

4i Platform User's Guide



› **4i Platform – User's Guide**

4i Platform

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INDEX

Introduction	1
About OEEasy	2
Functionalities	3
<i>Availability Indicator</i>	3
Statement of delays	3
<i>Performance Indicator</i>	4
Actual vs. Nominal Speed	5
<i>Quality Indicator</i>	6
Frequently Asked Questions	7
<i>How can I visualize OEEasy data from a mobile device?</i>	7
<i>How can I operate OEEasy from a mobile device?</i>	8
<i>How to generate a new batch?</i>	10
<i>How to open and close a batch?</i>	11
<i>How to declare delays manually?</i>	13
<i>How to declare a "defective product" manually?</i>	14
<i>How to access available reports?</i>	15

Introduction

4i Platform provides tools to connect plant sensors data and provides an execution environment for specific solutions that use that data to generate useful information for decision making.

The features that distinguish 4i Platform are:

- › Distributed data acquisition + Centralized information.
- › Tolerance to power, network and equipment availability problems.
- › Scalable at the data, machine, line, plant level.
- › SaaS: Software as a Service.
- › Simple and unified installation and configuration.
- › Integration with existing systems.
- › Low Total Cost.

About OEEasy

OEEasy is a software that allows you to measure and improve the efficiency of your equipment by automatically calculating the OEE. Overall Equipment Effectiveness is an index, composed of three indicators (availability, performance and quality), that measures the efficiency of industrial machinery. It is a crucial tool in the manufacturing industry that is used to maximize the performance, availability and quality of production processes.

OEEasy acquires your production data in 2 ways: directly from your machines or from the installed infrastructure. With it, you will be able to identify the causes of productivity losses, detect the reasons for the most frequent production stoppages and implement corrective actions to improve efficiency. You will be able to make more efficient decisions by having historical records.

Why is it important to measure the OEE of machines?

- Improves operational efficiency.
- Increases process safety.
- Can increase return on investment (ROI).
- Helps to evaluate the efficiency of your production process.
- Facilitates maintenance and monitoring of your equipment.

OEEasy translates your data into charts and graphs to ensure better visualization of information. You will be able to access OEE reports from any device with an Internet connection: smartphone, tablet, computer.



Functionalities

Availability Indicator

The machine availability indicator is a measure of efficiency that shows how long a machine is operational within a given period. It reflects the percentage of time the machine is running and available to do its job, compared to the total time it should have been operational. It is a key parameter in maintenance management and operational efficiency in industrial production processes. High availability indicates that the machine is frequently in operating condition, which is positive for production. On the other hand, low availability could indicate maintenance problems, frequent failures, or unplanned downtime, and suggests the need for improvements in maintenance or operations management.

› Statements of delays

To optimize the management of stoppages in the production process, it is essential to implement a system for declaring and categorizing the reasons for stoppages. This declaration can be done in two ways:

- **Manual Declaration:** operators categorize the type of stoppage by selecting the reasons previously loaded on the platform. This option allows a direct intervention of the personnel, but focuses on a clear and organized structure of reasons to facilitate the selection.

- **Automatic Declaration:** In case of a direct connection to the PLC (Programmable Logic Controller), the system can automatically register the reasons for stops. This significantly reduces operator intervention, increasing the reliability of the recorded data and minimizing human errors.

In addition, this management system allows the analysis of different reasons for production delays in a given period of time. Its functionalities include:

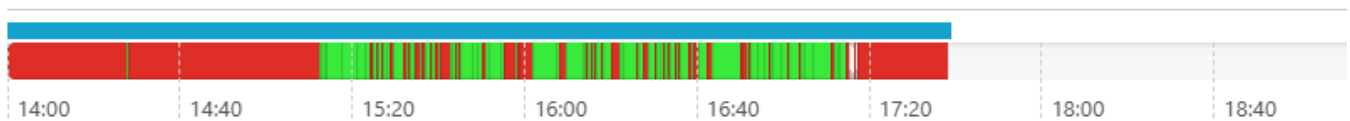
- Monitoring of the total number of stoppages and the times they occur.

- Comparison of downtimes by product, shift or machine in question, allowing the identification of specific behavior patterns and areas for improvement.

- Customization of downtime reasons through a configurable list, adaptable to the specific needs of each production line.

