BMS / MES
Manufacturing Execution System

Your modern software solution for transparent manufacturing, manufacture planning and machine data acquisition.

breitenbach
software engineering
BMS / MES – Operating Data Management System

„To me, modern operating data management means:

an immediate insight into the current situation in manufacture and assembly."

What do I expect from modern operating data software?

- Control and full utilization of machine capacities and resources
- Prompt reaction to planning bottlenecks
- Cost savings
- Transparency in manufacture
- Directly retrievable, current data
- Less (or no) paperwork
- Reduced workload
- Time savings
- Lower training effort and expense
- Easy-to-use system

Production-optimizing software solution

MES (Manufacturing Execution System) is a process-oriented management system that provides a connection between production-level data and corporate-wide enterprise resource planning (ERP) systems.

Detailed production flow

Integration of ERP and MES means detailed, up-to-date monitoring of production processes.

Controlling production in real time ensures high transparency and traceability.

Continually updated graphic display reveals standstill times and overcapacities. That means production processes can be better planned in future and optimized in the medium to long term.

Raise productivity and lower costs

Efficient, targeted use of resources raises productivity and lowers costs. Just-in-time delivery of production goods shortens storage times and increases cash flow.

That makes your company more competitive, thanks to improved manufacturing processes using BMS / MES.

Reduce throughput times by up to 30%

According to the Manufacturing Enterprise Solutions Association (MESA), throughput times can be reduced by up to 30% using MES solutions. Furthermore, defective products can be reduced by around 10%, stocks by around 15% and manual data entry by up to 60%.

BMS / MES helps you reach these objectives.
Short-notice and cost-conscious action

The demand for ever shorter delivery times for high quality products is in direct conflict with the challenges that a manufacturer has to face every day: machine faults, rejects and material and personnel bottlenecks. This demands short-notice, cost-conscious action based on objective information.

To plan effectively, use resources to full capacity and respond to customer requirements rapidly – those are the tasks that modern manufacturing shops have to live up to today.

This is exactly where the Breitenbach Operating Data Management System supports you.

Easy to use

BMS provides a wide range of tools for displaying, monitoring and controlling entire manufacturing operations and processes. Ergonomic operation and easy settings make it easy to use.

BMS is used to great success for the following industries and product types:

- Automotive
- Plant manufacturing
- Metals
- Plastics
- Printing
- Food and beverages
- Single-part production
- Batch production
- Assembly to order
- Small series production
- Large series production
- Mass production
- Line production
- Process manufacturing

BMS

Your advantages at a glance:

- Efficient planning
- Easy handling of machine capacities and resources
- Permanent process visualization
- High systems transparency
- Real-time control of production
- Discovery of weak points and bottlenecks
- Ability to react quickly
- Improved process quality
- Improved use of existing capacities
- Gapless traceability of products and components
- Reduction of operating and personnel costs and downtimes
- Lowering of reworking costs
- Short-term return on investment (ROI) for the company

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Step by step to an integrated system

Modular software components allow a flexible system structure. Software modules are integrated into the existing system and individually configured to suit your company’s specific requirements. Open and variable interface architecture allows connection to existing and popular ERP / PPS, quality assurance systems, payroll accounting systems etc.

- SAP • Semiramis • Abas EKS
- Sage bäurer • Navision • Axapta
- BaaN • proAlpha • ifax Open
- Infor • printplus • Syogra • Ordat

improves the quality of planning even further.

Efficient manufacture

OCC is a tool that can react more quickly and effectively to changes in planning data, running and non-productive times of machines and workstations as they deviate from the target condition, as centrally organized ERP systems or manually operated pinboards. There is no isolated treatment of resources: machines, tools, devices, materials, setters and operators can all be planned simultaneously instead.

Perfect visualization of the planning and production situation

Given periodical re-evaluation, even of undermining influential factors (such as machine faults, unplanned production time changes or failed material deliveries), the actual situation at the time is always accounted for in the planning.

