EROWA®
system solutions

JMS® 4.0
MoldLine
The process control system for tool & mold manufacture

Global presence

Well-known companies on every continent are among our customers. Machine manufacturers, fixture, tool and mold makers, as well as production companies in the electronics, automotive, watchmaking, medical technology, and aerospace industries, manufacturers of cutting tools, and many subcontractors.

EROWA JMS® 4.0 MOLDLINE

A step towards Industry 4.0

The EROWA JMS® 4.0 MoldLine process control system has an important place within Industry 4.0 as a whole. It covers a large proportion of the functions that make up the Smart Factory. The benefits for users are significant, as it is always clear what workpiece is where in the process and when.

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The machines constantly report their status and in-process control with automatic feed-back gives you production of the very highest quality. Of course, flexible interfaces to upstream and downstream systems are provided as well. Workpiece pallets and electrode holders can be identified at all times from their RFID chips.
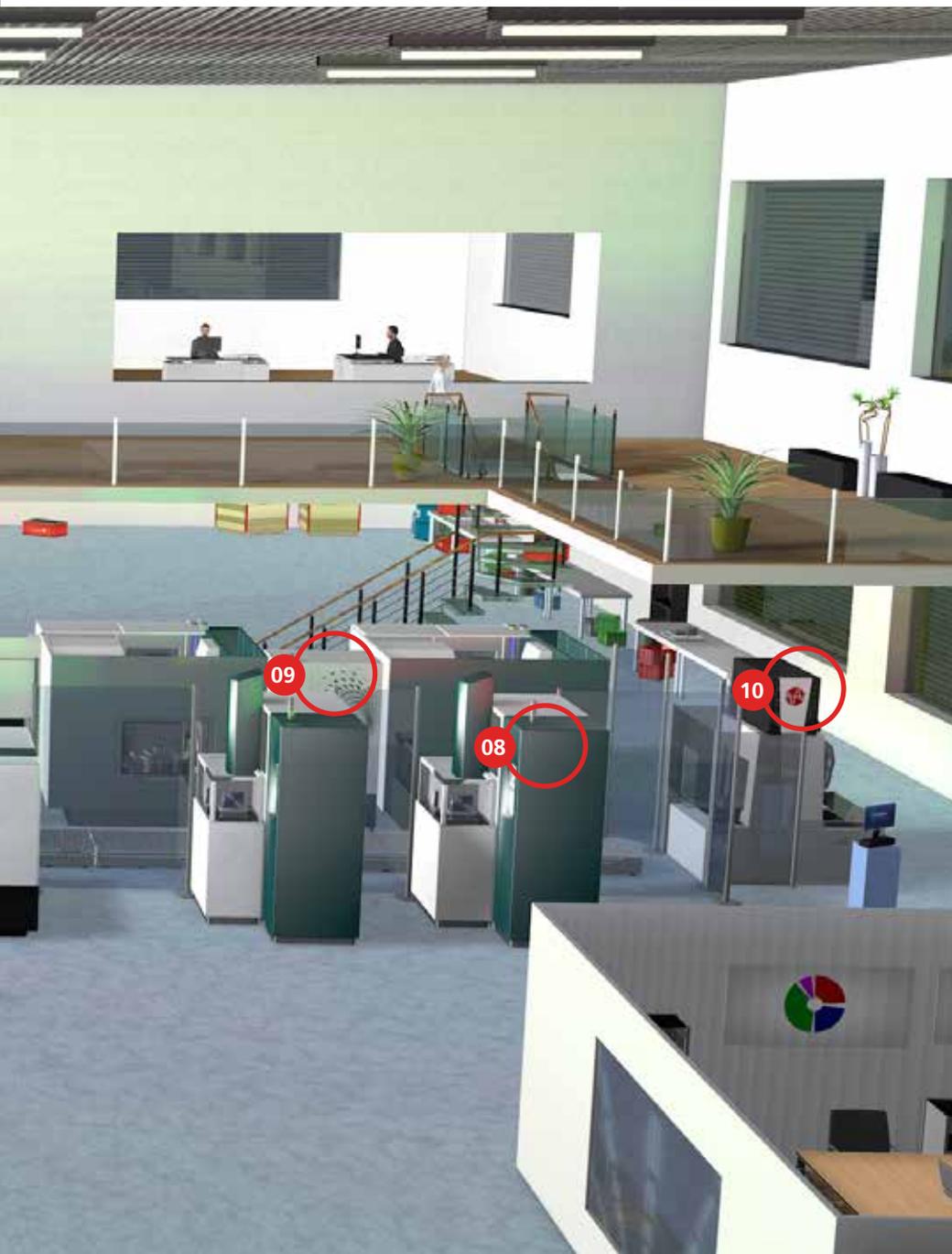
01 | **Avor**

