



Manufacturing Execution System



PRODUCTION QUALITY MATERIAL MAINTENANCE HR



About OPERA

OPERA MES is a full blown factory information system developed by Open Data. It is a multi-site multi-language software product with a modular structure, covering all the key areas of MES, from Production to Quality, Warehouse Management, Equipment Maintenance and HR.

The latest version Opera 5.0 uses Microsoft .NET Framework-based technology and works on a 64-bit Operating System.

OPERA is a powerful tool suitable for any industry environment where machines, operations and manpower interact. Its main task is to manage and monitor the whole factory by providing **real-time information** on Production Progress, Performance levels, Quality Checks, Traceability, Inventory, Maintenance and so on.

OPERA is tightly connected to any ERP system available on the market, from well-known brand names to smaller local solutions. A special connector called 'ERP Integration Interface' has been developed to ensure easy communication without any complex implementation to carry out.

A wide range of pre-configured charts and reports is also available, including Production Progress, Man/Machine Performance levels, Hours at Work vs. Hours Paid, Downtime Analysis, Stock levels, Batch Tracking, and so on. All reports are customizable and new reports can also be added to better respond to the users needs.

Indeed the key asset of OPERA MES is its fully configurable and user-friendly profile. OPERA perfectly meets customer requirements in terms of both functionality and costs. It is used across all sectors, and suits manufacturing companies of any size, from small businesses to larger corporations.



MES closes the GAP



The system is made up of two applications. **Opera Monitor** communicates with the data collection points on the shop floor and makes sure that the information gathered is consistent and accurate. On the other hand, the **User Interface** allows for correct analysis and reporting of collected data, thus ensuring a complete supervision of all manufacturing operations in real time.

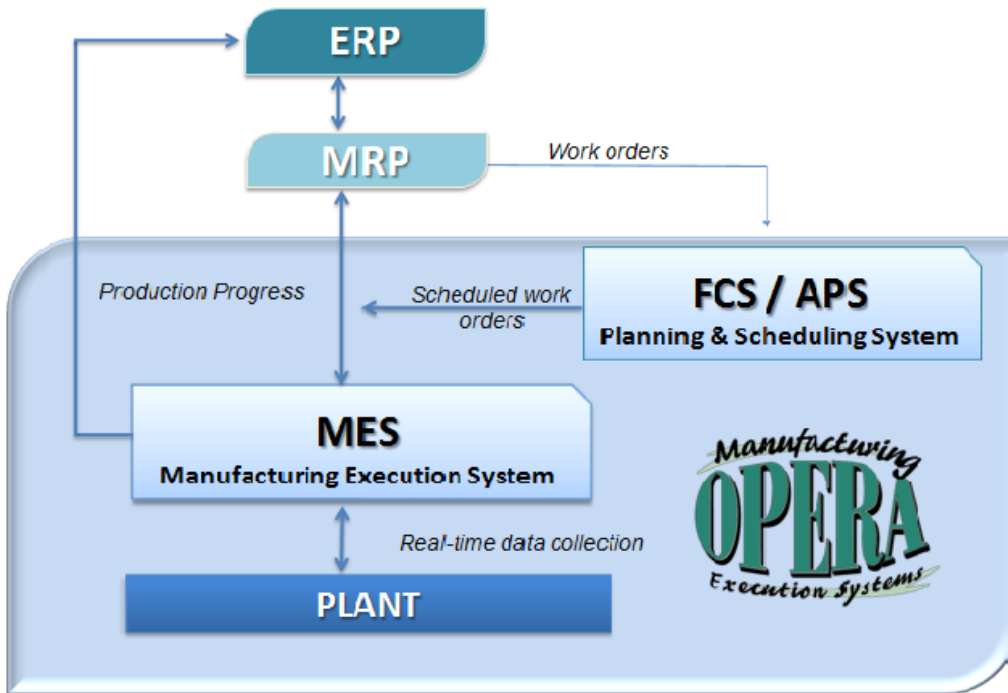
BENEFITS

There are significant benefits from using OPERA MES:

- All the information in one system – only one place to go!
- Data collected is accurate and consistent
- Easy and immediate access to production information
- Very visual and easy-to-use
- Accurate analysis of production process
- Timely and effective management of unexpected events
- Improved performance and efficiency
- Increased productivity
- Resource Optimization

LOGICAL ARCHITECTURE

The integration between OPERA MES and the ERP system is the key to bridge the gap between shop floor and top floor.



