



QView: HMI created on its own.

Yes we can reduce HMI interface development times!

M-Point Engineering is a Bolognese company, who design engineer software projects for advanced HMI, supervisors and SCADA, by focusing on the issues relating to data collection and integration with company management systems. As a Progea system integrator, they develop projects for the packaging industry using automation systems that include Motion Control and Robotics.

However, developing applications to manage machines can be rather expensive. This is mainly because the application's automation side is usually dealt by the PLC, while the graphical user interface (GUI) side is specifically operator panel-oriented. In most circumstances, the development of the application's automation

side and GUI side do not coincide and are usually done at different times.

When developing a prototype, a good rule of the thumb would be to start testing I/Os and the various machine devices for any cable or mechanical malfunctions before going ahead with the rest. It would be very useful to have a HMI installed already with the application in question to run these tests but apparently this is not possible because the HMI is usually developed after that of the PLC automation. However, once the HMI has been developed, it can then be used to test all the machine devices in order to make any necessary changes to the respective parameters accordingly and check whether all the alarms are functioning properly.

The HMI software is, therefore, a key component for test running automated systems which entails a heavy workload for the design engineer to program and create different screen pages and devices all needing detailed graphics, parameters, commands and alarms.

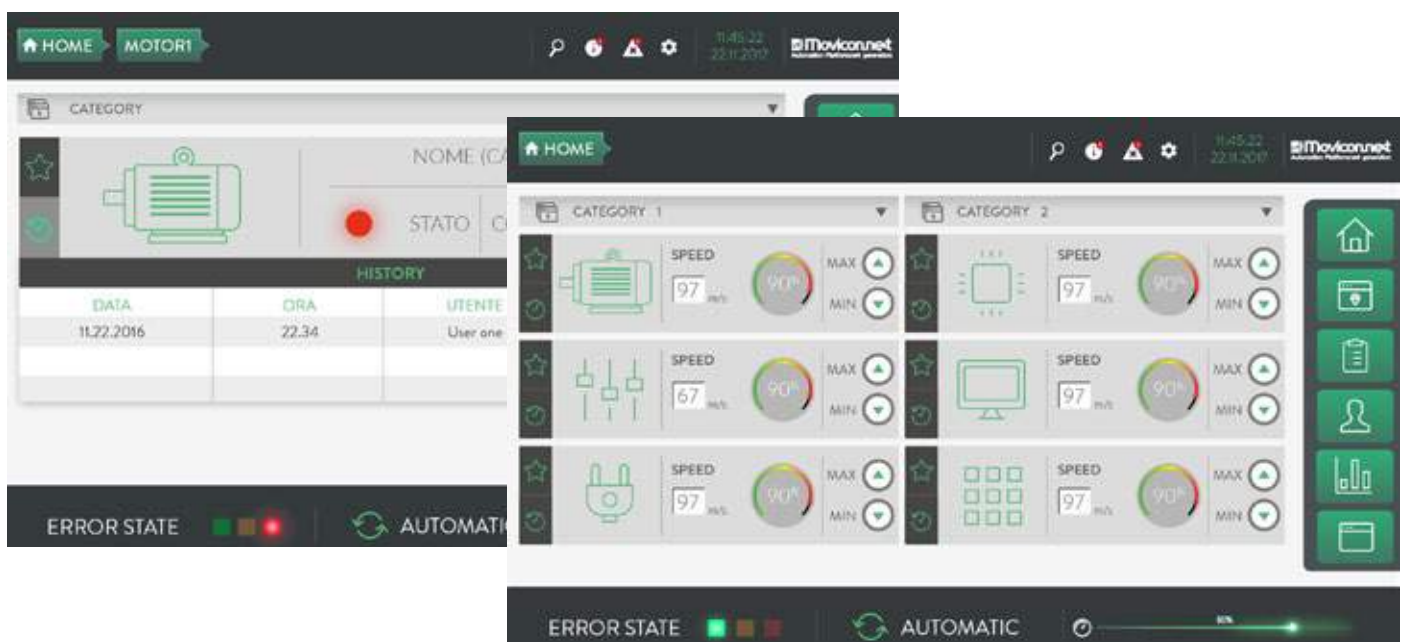
By using QView, M-Point Engineering has designed a system that automatically creates ready-to-use HMI screen pages. This software compiler instantly creates the basic HMI pages to include manual commands, parameter fields and alarms of all the machines' devices based on specific configuration files or those read by the PLC. Moreover, once the templates of supervision screens and operator pages have been created, Qview is able to compile and create the complete HMI software.