Constantly up-to-date, transparent data

Thanks to OCC’s clear and user-friendly graphical interface, you always have a transparent overview of all of the most important manufacturing information – in real-time. Seamless integration for the purpose of order and machine data acquisition allows a direct overview of the current production results (order progress, produced yields and reject quantities, machine downtimes etc.). These are then compared with the planned results.

OCC - Control Centre

As a planning module of the Breitenbach MES solution, OCC combines company-wide ERP systems with data from the manufacturing level. OCC plans the orders and jobs assigned from ERP to the Operating Data Management System. This is assuming the ERP system does the rough planning.

On the basis of the basic plan dates predefined by ERP, OCC performs the actual planning. During the planning phase, orders are automatically planned and re-evaluated by a user-controllable ranking system. Influential parameters here could be, for example, order throughput time, target deadline, priority, material traceability or customer parameters. Additional integration of ZMS time attendance management and BMS operating data management

Basic functions:

- Automatic planning
- Ranking systems for plan optimization
- Production derived re-evaluation of the plan
- Forward and backward scheduling, bottleneck scheduling, simulation
- Accounting for disruptive factors in the plan
- Comparison with feedback from BDE
- Plan / actual comparison
- Comparison of planned / actual personnel capacity
- Full capacity utilization
- Accounting for buffer times, downtimes and transporting times
- Flexible interface architecture for integration of ERP / PPS systems
- Monitor functions
  - Personnel status
  - Machine status
Operating data acquisition supports you by easy use, improved timeliness, early checking of acquired data for completeness and correctness and greater transparency in acquisition, processing and analyzing production data such as times, quantities, weights, quality and numbers of units.

Integration into central ERP / PPS systems, control centre systems is done over standard interfaces for direct communication.

**Optimization of production processes**

MDE is an essential component for optimizing production processes, reducing process disruptions and increasing productivity, and supports you on setting new targets in the production process. Breitenbach operating data acquisition is used as more than just a feedback system: it is also used for manufacture and progress control parallel to production in all kinds of industries and companies.

**Permanent visualization**

Permanent visualization of current actual values and comparison with planned values gives you an overview of the production situation at all times, and allows you to react quickly to unplanned deviations and disruptions during the production process.

Easy configuration and parameterization of the software modules allows gradual introduction and expansion of MDE functions, as well as cost-effective adaptations to the constantly changing manufacturing and production situation.

**Easy acquisition and feedback**

Changes in the employment system, such as group work or introduction of performance-based bonus systems, which usually have an effect on the acquisition and display of manufacturing results, can be implemented and activated in the program at any time.

**Basic functions:**

- Entry of postings to items such as: project, order, process, workstation, machine, or person at terminal or PC
- Reduction of data acquisition effort
- Reduction of manufacturing paperwork by order supply lists at the terminal
- Prompt feedback
- Master checklists and correction options for acquired data
- Multiple machine operation
  - One worker can process more than one order on different machines / cost centres at the same time
  - Automatic calculation of the proportional order times
- Merging short work cycles of the same kind into collective pay slips
- Allocation of proportional times to the individual work cycles
- Group work
- Incentive wage entry
- Premium calculation
- Project data entry
  - Entry of activities performed
  - Clear, understandable documentation of orders and activities
  - Project planning and monitoring
- Checking for personnel attendance
- Automatic signing on / off production orders with coming / going posting
- Automatic break deduction
- Time deviation calculation
- Comparison of manufacturing order with personnel attendance times
- Management of project, order, work cycle, tool, material, cost centre, machine and accounting data
- Personnel status display
- Cost centre status display
- Comfortable graphical user interface
- Configurable summary of data overviews and comfortable changing
- Quick-selection on available fields
- User-dependent / related colour schemes / styles
The necessity for maximum deadline and maximum quality requires the optimal coordination of all existing resources. Substantially stable processes throughout the company requires accurate scheduling of all resources in quantitative terms. In the area of PPL personnel deployment planning, an improvement in the cost structure is achieved, in particular through the reduction of working hours due to the utilization of existing time working credits and set times.