02 | **CAD**

03 | **CAM**

04 | **ERP**

05 | **Milling**

06 | **Preparation**

07 | **Robot on rails**

08 | **EDM**

09 | **Washing**

10 | **Measuring**

11 | **Cell computer**

Import rather than copy

Getting a job through your own production is certainly manage-
able. However, you often have to expect copying and recapturing
when it comes to detailed planning. These tasks are time-consum-
ing and error-prone. The JMS® 4.0 MoldLine process control system
has a wide variety of interfaces to surrounding applications. This
makes direct imports, but also feedback, much faster and safer.
And the current status in production is captured and displayed in
real time.

**ERP I** An order is recorded in the ERP system.

Various data is entered.
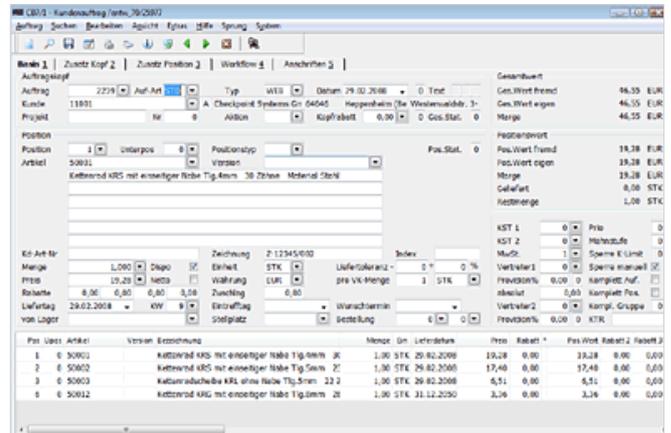
PPS I The production planning system fetches the master data from ERP, and adds planning details such as machine assignments and standard times.
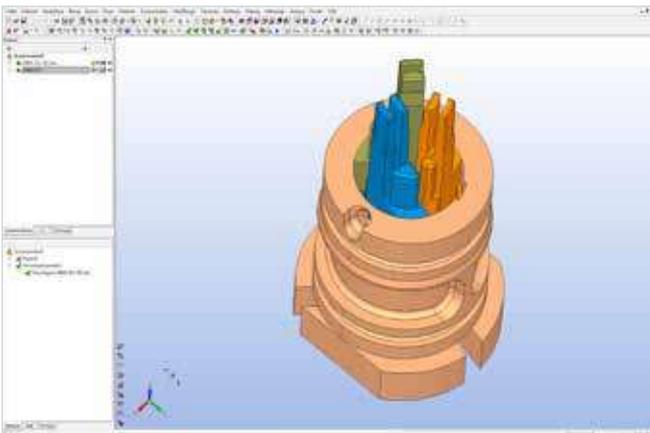
CAD I Design generates all data sets.
The item structure is applied.
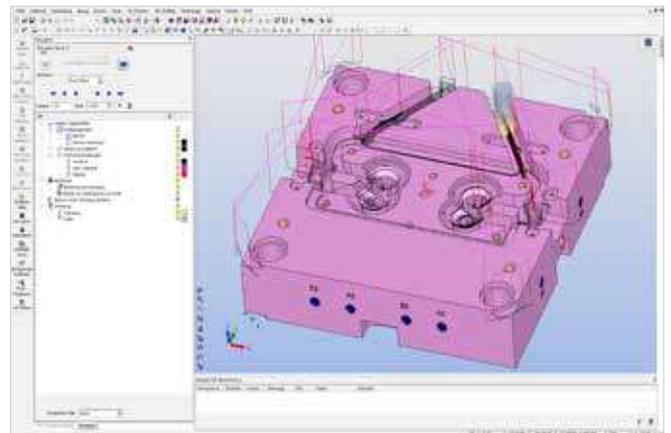
CAM I CAD data is imported via the interface to the CAM. JMS® MoldLine receives the programs and assigns them to the workpieces.