This systematized approach to downtime management contributes to a holistic view of production, facilitates the identification of improvement opportunities in the workflow and promotes greater operational efficiency.

Progress



Performance Indicator

The machine performance indicator is a measure that evaluates how efficiently a machine is operating compared to its theoretical or ideal capacity. This indicator is commonly used in industrial environments to analyze if the machine is producing at the expected speed and if it is optimizing its potential.

This indicator makes it possible to:

- Identify inefficiencies in production speed.
- Detect productivity problems and make adjustments in machine operation.
- Compare performance between different machines, shifts or products.
- Optimize production by adjusting operating or maintenance parameters.

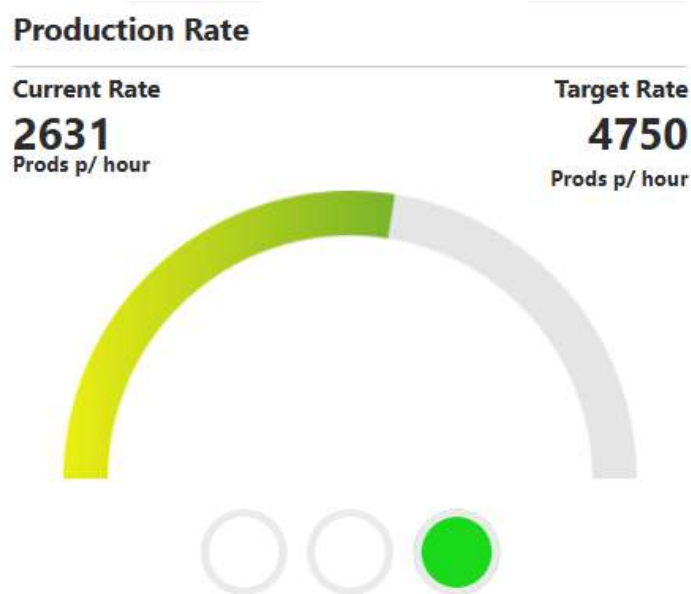
A high value on the performance indicator suggests that the machine is operating close to its maximum capacity, while a low value indicates possible problems or inefficiencies that may require adjustments or interventions.

> Actual vs Nominal Speed

Current speed and nominal speed are two key parameters in evaluating the performance of a machine in a production environment.

- **Target Rate:** The ideal or theoretical speed at which a machine is designed to operate. It represents the maximum production capacity under optimal conditions, with no interruptions or variations in rate.

- **Current Rate:** The actual speed at which the machine is operating at a given time. This speed may vary and is usually lower than nominal due to factors such as process adjustments, operating conditions, material quality, technical problems, or minor stoppages.



The analysis of the difference between the actual and nominal speed allows: detecting performance problems, identifying opportunities for improvement, reducing operating costs, comparing performance between shifts or products, optimizing maintenance, among others.

In 4i Platform, the average speed is configurable according to the type of product to be manufactured.

Quality Indicator

The quality indicator of a machine measures the percentage of conforming or defect-free products produced by a machine in relation to the total units produced. It is one of the fundamental metrics for evaluating machine efficiency and performance, as it indicates the ability to produce products that meet the required quality standards.

This indicator is essential in production because it allows:

- Understand what percentage of production is good and meets quality requirements,
- Identify problems in the production process, low quality materials or faults in the machine configuration that generate defective products,
- Reduce waste and costs,
- Increase Overall Equipment Efficiency.

The declaration of defective products can be done manually or automatically, depending on the equipment configuration.



Products Quantity



69630 [Prods]

Good

1444 [Prods]

Defective

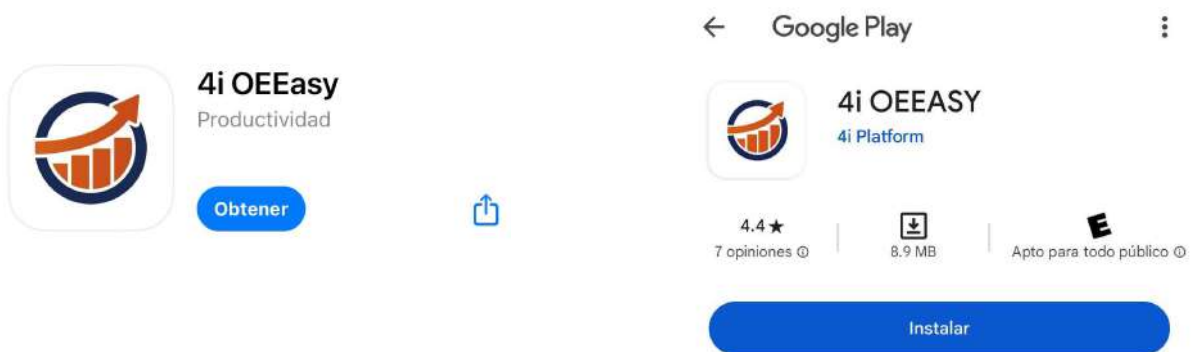
1200000 [Prods]