Logical flux:

1. Work order import from the ERP/MRP system into OPERA.
2. Work order is scheduled based on resources available/ongoing jobs. Generation of the operational production plan.
3. The production plan is released.
4. Automatic data collection and Production Progress monitoring.
5. Update on Production Progress is fed back to the ERP/MRP.

OPERA MES – Opera ‘Monitor’

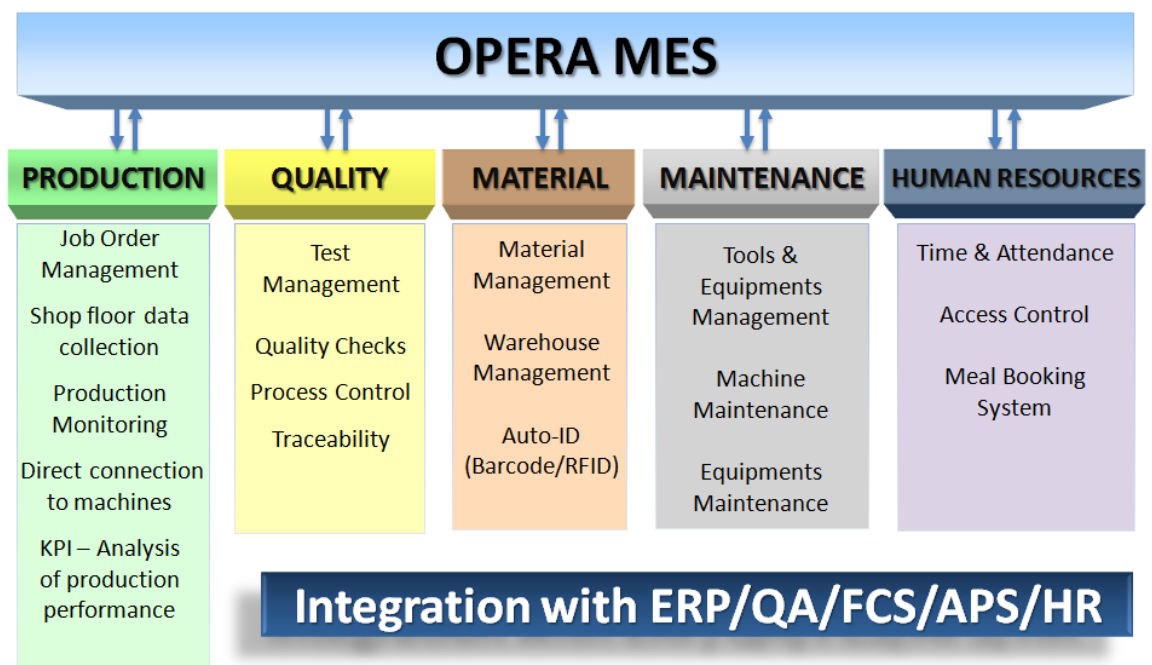
The OPERA ‘Monitor’ application supports devices of many different kinds. Upon Customer’s request, Open Data can provide highly reliable hardware solutions from leader brands of the industrial automation market.

- Data Collection Terminals
- Industrial PC
- Barcode Readers (CCD, Scanner)
- I/O cards for digital signal processing
- Network Adaptors
- Industrial Label Printers
- Portable terminals WI-FI / GPRS
- Paperless Graphic Interfaces

MODULAR SYSTEM

The latest version OPERA 5.0 stands out not only for its strong technological innovation, but also for a flexible modular structure which perfectly responds to customer needs. The 'Production' module is the core of OPERA MES. This is a powerful tool for you to track the amount of manufacturing activities and indirect labor being performed. At the same time, you can view real-time status updates for all the resources involved in the production process, and have immediate access to detailed records of all production events.

The Core Module can be enriched with a variety of functions to create a full manufacturing intelligence solution covering all the key areas of what is also described as Manufacturing Operations Management. The modular structure of OPERA makes it possible to configure custom solutions meeting your requirements and budget.



PRODUCTION:

- Job Order Management
- Shop floor Data Collection
- Production Monitoring
- Direct connection to machines
- KPI Performance Analysis



QUALITY:

- Test Management
- Quality Checks
- Process Control
- Traceability



MATERIAL

- Material Management
- Warehouse Management
- Auto-ID (Barcode, RFID, etc..)