From all these sources, the EROWA JMS® 4.0 MoldLine collects the required information to create a complete work process. The data is imported largely automatically. Manual additions can be made depending on the characteristics of the various systems.


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THE FACTS

- Import interfaces
- Process flow created
- Manually editable
- Export interfaces

Setup during main time

Upholding the autonomy of the system is the goal. This means sufficient workpieces must be prepared ready for pick-up. This preparation is handled by the setup and presetting stations. Here, the prepared pallets are identified and uniquely recognized on every subsequent machine in the work process.
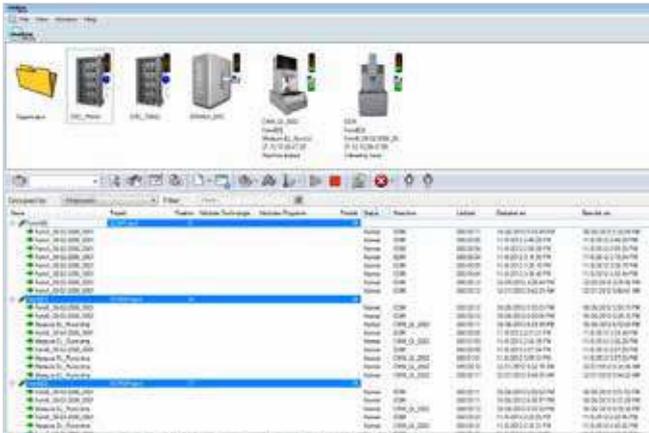
Step-by-step process flow I The CAD imports are converted to process steps. The workflow (sequence of operations to be executed) is supplemented with further inputs.

Presetting I Offset data of electrodes is determined easily on the PreSet 2D presetting station. The data is associated with the corresponding electrode through the integrated interface.

Job preparation I Setup and preparation while the production cell is producing. There is no waiting time. The EWIS™ chip ensures identification.

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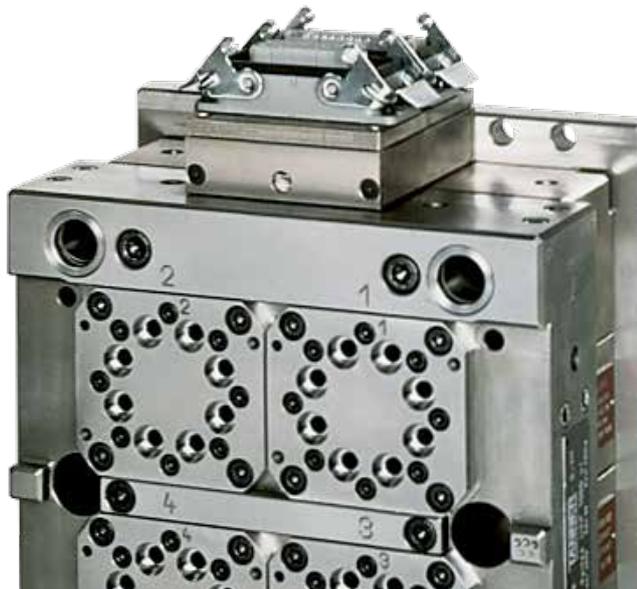
THE FACTS

- Maintains autonomy
- Unique identification
- Associates offset data
- Ergonomic working

Increasing autonomy

EROWA robots open up previously untapped production hours. In the third shift and on weekends production runs autonomously. This requires exact, but still flexible, planning. JMS® 4.0 MoldLine ensures that you get a clear overview. The order list, priorities, the CNC programs, tool management and the current status messages show you what is going on at a glance.

The cell I A production cell consists of the machine, the EROWA robot and the terminal for the process control system. By this, the operator has everything under control.
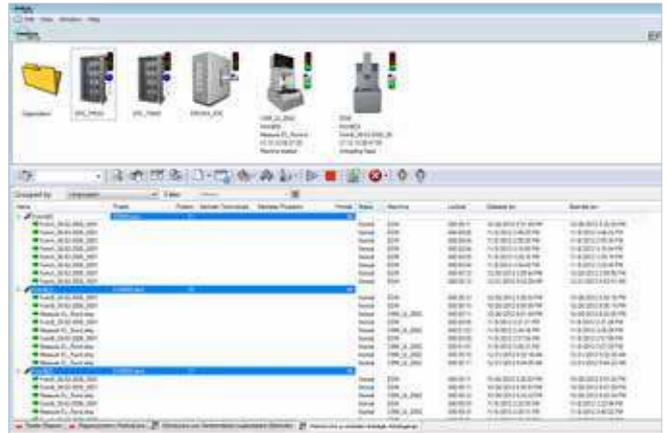
The Manager I The JMS® 4.0 MoldLine is responsible for control and monitoring of the cell. This task can be set up in different comfort levels. (Post processor, JobGenerator, JobManager).

