



Manufacturing Execution by ORBIS

More efficiency in production





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ORBIS MES – More efficiency in production

Manufacturing Execution Systems (MES) have become indispensable tools in the field of industrial production systems. MES systems, which are production management systems closely involved in the operating process, close the technological gap between planning and production.

We have developed **ORBIS MES** as a solution fully integrated into SAP, which enables a “real-time based” data exchange between production, personnel, maintenance and quality management.

Management and employees are always up-to-date about the actual current situation and are able to react immediately to changes in the production process (e.g. machine standstills, material shortages) – ORBIS MES ensures improved manufacturing and process flows and increases both the quality and stability of processes.

The benefits at a glance:

- ◆ No gaps between business systems (ERP / SCM) and machine production and operators
- ◆ Consistent processes across all company and system levels
- ◆ Reduction in costs thanks to the automation of previously manual activities (obtaining, preparation and processing of information)
- ◆ Higher process quality and safety on production level (the use of information as success factor)
- ◆ Real-time capability improves manufacturing and process flows and promptly provides employees with relevant information (“online” production)

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“With ORBIS we have found a consulting partner that not only has comprehensive SAP experience but also excellent know-how in the field of manufacturing.

Thanks to the distinctive development expertise of the ORBIS employees, we were able to implement all our production processes in the MES solution.”

Manfred Brillert, CIO,
hülsta-werke Hüls GmbH & Co. KG

Overview of ORBIS MES features

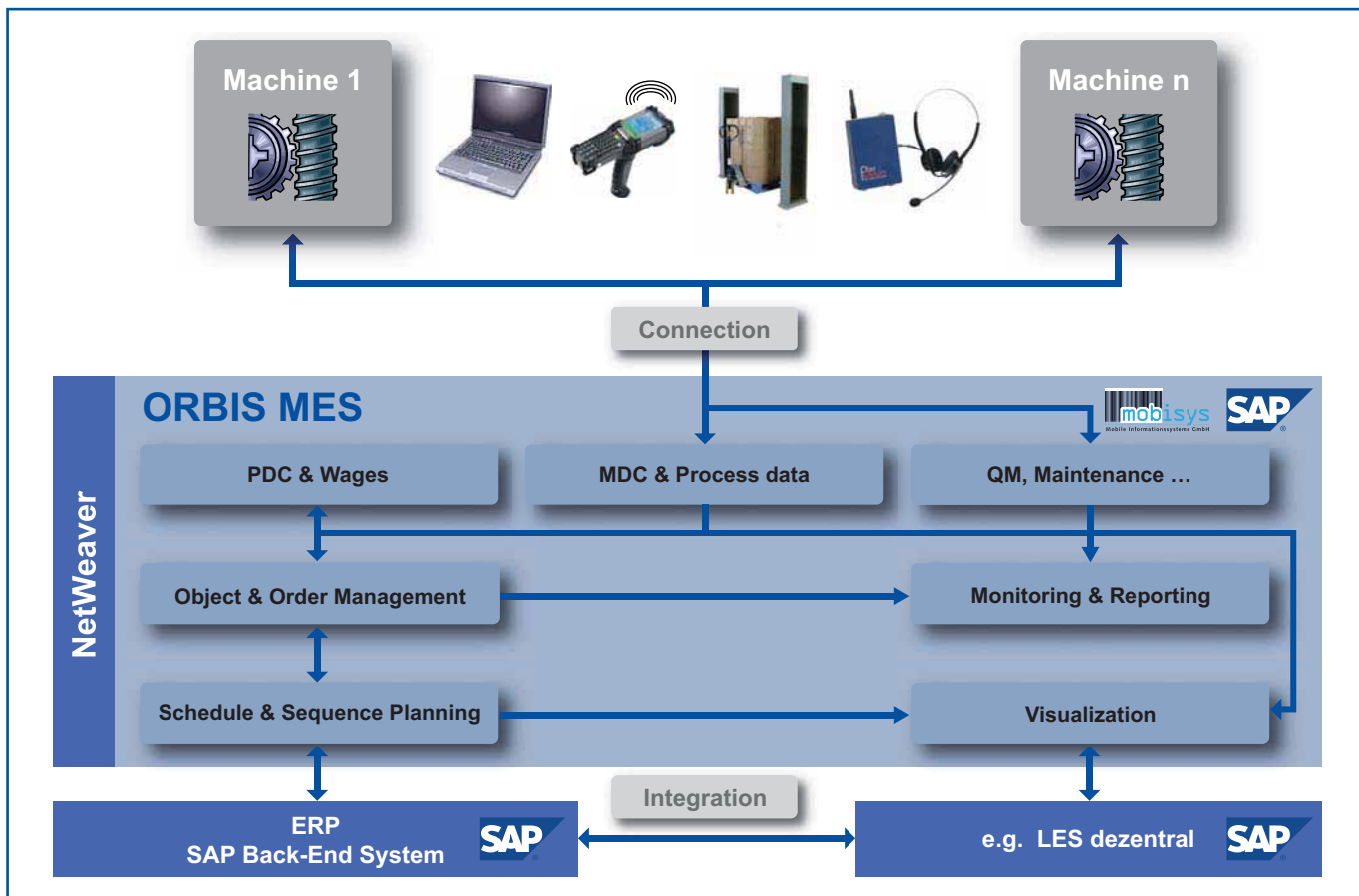
The highlights of our solution:

- ◆ Complete integration in SAP ERP / HR / BW
- ◆ User-friendly and industry-standard user interfaces (stationary and mobile processes)
- ◆ Complete schedule and sequence planning with the ORBIS planning tool
- ◆ Production data collection and machine data collection (PDC / MDC)
- ◆ Production monitoring & controlling
- ◆ Real-time integration of manufacturing information
- ◆ Expansion concept for the implementation of customized functions or adaptations

We have been active as a long-term SAP Consulting Partner in the field of SCM since our foundation in 1986. We know your industry and the technical challenges involved in manufacturing projects.

Whether you choose the ORBIS MES complete package or individual product components – We will implement the solution that best suits your company.

