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NIS User Handbook

Devices

The NIS in the Line

NIS is an acronym that stands for Next Improve System. NIS allows the control and monitoring of production efficiency, both in real time (Andon) and over a certain period (OEE).

How to Implement the NIS in the Field

In order to implement a Next Improve System, you need the following devices:

- An LED TV (we recommend at least a 40 inches TV)
- A mini PC
- A Touch Panel
- A Barcode reader
- A PLC

For each production line, there will be a touch panel and an LED TV (The Andon board).



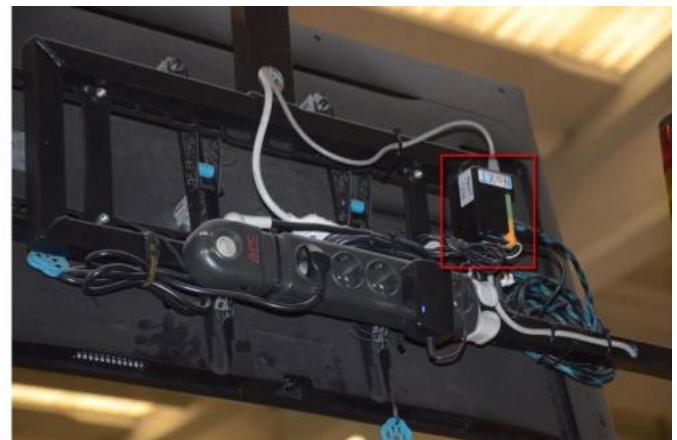
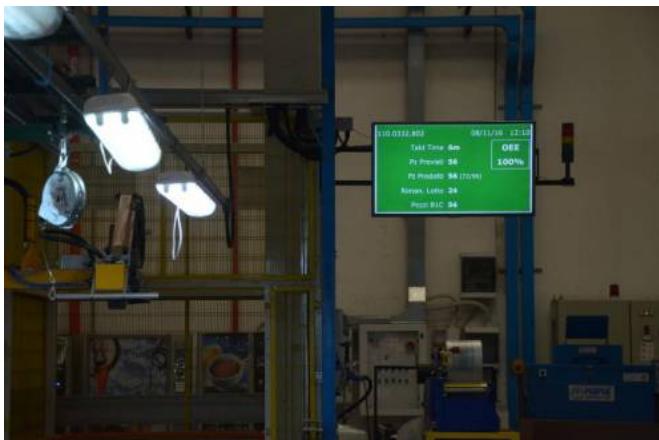
The barcode reader connected to the touch panel will help the operator **change the production order** and, in case the PLC is missing, to **increase the number of pieces produced**.

The barcode reader is connected to the touch panel via a USB port, and the touch panel is connected to the system via ethernet cable.

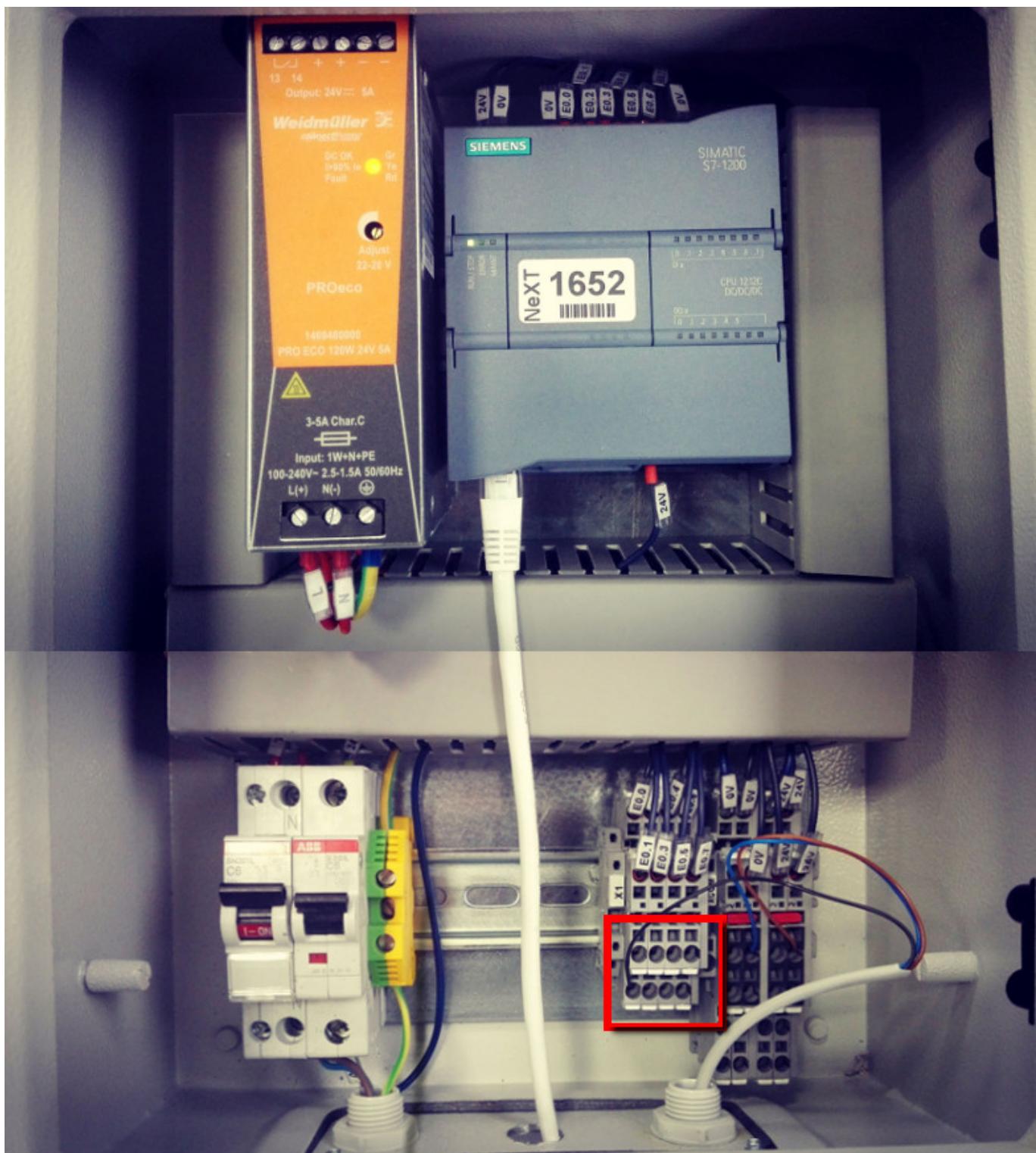




The Mini PC is connected to the LED TV via an HDMI port and is also connected to the system via an ethernet cable.



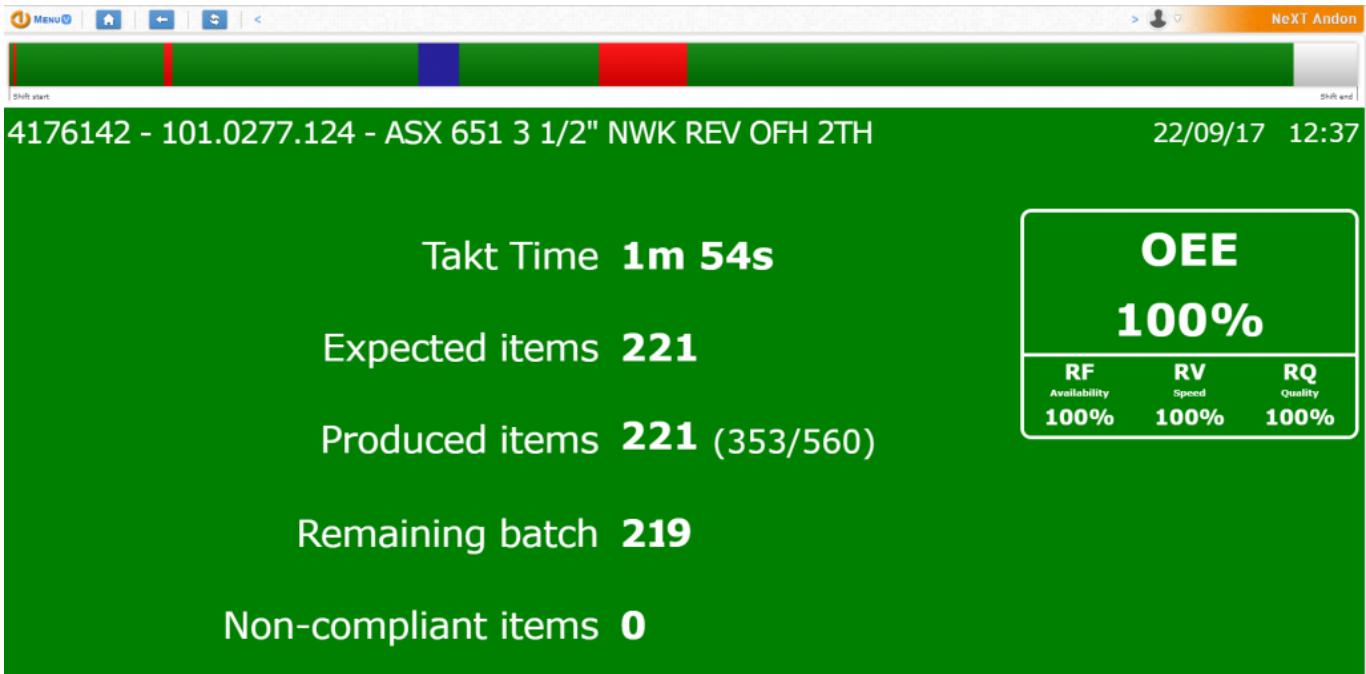
The main difference compared to a line without a PLC concerns the signaling mode of the advancement of a piece: the PLC automatically sends a signal when the operator performs the last operation. Another signal from the PLC indicates the status of the machine (Running/Not Running). Each PLC can be connected to 4 machines as it is provided with 8 slots.



Interfaces

The LED TV (Andon Board)

The Andon board shows different data related to real-time production.