Tool Checking I Besides the workpieces and NC programs, you need the right tools as well. Whether this is the case, and what their remaining lives are, is read from the memory of the machine.

Tool table before machining	Tool table after machining	Result
✗ 10	-	
✓ 17	✗ 17	✗ nok
✓ 20	✓ 20	✓ ok
✓ 33	-	
Workpiece State:		✗ Error!

Process steps I The manufacturing process can run only in the prescribed order. Even in unforeseen situations (tool breakage, priority change), the JobManager coordinates the correct procedure in the production cell. The operator is informed on his/her smartphone.

Identification I Staged pallets with workpieces are uniquely marked with a chip. At every station in the production process, each pallet is precisely identified by the EROWA EWIS™ system.

THE FACTS

- Utilize off-peak and night hours
- Manages manufacturing priorities
- Status messages

Everything under control

Automated single part production places high demands on the organizational flow. The JMS® 4.0 MoldLine keeps to the process steps no matter what the circumstances. Interim control after milling, before that automatic cleaning, the right eroding strategy, and blocking or release of the next production steps - everything is under control with the JMS® 4.0 MoldLine.

Release I A workpiece is released for machining if all requirements are met. That is, the priority is right, the CNC programs and tools are available, the previous production step has finished, and the intermediate check has confirmed the dimensional accuracy.


Overview I One glance at the screen shows whether everything is in the green range. The machine shows only the current status, but the JMS® 4.0 MoldLine also looks into the future.

Cleaning I The "washing/cleaning" production step is necessary if several processes run in succession automatically. For example, workpiece milling > washing > measuring > EDM.

Strategy I The strategy is received from CAM and enriched with other data, e.g. electrode life.

Automatic presetting I The larger the number of produced electrodes, the more important efficient measurement of zero points becomes.

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THE FACTS

- Prioritizing
- Integrated cleaning
- Selectable production strategy
- Automatic presetting

Perfect in detail

Attention to detail is one of the most important prerequisites in mold manufacturing. The same is true for the JMS® 4.0 MoldLine. We continuously provide new and advanced control features. Processes become better to control and faster to verify.

Loading Station I Take the pallet from the tooling stati-on to a free magazine location? The JMS® 4.0 MoldLine does it automatically.

Fixture Manager I Manages several fixtures on a pallet, automatically storing the position of a clamped work-piece. The identification system ensures the correct matching of the data.

Tool Checking I The ToolManagement module checks which tools are required based on the NC program right after a job has been created. A comparison with the tool list of the machine shows whether the job can be released or not.
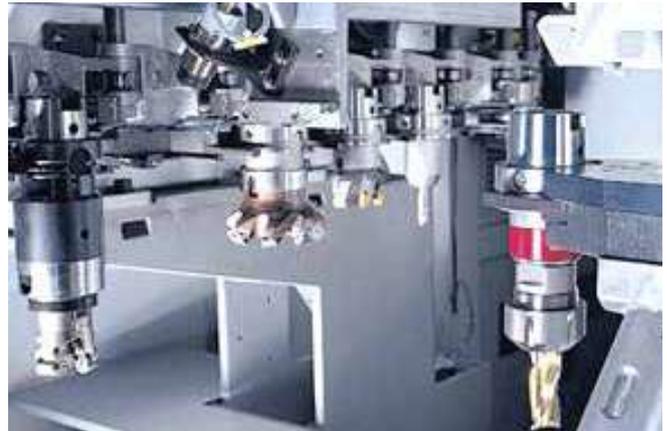
Tool Checking 2 I If a tool is missing or if its life has expired, its sibling tool is used instead. If none is availa-ble, the current job is stopped, and the next job on the priority list is processed.