OVERVIEW OF ORBIS MES FEATURES



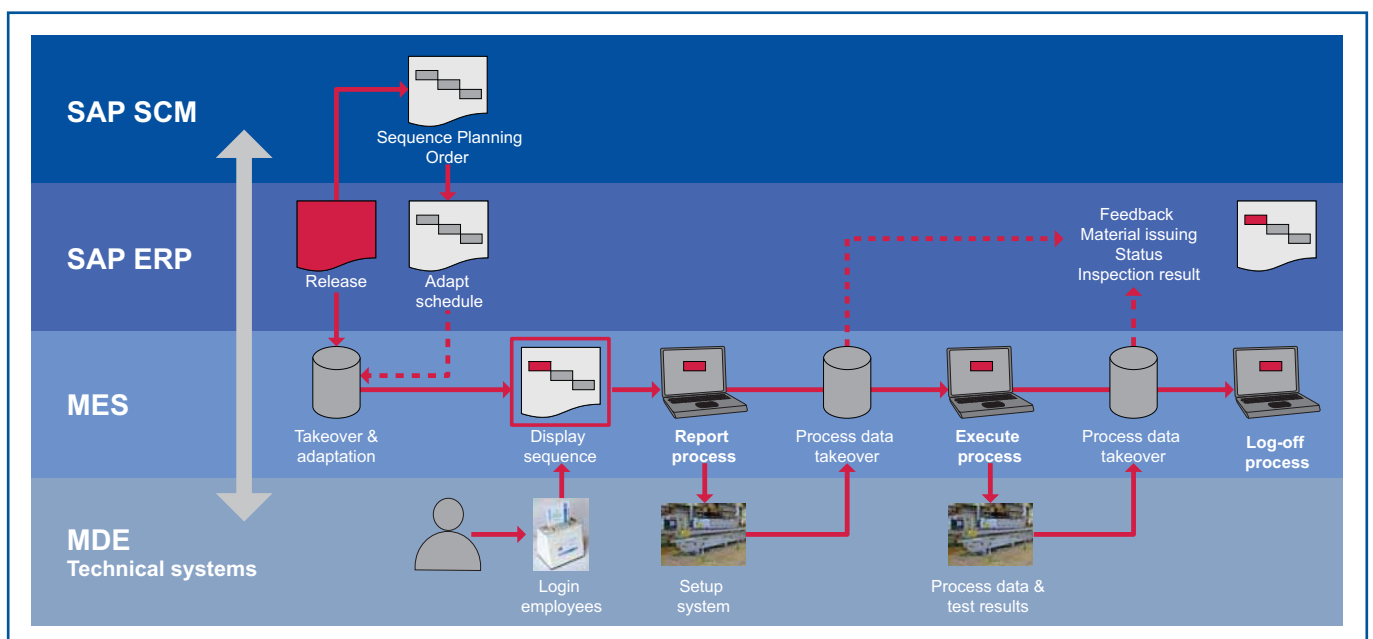
Success factor SAP integration

ORBIS MES is fully integrated in SAP ERP. This means that master data and transaction data such as material information, staff and payroll information, work place information, manufacturing orders and production run schedules can be taken over directly from SAP; or, following the completion of an order, directly reported to the ERP system (e.g. quality-approved quantity / rejects/ material consumption etc.).

SAP ERP is the main system for the management of the master data. Appropriate maintenance and administration transactions are available for all MES relevant objects, so that no parallel maintenance in MES required.



INTEGRATION OF ORBIS MES IN SAP



Stationary and mobile solutions fit for practical applications

Performant and industry-standard user interfaces are the key components of our MES solution. ORBIS MES highlights include user-friendly surfaces (e.g. convenient operation of the MES by touch panel) and the support of mobile processes.

Based on the SAP certified Add-On Mobisys Solution Builder® (MSB®), we offer a user-friendly front-end solution which provides the technical basis of the user interfaces.

These can be used for capturing of data on various terminal devices (e.g. industrial PCs, handheld scanners, forklift terminals, notebooks, PDAs) and on the operating systems installed in these (Windows CE, Windows, Android).

All processes, such as

- ◆ logging of orders and order reports (e.g. status of orders on hand),
- ◆ capturing of error messages, time events (e.g. set-ups),
- ◆ and feedback (e.g. status overview)

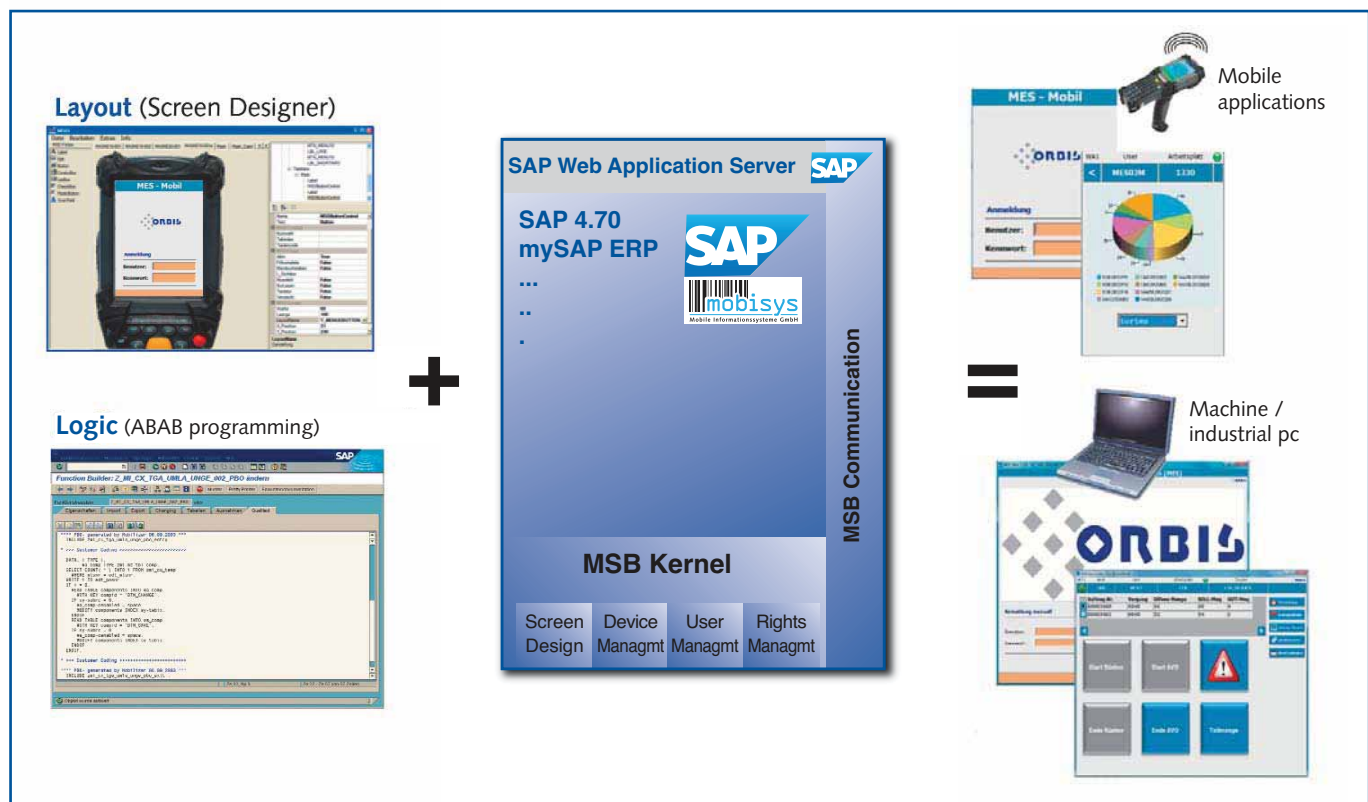
can be conveniently performed by production managers and production staff thanks to the intuitive user interfaces.

Technology

This is a streamlined solution that is fully integrated in SAP, based on the SAP NetWeaver technology. A separate server is not required - the screen layout and the user logic can be maintained centrally in SAP.

MSB ensures high performance real-time processing, as the terminals connect directly with the SAP system (e.g. MES, decentralized LES (Logistics Execution System) or a central ERP).