Target

Frequently Asked Questions

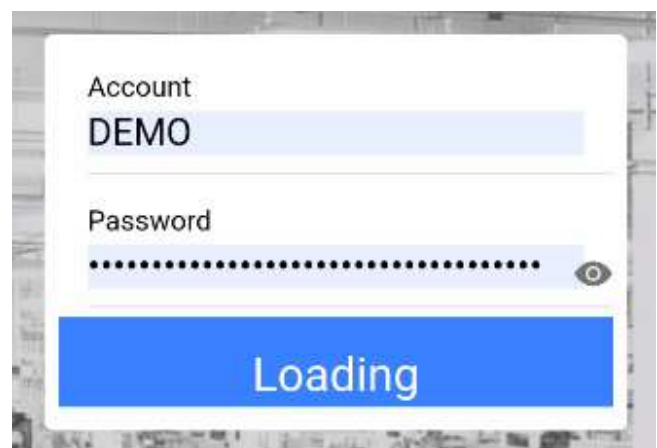
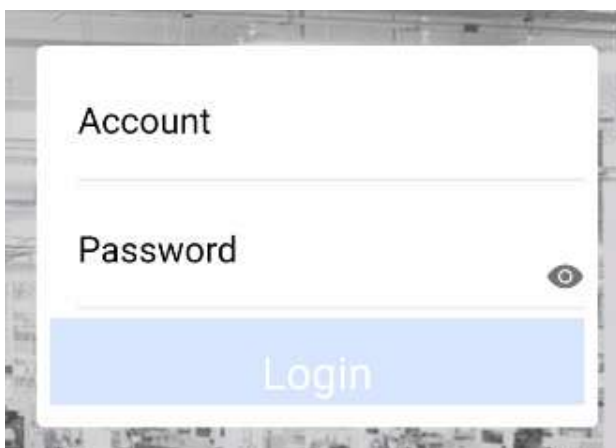
› How can I visualize OEEasy data from a mobile device? mobile device?

1) Download "4i OEEasy" from [Google Play](#) or [AppStore](#) as needed:



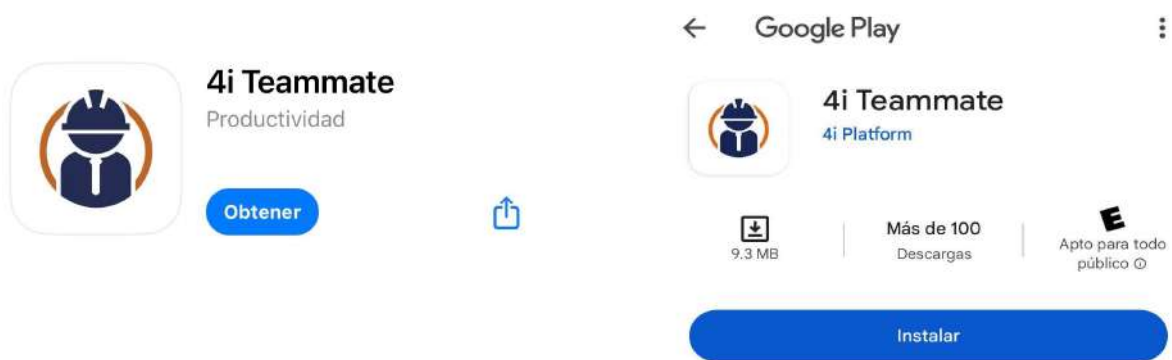
2) To access, each registered user with a viewing profile in OEEasy will receive an email with their username and password for personal use. In addition, he/she will receive the company's account name and password.

IMPORTANT: As 4i OEEasy is a viewing application only, all users who want to use it must enter the company's account name and password received by email, NOT the personal user name and password!

