Jetter
automation

Software & Services

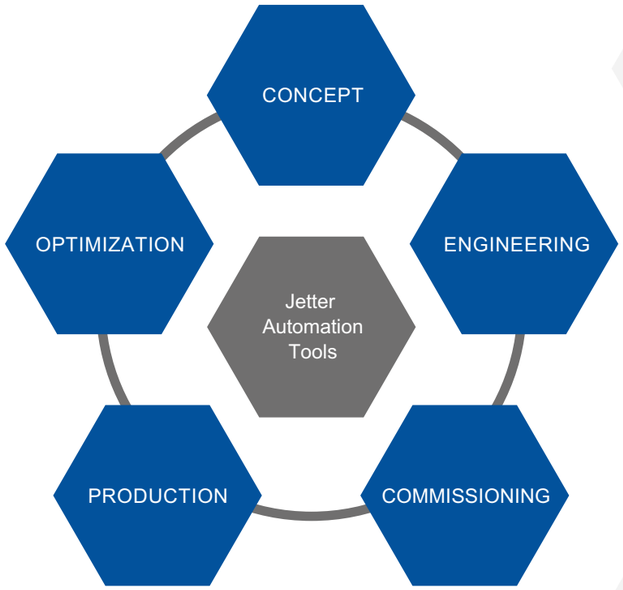
For the complete life cycle of machines

We automate your success.

Contents

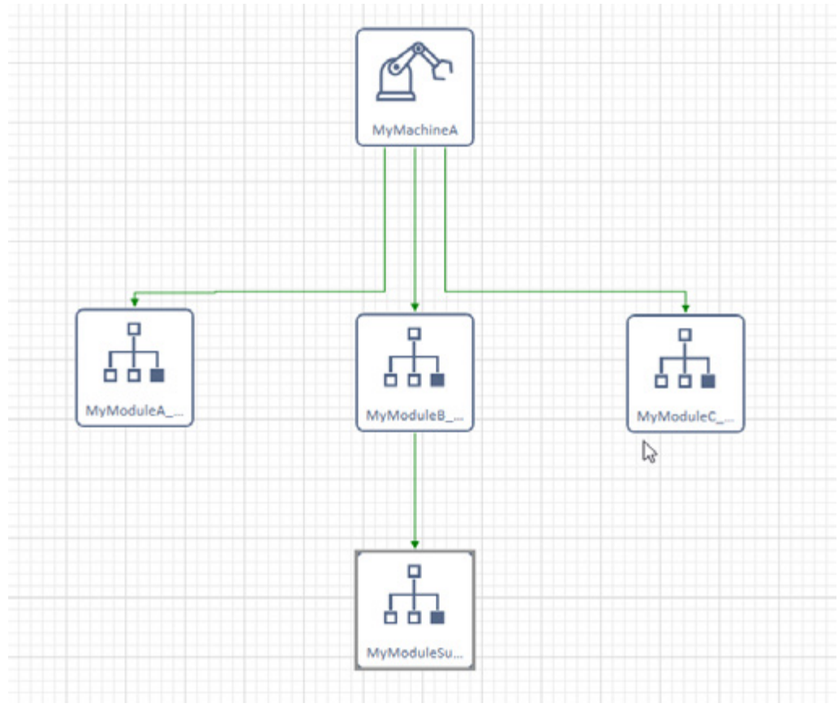
Machine manufacturers have to make their machines ever more flexible, productive, and thus competitive. This makes moving towards a higher degree of digitization an absolute necessity. The Jetter high-performance automation solution with its integrated software products forms the basis for optimizing workflows in automation projects throughout each phase of the machine life cycle and achieving efficiency gains.

