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Compatibility, Migration

1. Will it be possible to migrate a project designed with a EcoStruxure Process Expert version to a more recent version?

Yes, EcoStruxure Process Expert includes all the software tools to migrate the database from one version to another. This migration is also provided for the embedded libraries. Depending on the enhancements from one release to another, the migration will be done in one step (automatically following the installation of the new release) or in two steps: one before uninstalling the former release and the second step after the new release installation. For migration from any version to V4.3, it was mandatory to do all the intermediate steps to reach the latest release (migration from V4.1 to V4.3 requires migrating from V4.1 to V4.2 first). Since V4.3, migration to any recent release doesn't require intermediate migration.

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.

Configuration specifications

3. For system integrators, is it possible to have several versions of EcoStruxure Process Expert installed on a single machine?

No, but an alternative should be to run EcoStruxure Process Expert on a virtual machine. A technical note describes how to configure the system.

4. Can I install and run EcoStruxure Process Expert on a Virtual Machine?

Yes, this is possible. This feature is provided to facilitate installation for people to promote and demonstrate the offer. A technical note explains how to proceed with configuring this with an acceptable performance to run the software. Two solutions of virtualization have been tested:

- VMware Workstation Player™ (Type-2 hypervisor); for small applications
- VMware ESXi™ Type-1 (bare metal) hypervisor; industrial solution for any type of application

5. Does EcoStruxure Process Expert allow the installation of several servers on a single machine?

Yes, this flexibility is provided to users. For example, the EcoStruxure Process Expert system server can be on the same machine as an operation server (SCADA server).

Features – Application

6. Are there any recommendations when using instance name inheritance?

Inheritance of the hierarchy in the instance name is based on folders and the instance itself. To limit the size of the name, it is possible to associate an alias to any folder, an alias that will be used for the instance naming. As many levels are allowed in the hierarchy of folders, the recommendation is to limit the instance name to 18 characters maximum.

7. How can I duplicate a function (an object instance)?

The most useful way to duplicate an object instance is to copy and paste an existing instance. It is possible to easily duplicate a sub tree of the application tree through Copy/Paste. In this case the object instances are automatically renamed. But another possibility is available when the duplication covers a wide scope of information. Export of a set of instances within their hierarchy can be done in Excel format to be modified (renaming, modify parameter values,...) and import the modified file in the application

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8. Is it possible to instantiate a control service template instead of a control module template?

A object template is a composition of several elementary templates that are combined each other. By default, EcoStruxure Process Expert lists all the object templates at a level of composition corresponding to control modules, to reduce the list of templates. But it is possible to list all of them, up to the facet level. Any level of composition can be instantiated in an application.

9. What is the scope covered by the export/import service of an application?

The current release of EcoStruxure Process Expert allows you to wholly or partially export and import any kind of information from a control system: Application tree and instances, Topology, including networks, Projects (control and supervision). It is also possible to export and import templates.

10. What is the purpose of the link editor: is it a high-level editor to design process strategies, or is it to connect functions (process objects) to each other and to devices, or is there also another purpose?

The link editor enables the service to link object instances graphically. And so it is a high level editor to design process strategies. The purpose is not the substitute the FBD editor. The result from the project generation is that objects instances are connected automatically in the FBD program section. An alternative is to create these links between instances during the refinement of the control logic with the FBD editor.

11. What is the difference between "update" and "replace" an object template?

Update means to use the last version of the template. Replace allows the user to use any version of the template.

12. Is there an editor in EcoStruxure Process Expert to define interlocks or to create additional logic?

No, there is no dedicated editor. Adding interlocks or building additional logic is done during the "refinement" phase with the Control Editor, providing full flexibility to manage the required logic.

13. Does EcoStruxure Process Expert allow propagation of changes selectively to the instances?

Several levels of change propagations are possible with EcoStruxure Process Expert:

1. Object template change with versioning management, allows you to manage several versions of the template within a control system
2. Propagation of an object template change to all or a selection of instances

Propagation in the projects, allowing you to deploy step by step changes in a control system.

Features - Deployment and Execution

14. Does EcoStruxure Process Expert provide a partial deployment?

Yes, the deployment can be done at many levels:

1. Create object instances in the application, but they are not assigned to a project. In that case, a partial application is executed, and some objects are ready to be used later in the application
2. Objects instances are assigned to a project, but they are not mapped to any hardware. In that case, it allows you to perform simulation without or with a subset of the hardware
3. Deployment of the application in some controllers only, to test a subset of the application.

