PROCESS PLANTS
AUTOMATION
ROBOTICS

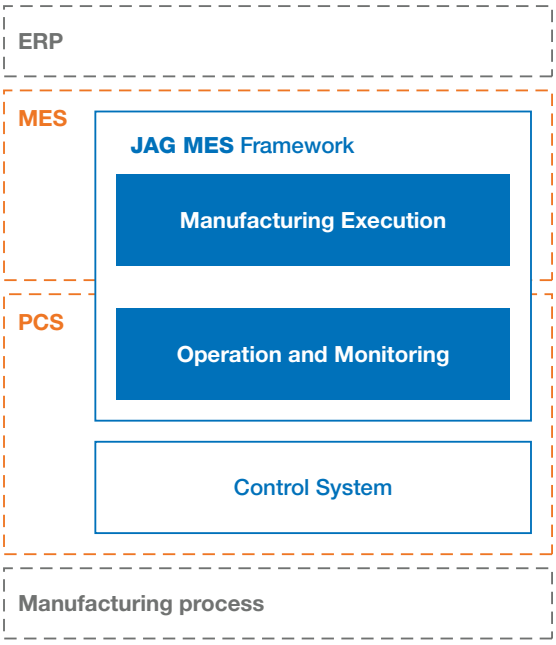
JAG MES Advanced

For highly automated manufacturing.

JAG MES Advanced is designed for large, complex and highly automated production plants. It is a validated application and therefore particularly suitable for pharmaceutical and biotech applications.

The wide range of matching modules allows building tailor made solutions for Manufacturing Execution, Operation and Monitoring. As the MES and PCS related modules share the same framework, there are or no unnecessary interfaces and the information flow is seamless across the whole application.

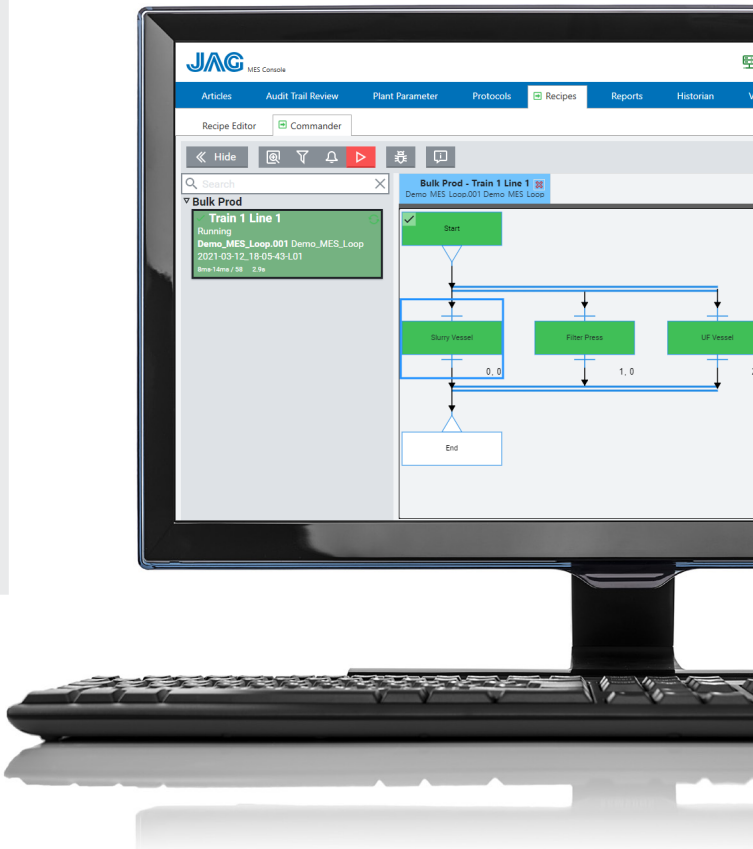
With JAG MES Advanced the production process is driven by recipes. These recipes may contain combinations of automated operations and user dialogs for manual operations, deal with complex sequential and parallel processes and can be nested. As an example, the main recipe of a production process can start separate recipes for a buffer preparation or a Cleaning In Place (CIP), in order to orchestrate the different activites.



