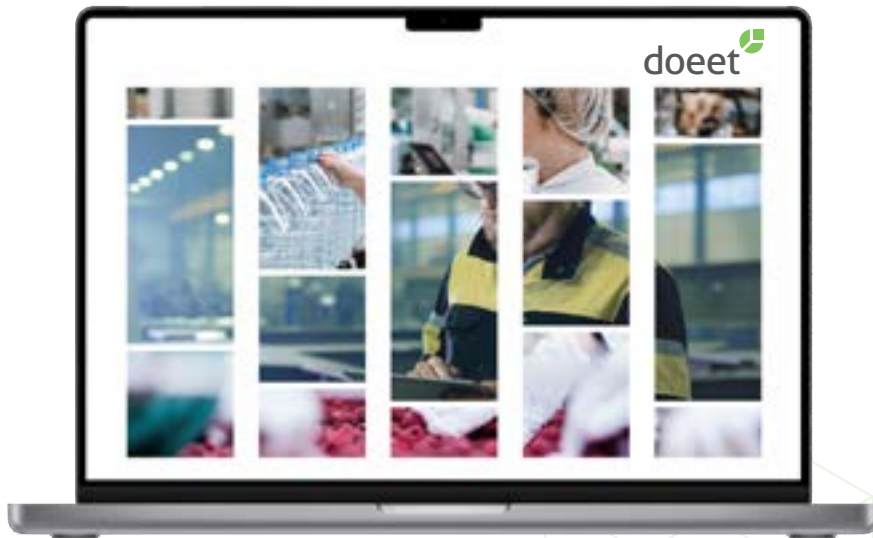


# Solutions for Manufacturing Operations Management



**doeet** 

The MES/MOM solution  
for Industry 4.0

A decorative background featuring a light green hexagonal grid pattern. Several lines with circular nodes connect different points on the grid, creating a network-like structure.

Doeet is one of the leading Industry 4.0 solutions for industrial digitalisation, production control, productivity improvement and cost reduction.

Doeet collects your manufacturing data in real time: production, productivity, quality, traceability, costs, maintenance and analyzes machine and operator information: downtime, units produced, consumption, scrap, wastage and rejects.



More than

**20**

years of  
experience

More than

**40**

consultants  
and technicians

More than

**400**

customers

# Solutions for Manufacturing Operations Management

The capacity of the doeet system in production management enables **communication between the planning, maintenance, warehouse and quality areas.**

Connect your ERP with doeet to send work orders to the production plant and **know their status and consumption in real time.**

The order sequencer allows you to assign and modify the order queue of each machine in real time, to **obtain an optimal sequencing in your production processes.**

Know the real and theoretical productivity of your machines and operators, through the universal OEE indicators of availability, performance and quality, with the aim of **optimising manufacturing processes and reducing costs.**

Among the doeet **Solutions for Manufacturing Operations Management** we highlight the modules and functions of **MES/ERP Integration, Production Sequencer, Calculation of OEE, Documentary Management, Control of Manual Works and Molds and Tooling Control.**





MES/ERP  
INTEGRATION



PRODUCTION  
SEQUENCER



CALCULATION  
OF OEE



DOCUMENTARY  
MANAGEMENT



CONTROL OF  
MANUAL WORKS



MOLDS AND TOOLING  
CONTROL



# MES/ERP INTEGRATION

The MES ERP integration allows sending work orders and knowing their status and consumption in real-time.

## MES system with ERP integration

The MES ERP integration of the doeet MES system allows companies to **improve reaction times and avoid rework** in terms of allocating consumption and hours spent on each work order.

By connecting these systems we obtain **production data in real-time, reliably and objectively**, and the production reports are **100% digital**.

## Send the day's production orders to each work centre

Doeet collects from the ERP the **information required in production** and sends it to the operator terminals at the machine.

All the data necessary for production are associated with the order: **article code, units, theoretical production times or machine parameters**.

- Send orders to be manufactured directly to the operator in the factory plant.
- Know in real time the status and actions performed for each work order.
- Automatically receive in the ERP all data collected in order.
- Anticipate the supply of materials by knowing the actual consumption.
- Eliminate paper generated by the management of production orders.



## Upload consumption, labels and working documents

Attach to each order the details of the batches and expected consumption of raw materials or semi-finished products. This way you can control your stocks and obtain complete traceability.