Overview

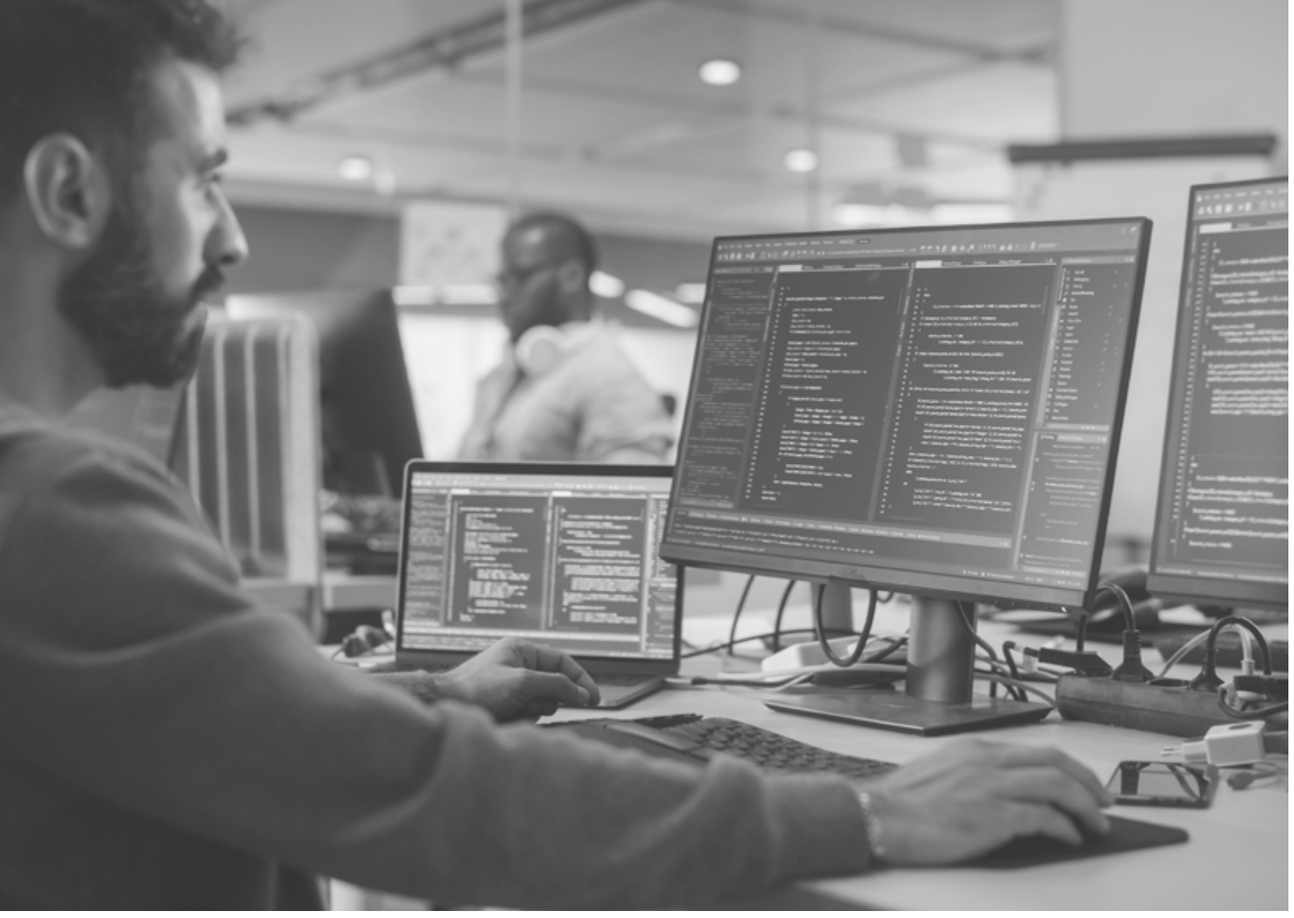


Concept

Machines are embracing increasingly modular design approaches. JetSym offers appropriate support by allowing several machine configurations to be mapped within one project. The modular app system takes things a step further and offers predefined modules based on a machine library. Utilizing a graphical editor, these modules can be simply assembled as a machine in the desired module configuration by drag & drop. The characteristics of the individual machine modules are also easily configured in the editor. As a result, JetSym automatically creates the corresponding program code, which is then transferred to the controller. New machine variants can be designed easily and rapidly in this manner.