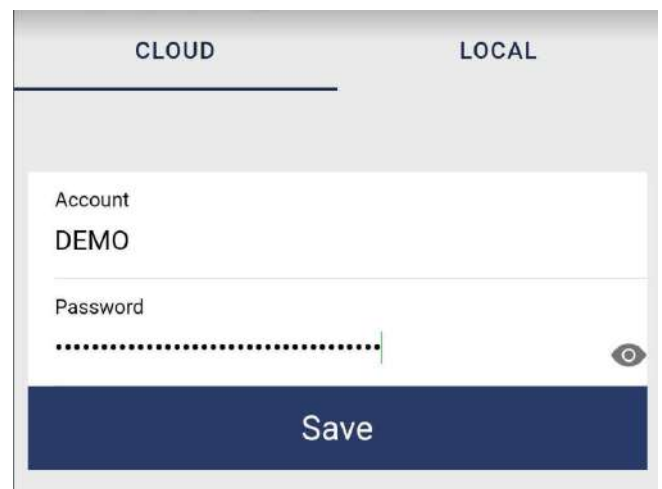
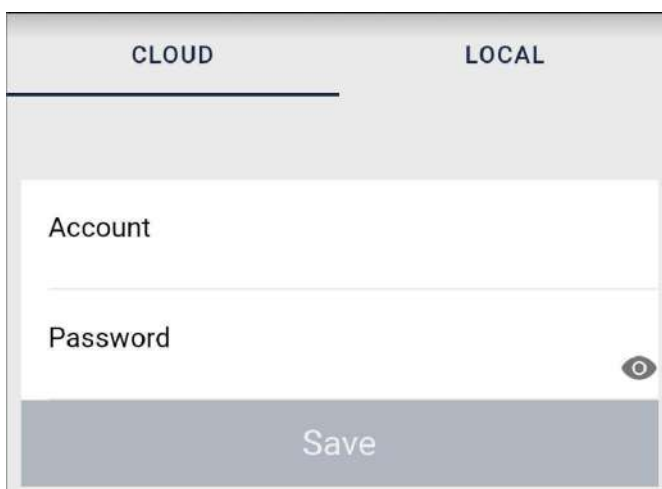


➤ *How can I operate OEEasy from a mobile device?*

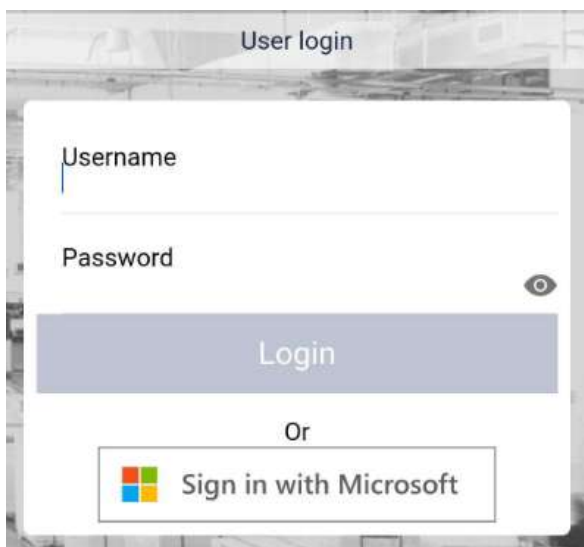
1) Download “4i Teammate” from [Google Play](#) or [AppStore](#) as needed:



2) In order to access, the supervisor or whoever the client arranges, must enter the company's account and password in the mobile device to be used in the operation process. Once the account and password have been entered, it will not be necessary to do it again.



3) Then, each operator who needs to use the application must enter his personal username and password to be able to operate with 4i Teammate.