Features and benefits

The Advanced mode of JAG MES offers the following features and benefits:

- » **Modular, extensible architecture**
- » **Numerous standard modules available**
- » **MES and PCS functionality on the same framework, no unnecessary interfaces**
- » **Automated processes and the operator dialog for manual operations are driven by the same recipe**
- » **Up to date technology and user interfaces**
- » **Validated as an application (GAMP category 4)**



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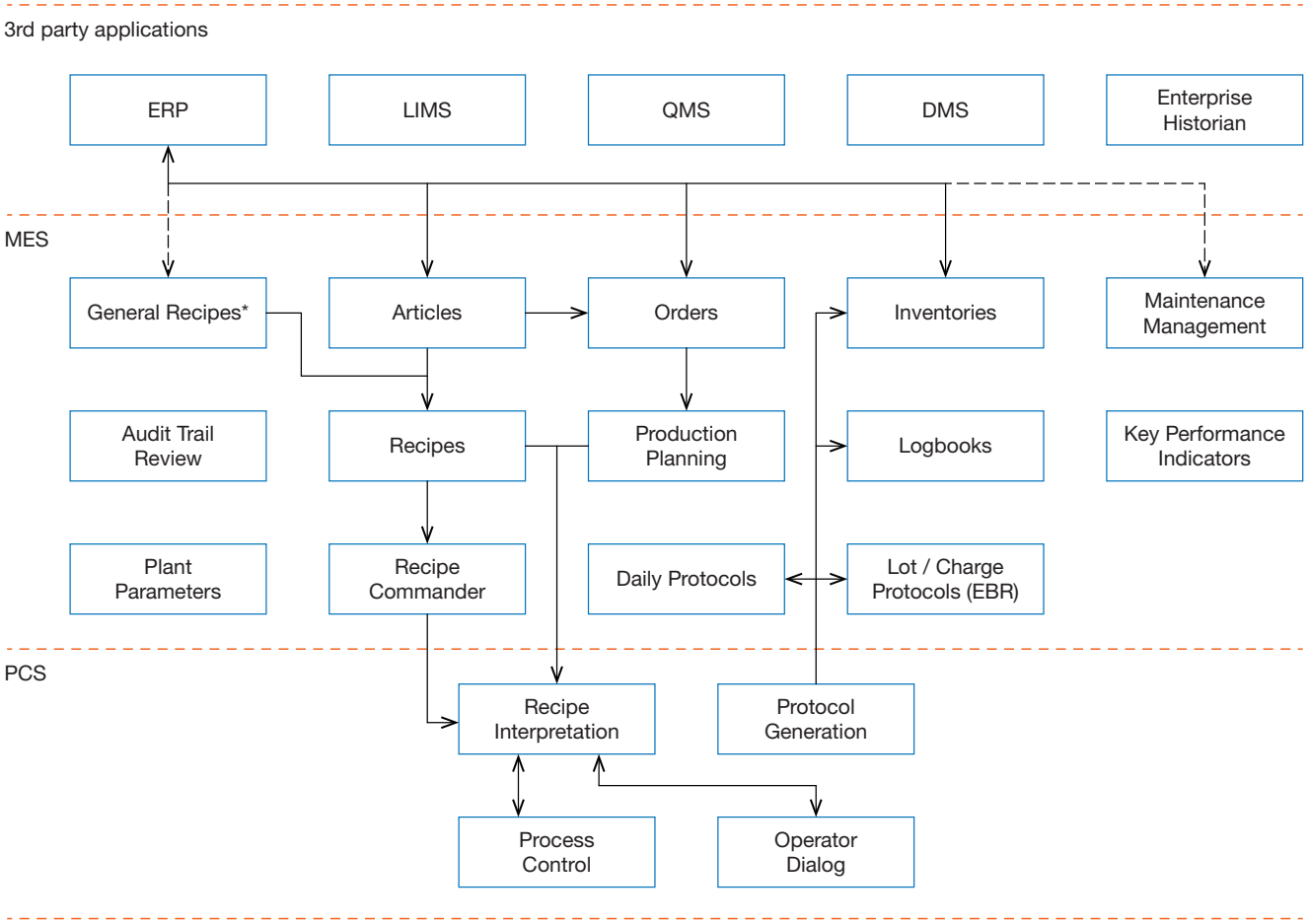
JAG MES Advanced modules.