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THE FACTS

- Detailed information
- Fixture management
- Changing pallet places
- Graphical tool table

Documented quality

Traceability of production processes is an integral part of all certifications. The JMS® 4.0 MoldLine takes this into account right when the data is created. Specifications and evaluations are consistently associated with the workpieces and stored.
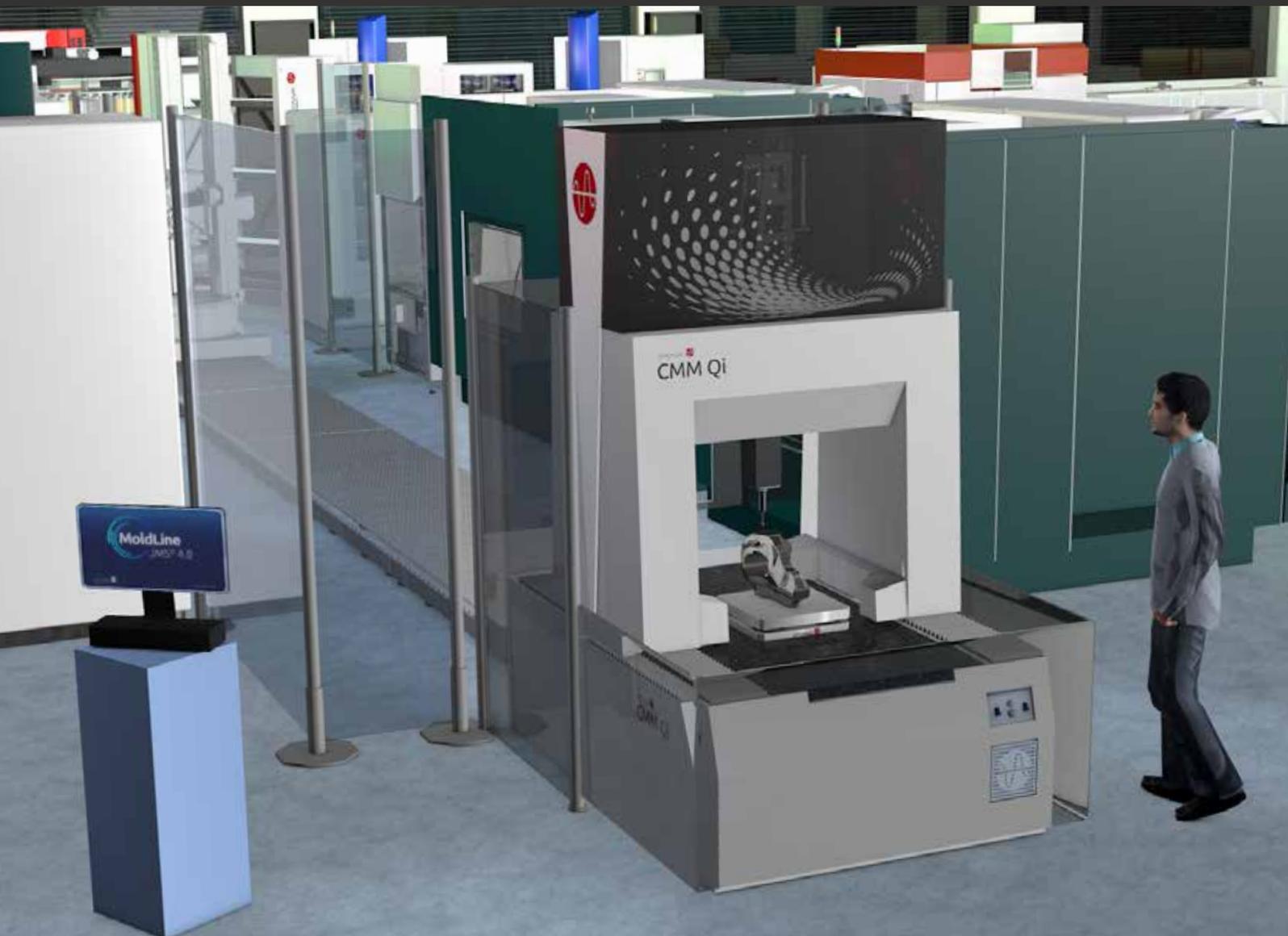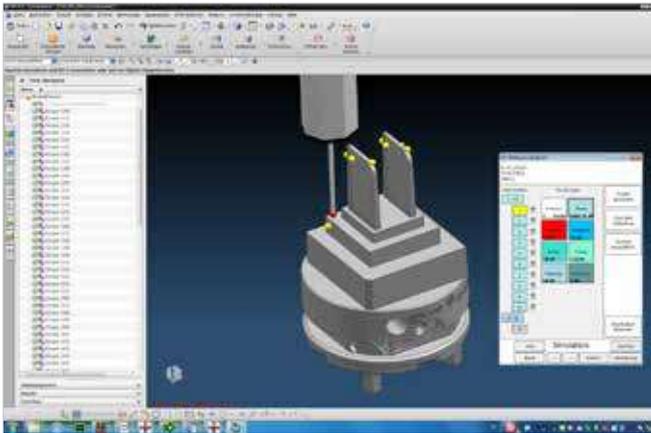
Q-Measure I The points on the electrode that absolutely must be within the tolerance are determined right during the design phase. A measuring machine compares the specifications with the actual dimensions. The measuring program is generated automatically. JMS® 4.0 MoldLine Q-Measure - brilliant!


