.

Features – Libraries

10. Which libraries are delivered with EcoStruxure Process Expert?

EcoStruxure Process Expert provides built-in process, communication and devices libraries. These ready-to-use libraries reduce the design time of the application. It is called GPL (General Purpose Library) and delivered with the system platform. Since version 2019, a new generation of the GPL is available with the objective to replace the legacy library in future. This new GPL embeds new capability to meet ISA 101 principles (Situational Awareness) for the operation environment, bringing more services in configuration and an higher flexibility for customization.

Moreover, the added value of optional segment / vertical libraries with EcoStruxure Process Expert provides application-specific benefits (Water, MMM F&B ...). Energy management is also provided through optional libraries to be used with EcoStruxure Process Expert.

Features – Project

11. Does EcoStruxure Process Expert allow alarms to be sorted and filtered according to the process tree?

The supervision view inherits the process description (application tree) that describes the process in a hierarchical manner with object instances. The result is an automatic filtering of the alarms according to this process description, to ease the diagnostic.

12. Does EcoStruxure Process Expert generate automatic navigation in the supervision project based on the application description?

From the engineering phase, EcoStruxure Process Expert automatically builds the navigation between “facets” (point of view of the object) of an object instance and the navigation between object instances. Then during

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operation, the operator automatically gets all these relations sorted by type through a mini browser and can navigate across them. Selecting a relation in the mini browser allows the user to "navigate" to this item, which is related to the graphical object selected on the supervision page.

Features – System

13. Does EcoStruxure Process Expert support an audit trail?

Audit trail covers two areas: log activities during Engineering to track the changes in the application and log activities during operation, tracking user operations (e.g., change of data). The 2020 version delivers a service to log all the user activities during engineering including the actions that are done inside the EcoStruxure Process Expert, enabling the logging of user activities with time stamping on the screen. This information is encrypted to be stored in a Syslog software for traceability management. Runtime audit trail during operation is already possible thanks to the Supervision software capabilities.

14. How do I backup my EcoStruxure Process Expert project?

Two possibilities are offered to back up user's data:

1. EcoStruxure Process Expert offers the possibility to backup and restore the database. In that case one or more control systems are saved
2. EcoStruxure Process Expert offers the possibility to backup and restore a control system. In that case, only one system is saved at a time.

Features – Topology

15. Is the integration of Electrical Devices possible with EcoStruxure Process Expert?

EcoStruxure Process Expert supports devices connected through Modbus serial, Profibus DP and Ethernet to the controller. The libraries that are embedded provide ready-to-configure objects either for automation and electrical (Power) devices, like SEPAM and Power meters, circuit breakers. Most common devices are modelled by a template. Other devices can be managed by a generic template that is able to define the configuration to fit with the data that is managed by the device.

16. Which kind of high availability can be deployed with EcoStruxure Process Expert?

The supervision can be redundant (operation servers and clients) to provide the high availability of the operations in the control rooms. Redundant networks and redundant controllers (Quantum or M580) provide the high availability of the control itself. High availability of the system server through the redundancy is not available in this release.

17. Can I use supervision Web clients with EcoStruxure Process Expert?

Web clients for supervision can be used in a EcoStruxure Process Expert configuration. But navigation services are not available on Web clients.

18. What about the support of IEC 61850 network widely used for Electrical distribution system?

EcoStruxure Process Expert embeds the configuration of a module for M580 dealing with IEC 61850 network. Intelligent Electric Devices (IED) can be configured. Nevertheless, object templates related to the devices are not available in the libraries of objects.

19. Does EcoStruxure Process Expert manage instrumentation?

Nothing specific about the management of instrumentation is delivered in EcoStruxure Process Expert. Dedicated templates or existing generic templates can be designed to interfere with the instrumentation within the application.

20. Can I access documentation about a device located on a server through the selection of that device in the system?

Thanks to the object model, EcoStruxure Process Expert can provide navigation services in Operation, enabling access to any information related to a graphical element selected on a SCADA page that represents an object instance. This possibility is given through a dedicated facet called "hyperlinks". This service, which is available

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natively in the object templates delivered in the library, can also be used in user-designed templates. From the instance editor, the user can configure access to documents or an url to open contextually these hyperlinks from an object. Documents are stored in the “contents repository”, enabling to keep consistent the information related to the application, including associated documents.