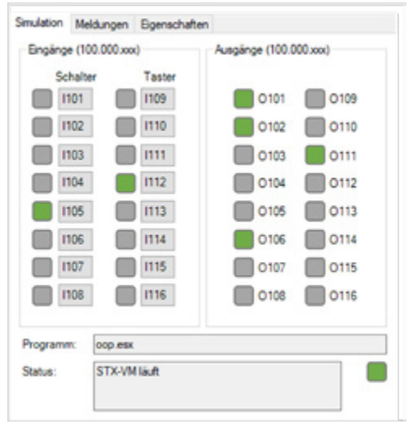



```
const //This block is for declaring all constants.
end_const;

type //This block is for declaring all types like structs.
end_type;

var [export jde] //This block is for declaring all exported variables.
end_var;

var //This block is for initializing all variables.
   ModuleAuto_Variant1 : ModuleAuto_Variant1(1, , );
   MyModuleA_Variant1 : MyModuleA_Variant1(0, , );
   MyModuleSub_Variant1 : MyModuleSub_Variant1(0, , );
   MyModuleB_Variant1 : MyModuleB_Variant1(0, MyModuleSub_Variant1, , );
   MyModuleC_Variant1 : MyModuleC_Variant1(0, , );
   MyMachineA : MachineA(0, ModuleAuto_Variant1, MyModuleA_Variant1, MyModuleB_Variant1, MyModuleC_Variant1);
end_var;

task StartUpTask autorun
end_task;
```



Engineering

In JetSym, it is possible to launch the automation project at an early stage of the engineering design process - even before the actual machine or its components are physically available. To this end, a soft PLC integrated in the software can extensively simulate the controller's functionality. In interaction with virtual inputs and outputs, corresponding functions can be programmed at an early stage and their behavior tested accordingly.

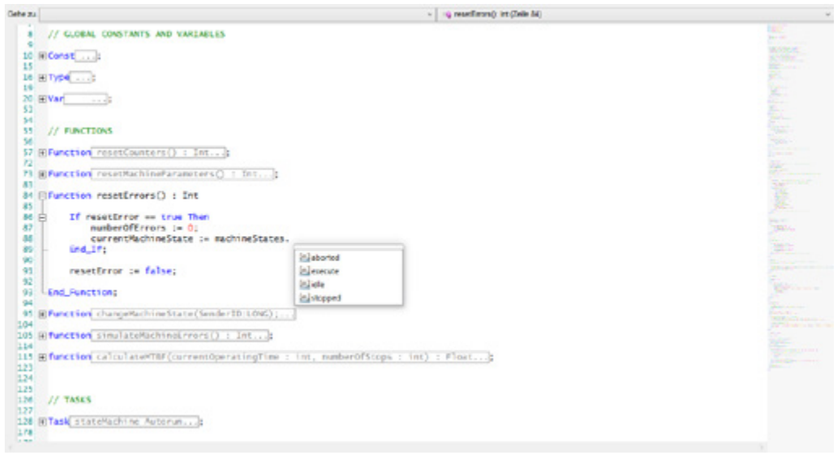


Jetter also provides its controllers as digital twins. Based on this virtual controller, the required machine kinematics can be started. Once again, a real machine or hardware is not yet required. The Jetter servo amplifiers are also available as digital twins in the controller. By simply switching to simulation mode and in combination with Motion Control, even complex axis movements can be designed, simulated, and optimized at an early stage with JetSym.

JetSym also offers extensive assistance when it comes to configuring the machine kinematics. The motion setup automatically adjusts many of the drive controller settings according to the kinematics used. This enables initial test runs at the push of a button using predefined movement patterns without the need for a fully programmed motion logic in the controller program.

Controller applications are programmed in the Jetter ecosystem using STX. This is where two worlds come together to form a powerful duo. STX is based on the established IEC 61131-compliant programming language ST. The X stands for the extension with modern programming concepts and for useful extensions, e.g. the object-oriented programming used for other well-known high-level languages.

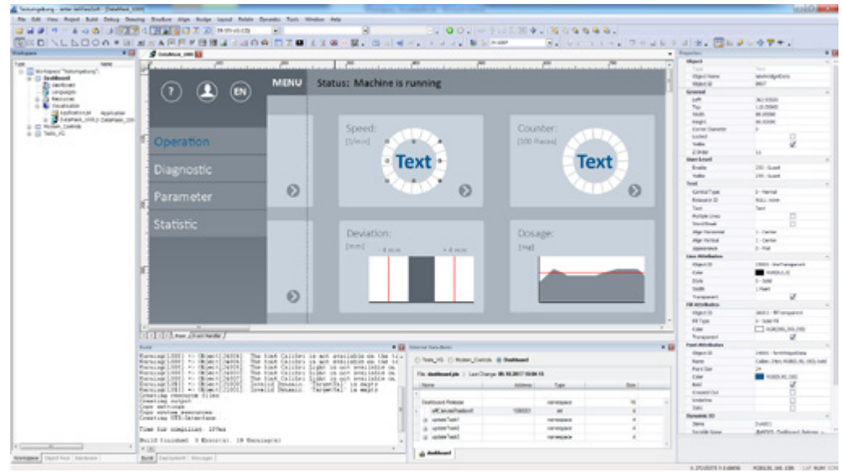
The JetSym high-performance editor supports programmers with writing program code. Helpful functions, such as a code navigator, code folding, etc., ensure the necessary clarity. Integrated IntelliSense provides context-sensitive suggestions, such as methods or variables, when writing. Beside speeding up the whole process, it also offers the potential for fewer coding errors.