The Andon Board Interface

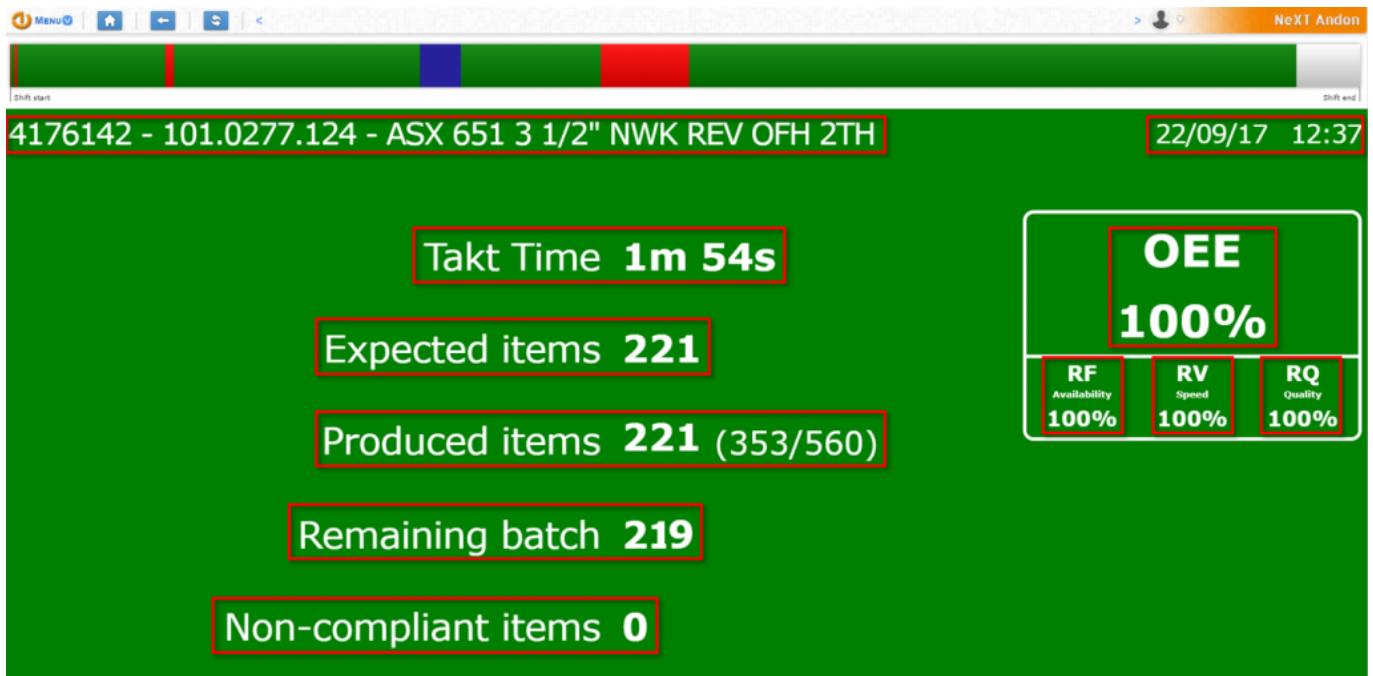
At the top of the page, a horizontal bar shows the sequence of stops of any type (programmed stop, maintenance stop, etc.).

In green, the runtime; in red the stop time, and in blue the scheduled stops.



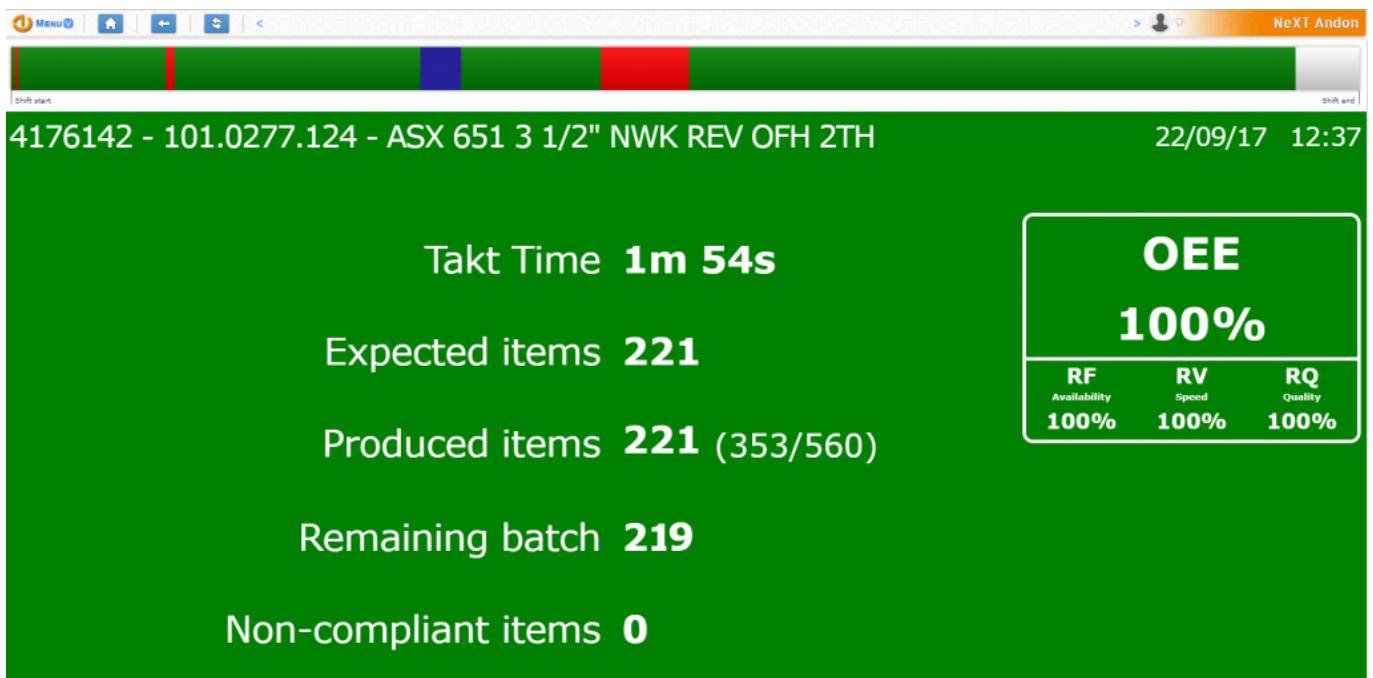
Let's see the meaning of each element:

- At the top-left, there is the **«Production Order code»** currently ongoing.
- At the top-right, there is the **date and time**.
- **Takt-time:** is the time that each operator has to carry out its task.
- **Expected items:** it represents the theoretical production.
- **Produced items:** it represents the number of produced products, both goods and scraps.
- **Remaining batch:** the number of remaining pieces in order to complete the entire lot production.
- **Non-compliant items:** the number of parts not good (scrap items).
- **OEE:** on the right, there is the OEE value expressed as a percentage, referred to the current shift. Single percentages are also specified for availability, speed, and quality.

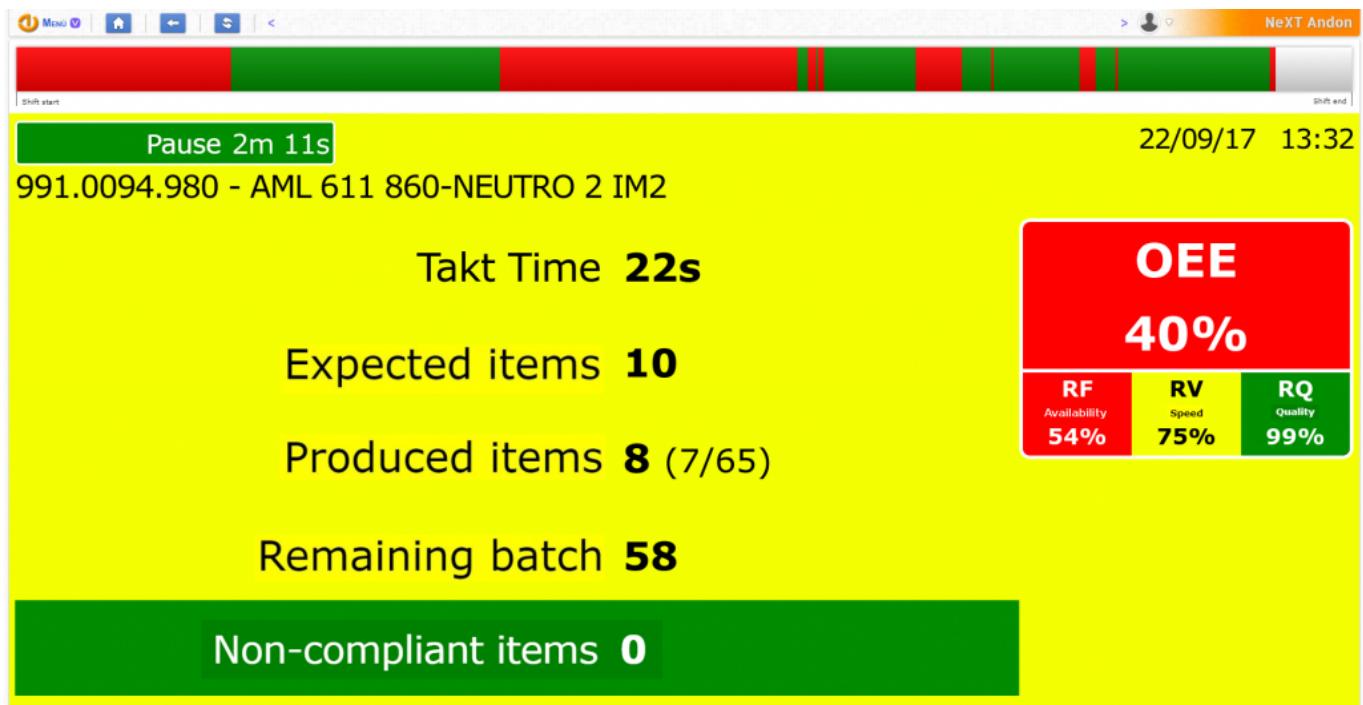


Even the colors of some elements have a specific meaning.