Send with the order the labels to be printed with all the details of the order, and any other data that may be required in production.

## Modify work orders and communicate them instantly

Sometimes we need to reorganize production and meet unforeseen orders or emergencies. Doeet allows partial closures of work orders to execute the next one or another with higher priority.

Send order modifications with one click and they will be instantly visible to managers.



## FUNCTIONS

- ✓ Import of manufacturing orders to MES doeet from ERP.
- ✓ Import of consumptions, labels and documents associated with the order.
- ✓ Real-time data back to ERP: order status, costs, raw material consumption, quality.
- ✓ Automatic loading of orders.
- ✓ Sending manufacturing parameters and incidents to the ERP.

## MES ERP integration with real-time order status

Doeet collects plant production data and returns order status to the ERP in real-time. This enables you to know at all times which orders are planned, in process, completed, on hold or blocked to react quickly.

Know the actual raw material consumption and production times for each order to analyze any discrepancy with the theoretical times in the production reports.







# PRODUCTION SEQUENCER

Control the order queue of each machine in real time to obtain optimal production planning.

## Total freedom to **rearrange production planning**


Organize the order queue of each of the machines and lines in the factory with the doeet Order Sequencer.

Modify the sequence of jobs, change the status of orders from launched to scheduled, and **check which orders are in production now**.

## Decisions **at the machine**

The order of the jobs, set in the sequencer by the production manager, is automatically sent to the operator's terminal. The operator simply **displays the orders and selects the one to be loaded next**.

We can **lock the order queue** using an authentication system to prevent modifications so that only the assigned order can be loaded, or allow the operator to make last-minute changes.

- 
- Digitally control all your manufacturing order queues.
  - Reschedule optimally each order queue.
  - Make quick and agile changes to queues to improve productivity.
  - Instantly communicate order changes to your operators.
  - Decrease order changeover times by applying the SMED methodology.



## Control orders not assigned to a machine

Doeet reports at any time the production orders that are not assigned to any machine. Using the order assignment panel, the production manager can **reorganize and send each of these orders to the appropriate line or machine.**

## Control several orders in the same operation

The **multi-order function** of the doeet sequencer makes it possible to easily control **processes in which more than one order is executed** at the same time on machines such as presses or plastic injection molds.

The multi-order function is essential in systems where several items are processed with each machine stroke. Doeet **manages each of these orders and manufactured products separately**, to adapt to the reality of complex production processes.

## Manufacturing line sequencer

The doeet sequencer adapts to all types of **lane models or manufacturing lines**, such as fruit sorting and packing in the food industry. Its interactive **drag-and-drop interface** allows the production order to be dragged directly to the appropriate lane or line.

Doeet **updates in real time** the information of each order queue and communicates it to the production plant.

## FUNCTIONS

- ✓ Assignment of production orders to machines.
- ✓ Management of production order queues.
- ✓ Receipt of orders from the ERP automatically at the factory.
- ✓ Adaptable to multi-order and parallel systems.
- ✓ Eliminate the paperwork associated with each order in production.

## Link your machines to your ERP and plan your production

By incorporating a link with your ERP we get **direct and immediate communication between the factory and the office**, and we can manage production order queues in real-time.

The ERP link returns all production data generated in production: **order status, raw material consumption, incidents and last-minute changes.**



BY DRAGGING A PRODUCTION ORDER FROM RELEASED TO SCHEDULED WE PREPARE THE PRODUCTION SEQUENCE.





# CALCULATION OF OEE

Measure the overall efficiency of machines and operators with the calculation of OEE in production and productivity KPIs.

## Know your **real productivity**

OEE in production (Overall Equipment Efficiency) provides a **global view of the productivity losses** that occur during manufacturing processes.

The **OEE** doeet system collects all the data from your production lines and executes the necessary calculations to obtain the **OEE, availability, performance and quality** values, their deviation from their target value and their evolution over time.

## Measure, manage, **improve** your OEE in production

Know exactly which **OEE indicator** is affecting your production efficiency **when it occurs and for what reason**.

Analyze the actual evolution of the productivity indicators and compare them with the established objectives. So you will be able to know if **a drop in production is due to a downtime or speed problems in the machines, or quality problems in the final product**.

- Analyze your production in real time with OEE indicators.
- Filter production data by line, reference, order or shift.
- Know the hours of walking and stopping, their causes and frequency.
- Know the actual units manufactured on each production line.
- Diagnose in which shift the speed drops of the operator or the reference.
- Analyze your quality and the reasons for defective units.