This project was developed with Movicon.NExT which offers the advantage to implement other modifications when and as needed using Progea's development environment. Therefore, once the software has been completed, it can be used to make further modifications to add buttons, change colours, insert new icons and include more graphics for instance.

The Movicon.NExT Project Builder

The Project Builder is native to the Movicon development environment and is used as a tool to create graphical project pages automatically. The Project Builder permits you to manage some of the Movicon.NExT resources using Visual Studio, an integrated development environment (IDE) from Microsoft, within which a Wizard can be created to modify Movicon.NExT-based projects aided by an included MoviconNextBuilder.dll file containing the relative classes and functions, to customize the following functionalities:

- All Tag and alarm properties can be customized and changed.
- Screens can be created, modified and deleted.
- Toolbox objects can be inserted, modified or deleted on screen.
- Symbols from the Library can be inserted, modified or deleted on screen.
- Strings can be added, modified and deleted.
- Languages can be added and deleted.
- Parameterization files can be created and deleted.
- Create and delete parameters (pairs of aliases/variables) from parameterization files.



Thanks to the Project Builder the project's features can be modified whenever needed. The crucial part lies with using Visual Studio to create the software which contains all the project's features and DLL to be used. M-Point Engineering did a great engineering job using the QView software. It includes everything needed to create the project. What's more, they were able to make the project more exclusive by adding new symbols and graphical designs with the help of Progea's Graphic Designer.

QView features

The QView project provides the tools to automatically create HMI starting with the PLC project or configuration file if the PLC technology does not permit direct connectivity. The result is a standard Movicon.NExT project ready with the basic functionalities needed and associated to all the machine's devices:

- Manual management for all the machine's moving parts
- Machine error and alarm management
- Machine device configuration parameter management

Automatic machines are usually a combination of devices controlled by the software. The basic devices in any machine require a series of functionalities that should also be made available in HMI, such as:

Inverters or Axes: commands are needed to manually move the axis and therefore need motion parameters to establish speed and acceleration.

Pneumatic cylinders: commands are needed for manually operated cylinder movement and time-out and alarm management.

IP Video Cameras: possibility to have basic commands to change position and take pictures on demand

Sensors and end stops: possibility to visualise on/off status

Conveyor belts and motors: possibility to have start/stop commands and alarm management. If the predefined pages come with templates, QView will automatically generate them instantly rendering HMI ready for use.



As with any other project developed with Movicon.NExT, the project created with QView can also be completed and modified with additional graphics or 3D models to enhance operator panel usability and functionality.

The project-based solution

M-Point decided to use Progea's Movicon.NExT, because it proved to be the only SCADA capable of automatically and dynamically creating all-inclusive and editable projects.

This is possible with the aid of the Project Builder tool that can be embedded in MS Visual Studio, through a dll that Progea directly implements within the Movicon.NExT development environment.

This tool allows you to create and generate massive resources without needing to use the workspace to insert and connect the multitude of machine line variables.

The Project Builder also automatically generates screens. Any screen can be automatically created with features with the option to add more using the standard Movicon.NExT development environment.

“I like to call our application - Movicon.NExT QView”

Matteo Aldrovandi
CEO MPoint Engineering

Movicon.NExT The NExT generation SCADA/HMI.

The results

By using the QView project, it is possible to automatically generate an Operator Panel for immediate HMI Movicon project customer use. Machine interaction is immediate without PLC automation software to define automatic machine behaviour.

What you gain is a drastic reduction in time, both for HMI project development, whose major part is ready for use, and for testing the various machine devices.

As a consequence, the PLC software project engineer can dedicate more time to developing machine automation and less time running tests. The first project architecture consists of a Beckhoff TW 3 PLC connected through ADS or OPC-UA to an operator panel where Movicon.NExT is installed. In the absence of the project with TW3, the system can continue to function by connecting to any other PLC and creating a configuration file to connect variables by means of OPC-UA.



Matteo Aldrovandi
CEO MPoint Engineering