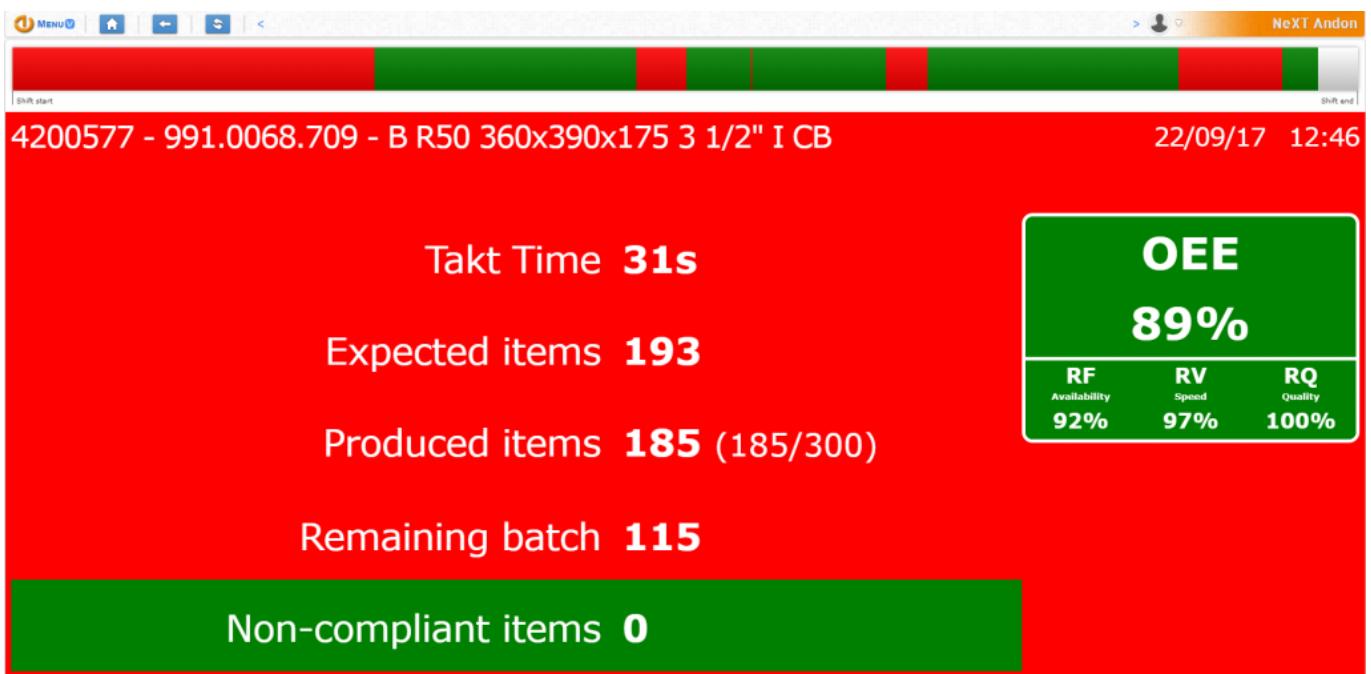
Green background: the background is green when the number of "Expected items" (for the current production) is equal to the number of "Produced items".



Yellow background: the background is yellow when the number of "Expected items" (for the current production) is greater by one or two items compared to the number of "Produced items".



Red background: the background is red when the number of "Expected items" (for the current production) is greater than the number of "Produced items" by three or more.



Also, the "Non-compliant items" area has its background color. Now we see the meaning of these colors.

- **Green background:** there were non-scrap items.
- **Yellow background:** there were one or two scrap items.
- **Red background:** there were three or more scrap items.

Non-compliant items

Also, the box that hosts the percentage of OEE will appear with different colors.

- **Green:** the percentage value is greater than 81%.
- **Yellow:** the percentage value is between 71% and 80%.
- **Red:** the percentage value is between 0 and 70%.



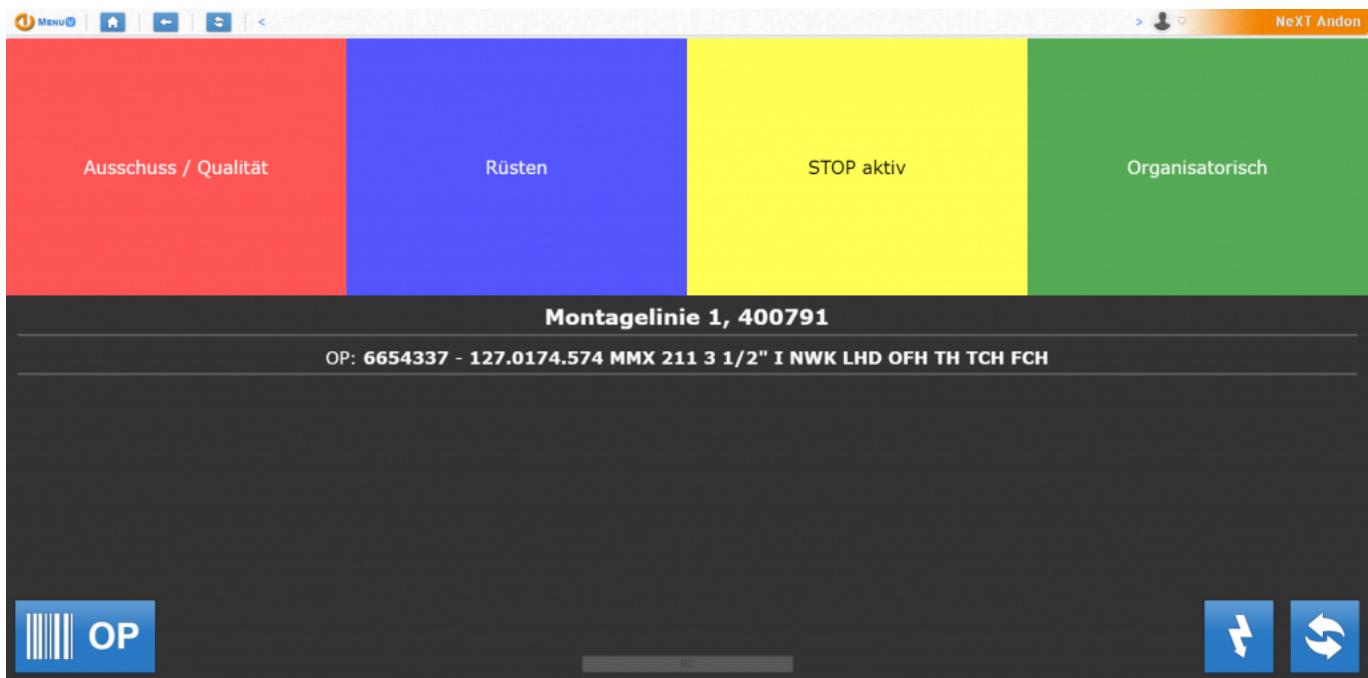
These percentage values can be customizable line by line, so they may differ from those shown in this guide. Likewise, the individual boxes of "Availability," "Speed," and "Quality" can take on different colors.

The Touch Panel

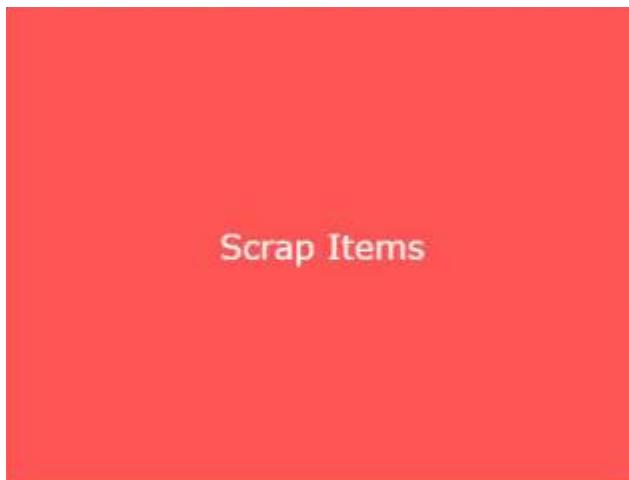
The Touch Panel Interface

This is the interface of the touch panel.

The red, blue, yellow, and green areas are buttons that allow the operator to access certain functions.



The "Scrap items" button provides access to a dialog box containing the datasheet of the loss of quality causes. The operator must specify the appropriate cause. For more information, see the paragraph "Declaring scrap."



The "Tool changeover time" button starts the setup process. For more information, see unit "Tooling."

Tool Changeover Time

The "Failure / Slowdowns" button provides access to a dialog box containing the datasheets of the causes of the stops.

The operator must specify the appropriate cause.

For more information, see unit "Declaring stop for failure or slowdown."

Failure / Slowdowns

The "Organizational" button provides access to some particular stop causes that have to concern organizational factors.

The operator must specify the appropriate cause.

For more information, see unit "Declaring stop for organizational cause."

Organizational

Below the four buttons, you can read the name of the line and the order of production that is processed at that time.

Montagelinie 1, 400791

OP: 6654337 - 127.0174.574 MMX 211 3 1/2" I NWK LHD OFH TH TCH FCH

At the bottom on the left, there is the "OP button" that allows the operator to change the production order. For more information, see unit "Production change."



At the bottom on the right, there is the "Flashing back" button that allows the operator to switch, to SAP, the quantity of produced units and non-compliant items. For more information, see unit "Flashback function."



Near the "Flashing back" button, there is the button to **refresh** the page.



Advancement of the Pieces

Here we'll show how to advance the pieces (with or without a PLC).

Without a PLC

When the operator finishes all the operations, before moving on to the next piece, he/she will indicate the progress of the piece using the barcode reader, scanning the unique item number.



With a PLC

The main difference compared to a line without a PLC concerns the signaling mode of the advancement of a piece: it is the PLC that automatically sends a signal when the operator performs the last operation.



The number of pieces will be updated on the Andon board (LED TV), under the heading "Produced items."