FRONT-END TECHNOLOGY IN PRODUCTION



Complete production planning

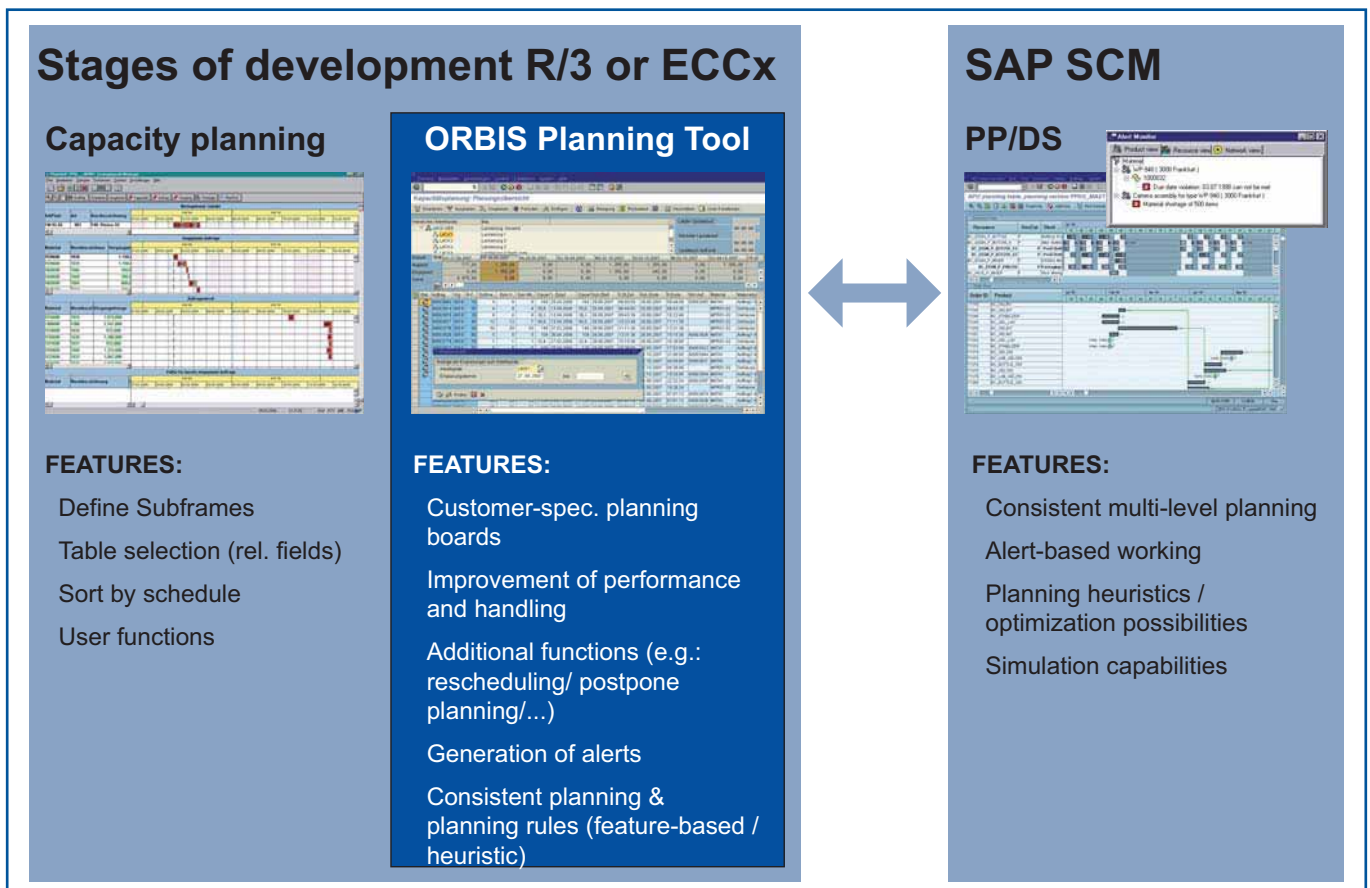
The integration of an effective planning component is essential for ensuring the optimum utilization of resources. The **ORBIS planning tool** allows for a complete planning of each individual production area and thus increases transparency in the order and schedule structure. Our solution, which is fully integrated in SAP ERP, let's you plan your orders by taking into account the required and available resources such as machines, materials, staff and tools.

The high flexibility and especially the expanded functionality, compared to SAP Standard, are the strengths of the ORBIS planning tool:

- ◆ Priority control
- ◆ Heuristic planning approaches for the creation of production sequences
- ◆ Target/actual comparisons for controlling the operative production target
- ◆ Generation of alerts

Other benefits include the easy handling, strong performance and high flexibility for customer specific requirements.

ORBIS PLANNING TOOL



Production data collection (PDC)

The core functions of ORBIS MES in PDC include the creation of transparency in the production process and the capturing of detailed order or process information.

Comprehensive and reliable information about the order flow is available in real-time, and not only provides the basis for continuous improvement in the production sequence, but also the basis for an objective cost control. Information on set-up and production times, quantities, standstills and faults is collected and analyzed.

Core functions and benefits of the solution:

- ◆ Workstation-specific PDC functions, stock lists and displaying of orders
- ◆ Current status of workstations and order processes in real-time
- ◆ Flexible status sequence for the prompt capturing of actual statuses, actual quantities and actual times
- ◆ Supports multiple machine operations and teamwork
- ◆ Depiction of the process progress, schedule and priority control
- ◆ Integration of maintenance and quality management

ORBIS will assist you in setting up a “paperless production” by means of an integrated solution. The data captured in production are transmitted to and visualized in the central SAP ERP system.

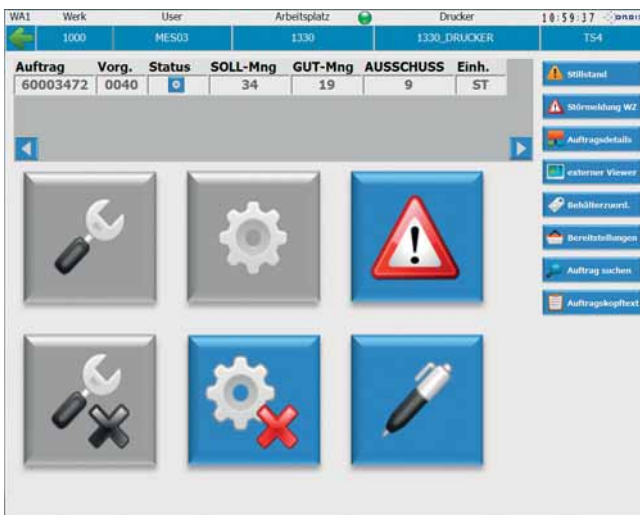
This means that ORBIS MES significantly reduces the costs for the capturing of actual data and supports you in setting up a paperless production.

Your benefits:

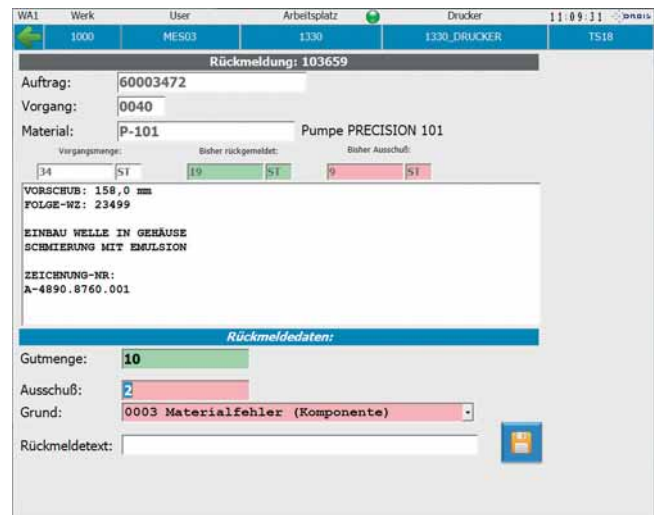
- ◆ Complete transparency in the production process
- ◆ Shorter processing times
- ◆ Higher machine capacity utilization
- ◆ Confusion-free capturing and transfer/
- ◆ Elimination of sources of error

Operating data:

- ◆ Status of systems (set-up, standstill, production, faults, etc.)
- ◆ Quantity information (quality-approved quantity, rejects)
- ◆ Time and attendance recording (in and out message)
- ◆ Order data (work progress, order status)



Status overview order process



Process feedback

Maintenance and quality management

ORBIS MES effectively supports the process of maintenance (PM) and the quality management (QM). Standstill and fault management, preventative maintenance and the support of processes involved in production in the quality management are the core functions of this solution.