User login

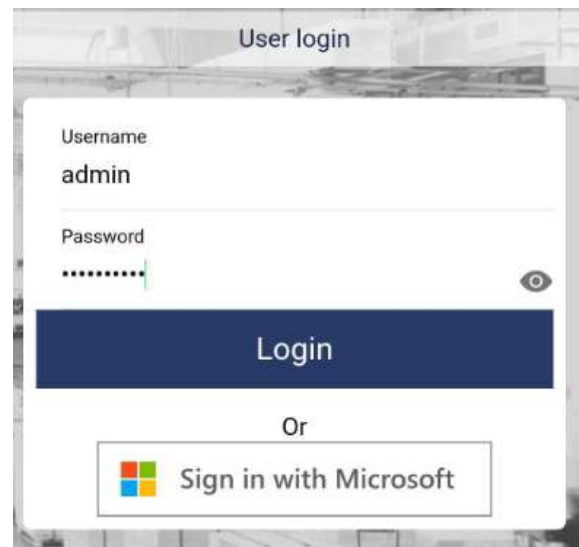
Username

Password

Login

Or

 Sign in with Microsoft




User login

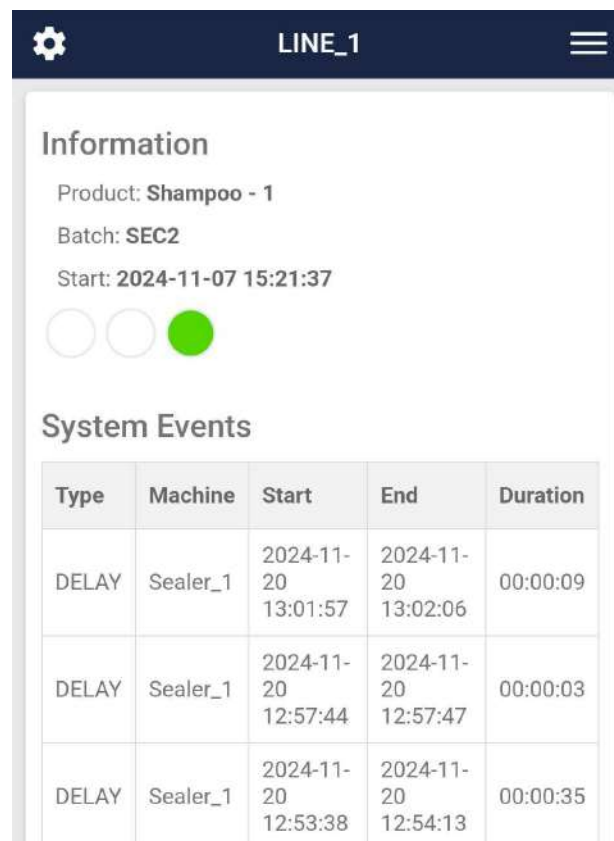
Username
admin

Password
.....

Login

Or

 Sign in with Microsoft



LINE_1

Information

Product: Shampoo - 1
Batch: SEC2
Start: 2024-11-07 15:21:37

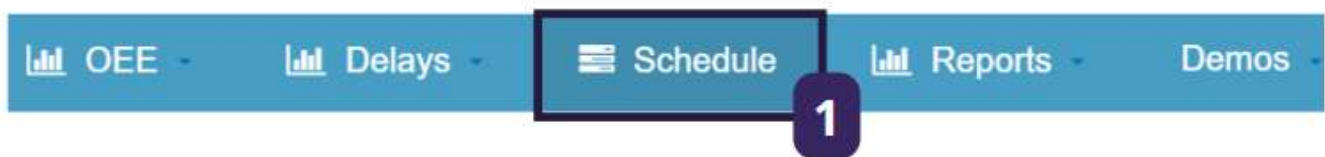
○ ○ ●

System Events

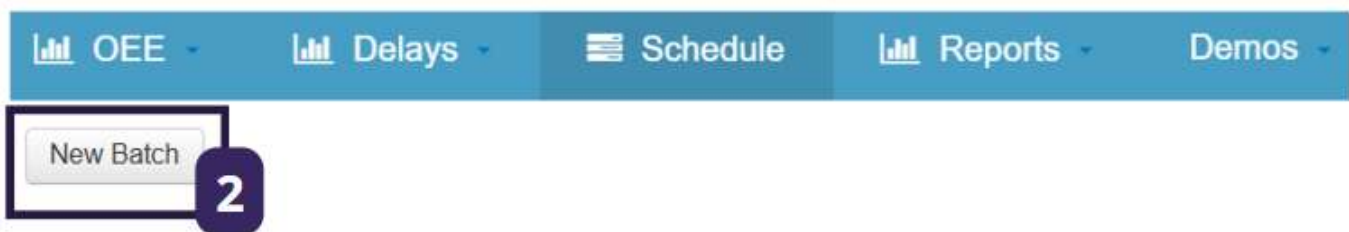
Type	Machine	Start	End	Duration
DELAY	Sealer_1	2024-11-20 13:01:57	2024-11-20 13:02:06	00:00:09
DELAY	Sealer_1	2024-11-20 12:57:44	2024-11-20 12:57:47	00:00:03
DELAY	Sealer_1	2024-11-20 12:53:38	2024-11-20 12:54:13	00:00:35

➤ How to generate a new batch?