Safety
JetSafe is ideal for programming safety-compliant controller programs for performance levels PLe / EN 13849 or SIL3 / EN 61508. JetSafe fits perfectly into the Jetter tool landscape.

Visualization
JetViewSoft is the design tool for state-of-the-art, professional HMI process visualization. The editor stands out due to its high performance and functionality, while remaining very user friendly.

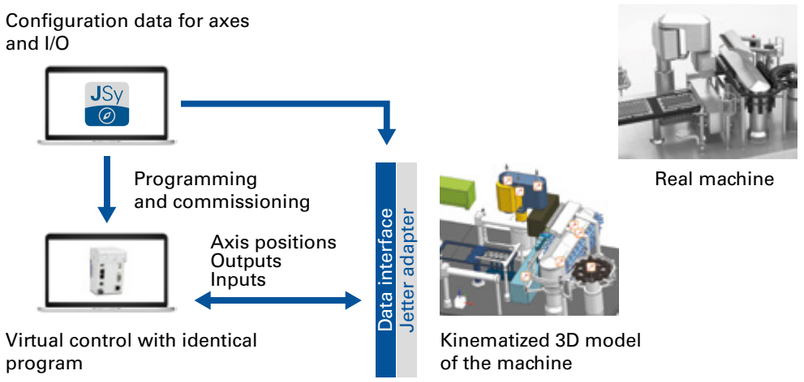
Together with the object-oriented approach of JetViewSoft, even extensive visualization projects can be implemented simply and efficiently. Data and information from external systems can also be prepared and visualized with JetViewSoft. The basis for this is an integrated OPC UA client, which enables platform-independent data exchange with any OPC UA server.



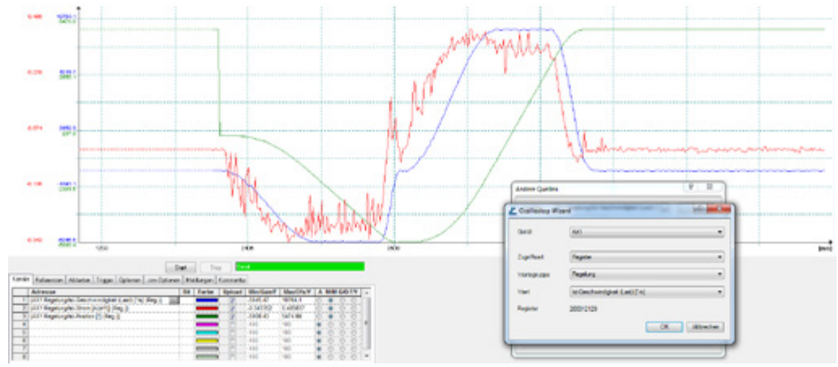
Moreover, JetViewSoft can be integrated seamlessly into the machine development process. New visualization projects can be created at an early stage – without the existence of physical hardware or a fully operational automation program. Program logics and sequences are simulated and tested on the basis of local variables in a virtual runtime environment. Connection to the actual hardware is established later on when the finished machine is available. Programming of the machines and visualization of the user interfaces can thus take place simultaneously. This results in a shorter overall development cycle and ultimately in faster market introduction.

Commissioning

Exploring and testing out possible machine sequences on a physical system leads to high costs. JetSym is a solution to this challenge, as it provides a generic interface that allows users to connect tools for virtual engineering. Current axis positions and input/output states are transmitted to the simulation platforms as real-time information. The data are then utilized to deliver 3D animated virtualization of machine or machine component movements. This boosts cooperation between mechanical design, electrical planning, and automation and reduces the time required for designing the machine and commissioning.