A wide range of standard modules for demanding applications.



Modules marked with * are in preparation

The classical entry point to the MES system is the ERP Interface. Usually there is a data exchange regarding articles, orders, intentories and sometimes regarding general recipes and maintenance tasks.

Once the production planning is done the recipe driven production process starts. The PCS takes care of the recipe interpretation, process control, operator dialog and protocol generation. The avantage of having the protocol generation embedded in the PCS is that the sequence of events is maintained and that precise and meaningful protocol messages can be created.

The messages in lot/charge protocols, logbooks and daily protocols are the basis for full traceabilty and adequate reporting.

All data collected during production can be viewed and analyzed. This includes the calculation of Key Performance Indicators like for instance the Overall Equipment Effectiveness (OEE).

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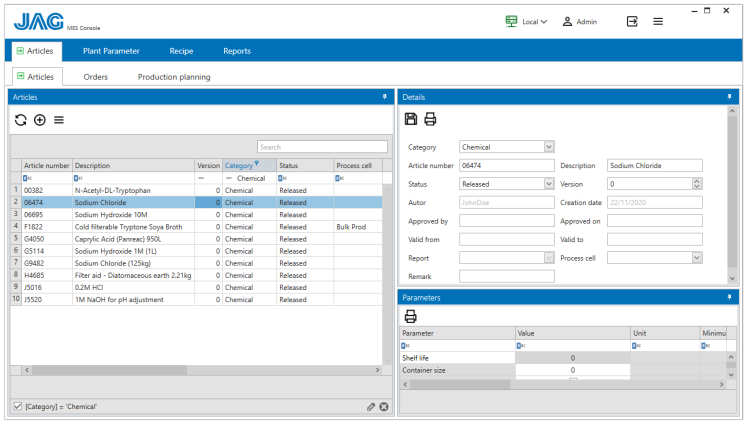
Modern and simple to use graphical user interfaces.

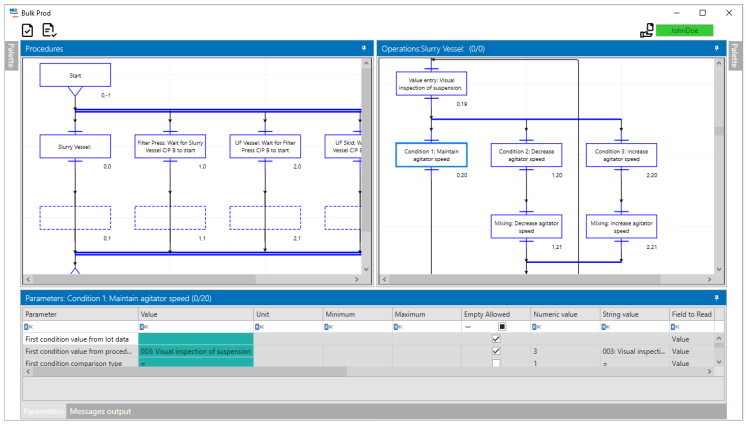
Examples of what the operators see.



From product definition to reporting

The classical functional areas of an MES involves a lot of data management.

Well structured and easy to use graphical user interfaces allow managing articles, orders, production planning, event protocols, reports, audit trail reviews and the configuration of all these features.

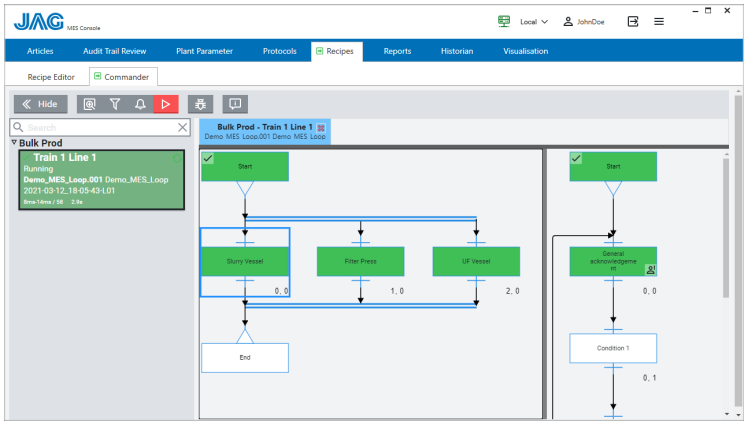


Recipe for success

The Recipe Editor allows plant owners to create S88 aligned recipes per simple drag and drop. Knowing the process is all that is needed to write or edit a recipe. No programming skills are required.