The complete integration of the existing PPL system enables an orientation of personnel requirements planning to existing orders or available capacities. By integration into the BMS / MES operating data management system, planned orders are handed over to the respective requirements. As a rule, planning is carried out on the basis of the order backlog of production quantities or capacities that can be documented.

PPL for industrial companies integrates all the data from production, production and enterprise control, thus enabling personnel deployment planning which always corresponds exactly to the current requirements.

Selection Criteria:

- Staff employed / working groups
- Qualification or personal preference of the individual employee
- Scheduled staff availability
- Reorganization and re-planning in the production area
- Personnel bottlenecks
- Defined production targets
- Long term or short term planning
- Service inserts
- Fixed shift scheduling
- Time account development
- Under-employment or over-employment
- Scheduled production orders
- Match the capacities required (for example, tools, devices, equipment, etc.)
- Statutory provisions (e.g., working time legislation, company agreements, etc.)

The interaction of personnel and operating resources thus forms the basis for predicting the real system behavior. In this way, the impact of different personnel structures on target variables can be investigated, such as utilization of operating resources and personnel, application and processing times.

Increase Profitability

Since personnel requirements and order intake are close to one another in the manufacturing industry, strong seasonal fluctuations lead to demand peaks and overcapacities. The planning is carried out on the cost carriers, cost centers, locations or projects managed in the system. The freelance employees can be immediately taken over in case of over / under cover become. The use of existing resources is thus optimized and at the same time additional work is minimized.

In the case of personnel over- / undercover, the employees can be considered according to their qualifications and time limits. This ensures that not always the same employees are used in the event of need, but the supervisor / dispatcher in good time in relation to the work impact. Companies are faced with the challenge of optimally coordinating the workforce and production utilization. The PPL personnel deployment planning in the industry serves to increase the profitability of industrial production.

However, in practice, the optimization of production capacities still often focuses exclusively on the order of the production orders. If the assignment of tools, Manufacturing aids, means of transport as well as the capacity utilization of the personnel, the companies give important optimization potentials.

For the planning and control of all production resources, the control console only functions on the basis of the real-time information during operation. This data integration combined with the increasing complexity of the requirements regarding term consistency, product characteristics and flexibility the sequence of orders allows both manual personnel deployment planning and planning based on insulation solutions to reach their limits quickly.

Optimal Adjustment

The integrated and modular design allows the system to be expanded in line with the requirements and thus the optimum adaptation to the individual requirements throughout the company. In particular through the introduction of the BMS / MES operating data management system, planned orders are used to determine the respective requirements.

Taking into account the urgency, predetermined rules and possible future balance determination, the available staff is immediately scheduled.
In the field of machine data acquisition (MDA) the Breitenbach company is using MODBUS components for recording, processing and control of machine data.

**Increased flexibility**

This enables connectivity to be expanded with a higher degree of flexibility. The MODBUS system is a communication protocol based on a master/slave or client/server architecture.

Since it is an open protocol, MODBUS has developed into a de facto standard in the industry.

This offers several advantages for the customer, namely, lower unit cost, increased flexibility and network-capable components for the detection of machine signals in both digital and analog form. Additionally, serial interfaces can be operated via expandable MODBUS components.

**Easy construction**

The mounting of the basic component (Bus Coupler), as well as the plug-in expansion components on top-hat rails, enable quick and cost-saving installation in existing control cabinets.

The direct processing of the information provided by MODBUS is given via a dialog interface.

With this the ability to use a Bus Coupler to process signals from several machines becomes available. Also, the communication with several bus couplers from one terminal is now possible. The central server is able to monitor and control all input and output parameters of the online MODBUS components.

Via the control center, the user configures the connected hardware components, monitors all available basic components and their attached expansion modules in the network.

**Mobile Time Management**

Breitenbach Software Engineering has enhanced the concept of off-line and on-line solution to an integrated combination solution. Now recording of time data (presence times, travel times, order times) can be recorded via several channels by employees in the field.

The online connection is optionally useable via a WiFi connection in a local network or via cellular data connections (internet connection).