1) Click on "Schedule" in the upper left bar.



2) Open a new batch by clicking on "New Batch".



3) Configure batch information: Equipment, Number, Product, Units, Quantities, Date and Time.



4) Save changes.



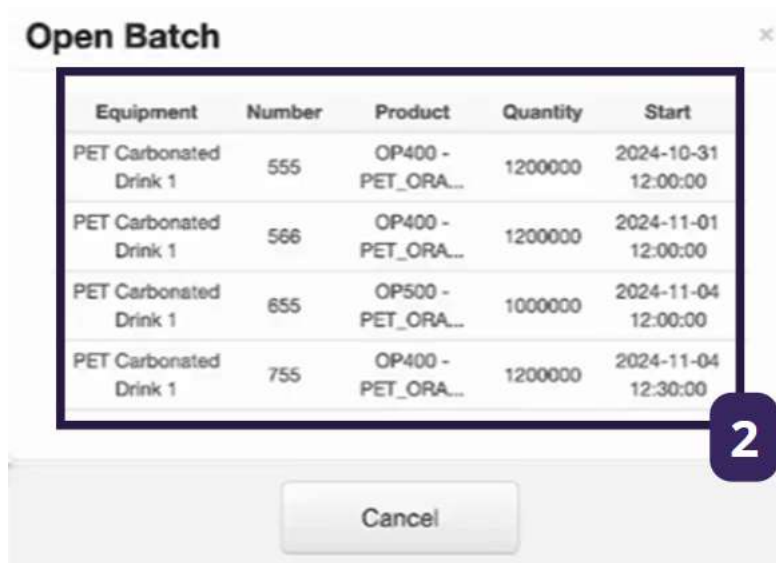
› How to open and close a batch?

To open the batch:

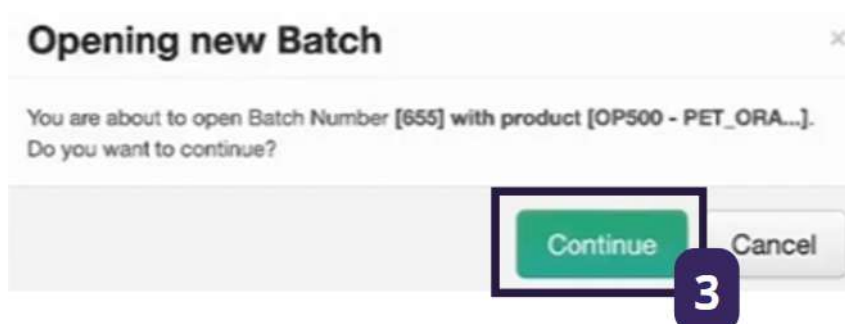
1) Click on "Open Batch".



2) Select the batch you wish to open.