Offer, positioning, catalogue

21. What is the name of Schneider Electric DCS offer for Hybrid Industries and what is it exactly?

The Schneider Electric Process Automation System for Hybrid Industries is called EcoStruxure Process Expert. It includes all the software for engineering, operation and maintenance and the automation architectures based on Modicon controllers.

22. What is the positioning of EcoStruxure Process Expert compared to a traditional DCS? What are the main differences?

EcoStruxure Process Expert as a DCS provides integrated services to engineer, operate, diagnose and maintain a control system application. The engineering has object-oriented configuration thanks to libraries of object templates. A DCS is "integrated" with little flexibility to extend with add-ons coming from third-parties except when they have already been planned (for example, partnerships).

EcoStruxure Process Expert is based on the collaboration of different software (called "participants") and a single database for the control system application, with the capability to accept new participants and third-party components. As such, EcoStruxure Process Expert is much more open and flexible than a DCS offer "pure player." EcoStruxure Process Expert is a Platform Automation System which goes beyond the pure values of a DCS.

23. What is the positioning of Schneider Electric and former-Invensys' different DCS offerings?

With EcoStruxure Foxboro DCS (formerly known as Foxboro Evo) and EcoStruxure Process Expert, Schneider Electric covers the breadth and depth of the automation market, with capabilities to deliver the functions and benefits of hybrid and continuous processes.

The EcoStruxure Foxboro DCS process automation system meets the needs of complex and highly automation intensive industries that require large amounts of advanced process control, integration with critical or custom applications that may or may not be in real time, and highly integrated batches. EcoStruxure Process Expert provides an option to meet customer needs that are more focused on flexibility and openness, and where a mix of process, sequential, manufacturing and assembly functions are required.

EcoStruxure Foxboro DCS and EcoStruxure Process Expert very clearly address different customer needs and are positioned as such. The combination of these offers allows Schneider Electric to provide a scalable and comprehensive portfolio that delivers solutions tailored to very specific requirements.

24. Does EcoStruxure Process Expert replace the existing Controllers and Scada offers from Schneider Electric?

No. EcoStruxure Process Expert is fully complementary to Schneider Electric's existing offers for process automation. Customers will choose, based on their application, their personal preferences and the required functionalities and services whether they prefer to work in a “standalone architecture mode”, meaning programming the application using standalone Software tools for Control (Control Expert), Scada (Citect Scada) and others or to use EcoStruxure Process Expert which provides a single environment, but that also requires a specific configuration approach.

This is in fact a differentiator on the market: our integrated Distributed Control System approach is part of our “standalone architecture” approach and shares the same hardware platforms and Ethernet architectures. This provides maximum flexibility of choice and freedom for customers to choose either option."

25. What is the difference between EcoStruxure and EcoStruxure Process Expert?

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

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of modern-day production. Positioned at the Edge Control layer of EcoStruxure Plant, it is the next-generation process automation system for a digitized and energy-aware plant. The industry-leading EcoStruxure architecture is based on a three-tiered technology stack, bringing energy, automation, and software together. The stack comprises connected products, edge control, apps, analytics, and services.

Because EcoStruxure Process Expert is a part of the EcoStruxure portfolio, it shares the same hardware platforms and Ethernet architectures as our stand-alone product offers to provide the flexibility and transparency of information that operators and engineers need to do their jobs effectively. Not only that, but the common hardware platform also reduces the barrier to entry for our customers and enables them to lower their support costs through reduced spare parts management.

26. Is there a EcoStruxure Process Expert subscription service?

Yes, Subscription service is part of a comprehensive portfolio of services available for EcoStruxure Process Expert. It includes telephone support, live chat, case management, access to a knowledge database through a Web site, and software updates. The entry level service (technical support) needs to be included in any project the first year.