MAINTENANCE:

- Tools & Equipments Management
- Machine Maintenance
- Equipments Maintenance



HUMAN RESOURCES:

- Time & Attendance
- Access control
- Meal booking system



PRODUCTION

'Production' is the heart of OPERA MES. For Companies pursuing a perfectly efficient production and implementing lean manufacturing strategies, it is crucial to make investments which result in

- **Increased production efficiency**
- **Improved product quality**
- **Reduced costs and manufacturing time**
- **Increased productivity**

OPERA MES is the ideal tool to take your business to the next level. It enables you to manage and monitor the manufacturing process in real time by providing data on your production efficiency for each department by employee/machine/cost centre, along with info on delay in production, quality checks carried out on the line, batch track and trace and finite capacity scheduling with resource optimization. The key functions of OPERA MES – PRODUCTION are:

JOB ORDER MANAGEMENT

OPERA MES can be connected with any ERP system. Production Orders launched by the ERP are automatically transferred into OPERA. The interface keeps the ERP system up to date by providing real-time information on Production Progress.

If your ERP does not provide for P.O. generation, the module 'Job Order Management' is also available in OPERA. This module is designed for those companies who either want to manage production completely with OPERA or do not have an ERP System implementing MRP functions.

Production Orders are generated using data from product records, bills of material and production cycles.

DATA COLLECTION & PRODUCTION MONITORING

This module makes it possible to collect online shop floor data automatically for real-time monitoring of all direct and indirect activities.

Data is collected through either operators entering production information as they work or directly from machines using special data acquisition input boards which can detect automatically such info as downtime events or the number of pieces produced.

Data collected is then monitored in real time by running database queries to ensure that the information used for process analysis is consistent and reliable. Data Collection Points are distributed across the factory to make the data entry work easier for operators. Data collected is concerned with production activities, quality control, maintenance actions and staff attendance.

The main functions are:

- Tracking manufacturing activities
- Number of pieces/scrap parts
- Setup operations
- Managing 1/N ratio (man, job, machine)
- Managing Job Sets
- Automatic job suspension after start of new job
- Closing jobs
- Production report by Job/Work Order/Operation
- Production report by Plant/Dept./Employee
- Production report by Plant/Dept./Cost Centre/Machine
- Labour costing by job order
- Monitoring status of employees/jobs/machines
- Job progress chart
- Workload chart
- Job chart by employee/machine/operation
- Layout of machine status
- Tracking indirect labour
- Providing reason for scrap
- Material consumption
- Rework activities
- Tracking machine downtimes
- Managing teams
- Time & Attendance/Clock-in rounding
- Hours worked vs. Hours paid
- Automatic job suspension at clocking-out time
- Automatic re-start of jobs suspended at clocking-out time
- Automatic closure of Work Order
- Managing machine setups/alarms
- Automatic addition of jobs not scheduled in cycle
- Printing and labelling
- Job and downtime analysis/Reporting downtime causes
- Performance reports