## Control downtime on your lines

Analyzing the most common **causes of the machine and operator downtimes** and taking measures to avoid them will **increase the availability** of your machines and operators and **improve your productivity**.

Customize the most common **causes of stoppages** in your production and group them into categories; so that it's easy for the operator to rapidly **justify the stoppage at the machine** via the doeet terminal.

## Your factory at high performance

Doeet **automatically counts all units produced** through sensors integrated into the machines or external PLC cards.

The system **recognizes the changes in times of references and calculates the average speeds** for each one and their deviations from theoretical speeds so that you know your precise performance.

## Manufacture without defects and without scrap

Count the **products without defects** against the total number of products manufactured, **know the causes of failures** and take measures to reduce them and avoid rework.

**Quality losses** involve both energy and raw material costs as well as production time and reprocessing losses, in addition to the cost of discarding or recycling defective units.



## FUNCTIONS

- ✓ Analysis of the global state of production with OEE indicators.
- ✓ Comparison of actual and theoretical production data and their evolution.
- ✓ Calculation of costs due to downtime or loss of yield and quality.
- ✓ Control of machine and operator status: running, stopped, non-operational, and analysis of causes of stoppages.
- ✓ Registration of units per machine, hour, reference, and operator.
- ✓ Justification of defective units and analysis of scrap causes.

## All your data at a glance

Doeet has several predefined productivity reports ready to start analyzing your production: OEE, availability, performance and quality. Reports are designed to range from **general analysis to particular detail** in a few clicks.

Customize and **filter all your production data by line, reference, order, and shift**, to study in more detail the causes of lost productivity.

## 100% reliable and real-time data

Doeet obtains data directly from the machines (running times, downtime, units produced) so that production records are reliable and cannot be manipulated.

Knowing in **real-time and reliably the drops in production and their causes** enables us to take measures aimed at improving productivity. Once the measures have been implemented, we will review the data to verify if we have solved the problem.



# DOCUMENTARY MANAGEMENT

Link text or multimedia files to orders, machines and items and facilitate document management to the operators.

## Link documents to **orders, machines or items**

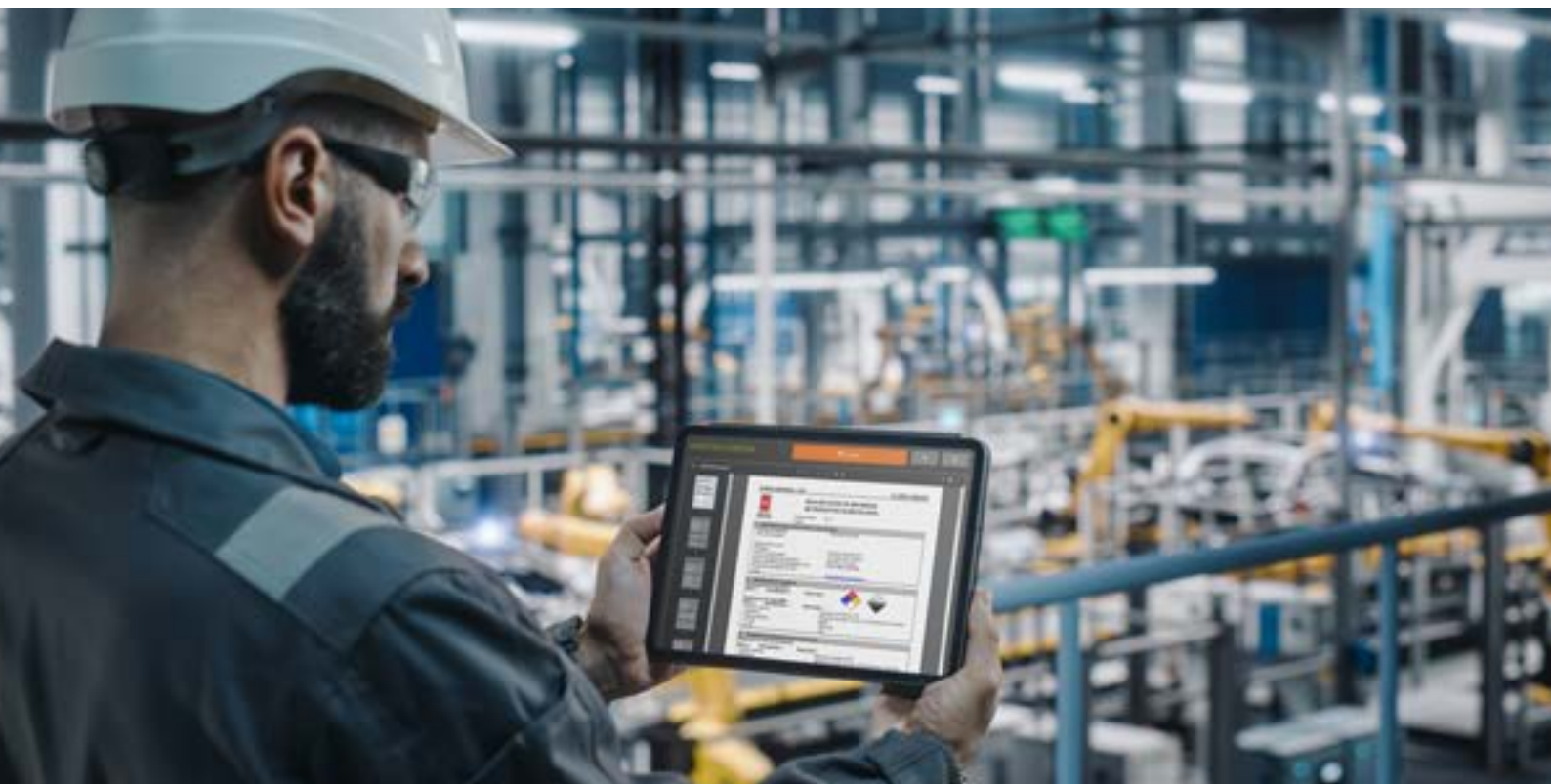
Select the **order, machine or item** to which you want to attach a document, access the file drop-down menu and indicate the **local or internet path** where the document is located.