All these three uses can be combined.

15. 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.

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16. 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.

17. 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.

18. 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.

19. 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.

20. 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

21. 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.

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22. Does Schneider Electric allow customers to modify the existing object templates that come out-of-the-box with EcoStruxure Process Expert?

Customers can create a copy of any existing object templates and use that template accordingly. EcoStruxure Process Expert enables the ability to copy and paste a template at any level. Nevertheless, management of device communication requires specific management and modifications are not allowed. The user templates from the out-of-the-box library can be easily identified with “\$” as leading character for the template name. This character is forbidden for user

23. How is the complex knowledge of a component packaged into a reusable object? For example, is it possible to model a tank in a dairy application?

The concept of the “Application Template” allows the promotion of a sub tree of the application (e.g. a tank or a complete machine) as a template. This feature is not yet available, but it is planned in a next release. The existing release of EcoStruxure Process Expert allows you to duplicate a sub-tree of an existing application and all the instances are duplicated with a new name, while keeping the properties of the copied object instances.

24. How does EcoStruxure Process Expert manage the update of a library once a user has made modifications to a template to create his own custom one?

EcoStruxure Process Expert can create multiple versions of a single template. By using the “Update Template” feature, the user can select the required version and update it where and whenever required. EcoStruxure Process Expert also provides services to import and export user objects.

25. How can I handle Library openness & DFB locked?

Up to now, the code of each template is locked for protection purposes (both for IP protection and more importantly to ensure that these objects, which have been validated by Schneider Electric, maintain the desired behaviour and performance). But it may be necessary to make some modifications to templates to adapt to application context specifics for various reasons. So now, it is possible to copy an original object template and then from the copy, customize it.

26. How can I lock my own development to protect my knowledge? (For Process OEMs)

A designer of parts of a software program can lock them when they design them in DFBs (Derived Function Blocks). This is a feature provided by Control Expert, which is also valid for EcoStruxure Process Expert. Consequently, it is possible to protect a piece of programming embedded in a DFB in Read only or not readable at all. This feature is used in our libraries to protect the control part corresponding to the management of device communication of the GPL libraries against modifications.

Features – Project

27. Can you assign in one action all the functions (object instances) created in an application folder both to a control project and a supervision project?

It is not possible to assign object instance in one action to both the control project and the supervision project. It is possible to assign all object instances at once to the control project using the assignment editor. Since the version 2019, the engineer can define his own rules of assignments, enabling to define the naming rules of the containers (program section) while defining the strategy to group the instances in containers. Similarly, it is possible to assign all the object instances at once to the supervision project using the assignment editor. When changes are done in an instance (for example, add a service like failure conditions), it is possible to automatically assign this additional service to the same project and program section as the other facet of this instance (flexibility is given through a setting)

28. Is it possible to design control projects with SFC and/or LD languages?

No. Currently all instances are generated in FBD language only. Indirect support for SFC and LD is available, because it is possible to create and modify SFC and LD sections during the refinement of a control project. These sections are not managed as entities belonging to the EcoStruxure Process Expert system platform but

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in the final generated/build project these sections can be seen and refined. During modifications of the EcoStruxure Process Expert application, SFC and LD sections are preserved "as is" in the project.

29. How do you hide the intermediate objects in the object browser and show only the control modules?

The strategy is to display the list of object templates that correspond to control modules. But any level of composition can be displayed to be used as template in projects. Check boxes "Composites" and "Facets" are available, in the object browser, you can select these to see either composites or facets or both.

30. Is it possible to include a standalone control project (already designed with the standalone version of Control Expert) inside a control system application designed with EcoStruxure Process Expert?

Yes, an existing project can be imported inside an existing EcoStruxure Process Expert project. Furthermore, it is possible to extend this project with object instances in dedicated program sections. But the imported project doesn't benefit from the services brought by EcoStruxure Process Expert.

31. Does EcoStruxure Process Expert provide native diagnostics pages from the supervision?

When designing an application, the user creates object instances with a graphical "facet" representing this object (e.g.: a pump, a valve,...). These instances are available to the graphic designer to design the pages, drawing the layout and taking objects from a browser to build the page. Communication with control and object configuration for diagnostics are implicitly done as well. On the other hand, EcoStruxure Process Expert doesn't automatically build diagnostic pages.

32. Is there a way to import a page with Genies created with a previous application?

Yes. The CTZ file of a previous application can be included in EcoStruxure Process Expert by using the option "Include projects" available under the Supervision project. However, these pages and genies will not be managed by EcoStruxure Process Expert (navigation services cannot be provided for these graphical objects).