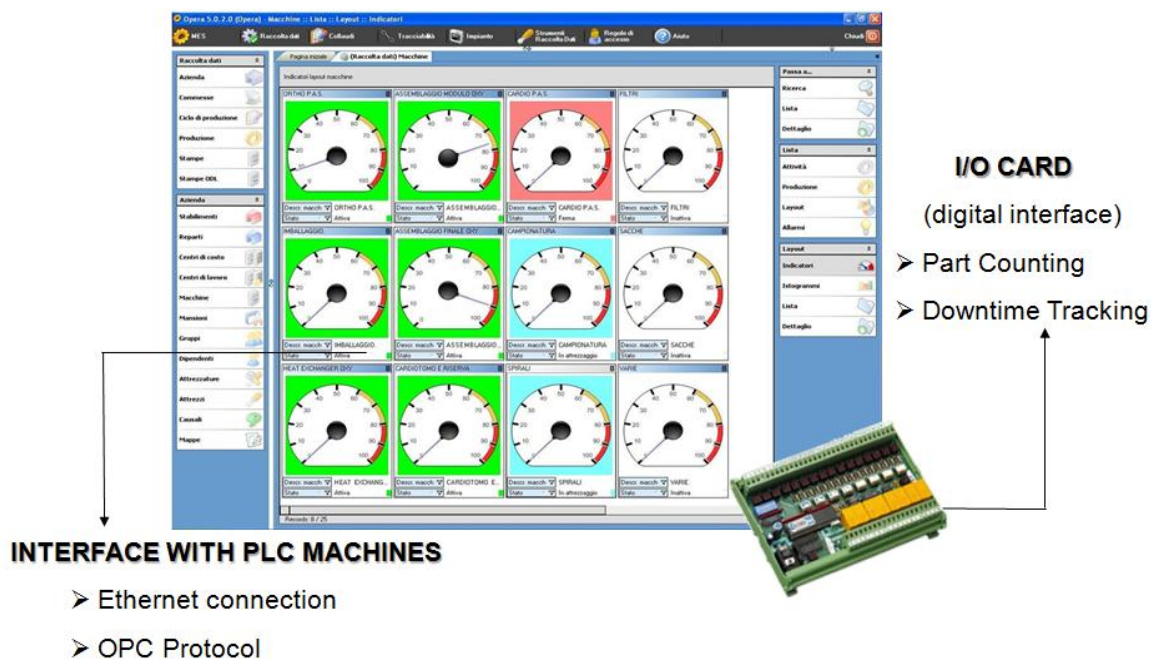
DIRECT CONNECTION TO MACHINES

Through a specific hardware interface, the 'Direct Connection to Machines' module can track automatically machine production and downtime events.

Data is collected from the machine dashboard by capturing digital signs. Both electro-mechanical control machines and PLCs/computer-based machines can be connected to OPERA. Connection to multi-pallet machines along with management and allocation of collected data are also possible.

The key functions are:

- Automatic counting of parts
- Automatic detection of downtimes + reasons
- Automatic downtime tracking when set quantity is achieved
- Automatic machine re-start following downtime
- Ethernet connection
- Connection to multi-pallet machines
- Automatic send/receive part-program
- Traceability of part-programs by Product/Operation/Machine
- Part-program recalling directly from the machine
- Managing alarm devices to signal any unusual event or status
- Interface with computer-based machines/PLC



KPI ANALYSIS OF PRODUCTION PERFORMANCE

Under current market conditions, manufacturing companies must invest in continuous improvement to maintain and enhance a high degree of competitiveness.

Against this background, a specific KPI (Key Performance Indicators) module has been included in the latest version of OPERA MES.

OPERA KPI allows you to calculate and analyze the main performance indicators – OEE, OLE, TEEP, OPE to name a few – which will provide performance evaluation and accurate information to support strategic decision-making.

In particular, **OEE** (Overall Equipment Effectiveness) is a key parameter for management who want to monitor production performance levels and quantify losses. OEE measurement is based on three components, each of them focussing on an aspect of the process which can be targeted for improvement:



BENEFITS

Deploying KPI brings major benefits across the company:

- **To Division Managers** (Accurate data acquisition, Real-time production monitoring, reduction in direct and indirect costs, daily/monthly Report of Production, performance levels)
- **To the Management** (Productivity analysis, Job costing, Growth trends, etc...)
- **To the whole business** (Individual productivity levels, hours worked, calculation of performance levels by Cost Center/Dept., productivity incentives)



QUALITY CONTROL

OPERA MES allows you to manage and monitor automatically quality control parameters on the production line, with a view to ensuring product conformity. The 'Quality Control' module includes:

QUALITY CHECKS

This module is used for tracking quality data directly on the production line.

Checks can be of two different kinds - 'by variable' if concerned with a measurement and 'by attribute' when the operator provides an assessment.

Managing quality data is essential to minimize non-conformity events and improve quality levels in general.

Key features of this module include:

- Product Inventory, Categories, Tests, Defects, Tools
- Definition of quality specifications (tests, faults, timing, values, tolerance and so on)
- Managing quality checks
- Monitoring test status and results
- Printing out barcodes for automatic data collection
- Data filing and tracking by batch or ID number
- Interface with ERP/QA systems



BY VARIABLE
(measurement)



BY ATTRIBUTE
(assessment)

PROCESS CONTROL

Process control techniques help to see if any change to the conditions of a process has been made. This enables you to implement corrections before the assigned limit of sets/tolerances is passed, thus preventing non-conformity at all stages. Key functions are:

- Managing articles, categories, tests, faults, tools
- Interface with measurement tools
- Process data collection and filing
- Real-time data dashboard to analyse temperature, thickness, levels and so on
- Timing analysis and printing of data collected by manufacturing order/batch

TRACEABILITY

- Tracking batch used
- Generating serial numbers/products ID/label printing
- Tracing batches or ID numbers used for a product
- Tracing products that use a specific batch/ID number





MATERIAL

OPERA ‘MATERIAL’ will enable you to monitor material inflows and outflows in real time and have access to reliable up-to-date information on the resources available. Shop floor operators can use wireless barcode terminals for inventory making and carry out material loading and unloading operations.

OPERA ‘Material’ includes: Material management, Warehouse management and Auto-ID (barcode, RFID, etc...)

