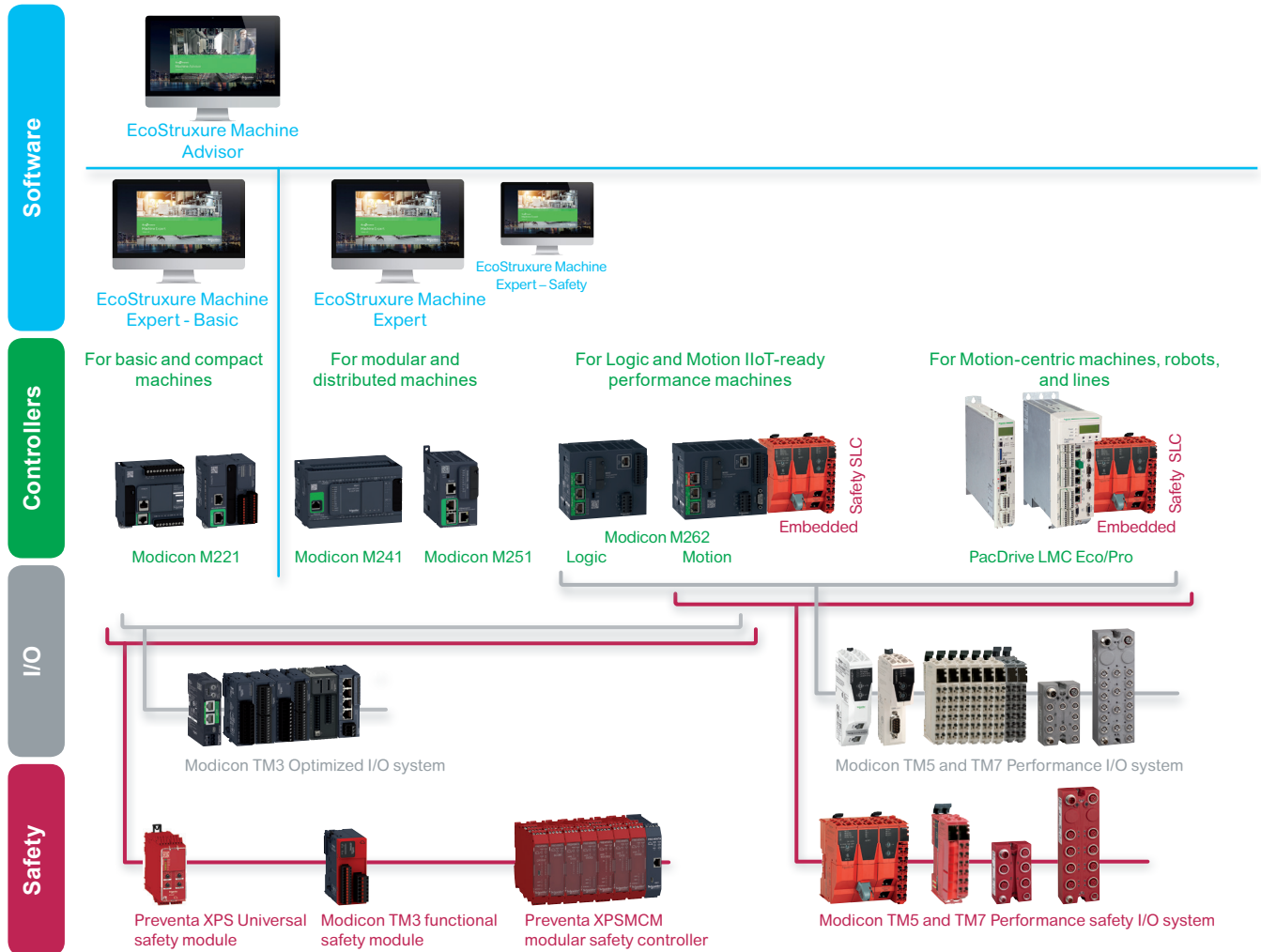


Machine Automation



Machine control

- > From basic to motion- and robot-centric machines with the PacDrive 3 offer, Modicon controllers and solutions bring a consistent and scalable response to achieving flexibility, performance, productivity, and digitization.