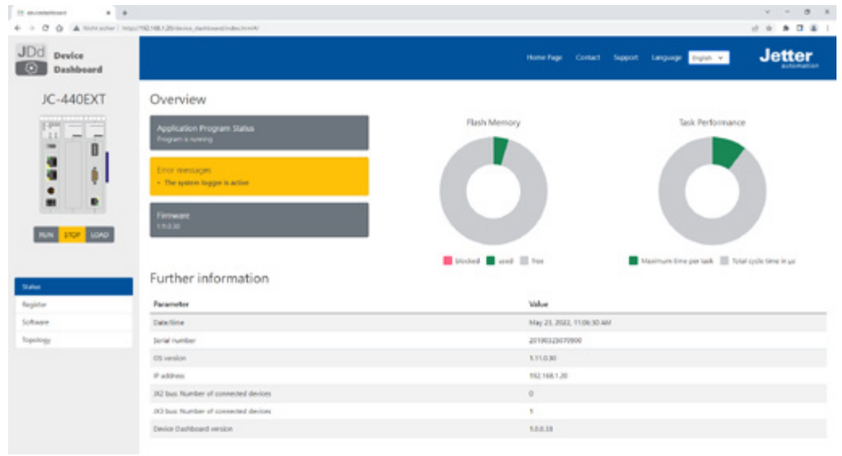


In addition, JetSym also offers extensive commissioning support for machines. With the aid of the built-in 32-channel oscilloscope, JetSym can monitor and coordinate axis movements and input/output states, for example. A wizard helps users quickly navigate to the desired data point.



JetSym provides programmers with effective tools for the precise analysis of the program flow. The integrated debugger can be used to step through the code and to display the values stored in variables. The trace and monitor function allows values to be monitored during the program flow without having to interrupt the actual program.

If malfunctioning occurs in the production process, it is essential to have tools in place that help to quickly isolate and rectify the fault. A device dashboard is automatically supplied with the latest generation of Jetter controllers. It offers a web interface that helps to display the state and key parameters of the machine controller. This facilitates first-level support by allowing machine operators and the support team to have a common view of the same dashboards with key diagnostic parameters. As such, the majority of faults can already be solved by first level support.

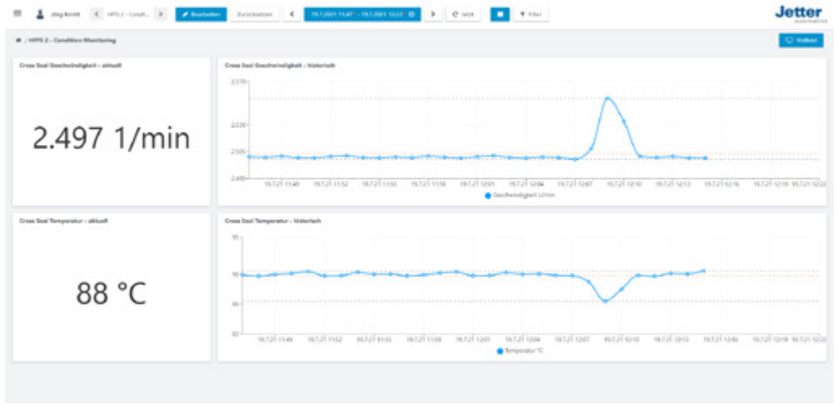


Production

JetSym also offers a toolbox of functions for fast diagnostics and response to more complex faults. Triggered by freely definable limit values, log data are automatically recorded in the controller, or an oscilloscope recording is started. This can be imported and analyzed in JetSym by service technicians at a later time.

Optimization

Thanks to ProData, the Jetter cloud for efficient production, it is not only machine operators who can optimize their production processes. Machine manufacturers can also use ProData to continuously record machine data and to determine any potential for optimizing the actual machine. These findings are ultimately implemented into the concept phase of a new machine.



Within the context of digital and networked production, it is also essential to have open interfaces available for connection to higher-level systems. To this end, the Jetter ecosystem utilizes established communication standards such as OPC UA and MQTT for communication at machine level and with cloud solutions such as Microsoft Azure. Moreover, the SQL connector enables easy data exchange with SQL databases, e.g. an MES system.

OPC UA MQTT SQL4AUTOMATION

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