Core functions and benefits of the solution:

- ◆ Structured standstill and fault management via PM notifications and PM orders
- ◆ Assessment of inspection characteristics and inspection lots
- ◆ Integration in the PDC/MDC solution for visualization of the machine and system statuses
- ◆ Flexible status sequence for processing of PM orders (actual times)

ORBIS MES allows the integration of maintenance and quality processes in the operational production process.

Your benefits:

- ◆ Organizational support of the maintenance staff in the monitoring and processing of maintenance intervals
- ◆ Costs due to standstills are minimized
- ◆ Expensive repairs of tools and machines are avoided due to continuous, preventative maintenance
- ◆ Timely procurement of spare parts
- ◆ High availability of capacities
- ◆ Documentation or historical analyses of maintenance activities

Capturing of PM notification in ORBIS MES

Auftrag.Nr.	Spät.Endezeit	Spät.StartDat.	Arbeitsplatz	Stat.Ges.	Stat.Eigen	Equipmen
816169	08:37:30	28.09.2006	1310	SIHA	SIHA	PP-FHME
816170	08:37:30	28.09.2006	1310			PP-FHME
816171	08:37:30	28.09.2006	1310			PP-FHME
816172	08:37:30	28.09.2006	1310			PP-FHME
816173	08:37:30	28.09.2006	1310			PP-FHME
816174	08:37:30	28.09.2006	1310			PP-FHME
816175	08:37:30	28.09.2006	1310			PP-FHME
816176	08:37:30	28.09.2006	1310			PP-FHME
816177	08:37:30	28.09.2006	1310			PP-FHME
816178	08:37:30	28.09.2006	1310			PP-FHME
816179	08:37:30	28.09.2006	1310			PP-FHME
816180	08:37:30	28.09.2006	1310			PP-FHME
816178	09:52:30	28.09.2006	1310			PP-FHME
816177	09:52:30	28.09.2006	1310			PP-FHME

Overview of PM orders



Machine data collection (MDC)

ORBIS MES supports the linking and use of information from the technical facilities for the visualization of machine and system statuses.

Current machine statuses are available in real-time. Standstill and running time analyses improve system utilization. Automated booking processes (e.g. approved-quality and reject handling) significantly reduce manual labor.

Core functions and benefits of the solution:

- ◆ Real-time display of the machine and plant status
- ◆ in less manual data entry work in production
- ◆ Detailed depiction of standstill and fault times including reason
- ◆ OEE analysis & traceability
- ◆ Visualization of production areas

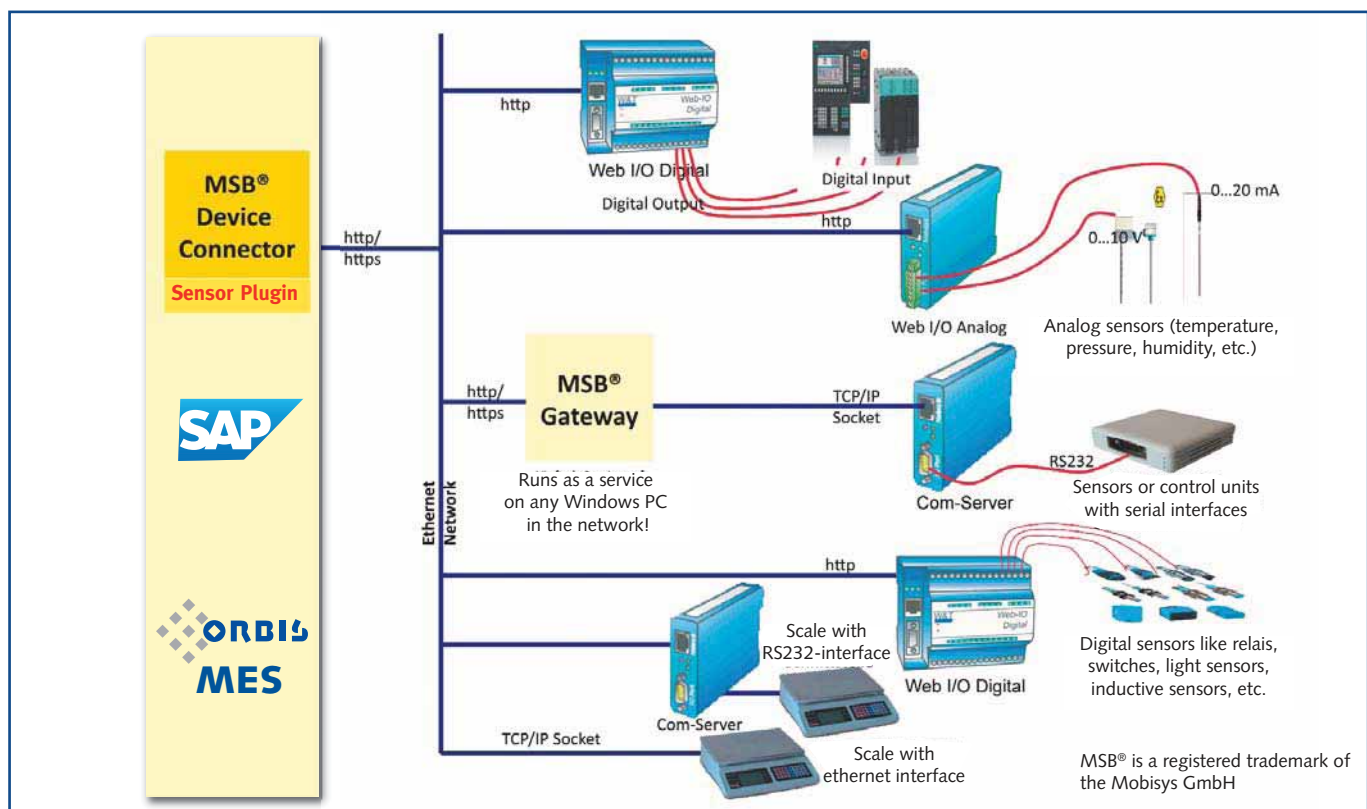
ORBIS MES supports automated capturing and use of machine data directly at the source. The MSB® Device Connector or the MPC module, in combination with appropriate plugins, allows the linking of different devices to ORBIS MES.