Time data, such as clock-in/clock-out, start of work, working time or travel times is entered via a user-friendly touch interface. The employee can make use of an available order book to see what work needs to be done.

This data is automatically synchronized with each online connection between the central server and the device of the employee.

The handheld device is used as a personal clock. The id assignment to the device is carried out centrally.

If necessary, a personal setting can be set so that the input to a handheld device can be personalized to the users need.
MDA
Machine Data Acquisition

Machine data acquisition offers the systematic recording of machine signals and states, and replaces manual, time-consuming, hand-written log sheets and analyses. The improved transparency and timeliness of data allows for an improvement in machine capacity utilization and optimization of productivity by rapid reaction to unplanned downtimes. The machine-to-system connection is made, depending on the age of the machine, over a separate signal transmitter, or by direct communication and standardized protocols with a network connection (Euromap 63, OPC, Profibus, host computer interfaces).

Reduced workload through monitoring

Monitoring gives you a direct overview of the current machine / system situation at all times. This information can be called up from any approved PC or web-terminal. Event-controlled programming and notification functions allow the forwarding of information for initializing suitable measures in cases of failure even during unmanned operation. BMS reporting provides the various departments with results over any period of time:

- Workers
- Foreman
- Operations scheduling
- Production management
- Controlling

Basic functions:
- Display operating states of systems and manufacturing areas
- Display current production status (production, rigging, startup, faults, unwarranted standstills, speeds, quantities, spoilage, charge, remaining runtime, etc.)
- Ascertain weak points by compiling different reasons for machine standstills (rigging, faults, etc.)
- Automatically record parts and quantities (yield, rejects)
- Order information in real-time
- Process fault messages:
  - Automatic process fault messaging (acknowledged not by user, but by PLC)
  - Manual reporting by machine operators upon faults, if the machine does not generate an automatic process fault message (organizational / personnel interruptions, etc.)
- Send off escalation reports, e.g. via SMS or e-mail
- Machine / system integration over many popular protocols, including OPC, Euromap, Profibus, etc.
- Visualize faults and errors
- Visualize current production, machine, warehouse, terminal and door states
- Display the hall layout and production flow
- Shift reports (employees, machines)
- Performance measurement system support, including
  - Capacity utilization of individual machines / groups in terms of load, frequency of errors etc. over various periods of time
  - OEE (Overall Equipment Efficiency)
  - „Extended workbench“ (machine integration at other manufacturing facilities and cooperative partners)
Information management

Information – the key to success

Only those who gather information, evaluate it correctly and then integrate the findings into the new planning period will have long-term success.

The Breitenbach Report-Tools give you the capability to create individual comprehensive analyses quickly and easily. These analyses are available to you at all times, thanks to the export function into PDF, HTML, CSV or text file – exactly as required.

Facts and figures about MDE reports / controlling

- Compare personnel times with MDE times
- Compare attendance times with MDE times
- Overview of productive / overhead times
- Performance summary per person / cost centre / company / order and runtime
- Currently attendant / absent people with MDE
- Workflow
- Deviations in time / quantities / performance
- Order overview
- Work cycle overview
- Work cycle information
- Postings per

Your reliable decision basis

On the basis of substantiated information, decisions are easier to make and easier to bring across clearly to employees.

MDA reports

- Machine usage
- Shift report / machine usage
- Shift reports including target / actual comparisons of quantities and times
- Daily machine events
- Reasons for disturbances per machine
- Machine speed diagram
- Order-related production, standstill and rigging times
- Reasons for disturbances per order
- Order and article profile, with comparison of order durations and processing, production, standstill and idle times
- Order / parts throughput
- Order, article and reject statistics
- Reasons for disturbances per month by comparison
- Capacity utilization per month by comparison
- Development / processes over larger time spans
- Capacity utilization
- Reject rates
- Malfunction times / downtime
- Productivity checks
- Long-term archiving of machine data
Breitenbach software products have ensured a high degree of integration for more than 30 years. Given the open interface architecture (including HL7 Standard, LDAP), the individual software components can be linked with one another as well as external products almost any way you like. This flexibility and compatibility gives you all the freedom you need for contemporary and future-proof platforms and systems. That makes our products a guarantee for high investment security.