Indicate an expiration date to set a deadline by which the file will be available. We can **associate documents with final, consumed or processed items**.

## Link **text, photos and multimedia**

The doeet document management system allows you to associate files of any format with production: **PDF manuals, JPG or PNG photographs, videos or multimedia presentations**. A specific viewer will display the document on the screen or the operator's HMI.

- Avoid the loss of documentation by integrating it into a single system.
- Unify all documents and avoid wasting time searching for them.
- Establish a secure and certified document lifecycle.
- Allow access control and document security.
- Eliminate paper consumption in the production plant.



## Accessible from the operator terminal

Facilitate the communication and consultation of documentation by the operators at all times. The operator can consult **from the terminal in the plant or any mobile device** the documents required for the performance of his task.

The system has a **reading log** that adds a mark to the documents to know if they have been read.

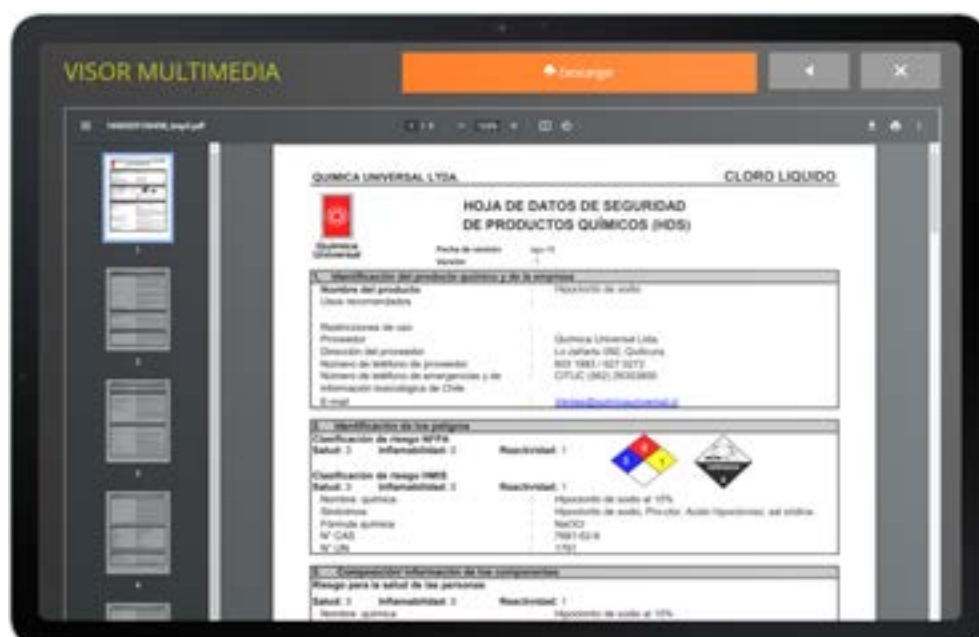
## Eliminate paperwork in the factory and avoid errors

Companies and organizations generate a large number of documents, electronic or paper, related to production. Our document management system allows documents to be **distributed quickly and efficiently** to each operator or machine and **avoids errors due to erroneous or obsolete documentation**.