More capacity I Even the "quality measurement" process step can be automated. A potential bottleneck is eliminated by automatic measurements in the second and third shifts.

Log I And if anyone wants to know exactly what the target/actual comparison results are, the specific workpiece log has all the information. It is directly accessible from JMS® 4.0 MoldLine.

3D World I The measurement logs can also be stored as 3D PDF files, providing a graphical view of the verified measuring points.
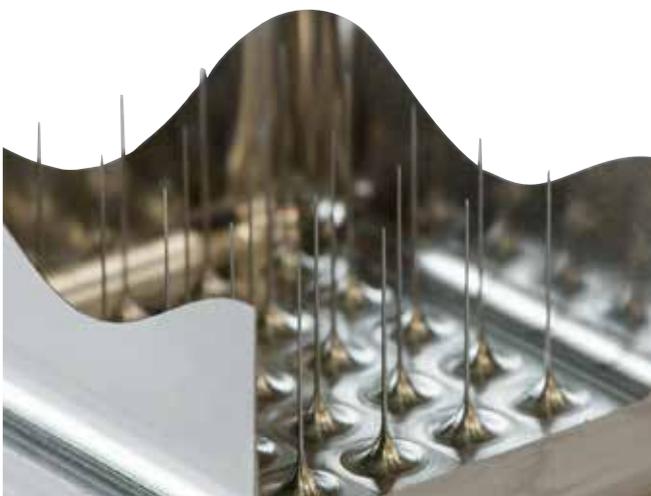
THE FACTS

- Clear checkpoints
- Increased capacity
- Online logs

Knowledge is power

Is the work supply in the magazines sufficient for the whole night? Are the most important tools in good condition? What is the remaining life of each tool? Who is informed about the system state?
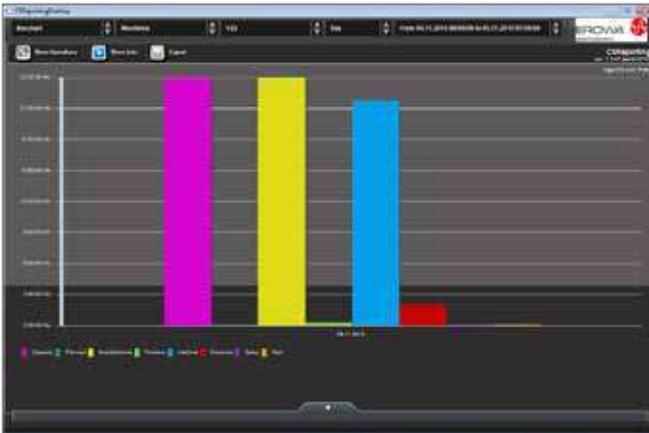
Checking I Target-actual comparison of the planned and actually achieved machine utilization over a selectable period of time – brilliant!