OEE		
100%		
RF Availability	RV Speed	RQ Quality
100%	100%	100%

4176142 - 101.0277.124 - ASX 651 3 1/2" NWK REV OFH 2TH 22/09/17 12:37

Takt Time **1m 54s**

Expected items **221**

Produced items **221** (353/560)

Remaining batch **219**

Non-compliant items **0**

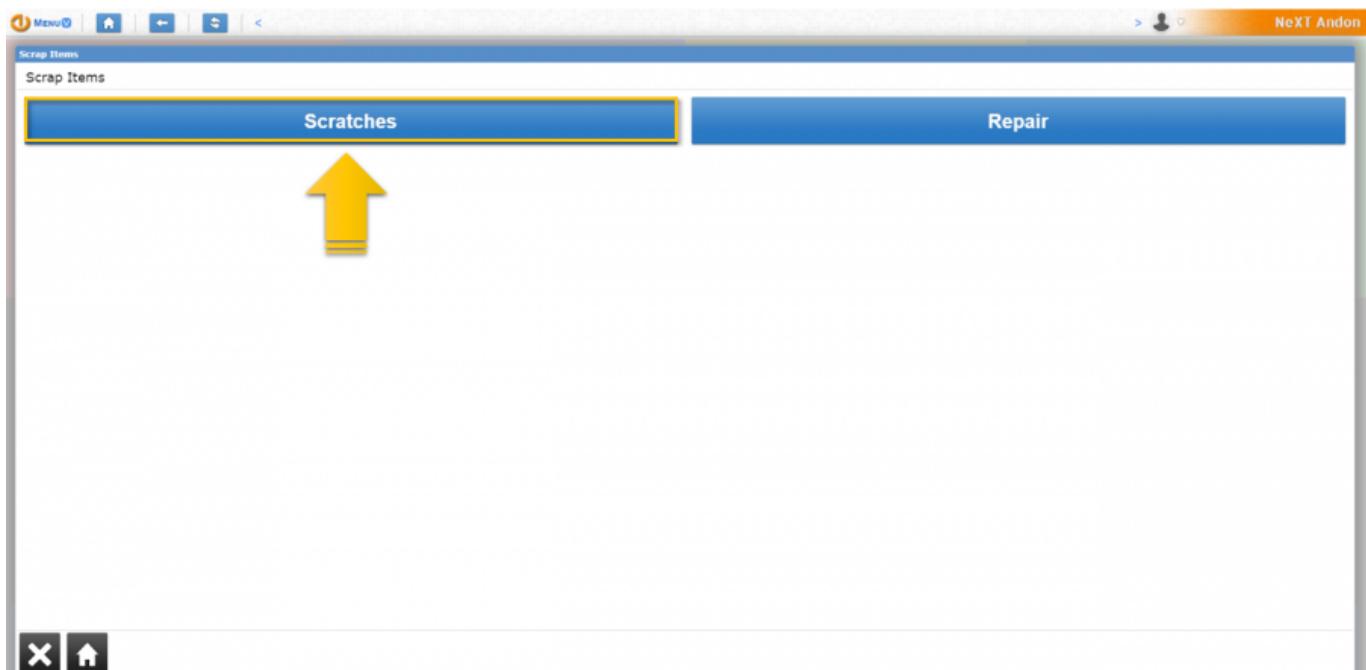
Declaring scrap

The following paragraph will show how the operator can declare the scrap items.

- Press the red area called «**Scrap items**»



- The operator has to choose from a list of causes



- Once the type of defect has been chosen, the operator can define the amount of pieces to be discarded

Number of scrap items

11

+1 +10

-1 -10

Ok Cancel



A message will inform the operator that the scrap declaration has been successful



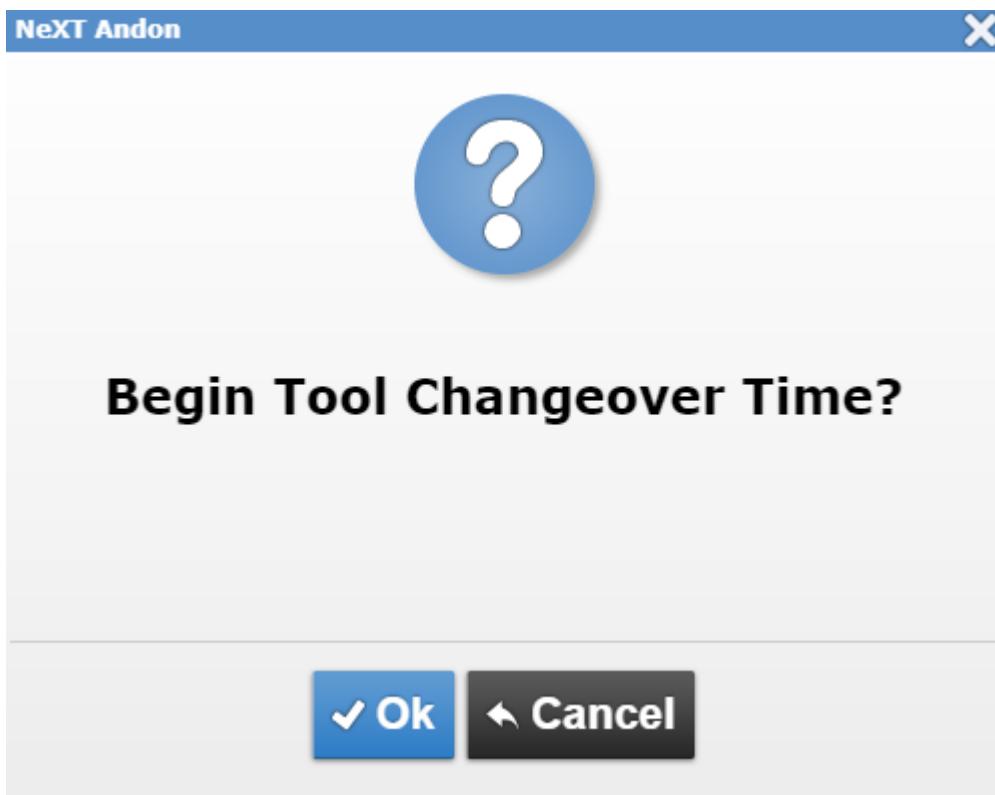
Tooling

The following paragraph will show how the operator can start the tool changeover time.

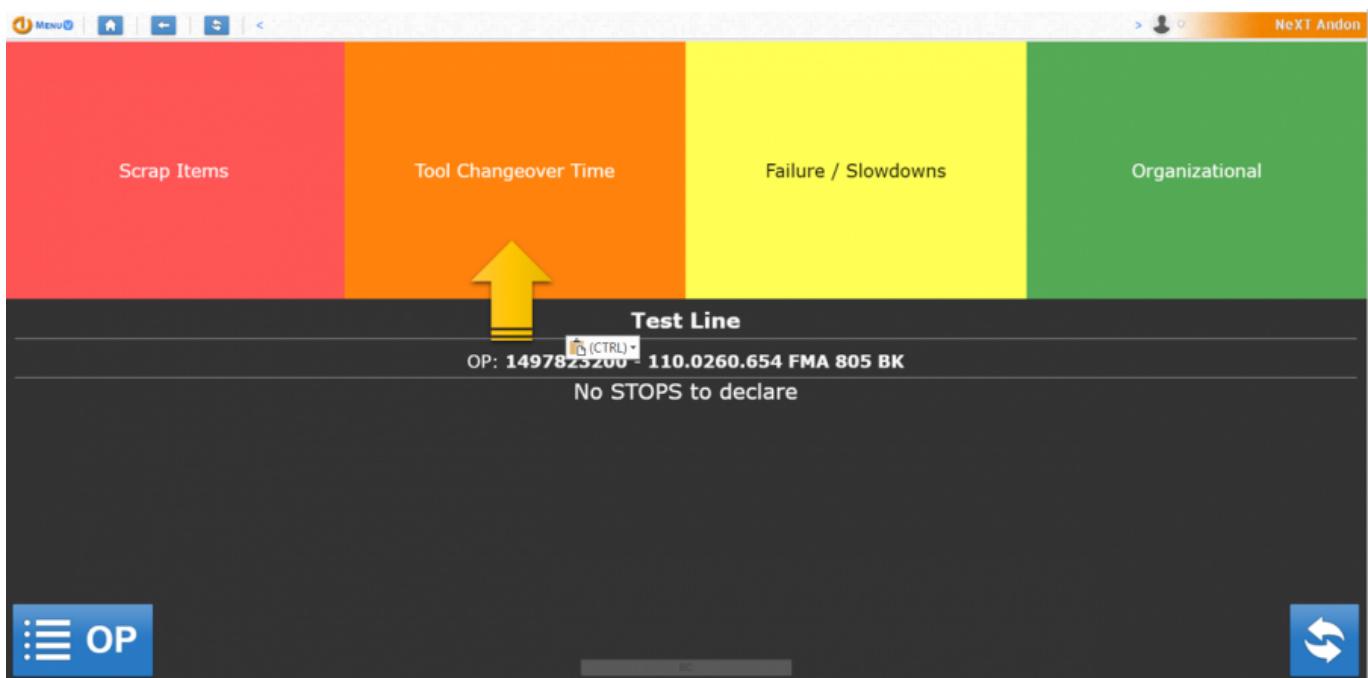
- Press the blue area called «**Tool changeover time**»



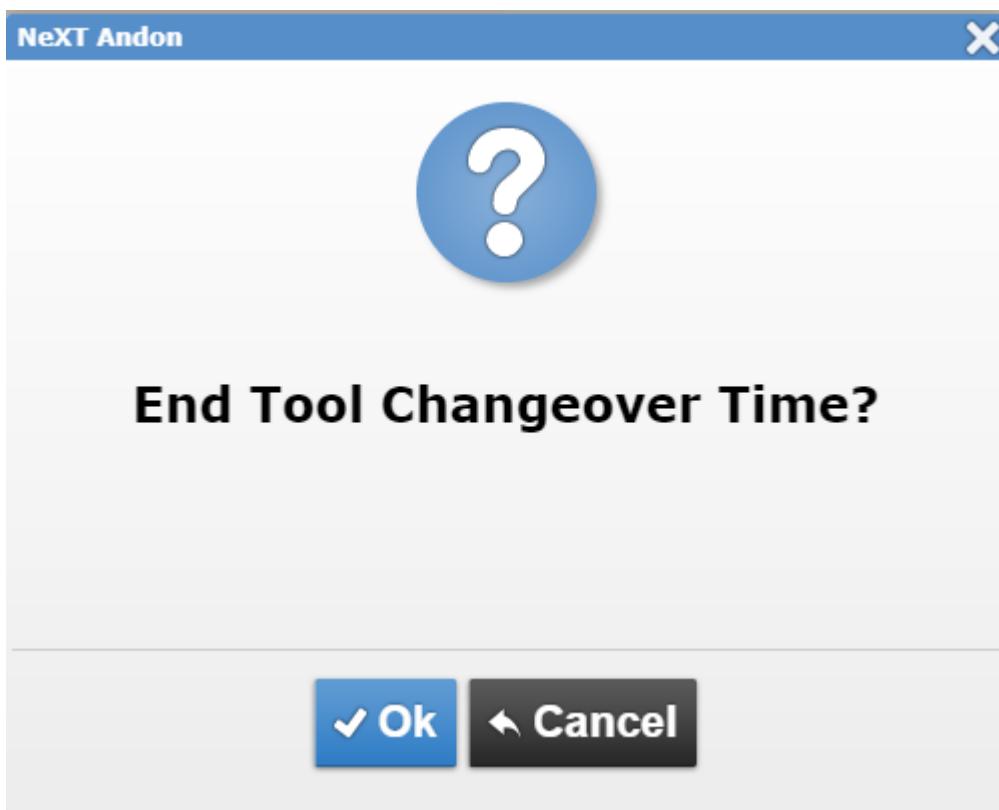
- The system will ask for confirmation of the choice to start the tooling



- Once the tooling has started, it will start blinking blue/orange for the entire duration.