The scalability and consistency of I/O ranges allow you to select the right offer depending on your needs

- > Modicon TM3 Optimized I/O system for more compact and modular machines
- > Modicon TM5 for more performance-demanding machines, with Modicon TM7 for harsh environments; Both Performance I/O ranges (Modicon TM5 and TM7) allow safety functions to be implemented using the Modicon TM5CSLC safety logic controller

Embedded Safety provides holistic solutions to Modicon M262 and PacDrive LMC controllers, increasing overall safety demand in Machine Automation

- > Preventa XPS Universal safety modules cover a wide range of safety functions, suitable for small applications with 4-5 safety functions, with diagnostic information provided to controllers via a single wire connection
- > Modicon TM3 safety functional modules are suitable for small applications covering E-Stop functions and diagnostics via TM3 bus
- > Preventa XPSMCM modular safety controllers are suitable for medium size applications with up to 20 safety functions and diagnostics via Modbus TCP, EtherNet/IP, EtherCAT, or Profinet

All these devices are managed within a single software, EcoStruxure Machine Expert, a powerful and collaborative engineering environment

- > **EcoStruxure Machine Expert – Safety** optional add-on for programming safety logic controllers
- > **EcoStruxure Machine Expert – Basic** software for programming Modicon M221 logic controllers: an intuitive standalone environment accessible to basic skilled technicians
- > **EcoStruxure Machine Advisor** is a cloud-based services platform designed for machine builders to track machines in operation worldwide, monitor performance data, and resolve exceptional events, while reducing support costs by up to 50%

Machine Automation

Comprehensive Schneider offers for machine builders

- > Lexium servo drives, motors, and robotics are designed to control applications ranging from a single independent axis up to high-performance synchronized multi-axis machines requiring high-speed and precise positioning and movements



[Robotics](#)



[Integrated drives](#)

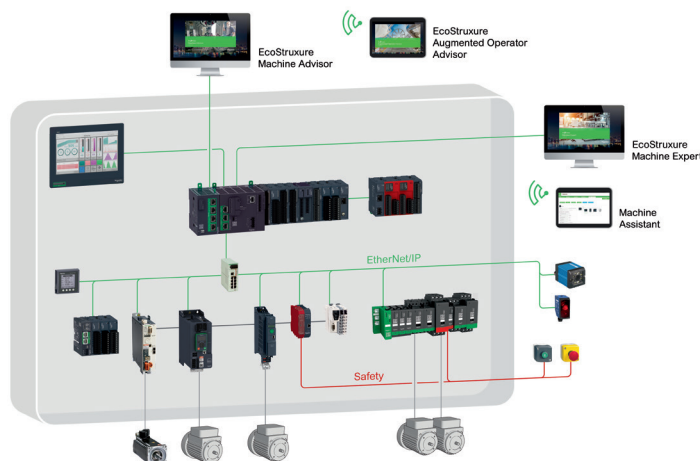


[Servo Drives & Motors](#)