Job data I Information on the effective machining time for each workpiece or for the entire job.
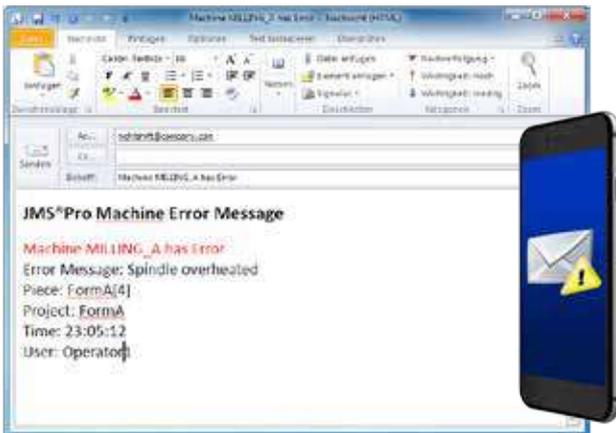
Alarm settings I Who receives potential status messages in what period of time and over which information channel?
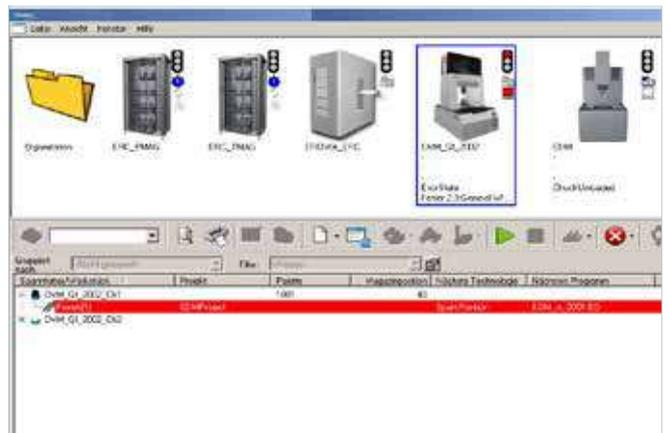
Error messages I The more differentiated the error messages are provided by the machine, the more meaningful they are when passed on to the operators.
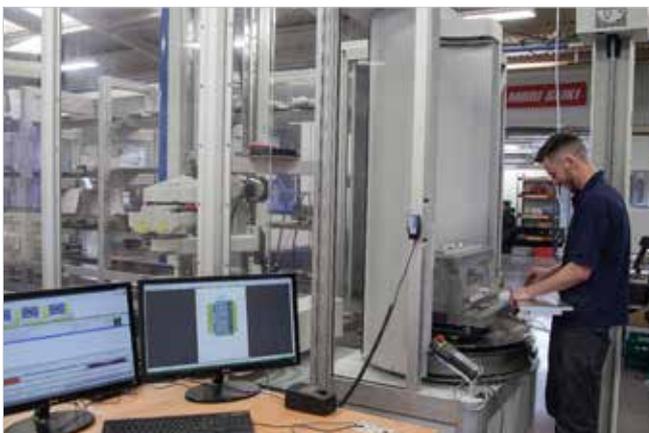
Change Handling I The unforeseen is the enemy of automation. If a job is interrupted for any reason, JMS® 4.0 MoldLine continues with the cell with the next lower priority job. This ensures that productivity is kept high.

THE FACTS

- Clear presentation of current situation
- Available via network
- Time-based messages
- Presets per machine
- Reliable handling of changes

At a glance

JMS® 4.0 ML Structure Management
includes products associated with data evaluation and information distribution.

JMS® 4.0 ML Presetting and Measuring
Includes products that are connected with data import, setup and presetting.

ERP Imp/Exp

ERP Import / Export
Receives data from high-level systems and provides production information back.

PreSet 2D

PreSet 2D
Data organization module for the connection of the proven electrode presetting station.

Import

EDM Data Import
Imports CAD data to create the work steps.

PreSet 3D

PreSet 3D
Data organization module for the integration of EROWA 3D measuring machines.

CAD Import

Q-Measure CAD Plugin
Lets you define measurement points in the CAD program.

PreSet Import

PreSet Import
data organization module for importing data from other measuring machines.

CAM Import

NC Import
Imports NC programs into the orders automatically.

THE FACTS

What is important in automated single-part production? Correct – to know what when where and how steps are planned and will be executed. That's exactly what you will achieve with JMS® MoldLine. The various components of JMS® MoldLine give you a clear view of the entire complex production process.

To learn how that might look in your specific production environment, call your local EROWA representative now.

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JMS® 4.0 ML Cell Integration
includes the products for controlling manufacturing cells. Both the handling device and the machine tool are controlled.