33. Does EcoStruxure Process Expert generate an automatic alarm summary display for each page?

The supervisory system provides various capabilities to display alarms with filtering capabilities: according to the severity, acknowledged or not, shelved or not, according to the equipment tree or a subset...

Features – System

34. 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.

35. Is it possible to manage several control systems simultaneously with EcoStruxure Process Expert?

EcoStruxure Process Expert can manage several control systems in its environment. Thanks to the multi-user capabilities, the current release allows the editing of several control systems at the same time and working concurrently on them.

36. How can two EcoStruxure Process Expert systems be merged into a single plant system?

This is possible with the export/import functionality. A repository as the final system must be defined and then it will be possible to include information from several sources. Several users can work in parallel in a part of the application (for example: design and implementation of a functional sub part of the application) and then merge their job in a single project. Partial import can be done for the topology also.

37. How can I navigate from one view of the control system to another view during the engineering (e.g. from the application view to the project view)?

Several possibilities are offered to the user:

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1. From the user interface itself: possibility to open several editors in parallel with EcoStruxure Process Expert.
2. From contextual menus, as shortcut: from a selected element (e.g. an object instance to view all the assignments or in the reverse from an assignment, where the object instance is located in the application).

38. How can the design of a control system application be shared with several designers at the same time?

Two possibilities are offered to users to design a control system:

1. Several users can work concurrently on the same control system from several client machines connected to the EcoStruxure Process Expert System server that is embedded in the application.
2. Distribute the design to several users. Pieces of the control system application that are designed with EcoStruxure Process Expert can be merged to create one single system or project (import/export features).

39. Is there a “Differentiator” tool in EcoStruxure Process Expert to compare two control system applications?

There is no “Differentiator” tool as such. But when the user proceeds to changes in a control project, there is a service that shows all the differences between the running application in the controller and changes that are ready to be deployed. So the user is able to check the modifications and decide what are the changes to be deployed.

40. 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.

41. How does EcoStruxure Process Expert inform the user about the status of the system (how many tags, devices, objects, PLCs memory consumption...)?

EcoStruxure Process Expert deals with object instances and not tags. An information menu gives the number of object instances used in all the projects that are stored within the EcoStruxure Process Expert environment. It allows you to check the number of instances created against the number of instances allowed in the environment, according to the license installed. Through the refinement of a control project or a supervision project, it is also possible to get the information about the memory consumption in a controller or the number of tags used in a supervision project.

Features – Topology

42. Does EcoStruxure Process Expert support safety controllers?

With Process Expert released in 2020, it is possible to manage safety controllers in the application (configure the safety controller in the topology editor and design the safety and non-safety tasks in that controller). The non-safety task benefits of all services of a regular controller, with object-oriented configuration. The safety task has its specific safety program configured by a specific software, which is embedded and launched in the single environment. The safety controllers are supervised by the common operator interface of the application.

43. How does EcoStruxure Process Expert ensure Ethernet I/O architectures work properly with the right level of performance?

There is none service to estimate the performance of scanning I/O over Ethernet embedded in EcoStruxure Process Expert. Nevertheless, EcoStruxure Plant Builder provides this service through the performance estimator. In addition, TVDA (Test and Validated Documented Applications) documents provide typical

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architectures and the rules to correctly configure Ethernet networks. It helps the designer of the architecture to correctly scale the control system.

44. 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.

45. Is it possible to include Schneider legacy controllers in a EcoStruxure Process Expert application?

EcoStruxure Process Expert is embedded with communication object templates that can operate to set up the communication between the legacy controllers and the supervision with Ethernet Modbus/TCP; the user must define the set of data to be exchanged. It enables a smooth stepwise transition of an existing installed base connected to more recent controllers with DCS services available. This is complementary to the possibility to include the project of a legacy controllers in the EcoStruxure Process Expert application.

46. Does EcoStruxure Process Expert provide the capability to integrate 3rd party controllers?

It is possible to manage the communication of 3rd party controllers through the configuration of a generic template that must be designed to define the set of data that must be exchanged. It may apply to any device, including third party devices. These controllers are not part of the unique data base.

47. Which controller platforms (PAC) are supported in EcoStruxure Process Expert?

M580 standalone configuration, M580 redundant, Quantum, Quantum HSBY and M340 are the controllers supported in the current release of EcoStruxure Process Expert.

48. 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.