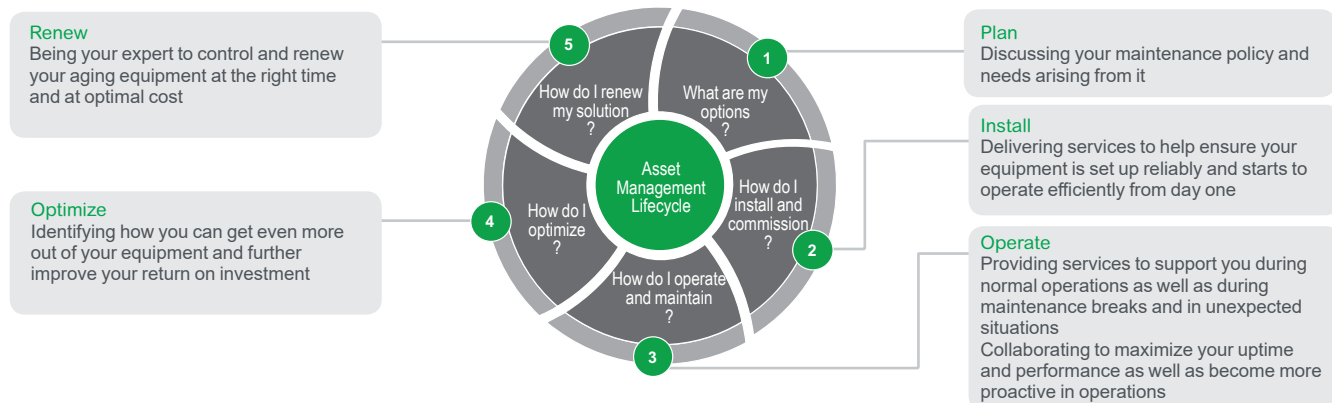


[Steppers Drives & Motors](#)

- > The Lexium offer is designed for a broad range of motion-centric machines in applications such as [Packaging](#), [Material Handling](#), [Material Working](#), [Food and Beverage](#), and [Electronics](#)
- > Schneider Electric has developed Tested Validated & Documented Architectures (TVDA) applicable for generic machine control applications as well as for dedicated segment applications such as Packaging, Material Handling, Hoisting, Pumping, or generic [Machine Control applications](#)



Choose Schneider Electric to help secure your investment and benefit from worldwide services at every step of your project



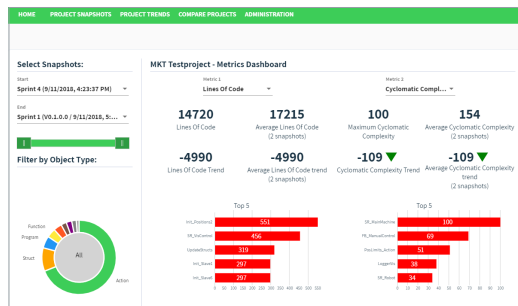
- > From planning and inception to modernization, we help ensure optimal technical and business performance. Our field service engineers combine 30+ years of manufacturer-level experience with the latest technology to bring innovation to every level of our offer, and every step of your project.
- > Our machine control dedicated services empower you to maximize your business infrastructure and face increasingly stringent demands on productivity, safety, equipment availability, and performance optimization.

EcoStruxure Machine Expert

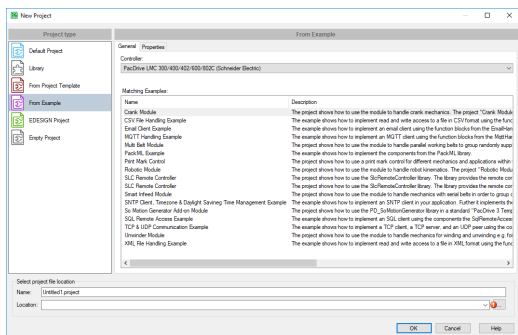
A single software environment to automate machines



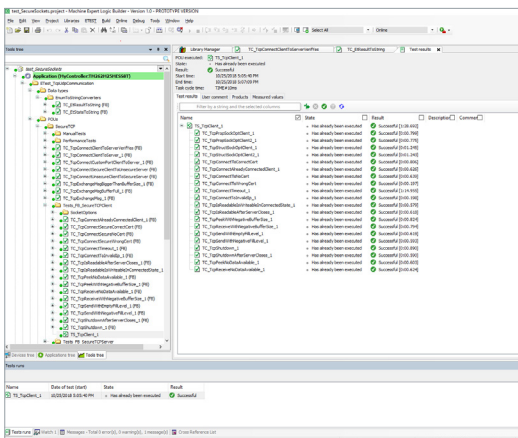
EcoStruxure Machine Expert V1.1 programming software



Cloud based code analysis



New project



ETEST result view

Presentation

EcoStruxure Machine Expert software V1.1

EcoStruxure Machine Expert V1.1 is the machine builder's solution software for developing, configuring, and commissioning the entire machine in a single software environment, including logic control, motion control, remote IO systems, safety programming, motor control, and related network automation functions.

EcoStruxure Machine Expert is a single software environment with:

- > **One** software package
- > **One** project file
- > **One** connection
- > **One** download operation

EcoStruxure Machine Expert is a software environment covering the full engineering lifecycle:

- > Version management
- > Testing
- > Deployment
- > Diagnostics and remote services
- > In addition Machine Expert interfaces with various engineering tools via open interfaces

It supports all the IEC 61131-3 languages, integrated fieldbus configurators, expert diagnostic and debugging functions, motion design as well as multiple capabilities for commissioning, maintenance and visualization.