Your benefits:

- ◆ Prompt action is possible
- ◆ Minimization of standstills
- ◆ Improvement of machinery and system use
- ◆ Less manual work, confusion-free capturing and transfer
- ◆ Elimination of sources of error
- ◆ Minimization of costs

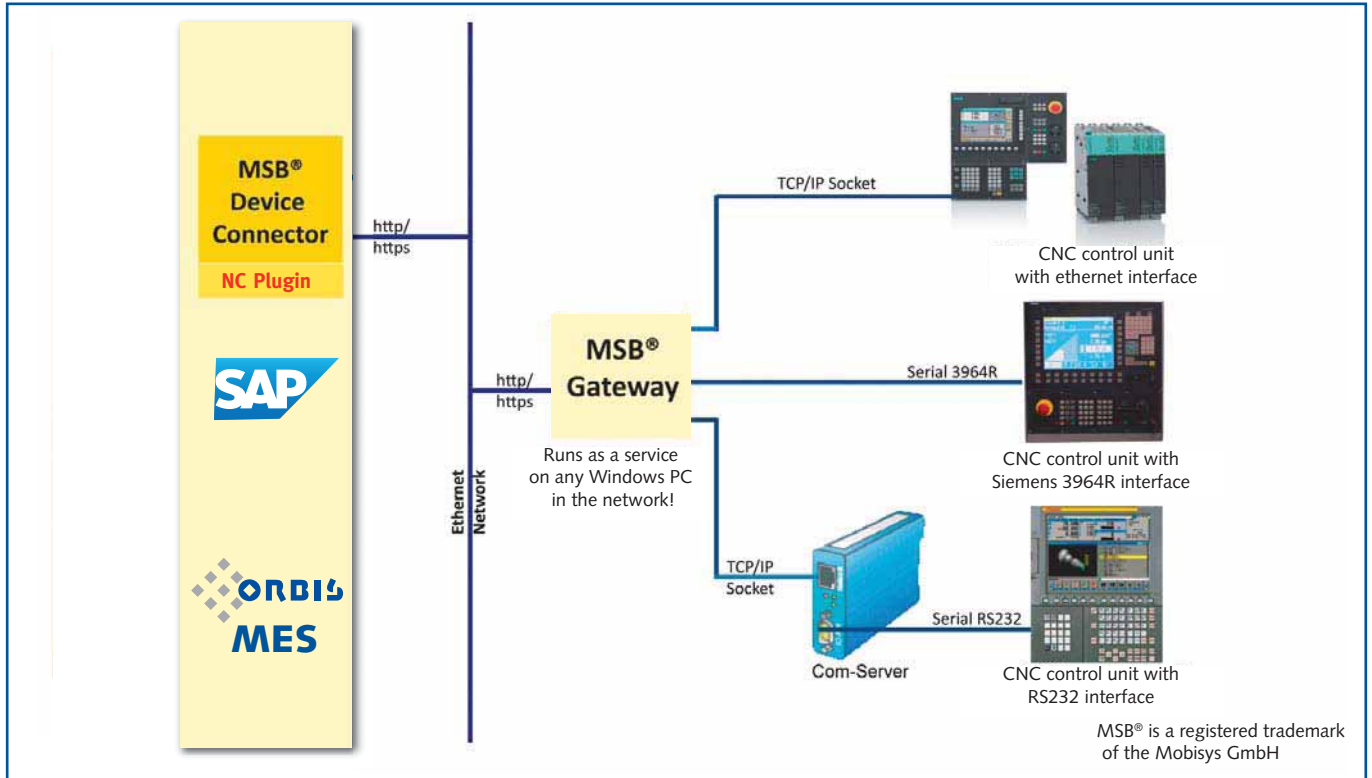
Please see the following charts for the various connection options.

REAL-TIME INTEGRATION OF MANUFACTURING INFORMATION: SENSORS, SCALES

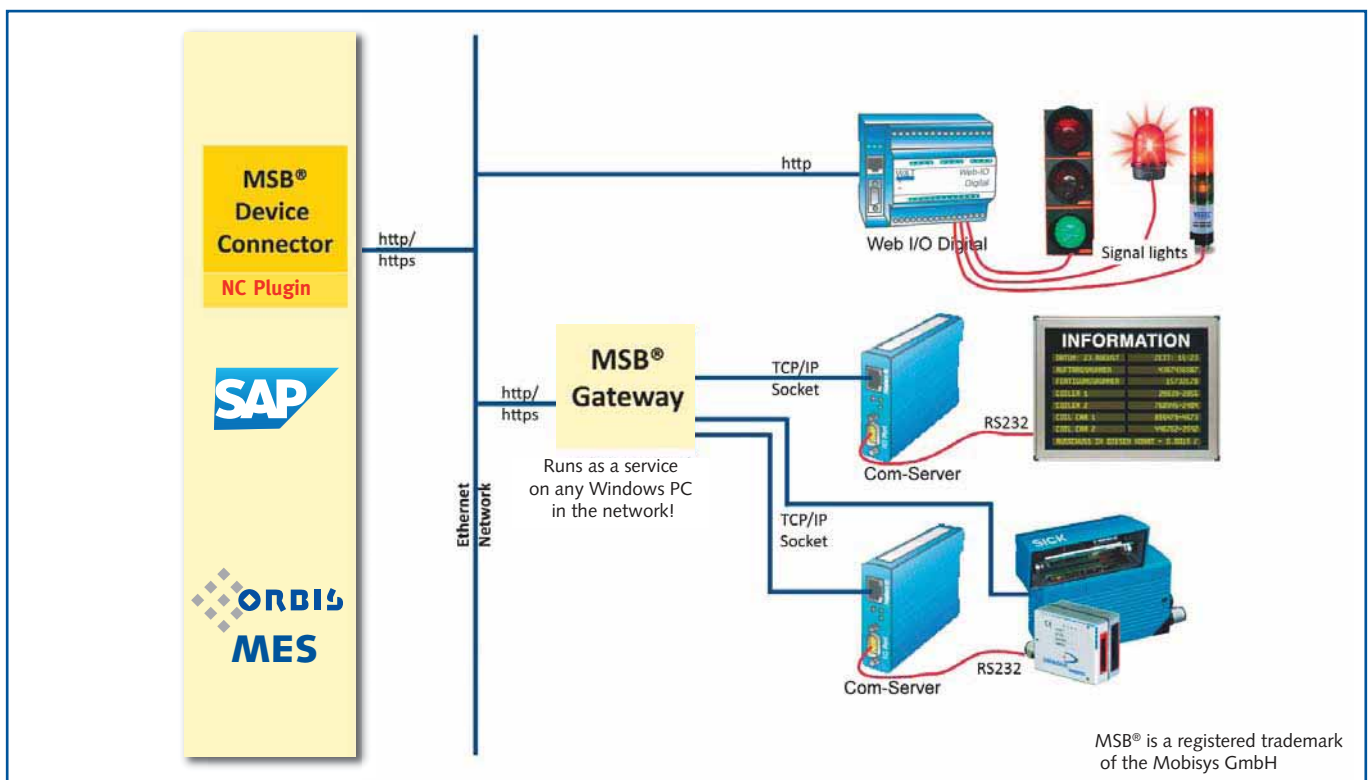


Machine data collection (MDC)

REAL-TIME INTEGRATION OF MANUFACTURING INFORMATION: CONTROL / CNC CONNECTION



REAL-TIME INTEGRATION OF MANUFACTURING INFORMATION: OTHER CONNECTIONS



Visualization & Reporting

The core functions of an efficient Manufacturing Execution System include the analysis of production process based on key performance indicators (KPIs), the visualization of the key performance indicators as well as the handling of aggregated and historical data for actual processes.