JMS® 4.0 ML Options
Integration means the comprehensive control and display of all the sequences in production across multiple manufacturing cells.

MoldLine Post Processor
converts the neutral part presetting data to machine-specific offsets and transfers the data to the machine.

Q-Measure
The postprocessor creates the measurement cycles.

MoldLine Job Generator
creates offline "mega jobs" in which the offset values and loading data of the handling unit are merged and transferred into machine-specific NC programs.

MoldLine Alarming
contacts, if needed, the correct operator.

MoldLine Job Manager
is the online control for the machine and handling unit. All production data is correctly mapped automatically.

MoldLine Reporting
is the interface to the evaluation of all relevant operating data.

MoldLine Tool Checking
compares the loading list of the tool changer with the requirements from the machining program. Discrepancies are reported.
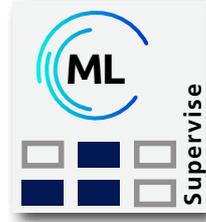
MoldLine ERP Feedback
provides online visualization of individual cell statuses.

The benchmark for process control systems

Productivity

Reduction of production costs and hourly rates through continuous production.

Short delivery times

Flexible prioritization for the best use of production hours without idle time

Process reliability

Production processes are under control – automatic supervision and monitoring by the process control system

Quality

Traceable and documented production steps for optimal quality assurance including change system.

Ease of use

Centralized data management, integrated data flow from PPS through CAD/CAM to manufacturing and quality measurement.
A wide variety of machines and production technologies are incorporated into the entire system.
Clear overview of the manufacturing progress in real time and at any time.

JMS® 4.0
EROWA Productivity Suite

MoldLine JMS® 4.0

ProductionLine JMS® 4.0

The next step

Important things need to be planned. And your next step is certainly among the important things. It is your start into a new, efficient era. We are pleased to be with you on the way. As consultants, in practice. For you to know at all times what you're engaging in.
The next EROWA branch office is not far – **take the step.**
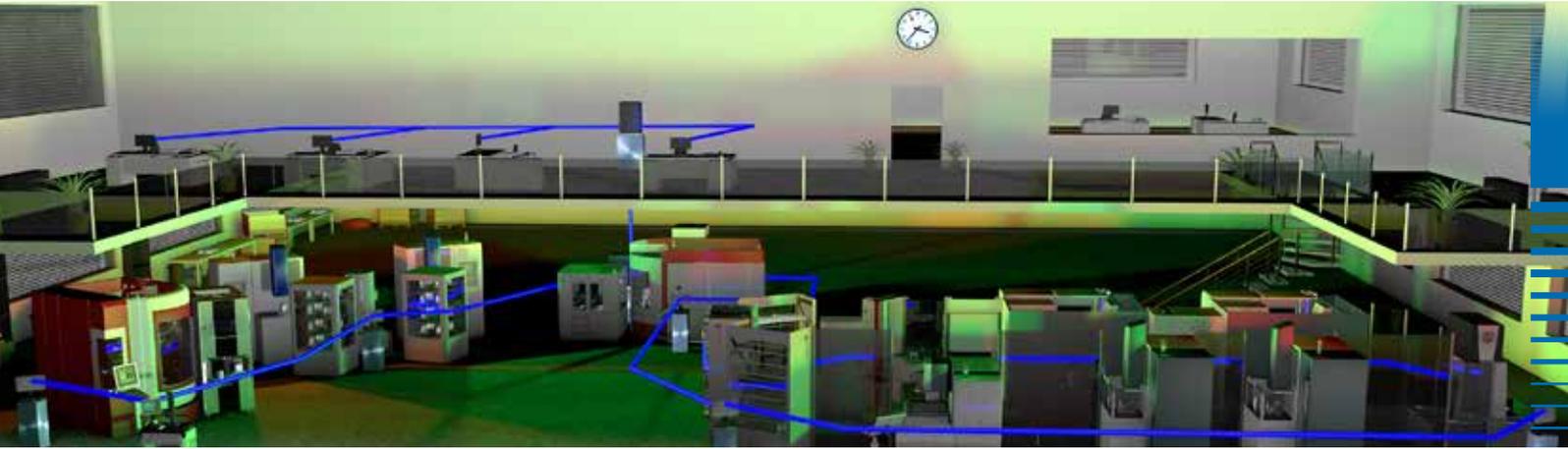
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