**Version control** distributes the most current version of each document. We can lock the file so that no one can make changes without the proper permissions.

## FUNCTIONS

- ✓ Uploading all types of documents to the system.
- ✓ Association of any type of document or format (PDF, photos, texts, videos).
- ✓ Association of documents to orders, machines or references.
- ✓ Display of documents on the operator's HMI.
- ✓ Document version control.







## CONTROL OF MANUAL WORKS

Assign manual tasks to your cells and teams, and get your manual job monitoring, their status and performance.

### Know the efficiency of each operator

Doeet not only records the time spent by an operator on a given manual task but also measures its speed of completion, its causes of stoppage and the quality achieved.

### Automatically record units produced and shutdowns

We can incorporate signals such as the count of units manufactured on the work or sorting tables.

In this way, in addition to counting the units automatically, doeet detects when the operator is in production or at a standstill, without the need for imputation.

- Create integrated manual work orders in a single system.
- Assign manual orders to cells and work groups.
- Get in detail the productivity of each operator and cell.
- Incorporate signals into your posts to automate the process.
- Add more modules and functions to your manual workstations.



## Add **more functions** to your manual works

Add other doeet functions to the manual cell tasks such as **quality controls, manufacturing guides, documentation, low-speed warnings or visual factory access.**

The operator can carry the terminal with him at all times and access the functions of any of the doeet extension modules.

## Record the activity of your operators

The doeet manual cell keeps a detailed **record of all jobs performed by each operator**, including the quantity and quality of the parts produced, the start and end time, and the hours and time of stoppages that have occurred.

## Monitor the manual works control **in real time**

The manual cell records the **status of tasks and assigned operators in real-time**. This way we can know if there are operators in pause, the speed of each one or the order they are currently working on.

By combining the Visual Factory module with the Manual Works Monitoring module, we can **know the status of each cell and its tasks using coloured visual indicators.**

### FUNCTIONS

- ✓ Creation of cells and manual work teams.
- ✓ Registration and assignment of manual tasks to cells and operators.
- ✓ Calculation of the speed and performance of each operator's activities.
- ✓ Recording of manual work stoppages and their causes.
- ✓ Real-time control of consumption and production of the cells.
- ✓ Display of the status of the manual orders in real time.







# MOLDS AND TOOLING CONTROL

Manage auxiliary tools with molds and tooling control, and apply the poka-yoke system in the factory plant.

## Register your molds and tools

Record each of the tools used in your production processes. Indicate for each one of them its **registration number**, the **date of registration** and the **maximum number of parts or hours** it can manufacture.

## Record the wear and tear of each tool

Doeet records the number of hours each tool has been used and the number of parts it has produced. In this way, we will only replace the tool when it has reached its **wear limit**, to avoid the production of defective units.

## Your tools organized

Create a **tooling plan** to group the tools used in your production processes according to their specific characteristics and apply the **5s methodology**, to achieve better organized, tidier and cleaner workplaces, higher productivity and a better working environment.

Group all the tools by machine to facilitate optimal tooling control on the factory plant.

## Poka-yoke system to avoid assignment errors

When loading an order into a machine, a prompt will indicate to the operator whether or not the molds being used are compatible with the machine. In this way, it **will not be possible to start manufacturing orders with incorrect molds**.

- Register and enrol all your tools and molds.
- Take total control of your tools digitally.
- Replace your molds and tools before their wear limit.
- Avoid manufacturing errors due to the use of wrong molds.



## FUNCTIONS

- ✓ Registration of tools and tooling required in the plant.
- ✓ Registration of injection molds and presses.
- ✓ Control of the hours and parts produced with each molds or tool.
- ✓ Poka-yoke system to avoid assignment errors.



DIGITALIZE YOUR PRODUCTION

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