EcoStruxure Machine Expert V1.1 is the new name and the next release of the three-engineering software: **SoMachine** and **SoMachine Motion** and **SoSafe Programmable**, now merged into one single environment.

EcoStruxure Machine Expert introduces innovative features for efficient machine development:

- > Collaborative work with SVN client
- > New IloT standard libraries (MQTTs, HTTPs, JSON...) to connect the controller to web APIs our cloud services like EcoStruxure Machine Advisor or third party systems. Project examples and function templates help the usage of these technologies.
- > Machine code analysis to improve coding efficiency, code quality coding consistency in teams and now uses cloud technology to store the evolution of your code quality:
 - Check code convention using standard or customized rules
 - Understand the DNA of the code with structured graphical code exploration and identify critical sections in the code
 - Get metrics with quality indicators
- > Machine Advisor Code Analysis is a cloud based service. It helps you to track deviations from your code quality over the life time of the application. Find more information on our [website](#).
- > New Functional view in the project tree to program machines in a modular way
- > Python programming language interface:
 - Increase Programming Efficiency, by automating development and project generation
 - Integrate **Machine Expert** in the company's individual environment and automatize workflows
- > ETEST framework for higher quality of application code, thanks to automated IEC software unit test
- > Import projects from **SoMachine** and **SoMachine Motion** software
- > Import projects from **SoSafe Programmable** software
- > New HTML5 browser responsive documentation accessible offline or online from any smart device with an internet connection

HMI programming

EcoStruxure Machine Expert V1.1 embeds:

- > Vijeo Designer to program a wide range of Magelis industrial HMI
- > A Webvisu editor to design and program a visualization screens that are running on the controller's runtime. A controller Webvisu can be accessed remotely via any web browser on many different devices (computers, tablets...)

EcoStruxure Machine Expert

A single software environment to automate machines

Presentation

Configured controllers with EcoStruxure Machine Expert V1.1 software

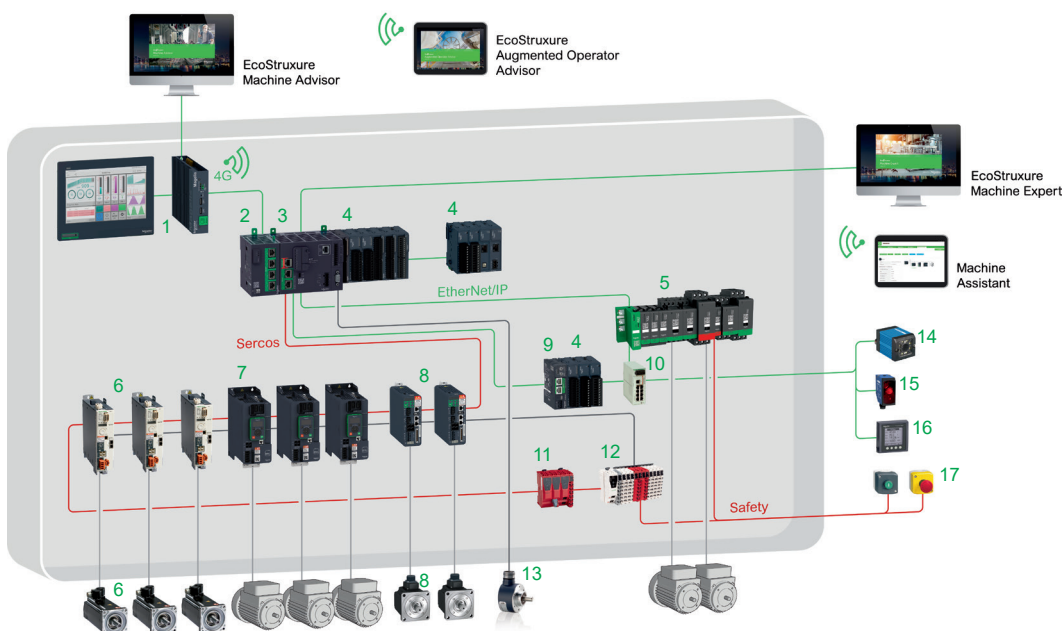
- > **Motion controllers:** PacDrive 3 LMC Eco/LMC Pro/LMC pro2 (catalog ref. [DIA7ED2160303EN](#))
- > **Logic controllers**
 - Modicon M241 (catalog ref. [DIA3ED2140107EN](#))
 - Modicon M251 (catalog ref. [DIA3ED2140108EN](#))
- > **Logic/Motion controller:** Modicon M262 (catalog ref. [DIA3ED2180503EN](#))
- > **HMI controllers:** Magelis SCU (catalog ref. [DIA5ED2130505EN](#))