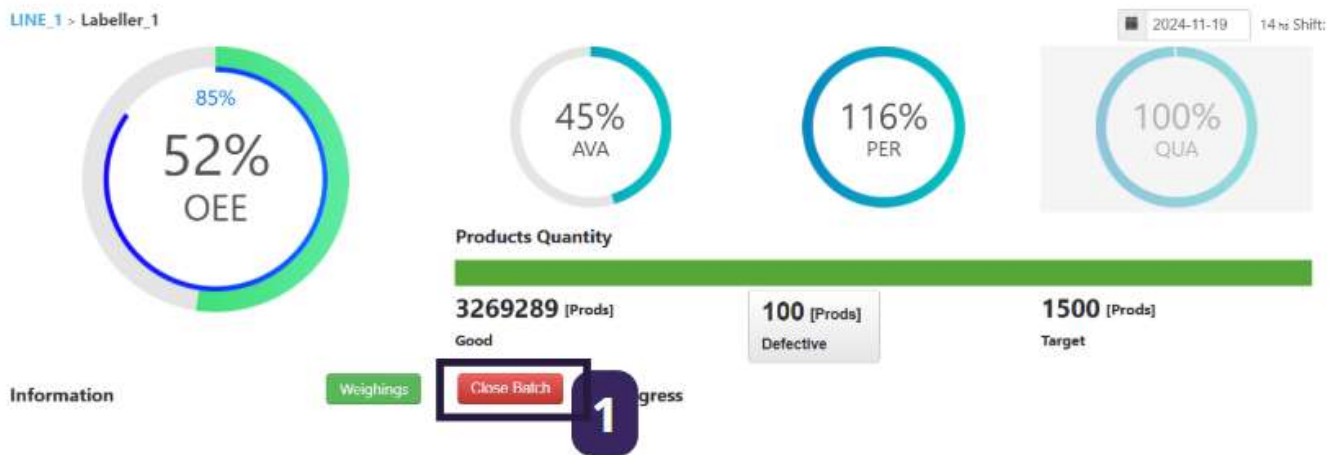


3) Confirm batch opening.

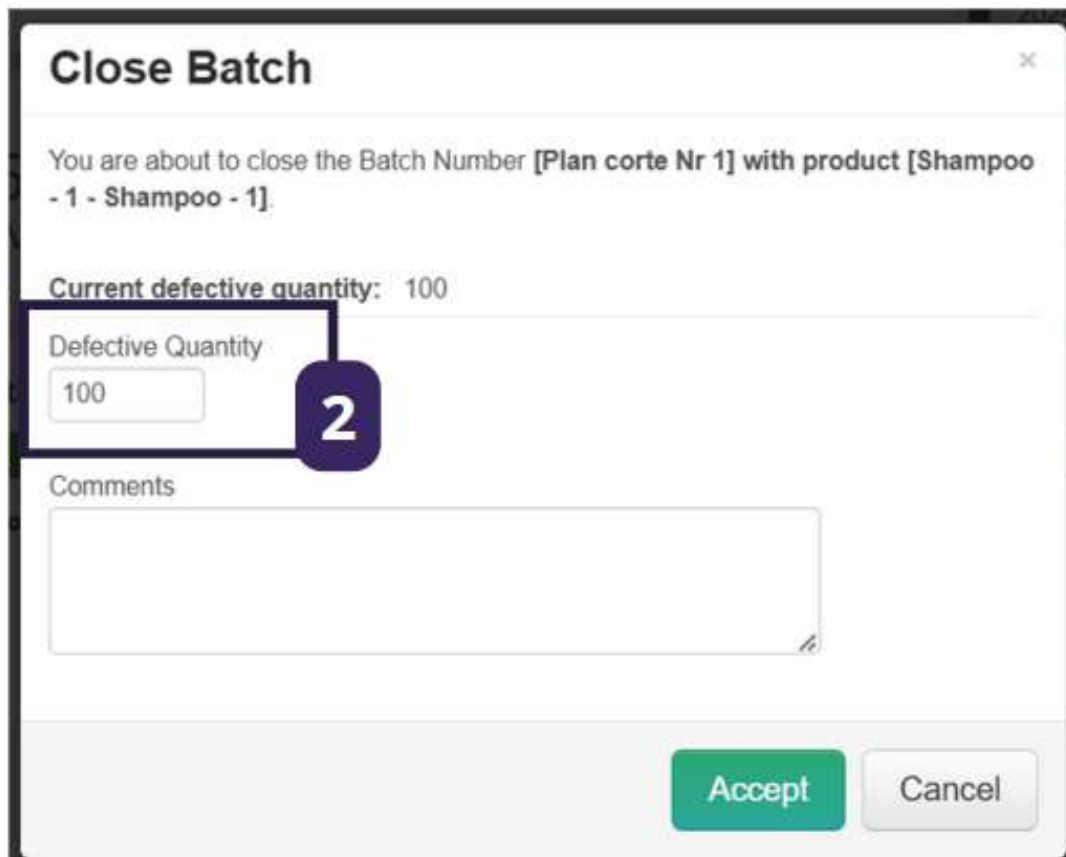


To close the batch:

1) Click on "Close Batch".



2) Set the number of defective products and, if any, comments on the batch.



Close Batch

You are about to close the Batch Number [Plan corte Nr 1] with product [Shampoo - 1 - Shampoo - 1].