- Press the blinking area to end the tooling. The system will ask for confirmation.



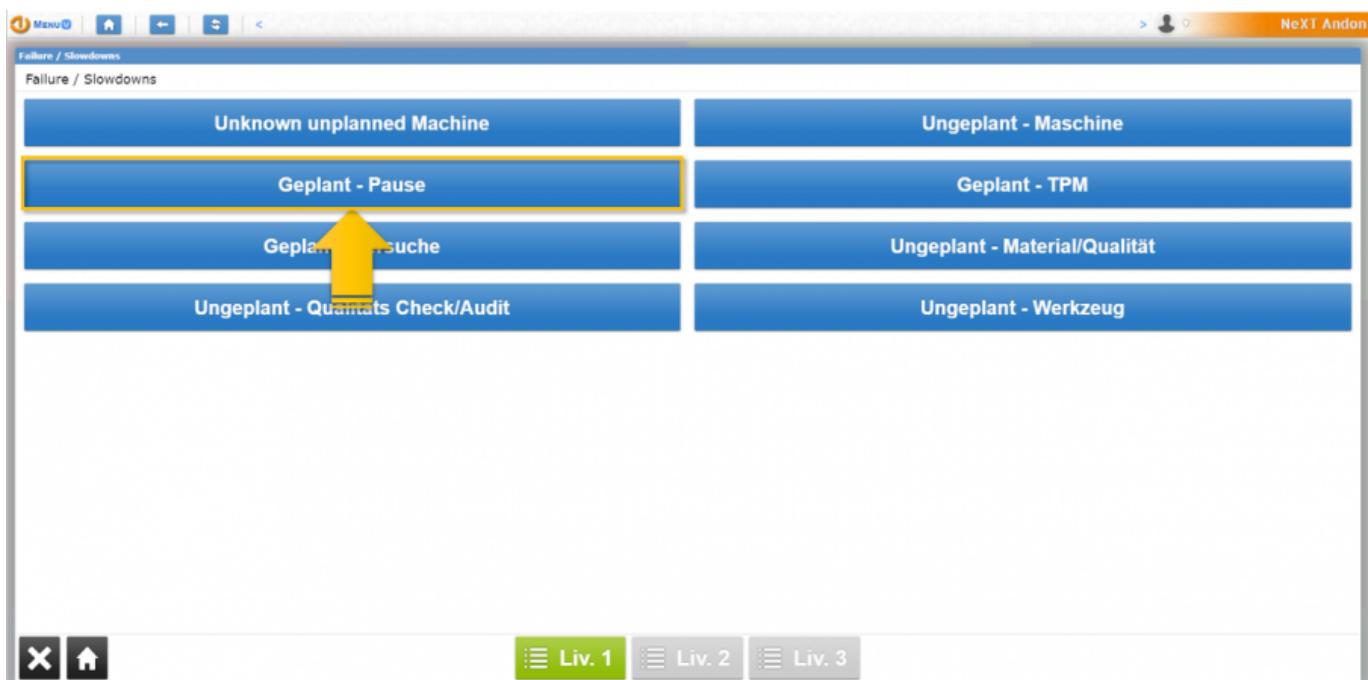
Declaring stop for failure or slowdown

The following paragraph will show how the operator can stop the system for failure or slowdown

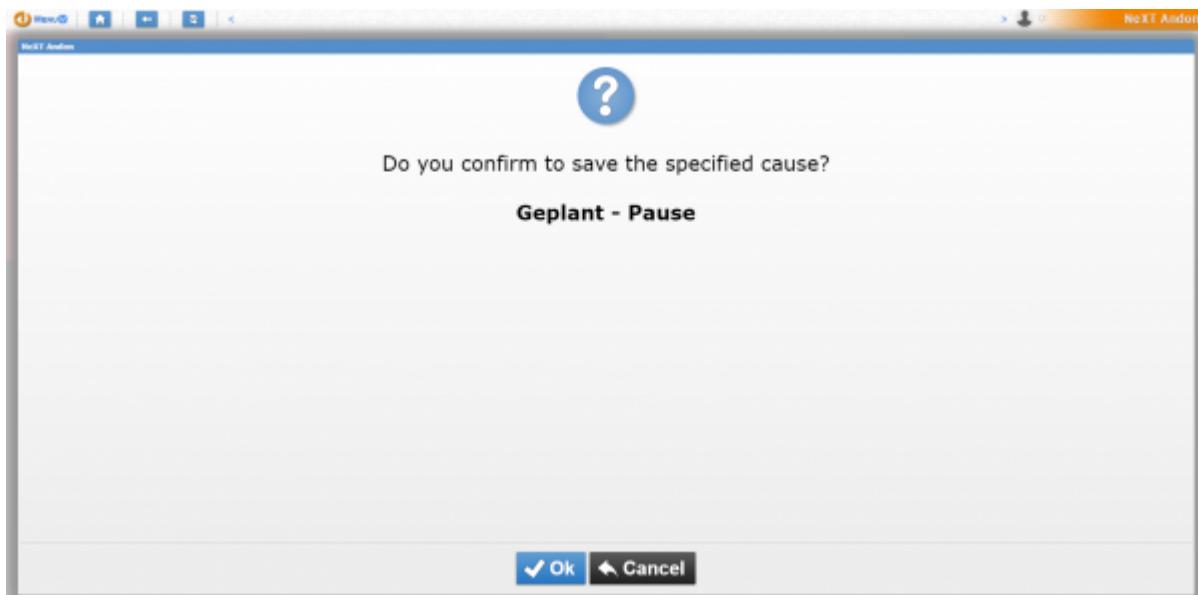
- Press the yellow area called «Failure/slowdowns»



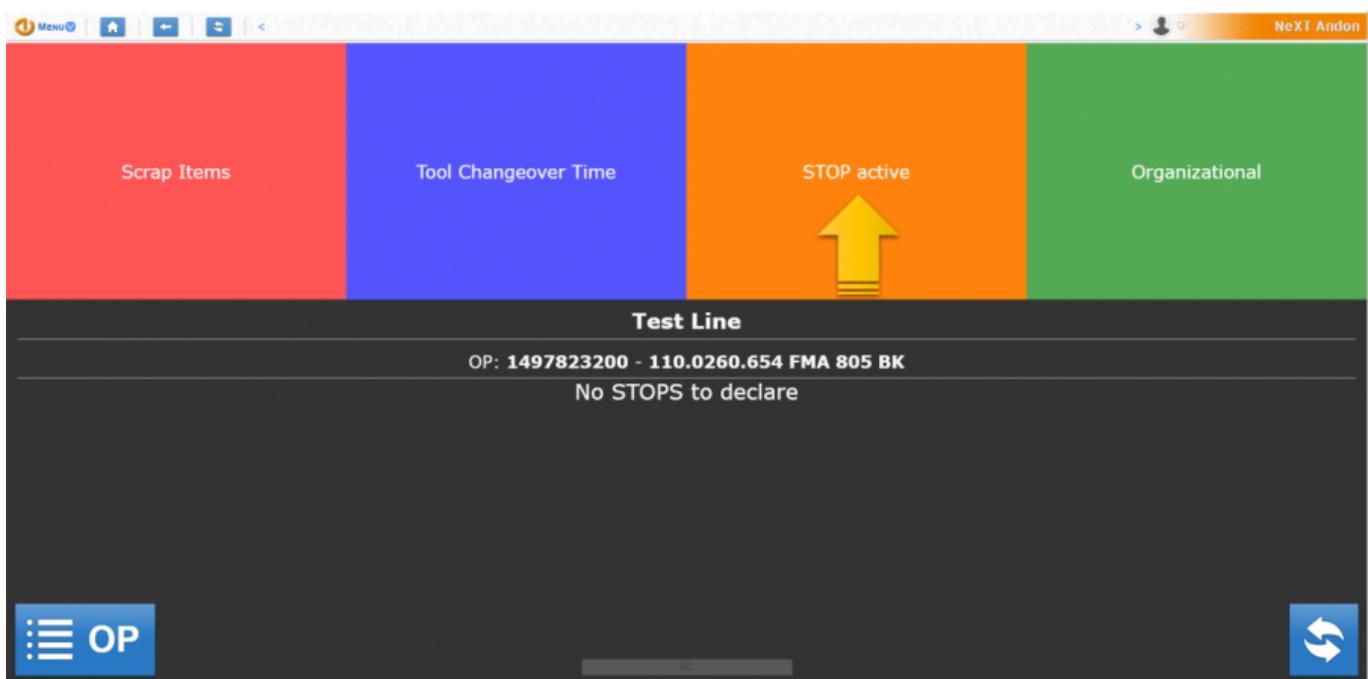
- The operator will have to choose the correct stop cause