27. Can I state that EcoStruxure Process Expert is compliant with ISA S88?

Yes, It complies with ISA S88 because the application engineers are able to fulfil these rules with EcoStruxure Process Expert. The application manager in EcoStruxure Process Expert makes it possible to organize the process control application in a hierarchical tree, with naming conventions for object instances and variables that belong to a given folder of the tree. But EcoStruxure Process Expert doesn't restrict the compliance to S88, making it possible to also comply with other models.

28. What is the EcoStruxure Process Expert licensing model?

The licensing model is based on two parameters:

1. The topological architecture deployed at the customer site for servers and clients. Each of them requires a license. None license is attached to the controllers
2. The size of the project deployed onsite (runtime). The parameter is based on the number of object instances (assets running in the plant). This parameter is independent from the topology.

29. What does EcoStruxure Process Expert provide in terms of cybersecurity?

Cybersecurity must be considered at system level, following a deep analysis of the architecture and define a strategy of implementation to reduce the vulnerability of the system. EcoStruxure Process Expert is based on our automation offer, well designed to ensure protection against cyber-attacks. As well as the other offers, EcoStruxure Process Expert is tested against penetration tests to ensure the robustness against intrusion. Access to the software environment is ensured by user login and any connection to the network architecture is checked against certificates. To help system designers to design their architecture and adapt the right strategies, documents called "TVDA" provides reference architectures and technical recommendations. This document is called "How to reduce vulnerability to Cyber Attacks in the control room".

30. Is it possible to quantify potential benefits and the types of applications where EcoStruxure Process Expert will deliver benefits?

EcoStruxure Process Expert provides benefits during engineering, operation and maintenance:

- Reduces the design time thanks to a powerful object model and libraries. Data for control and supervision are created consistently and change propagations are managed by the system platform. The design though bulk edition, using the import/export capabilities, contributes to a high productivity in engineering. The embedded services bring a better quality design.
- Reduces the downtime thanks to the navigation in operation. The operator / maintenance staff get all the information related to an object (ex: from a mimic on a SCADA page), speeding up the diagnostics. The outcome is better availability of the production means and operational efficiency.
- Simplifies maintenance (management of automation systems) thanks to a single repository of all data concerning the control system application.

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Moreover, the added value of segment / vertical libraries with EcoStruxure Process Expert provides application-specific benefits (Water, Mining, Cement, ...). Energy management is also provided by specific libraries to be used with EcoStruxure Process Expert.

Openness

31. Are any of the Industry partners (CAPP) software offers integrated in EcoStruxure Process Expert?

EcoStruxure Process Expert manages a XML format as a capability to exchange static data with other application software. OPC UA that is a standard, is our solution to exchange real time data with third-party applications in a secured manner and it is compliant with Industry 4.0.

32. Does EcoStruxure Process Expert include a Historian tool / historian function?

Historian is not included inside EcoStruxure Process Expert, but it can get easily the information for reporting. Within the property editor of an object instance like a motor, the engineer can tag information in EcoStruxure Process Expert to get the historization of these data in Historian. Historian exchange with supervision servers which collect the data from the controllers.

33. Does EcoStruxure Process Expert include a change management function? Is it using or is it compliant with MDT Software?

A basic level of Change Management is embedded inside EcoStruxure Process Expert through the notification panel. Change management is considered as a key service for users but is not integrated as a core function of the offer. It is possible to administer the changes both for supervision and control projects thanks to a third party software named "MDT Software". This software is able to manage changes of projects individually.

34. Is it possible to include third-party controllers in a EcoStruxure Process Expert application?

Yes, it is possible to have third-party controllers in a EcoStruxure Process Expert architecture. In that case, manual work must be done to manage the communication with the operator interface. However, obviously a unique database is not possible for that data.

35. Is EcoStruxure Process Expert only a Process Control application or does it takes into account the needs of other domains?

EcoStruxure Process Expert is not only a Process Control platform. Its scope is also to provide the capability to welcome tools and services from other domains. For example, EcoStruxure Process Expert provides superior benefits in energy efficiency through the association of automation and power monitoring within the same environment. Power meters and other electric devices are managed within EcoStruxure Process Expert.

36. What about MES within EcoStruxure Process Expert?

The openness and the level of synergies / collaboration with other software offers enables to build a solution to exchange data with a MES application system.