Configured devices with EcoStruxure Machine Expert V1.1 software (1)

Devices can be easily inserted to the project from the Hardware catalog window using simple drag & drop.

- > **Servo drives:** Lexium 28, Lexium 32, Lexium 52 stand-alone, Lexium 62 multi axis, Lexium SD3
- > **Integrated drives:** Lexium ILA/ILE/ILS, Lexium 62 ILM, Lexium 32i, Lexium 62 ILD detached
- > **Robotics:** Lexium STS, Lexium T series, Lexium P series, Lexium PAS/CAS/TAS/MAX
- > **I/O systems**
 - Modicon TM3: I/O modules and bus coupler (catalog ref. [DIA3ED2140109EN](#))
 - Modicon TM5: IP20 I/O modules, and fieldbus interface module (catalog ref. [DIA3ED2131204EN](#))
 - Modicon TM7: IP67 I/O blocks (catalog ref. [DIA3ED2140405EN](#))
- > **Safety logic controllers:** Modicon TM5CSLC
- > **HMI:** Magelis GTO standard panels, Magelis GK advanced Touchscreen/Keyboard panels, Magelis XBTGH advanced held panels, Magelis GTU high performance modular HMI, Magelis STO compact panels
- > **Variable speed drives:** Altivar Machine ATV320, Altivar Machine ATV340, Altivar Machine ATV600, Altivar Process ATV900, Altivar 71
- > **Sensors:** RFID sensors XG, Vision sensors XUW
- > **Battery-less and wireless pushbuttons:** Harmony XB5R /XB4R (Ø 22 mm)
- > **Connected load management system:** Tesys island

Managed TVDA with EcoStruxure Machine Expert V1.1 software



Solution breakdown

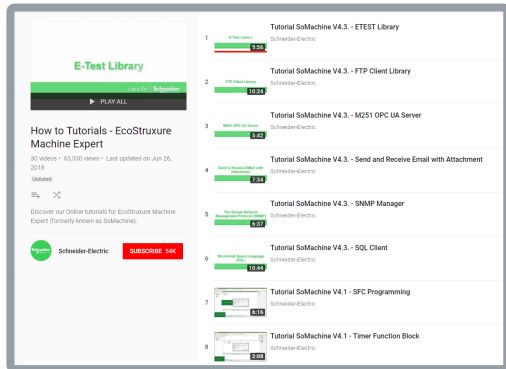
- | | |
|--|--|
| 1 Magelis iPC: Touchscreen display and IIoT Edge Box | 10 Modicon Ethernet switch |
| 2 Modicon TM5ES4 Ethernet Smart communication module | 11 Modicon TM5CSLC Safety logic controller |
| 3 Modicon M262 Motion controller | 12 Modicon TM5: Sercos interface module and I/O modules (Digital, Analog and Safety I/O) |
| 4 Modicon TM3 expansion modules (Digital, Analog and Expert I/O) | 13 Encoders |
| 5 Tesys island load management system | 14 Bar code reader |
| 6 Lexium 32S servo drives and BMH/BSH servo motors | 15 Telemecanique Sensors proximity sensors |
| 7 Altivar Machine ATV340S variable speed drives | 16 Power Meter |
| 8 Lexium 28 servo drives and BCH2 servo motors | 17 Harmony® XB5 Plastic pushbutton and Emergency stop |
| 9 Modicon TM3 Ethernet bus coupler | |