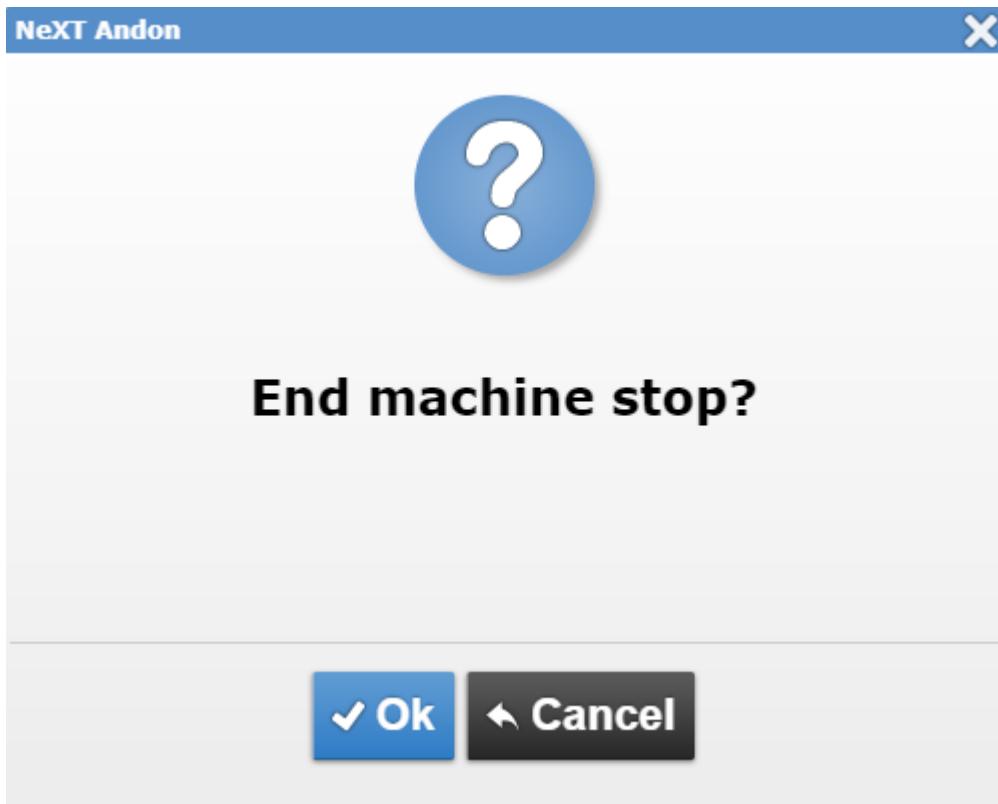
- The system will ask for confirmation of the choice



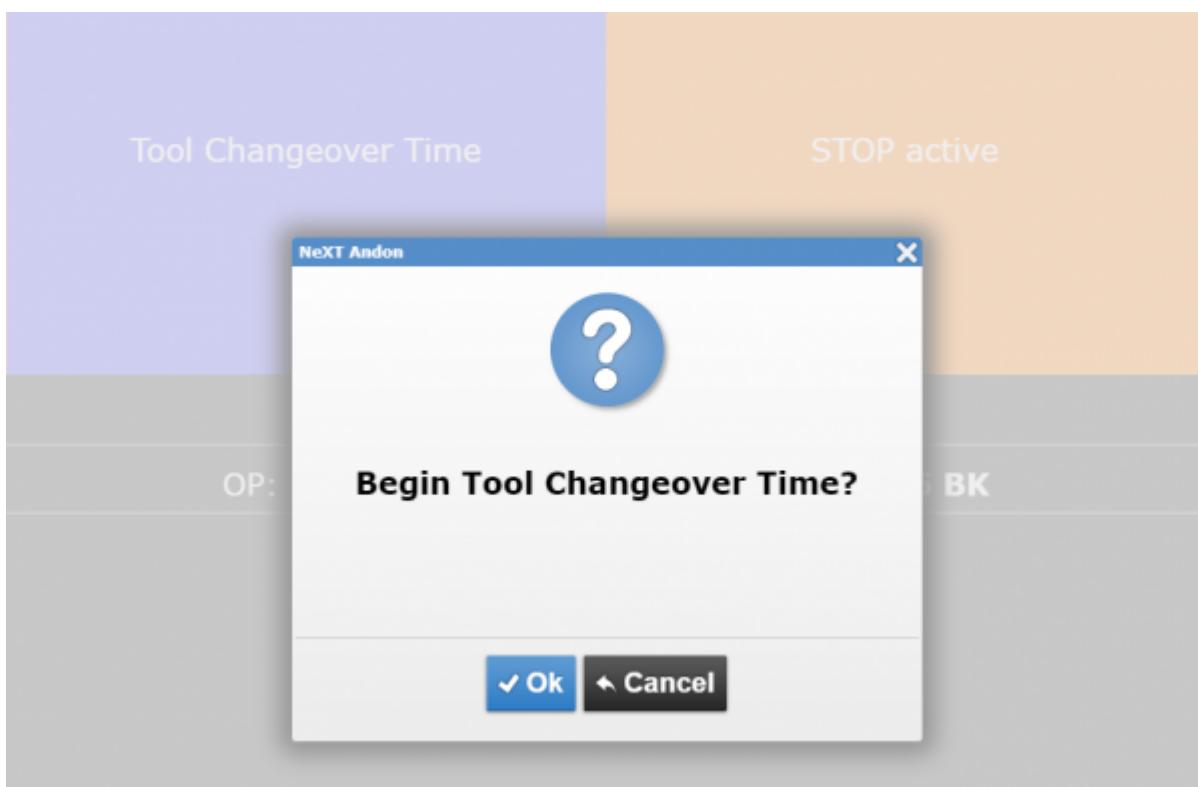
- Once the stop has started, it will start blinking yellow/orange for the entire duration



- Press the blinking area to end the stop machine. The system will ask for confirmation



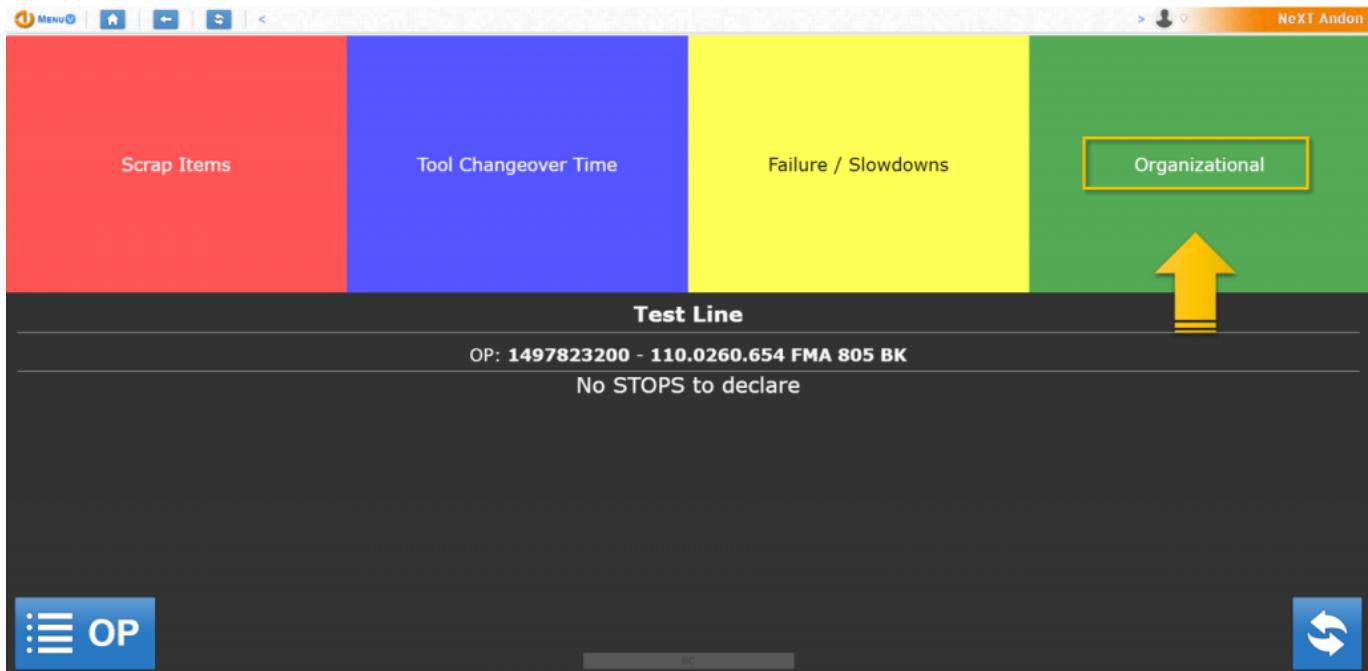
- It's also possible to switch from the stop machine, to tooling while stop is active



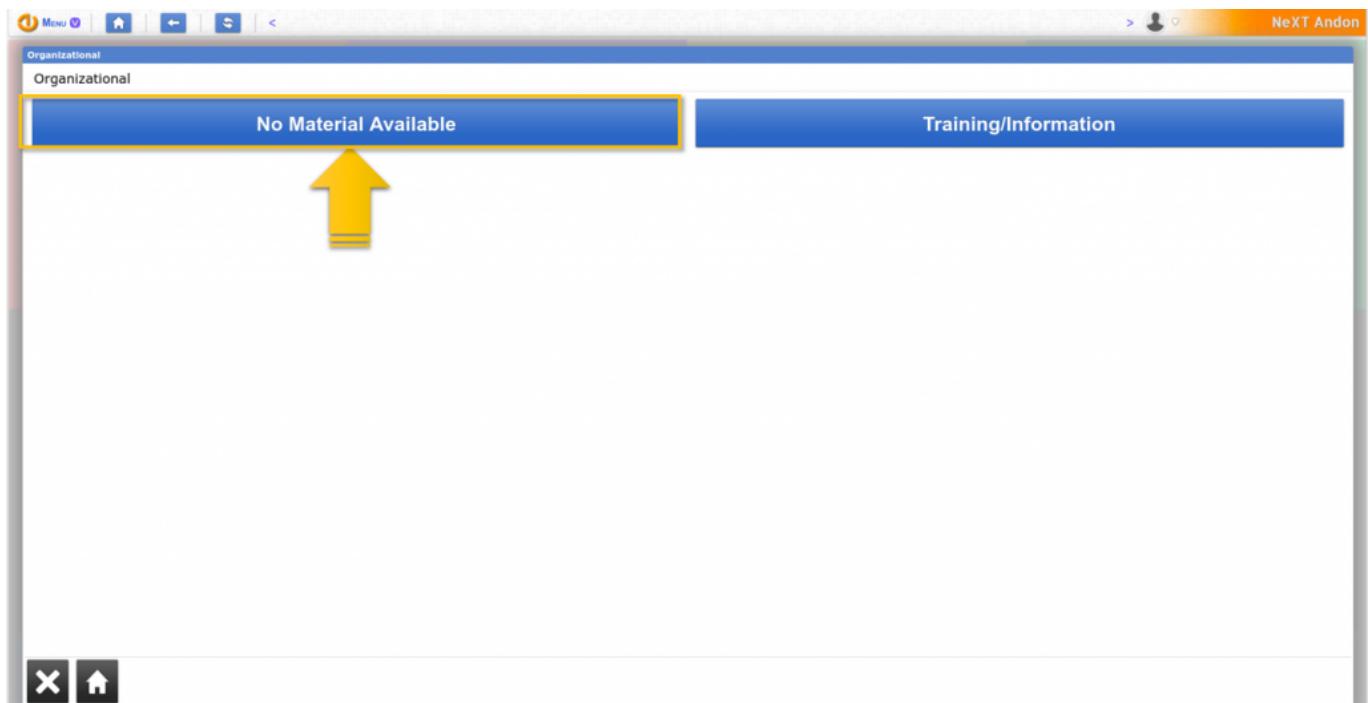
Declaring stop for organizational cause

The following paragraph will show how the operator can stop the system for an organizational cause