Predefined procedures and operations are used as building blocks. The order of events is defined with lines and the detailed behaviour of the procedures and operations is defined with parameters.

The orchestration of automated processes and the interaction with the operators are driven from the same recipe.



Full control during manufacturing

During manufacturing the Recipe Commander allows observing the recipe execution in real time.

Animated versions of the recipes provide a detailed view of the activites going on in the manufacturing process in an easy to read and understand format.

In plants that are build for multilot operation the number of parallel activities can be very large, but the Recipe Commander allows keeping control at any time.

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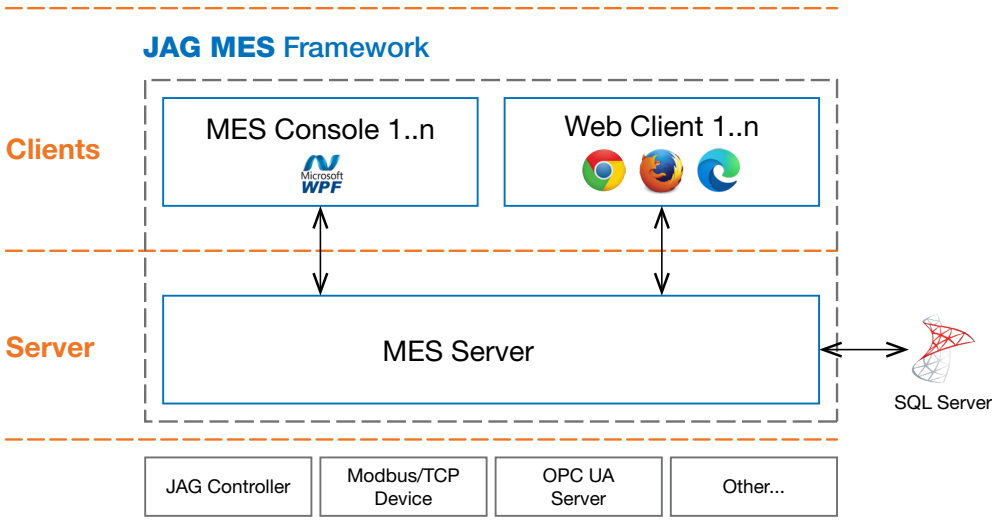
Client / Server architecture.

Built for modularity and extensibility.



JAG MES has a classical Client / Server architecture designed for multiuser environments. The core of the MES Framework is the **MES Server**. It runs as a service and offers a large number of interfaces. For the graphical user interfaces it provides the backend to the MES Consoles (rich clients) and Web Clients. At the same time it interacts with the JAG and third party automation components on a PCS level and stores all data in SQL Server databases.

The **MES Consoles** are the main user interface for the typical MES features like working with articles, orders, production planning, event logs, reports and so on. To simplify the rollout of updates, the MES Consoles themselves are kept minimalistic and dynamically load the functionality and user interfaces from the MES Server while starting up.

This approach is very similar to web-based user interfaces, but offers the full functionality and performance of Windows Presentation Foundation (WPF) based user interfaces.

Certain modules can be used in the MES Consoles, as well as in **Web Clients**. The advantage of the Web Clients is that only a current generation web browser and a network access to the MES Server is required to work with web-based JAG MES modules. This is particularly useful during commissioning, qualification, calibration and maintenance.

Numerous standard modules are available. Thanks to the standard modules, most applications can be covered just by licensing the required modules. That said, the modular approach of the MES Framework allows adding custom modules – and thus extending the functionality to cover very specific customer requirements.

As the MES Framework hosts both the modules for MES and PCS related functions, there are **no complex and unnecessary interfaces**. This ensures a seamless information flow across the whole application.

JAG Jakob Ltd
Industriestrasse 20
CH-2555 Brügg
T +41 32 374 30 30
jagpt@jag.ch
www.jag.ch

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