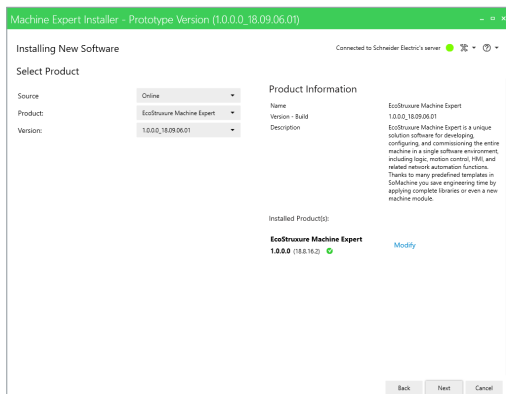
(1) Please refer to our catalogs on [Digi-Cat](#) (download Digi-Cat)

EcoStruxure Machine Expert

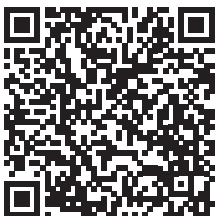
A single software environment to automate machines



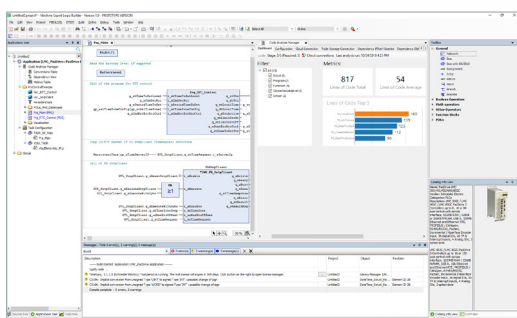
Video tutorials on [YouTube](#)



[Machine Expert installer](#)



Download installer



Logic Builder

Functions

Related functions configured with EcoStruxure Machine Expert V1.1 software

Hardware related functions can be configured:

- > Discrete, analog I/O: from simple IO to sophisticated features like controller to controller communication.
- > High speed counter (HSC) inputs
- > High speed outputs:
 - Pulse width modulation (PWM)
 - Pulse generator (PLS)
 - Pulse train output (PTO)
 - Frequency generator
- > Communication ports (Ethernet, Sercos, serial links):
 - Ethernet: EtherNet/IP, Modbus TCP client and server, Exchange table
 - Sercos bus
 - Serial links: Modbus RTU or ASCII, ASCII protocol, Display
 - The Modbus Serial IO Scanner and Modbus TCP IO Scanner protocols are used to automatically configure an Altivar variable speed drive, other Schneider devices, or a generic device.

Learning, Training and Examples

From the help menu, several tools and links help you to get started with EcoStruxure Machine Expert. This section provides content access to both beginners and advanced users to learn how to use and take advantage of the software:

Discover:

- Project examples and their documentation
- Project templates
- How to guides
- Video tutorials to be consulted on [YouTube](#)

Project management

The project management function is used to:

- > Create a new project from scratch or by using project templates or examples
- > Open a project from the PC (hard disk, CD-ROM, USB flash drive, etc.)
- > Retrieve a project from a controller (logic, safety, motion or motor controller) or a servo drive
- > Open a project from former SoMachine or SoMachine Motion versions
- > Open a Twido or M221 project using conversion tools
- > Print a project as a customized report

It is possible to define additional project specific information properties (company & creator details, project protection information, application information...), attach documents and custom or configuration pictures. The software also supports automatic versioning.

Installation

- > EcoStruxure Machine Expert software can be installed directly from the cloud. Either perform a full installation or select the components you need. **Machine Expert Installer** downloads the required components **only**. Offline installation from a local folder is also possible. The installer can be [downloaded](#) from Schneider Electric website.
- > EcoStruxure Machine Expert software V1.1 can be also installed from a USB drive, available in catalog, see [page 16](#).

Application Function Block (AFB) libraries for dedicated solutions

EcoStruxure Machine Expert includes application function block libraries for selected machines. Their simple configuration speeds up design, commissioning, installation, and troubleshooting.

These libraries cover the following applications:

-  Packaging,
-  Hoisting,
-  Handling,
-  Pumping,
-  Material working,
- and more ...