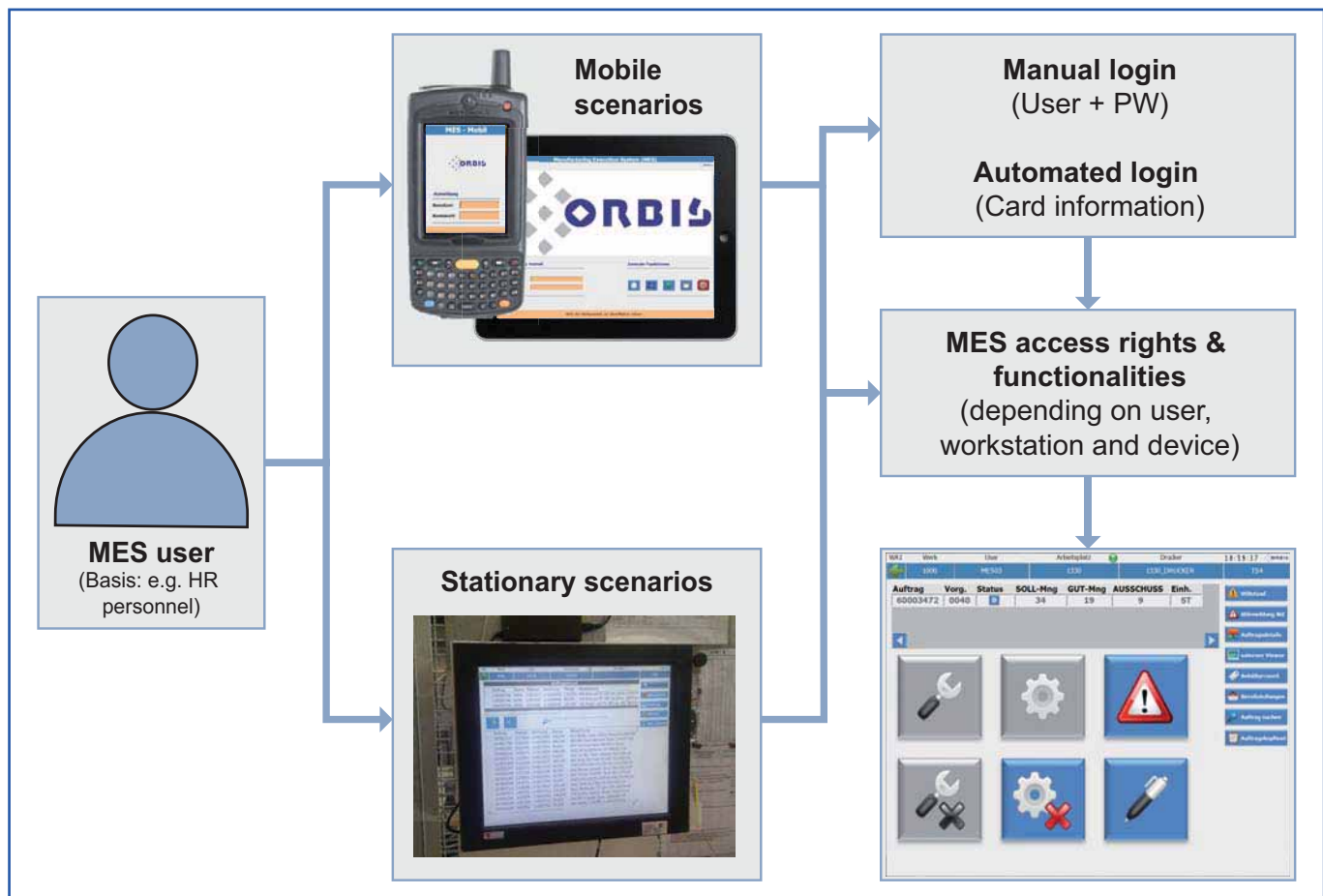
Benefits of the visualization & reporting

- ◆ Real-time display and visualization of actual statuses
- ◆ Optimized planning of production orders and best possible utilization of resources
- ◆ Prompt provision of all relevant key production figures for the planning, control, documentation and monitoring of the production process
- ◆ High level of information about all persons involved in the production process, from the operative to the dispositive level

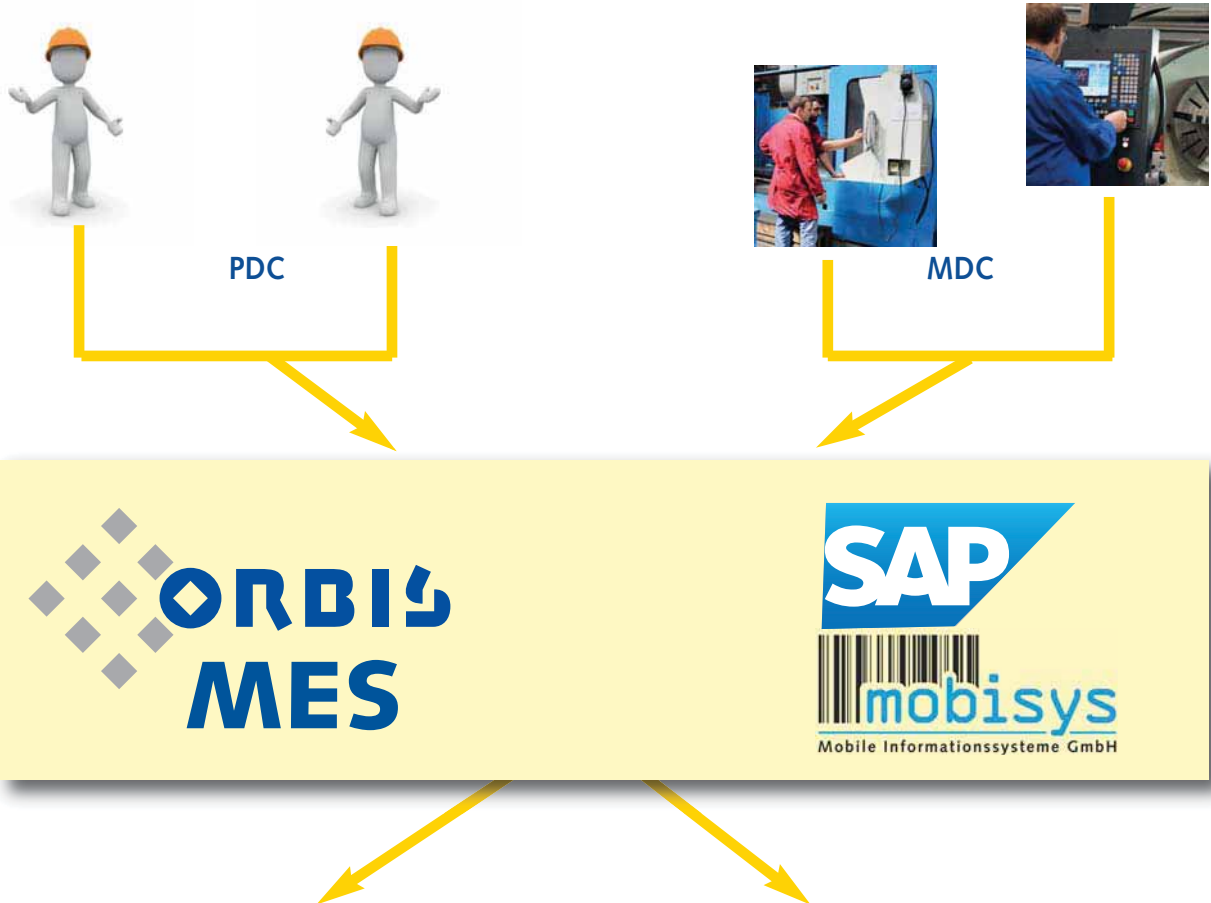
- ◆ Initiation of immediate actions for the rectification of errors or in case of target/actual derivations
- ◆ Graphic illustration of key production figures across locations for the analysis or definition of potential for optimization in all company productions sites
- ◆ Planning, management and documentation of company key performance indicators or goals

With **ORBIS MES** you can keep an eye on your production from a single workstation to the entire production hall! The visualization of relevant production data provides a transparent overview of all current production processes to managers, controllers, production managers and operating staff.