49. 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.

50. How do I manage devices that aren't in the libraries?

Generic device templates exist to support generic devices on Ethernet. In addition, the user has the possibility to design templates for unknown devices. It can be derived from an existing template to customize according to the data exchanged between the controller and the devices. The design of template requires skills delivered through an advanced training.

51. 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.

52. Can I access to the 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 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

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an object. Documents are stored in the “contents repository”, enabling to keep consistent the information related to the application, including associated documents.

53. EcoStruxure Process Expert architectures are based on Ethernet; Does EcoStruxure Process Expert support ModBus/TCP or I/P?

Ethernet Modbus/ TCP is available in the current release to manage Devices on Ethernet as a fieldbus and also peer to peer communication between controllers. Support of Ethernet I/P extensively is not available currently.

Offer, positioning, catalogue

54. 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.

55. 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.

56. 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.

57. 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.

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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.”

58. 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 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.

59. 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.

60. What are the key EcoStruxure Process Expert benefits for system integrators?

- Reduction in the configuration time thanks to the object-oriented design consistently filling information for control and operator interface
- Safe design and better quality thanks to a guaranteed consistency and a single database
- Change propagation consistently and safely performed in the overall control system application
- A single repository of the whole control system application to make maintenance easier
- Pre-tested general purpose, advanced and segment libraries minimizing testing, even for Process aware objects or equipment
- Open objects allowing customization of the application delivered

61. 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.

62. 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.

63. 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

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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".

64. Do I need to be a specialist in each software participant in the system in order to use the system?

The design of a control system is based on an object-oriented configuration with object instances used from libraries of templates, but not requiring expertise in the software participants. A good knowledge of the objects is required to configure them correctly. Nevertheless, the object configuration doesn't cover 100% of the design, and the refinement of the program and the edition of the supervision pages require the knowledge of Control Expert and Citect Scada respectively.

65. Is there a single installation regardless of the content to be installed?

Yes, a single installation of the engineering environment is provided for EcoStruxure Process Expert. As well, EcoStruxure Process Expert delivery provides all the software components to be installed on the respective machines playing the role of operation server and operation client. The software components installation of the overall infrastructure from a single location is not yet available.

66. 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.

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.

67. How does EcoStruxure Process Expert provide significant savings in the engineering of a project?

In design, the object-oriented configuration makes it possible to create consistent data for the control and the SCADA systems at once.

Propagation of changes is managed by the system platform, when a modification is done either in an object template or by changing the settings of object parameters. Tracking is done in a notification panel to log the changes.

Openness

68. Is it possible to manage a control system application based on several parts (main process is engineered as one system and the other parts are engineered by other companies and OEMs)? Can I operate and maintain the overall control system as one application?

Two possibilities are offered to users to design a control system:

1. Several users can work concurrently on the same control system from several client machines connected to the EcoStruxure Process Expert System server that is embedded in the application. Check-in/check out management is managed by the platform to ensure the overall consistency when several users want to access to the same resource.

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2. Distribute the design to several users. Pieces of the control system application that are designed with EcoStruxure Process Expert can be merged to create one single system or project (import/export features).

If the project part is created by a 3rd party software, then it is possible to import the application part through the XML or standard CSV formats, depending on the piece of information to be merged.

EcoStruxure Process Expert supports two formats: XML and CSV. XML is the standard format used in EcoStruxure Process Expert. CSV is particularly adapted to create by duplication or modify parameters of a set of objects instances, as well to create or modify the mapping of the logic to the hardware channels. The description format is documented to enable the data exchange with other application software.

69. 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.

70. 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.

71. Does EcoStruxure Process Expert include a change management function? Does it use 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.

72. Is it possible to develop workarounds by hand if the feature isn't yet available in EcoStruxure Process Expert?

A certain level of flexibility through openness is possible. For example, it is possible to integrate non supported controllers and devices in EcoStruxure Process Expert, with limited services for these devices.

73. 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.

74. Does EcoStruxure Process Expert include or collaborate with a Batch software?

It is possible to build application combining EcoStruxure Process Expert with WonderWare InBatch. EcoStruxure Process Expert embeds build-in services to ensure the collaboration with InBatch: a built-in object template to manage phases in a controller is included in the EcoStruxure Process Expert library; pre-build active X templates to manage the batch sequences can be included in the supervision pages. The configuration requires to install InBatch runtime servers aside EcoStruxure Process Expert. A TVDA (Tested and Validated Documented Application) document describes this configuration.

75. 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.