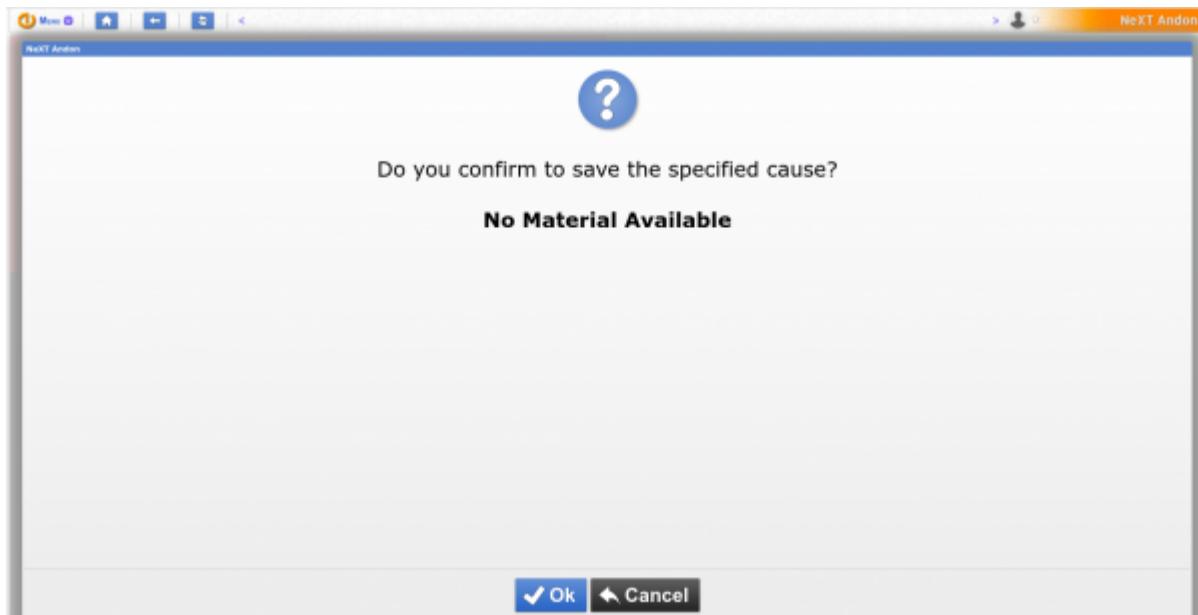
- Press the green area called «**Organizational**»



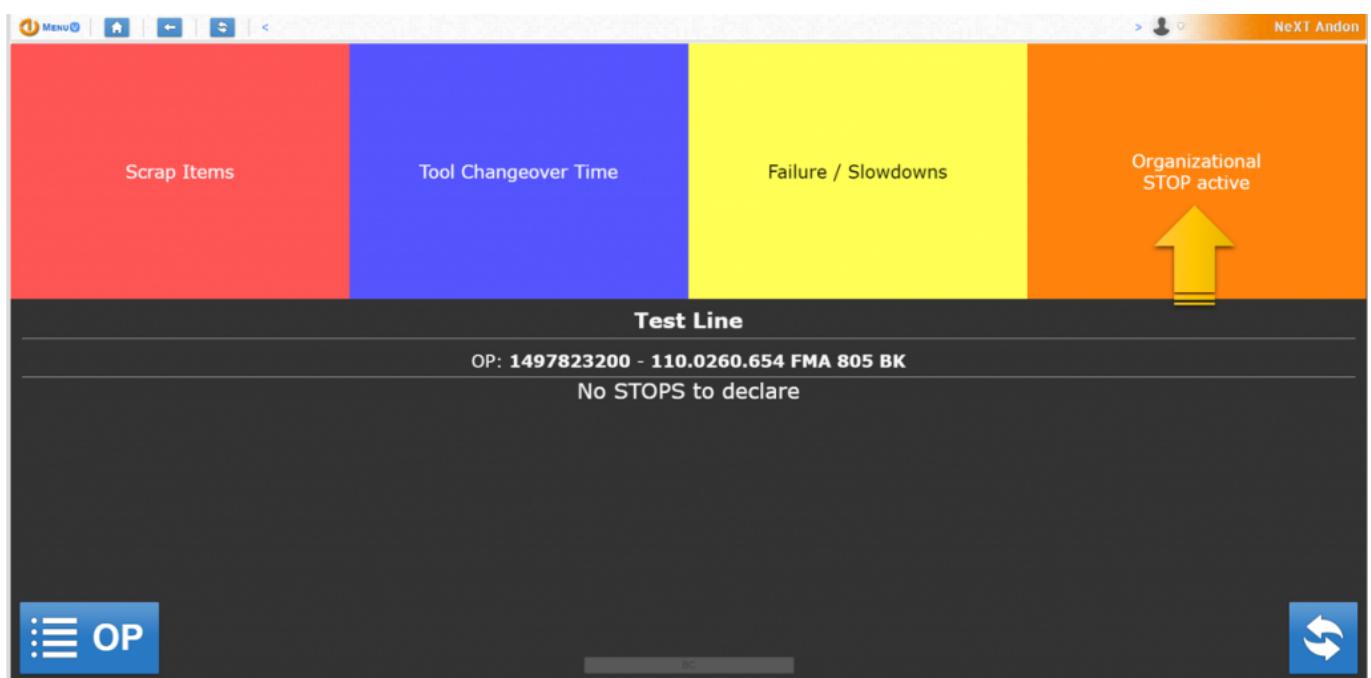
- The operator will have to choose the correct organizational stop cause



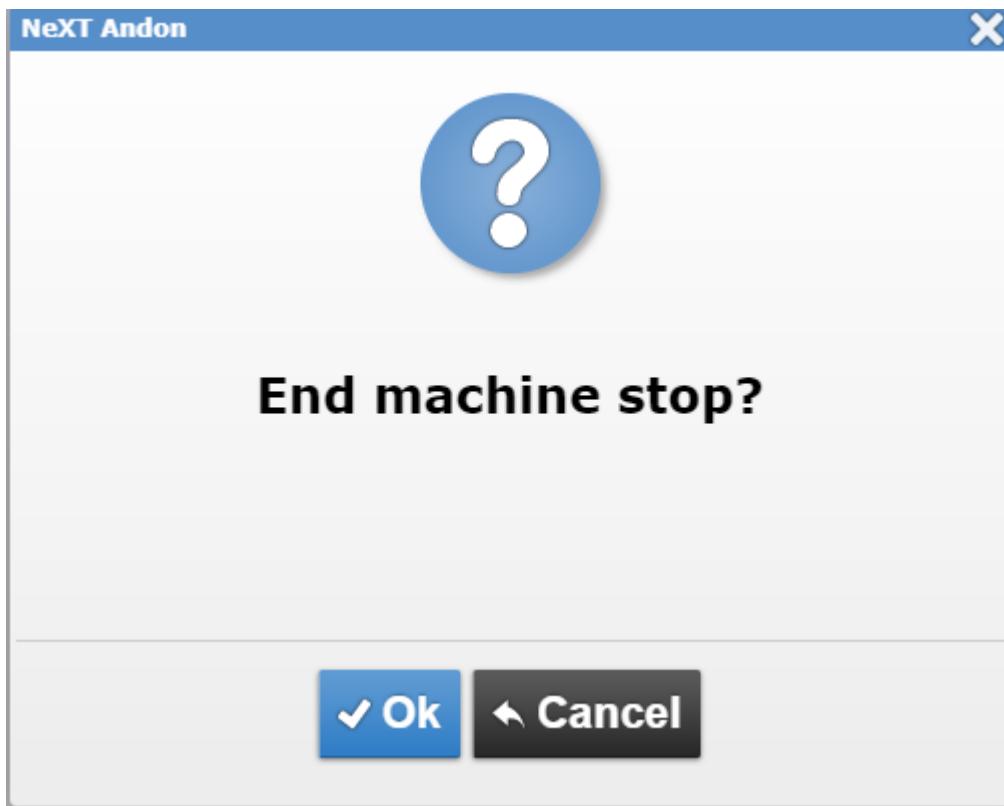
- The operator will have to confirm the choice