EMPLOYEE IDENTIFICATION

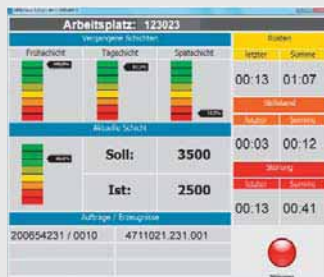


Visualization & Reporting



Real-time display and visualization of actual statuses:

- ◆ Workstations:
Set-up, production, standstill, faults...
- ◆ Processes:
Start set-up, end set-up, production, QM testing



- ◆ Graphic illustration
- ◆ Detailed display / evaluation

Reporting & Analysis:

- ◆ Aggregation of actual statuses
- ◆ Determination of key performance indicators (e.g. degree of utilization, quality rate, OEE)



- ◆ MES internal reporting
- ◆ Reporting based on SAP BW / iControl

Visualization & Reporting

With ORBIS MES you always have an eye on the actual current status of your production. For this, our solution provides a pre-configured set of key performance indicators (KPI). The MES key performance indicator determination is based on the definition of the VDMA.

Key indicators in production (examples):

- ◆ Throughput / capacity
- ◆ Overall Equipment Effectiveness (OEE)
- ◆ Quality rate
- ◆ Employee productivity
- ◆ Set-up level index
- ◆ Rework and reject rate

We offer you the option of assessing the data displayed in ORBIS MES with Business Intelligence tools. Preconfigured or KPIs created by "drag and drop" can be represented graphically by means of diagrams.

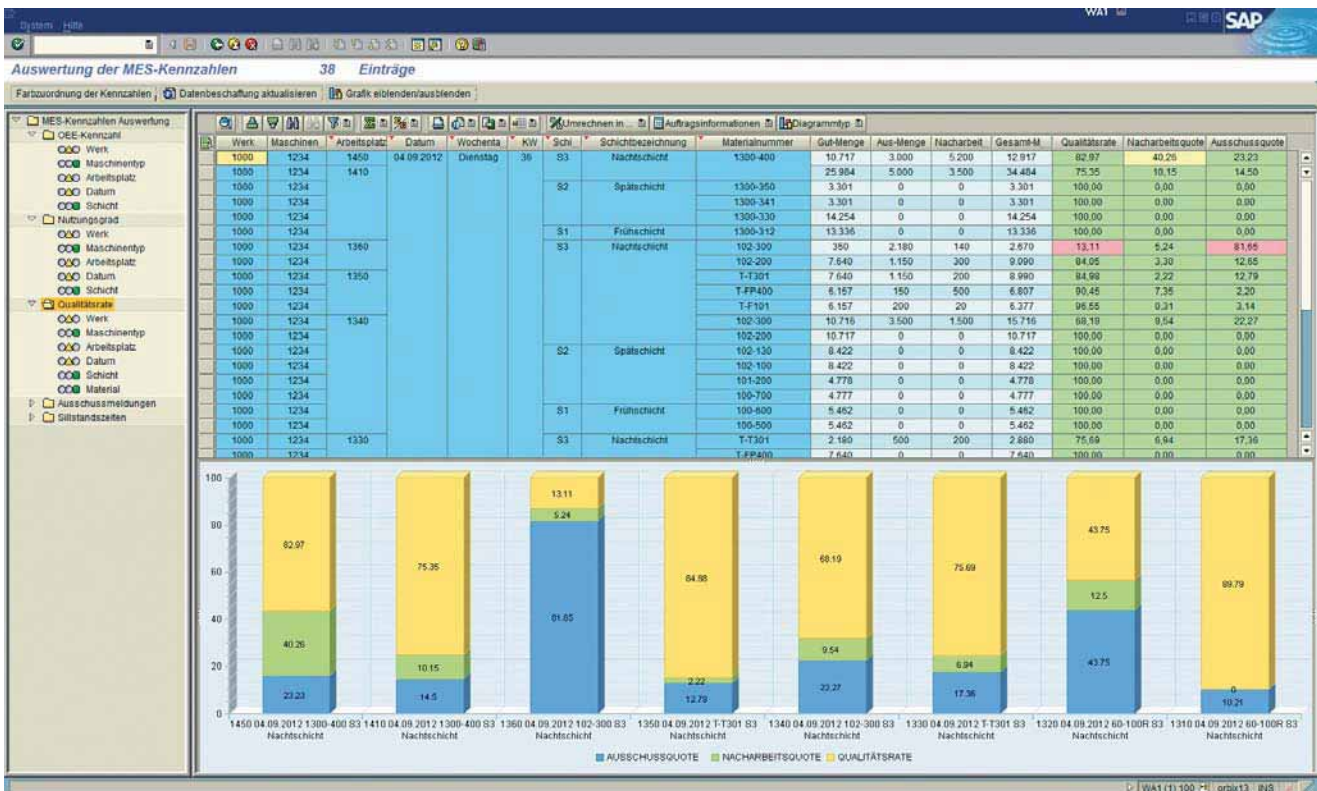
In addition to the analysis of historical data, ORBIS MES also allows for the analysis of production data in real-time by means of the status monitor (SAP GUI transaction).

The data can be summarized in different levels of detail:

- ◆ Smallest level of detail: Shift
- ◆ Highest level of detail: Plant

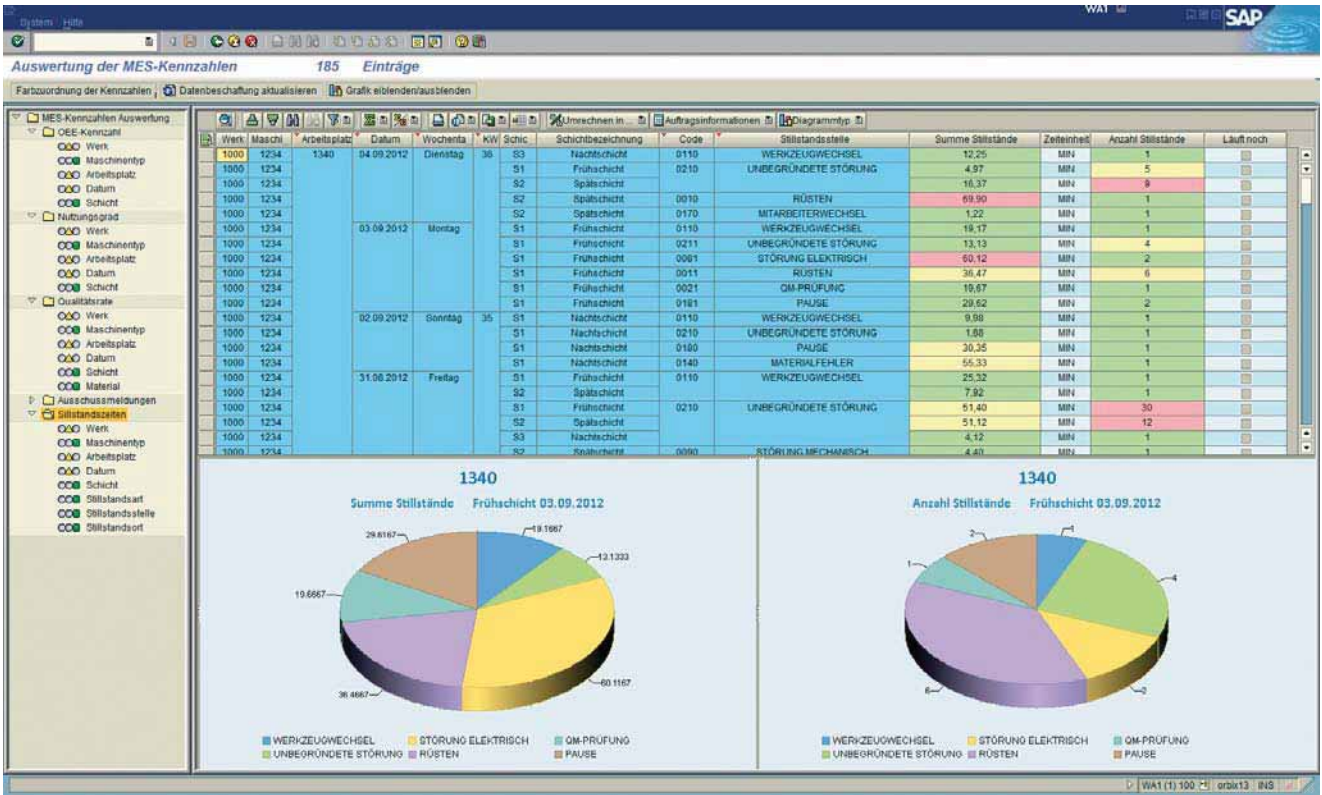
This data includes detailed information about faults, stand-stills and output at a workstation or for an order (process) and reflects the current status of production with minute to minute accuracy for specific orders.

This data can either be generated manually (with the PDC function) or with the MDC.

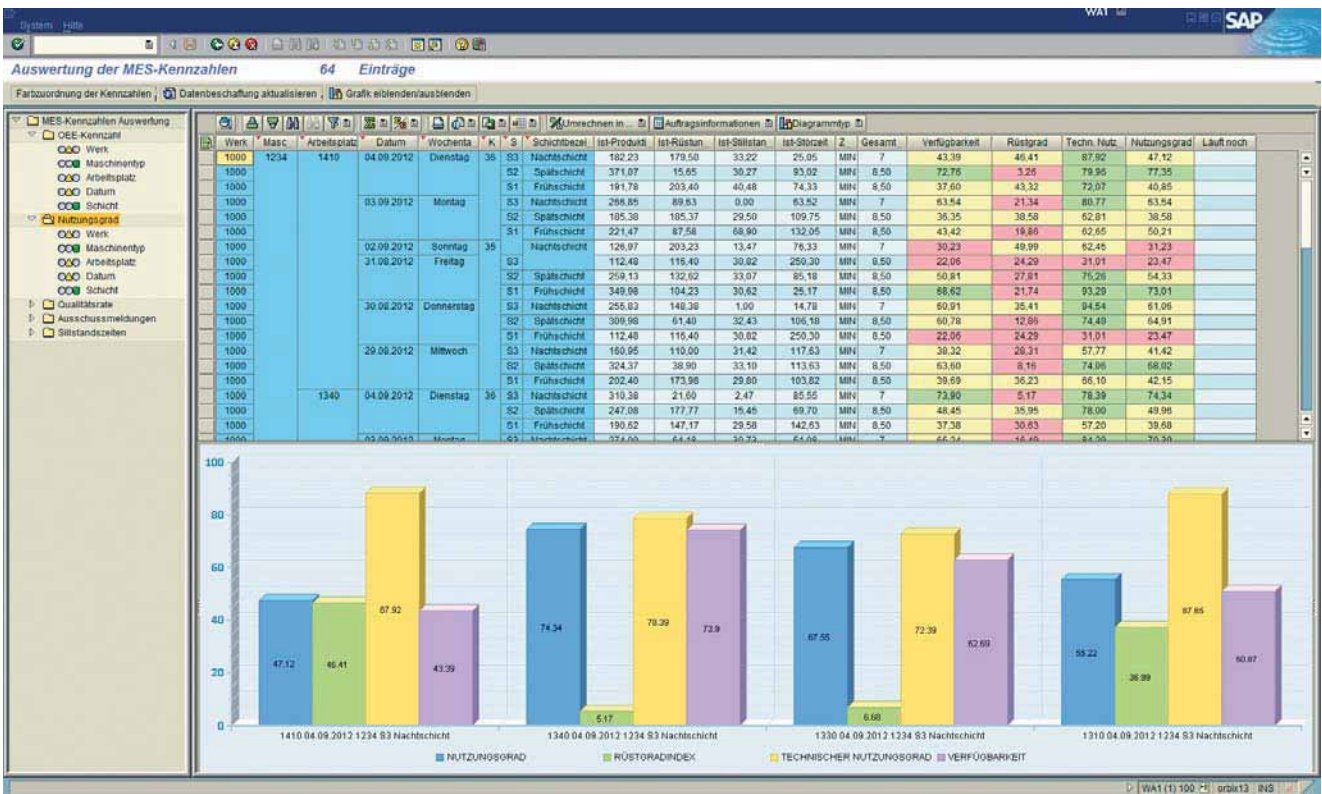


Quality rates

Visualization & Reporting



Standstill times



Degree of utilization

About Us



ORBIS is a business consultancy company that operates on an international level. ORBIS advises and supports international companies in questions ranging from their IT strategy and optimization of business processes to system selection, system implementation and system integration. To do so, ORBIS makes use of the solutions provided by the market leaders SAP and Microsoft.

Our core competencies cover classic Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Logistics Execution (EWM/LES), Manufacturing Execution Systems (MES), Variant Management, Customer Relationship Management (CRM), Business Intelligence (BI) and Product Lifecycle Management (PLM). As a reliable business partner, ORBIS can support its customers in the rollouts of ERP solutions and processes worldwide. Our service portfolio is rounded off with our own products for Business Intelligence, MES, Product Costing, e-Learning and numerous SAP and Microsoft add-ons.

Over 1,000 successfully completed client projects bear witness to our business consultancy expertise and many years of experience in machine and plant engineering, retail, manufacturing, steel, metal, automotive supply and consumer products industries.

ORBIS' long-standing customer base includes Eberspächer, Hager Group, Heineken Switzerland, Hörmann KG, hülsta, HYDAC INTERNATIONAL, Jungheinrich, KSB, KUKA Roboter, Melitta Haushaltsprodukte, Ostfriesische Teegesellschaft, Paul Hartmann, Pilz, Rittal, Schott, Trelleborg Automotive AVS, Uponor, Villeroy & Boch, WAGO Kontakttechnik and the ZF Group.



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