Key features of this module include:

- Warehouse and locations management
- Auto-ID (Barcode, RFID, etc..)
- Monitoring material inflows and outflows in real time with portable terminals
- Inventory making
- Printing out barcodes for data collection
- Managing warehouse locations to monitor stock levels and perform shelf checks
- Interface with Warehouse Automatic System



MAINTENANCE

OPERA MES allows you to manage and monitor the status and use of tools and moulds used in manufacturing industries. The maintenance module helps you greatly to plan maintenance activities, monitor maintenance costs, track machine use and warehouse locations.

Operators are actively involved in the machine maintenance process. Their task is to plan and carry out day-to-day maintenance activities, with a view to reducing unexpected events such as tools repair or replacement.

Managing maintenance activities with OPERA MES means:

- Tools and Equipments management
- Machine maintenance
- Tracking and monitoring equipment use
- Scheduling effective maintenance
- KPI – Analysis of maintenance performance (MTBF, MTTF, MTTR, etc..)



 **HUMAN RESOURCES**

TIME & ATTENDANCE

Operations, machines and labour are the key elements of a factory. In particular, Human Resources are a crucial aspect in terms of both performance and costs. That’s why they need to be managed as accurately as only a Time & Attendance module can do.

Key features of this module include:

- Clocking in and out
- Tracking employee status
- Clock-in rounding
- Balancing time and activities



ACCESS CONTROL

- Employee records
- Time brackets
- Access rights
- Recording transits within the company’s premises



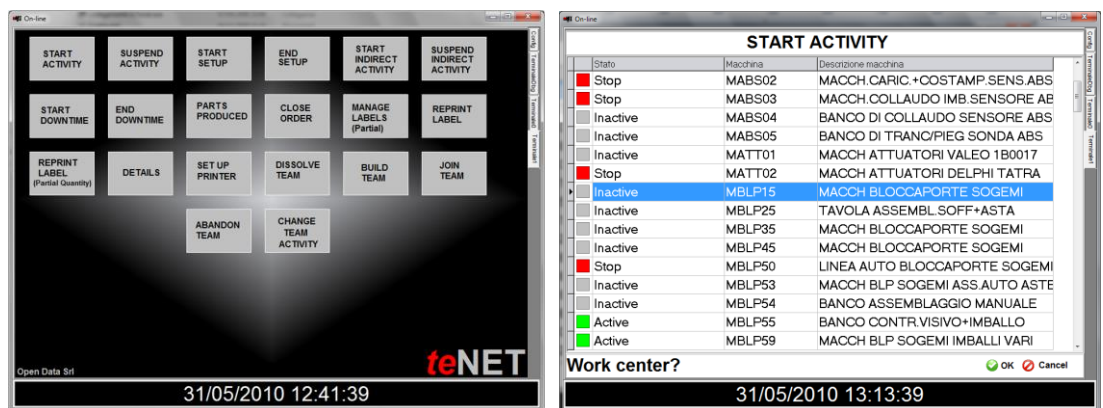
MEAL BOOKING SYSTEM

- Meal booking
- Salary deductions for meals
- Tracking meal information – date, time, location, number of meals
- Printing out daily menus with barcode



DATA COLLECTION INTERFACE

teNET is an interactive, Windows-based graphic interface for real time data collection. With teNet, production information is available in real time to operators directly as they work on the factory floor.



The graphic interface is very visual and easy to use. Such information as part drawings, activity instructions, setup procedures, due dates, number of pieces produced and scrap parts – to name a few – can easily be accessed from the factory floor. Data collection points can be equipped with either a touch-screen monitor or a barcode/badge reader for a fast and accurate data entering.



About Open Data

Set up in 1994 by a team of MES experts who still run the business today, OPEN DATA is a leading software house based in Italy offering integrated MES solutions for manufacturing companies across all sectors.

OPERA is the proprietary MES software developed by Open Data. It is suitable for any industry and company size, from small businesses to larger corporations.

The latest release OPERA 5.0 uses MS .net Framework-based technology and works on both 32 – and 64 – bit operating systems, making it easier for Open Data local partners to configure any customization requested by the end users.

OPERA is used by **over 300 companies** in Italy and can be configured to monitor multi-site companies having factories all across the globe.

Currently OPERA is also available **in English** and can be localized into any language. It is distributed internationally through a **network of Accredited Open Data Partners** offering expert advice and on-site support to their end customers.



***It's time to boost your business.
Let's partner together.***

OPEN DATA srl



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