Other integrated Breitenbach solutions for process optimization

Using the valuable resource „time“ efficiently
Reliable studies have shown that with modern time attendance management, euro sums in the double figures can be saved for each month and employee. With ZMS, we offer you exactly the time management solution you need.

The time of complicated payroll accounting is over
Reduce time expenditure for routine payroll accounting work. With ZMS-Lohn, we offer you a certified, flexible software solution for your payroll accounting.

No more rifling through files
Be it an electronic personnel file, job description or the basis for training measures (including seminar management), our software for personnel management offers you a clear, up-to-date overview of your employees at all times.

Professional canteen management
Canteen management: Optimize your operational canteen processes using our cashless ordering and billing system. Effective ordering procedures and calculable ordering quantities save you time and money.

Use your OP resources to the fullest
The medical control centre supports you in the multistage process of OP planning. Whether room occupancy, OP duration, or equipment, materials and personnel requirements – our software lets you plan and enter all services efficiently.

Security builds trust
Access control: Security against unauthorized access (e.g. baby wards) and for the protection of employees, buildings, high-security areas (e.g. laboratories), data and knowledge.

Reduce throughput times by up to 30%
With our MES solution, we offer you a process-oriented manufacturing management system that detects standstills or overcapacities immediately as they occur. According to the Manufacturing Enterprise Solutions Association (MESA), throughput times can be reduced by up to 30% using MES solutions. The central component of our MES solution is BMS – the operating data management system, which displays the production process clearly and in detail.

If you have any further questions on our products, simply call us at 02924/9700-0 or send an e-mail to: info@bb-sw.de
Breitenbach Services

We take care of your software solution – so that you can concentrate on the important things.

You receive comprehensive project management and advisory services for your entire Breitenbach software solution, specific to your requirements. Take advantage of our implementation experience from 3,000 projects. With proven methods, we bring our projects to a successful rollout.

**train-the-trainer-principle**

So that your employees learn how to use the new software quickly and cost-effectively, we apply the train-the-trainer principle.

This is where we train at least one of your employees to become a qualified trainer. In turn, this trainer will then train the employees in each of your departments. That way, the learned knowledge is efficiently passed on.

This is this proven training method by which we prepare your employees.

**Customizing – fine-tuning to your preferences**

We show you how best to optimize and simplify your processes using software-assistance.

By customizing, our flexible programs are adapted to your individual requirements. By setting specific parameters (e.g. input masks or forms for databases), our standard products become your tailored software solution.

**Hotline support**

We support you on all important issues and problems

Our hotline support consists exclusively of qualified IT advisors who have highly technical and product-specific knowledge.

Using our internal call tracking system, we are always up to the latest level of knowledge when you make your enquiry.

This special and personal support guarantees you and your employees the ideal support and quick solution suggestions.
The whole world of Breitenbach software engineering.

- **ZMS**
  - Time Recording System
- **ZMS Online**
  - Mobile Time Management
- **PMS**
  - Personnel Management System
- **ZKS**
  - Access Control System
- **PPPL**
  - Personnel Planning System
- **KMS**
  - Canteen Management System
- **ZMSLohn**
  - Payroll Accounting / OeV
- **BMS / MES**
  - Manufacturing Execution System
- **BLS**
  - BMS Control Centre
- **LMS**
  - Warehouse Management System
- **DA**
  - Document Archive
- **DMSW / EASY**
  - Additional Tools

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**The Company**

Since 1980 the name Breitenbach is synonymous with intelligent solutions for HR Management (E-Roster & Time and Attendance), WFM, Access Control and Operational Data Acquisitions.

Our software solutions are innovative and integrative and extremely flexible which can be customized to meet the needs of any industry on-demand.

To date, Breitenbach has successfully implemented in excess of 3,000 models in the European market over an extremely diversified sector of the economy.

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