Current defective quantity: 100

Defective Quantity

Comments

Accept Cancel

2

› How to declare delays manually?

1) Click on the delay (red) that you wish to declare.



2) Select the delay motive.

Delay Information

Line:	Machine:	Batch N°:	Start:	Duration:	User:	Code:
LINE_1	Labeler_1	Plan corte Nr 1pr	2024-11-19 15:32:14	0 min 30 seg	-	

Tree navigation

Code:

100 - FERIADOS NO NEGOCIABLES >	1000 - LIMPIEZA Y SANITIZACIÓN >	1100 - CHANGEOVER >	1200 - PREPARACIÓN DE ARRANQUE >
1300 - BREAKDOWN >	1400 - CORTE DE UTILITIES >	1500 - FALTA DE PERSONAL >	1600 - FALTA DE MATERIALES EN PIE DE LÍNEA >
1700 - CAMBIO CUCHILLA / BOBINA / CONSUMIBLE >	1800 - PARADAS MENORES A 10 MINUTOS >	1900 - VELOCIDAD REDUCIDA >	200 - FERIADOS NEGOCIABLES >
2000 - Defectos de Calidad y Reprocesos >	2100 - Mediciones y Ajustos >	300 - ESQUEMA DE ROTACION >	400 - SIN ORDEN DE PRODUCCIÓN >

← Close →

Delay Information

Line:	Machine:	Batch N°:	Start:	Duration:	User:	Code:
LINE_1	Labeler_1	Plan corte Nr 1pr	2024-11-19 15:32:14	0 min 30 seg	-	

Tree navigation

Code: 1000 - LIMPIEZA Y SANITIZACIÓN

1000 - LIMPIEZA/ SANITIZACIÓN PLANEADA (POR REQUERIMIENTO DE CALIDAD) >	1001 - RUTINA DE SANITIZACIÓN (ESTÁNDAR) >	1002 - RUTINA DE LIMPIEZA (ESTÁNDAR) >	1003 - LIMPIEZA/ SANITIZACIÓN INESPERADA >
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Delay Information

Line	Machine	Batch N°	Start	Duration	User	Code
LINE_1	Labeller_1	Plan corte Nr 1pr	2024-11-19 15:32:14	0 min 30 seg	-	-

Tree navigation

Code: 1000 - LIMPIEZA Y SANITIZACIÓN > 1001 - RUTINA DE SANITIZACIÓN (ESTÁNDAR)

1001 - Armadora de Cajas

1001 - Balanza

1001 - Cerradora de Cajas

1001 - Codificador Cajas

1001 - Codificador Doypack

1001 - Encajonadora

1001 - Envasadora

1001 - Etiquetadora

1001 - Fin de Línea

1001 - Mesa desviadora

3) Add a comment if necessary, and save.

Accept

Previous

➤ *How to manually declare a defective product?*

1) Click on “Defective products”.



2) Determine the number of defective units.

Add Defective Units

Current quantity: 0

Quantity

⚙️
Accept
Cancel

3) Save the changes and verify that the number of defectives is as desired.



➤ *How to access available reports?*

1) Click on “Reports” in the top left bar and select the report you wish to view.

Reports - Demos - Alarms Dashboard

1

- Dashboards
- Losses
- OEE
- Last 24 Hours
- Batch
- Delays
- Events

- 4 Lines Current Shift Overview
- Actual Cycle Time [min] / Product & Line (B)
- Actual Cycle Time [s] / Product & Line (B)
- Daily - Losses / Shift & Line (SC)
- Daily - OOE & OEE (AVA, PER, QUA) / Line & Shift
- Daily - OOE & OEE / Line & Shift
- Daily - Quantities / Line & Shift (SC)
- Daily - Quantities / Shift & Line (C)
- Delays / Category & Machine -> Shift (B)
- Delays / Category (B)
- Delays / Line & Shift / Category & Code
- Items
- Last Week - OOE & OEE / Line & Shift | Delays / Ca
- M.T.T.R. & M.T.B.F.
- Monthly - Losses / Shift & Line (SC)
- Monthly - OOE & OEE (AVA, PER, QUA) / Line & Shift
- Monthly - Quantities / Line & Shift (SC)
- Monthly - Quantities / Shift & Line (C)
- OOE & OEE (AVA, PER, QUA) + Times
- Quantities / SKU -> Product & Line



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Industrial IoT

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