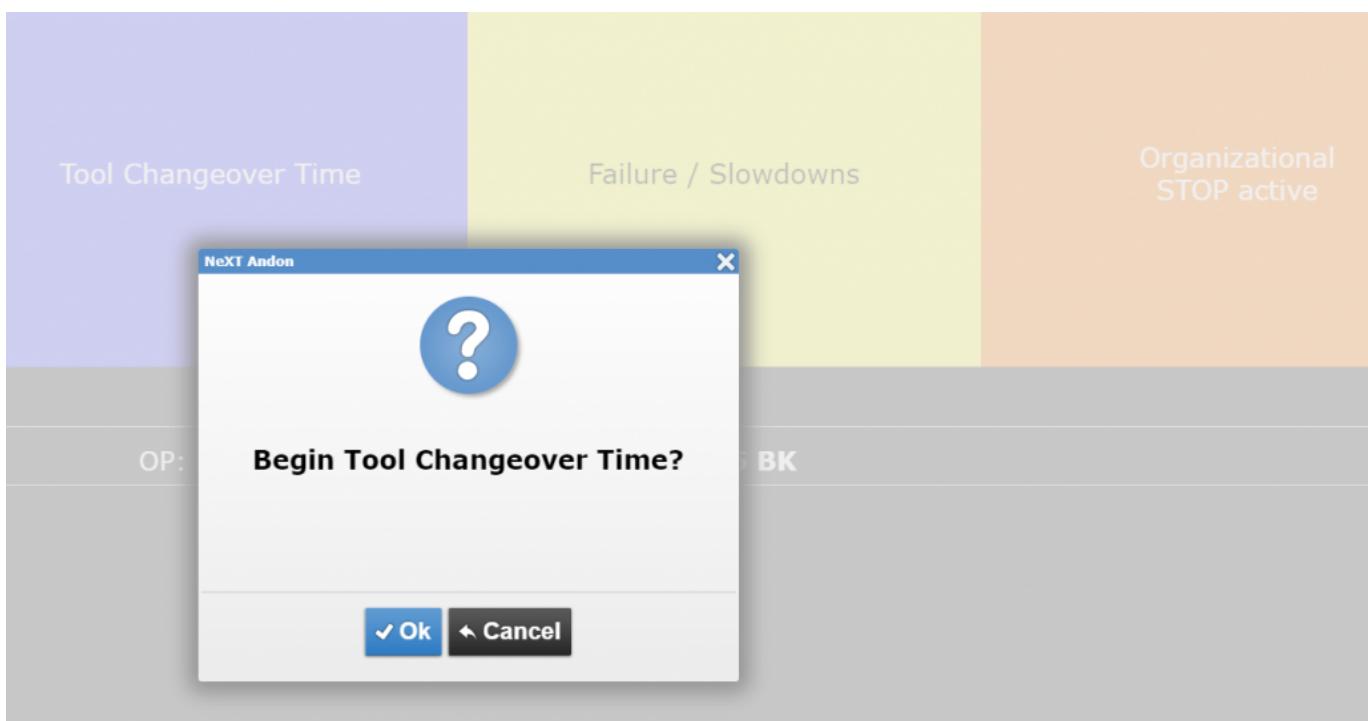
- Once the stop has started, it will start blinking yellow/orange for the entire duration



- Press the blinking area to end the stop machine. The system will ask for confirmation

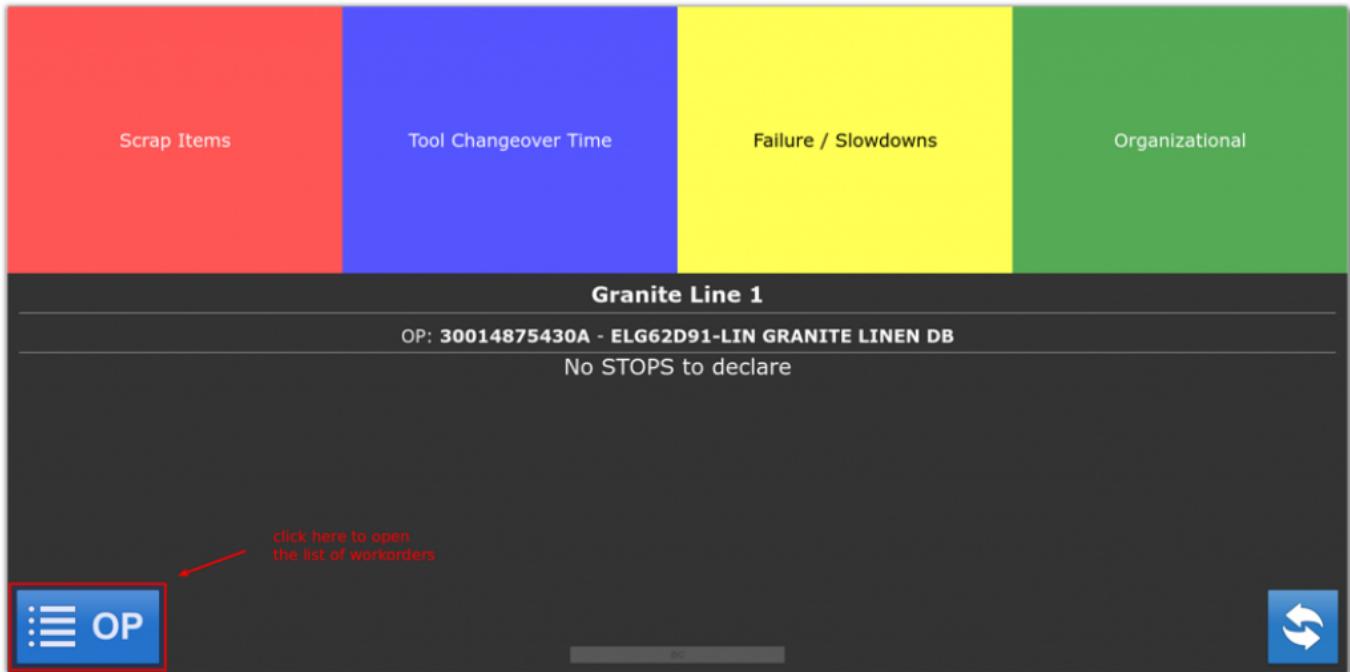


- It's also possible to switch from the stop machine to tooling while stop is active



The following paragraph will show how to change a production

- Open the list of workorders and Press on the "OP" button to open the list. That list is sorted by release date in ascending order.



- Choose the workorder from the list. Use the buttons at the bottom to navigate.

Production orders						
	Date	Production order	ERP code	Article code	Description	Items
▶	20170721	30014430430A	30014430	ELG61091-GRA	GRANITE GRAPHITE STD SINGLE BOWL	68
▶	20170803	30014478430A	30014478	500566	SEASONS 18 GA. DBL UM BX	300
▶	20170807	30014672430A	30014672	FTS904BX	TECTONITE SAND 1 HOLE DB BX	40
▶	20170810	30014744430A	30014744	FDS804NB	ESSENTIAL 20 GAUGE 4 HOLE DB BX	65
▶	20170817	30014775430A	30014775	LKBS602KIT	KINRED BAR SINK WITH FAUCET AND	600
▶	20170817	30014825430A	30014825	500875	ASPEN 3 HOLE SINGLE BOWL	60

- Press the "Play" button on the desired workorder to start a new production. A confirmation message will be shown.

Production orders

	Date	Production order	ERP code	Article code	Description	Items
▶	20170909	30014849430A	30014849	GHSOX901	GRANITE ONYX DB WITH ACCESSORY KIT	68
▶	20170909	30015148430A	30015148	EVDCS802KIT	EVOLUTION 20 GA W/SATIN PULLDOWN FT	60

choose the workorder from the list
and click here to start a new production

X TOT: 218

- Verify information on the touch panel. The new production will be configured and the information about the selected work order, will be shown on the touch panel.

Scrap Items

Tool Changeover Time

Failure / Slowdowns

Organizational

Granite Line 1

OP: 30015148430A - EVDCS802KIT EVOLUTION 20 GA W/SATIN PULLDOWN FT

No STOPS to declare

production successfully changed

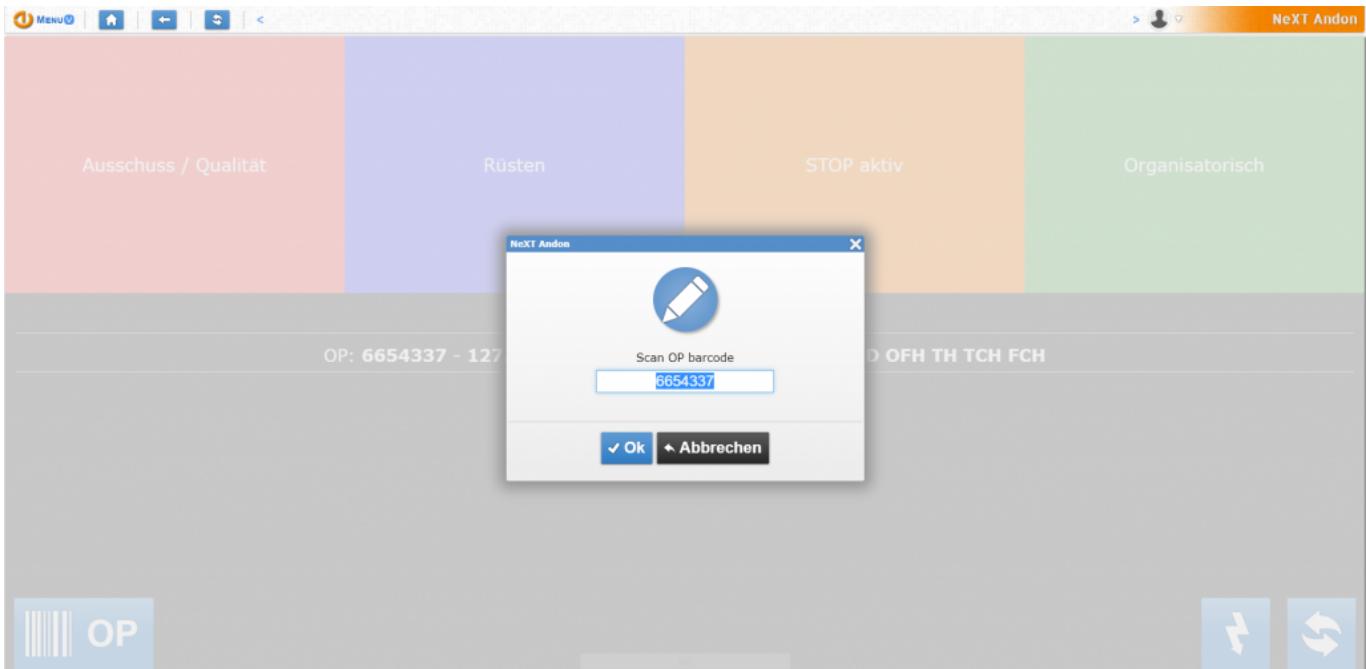
The flashback function

The **flashback function** allows the operator to switch to SAP, quantity of units produced and non-compliant items.

- Press the button at the bottom on the right, representing the icon of a lightning



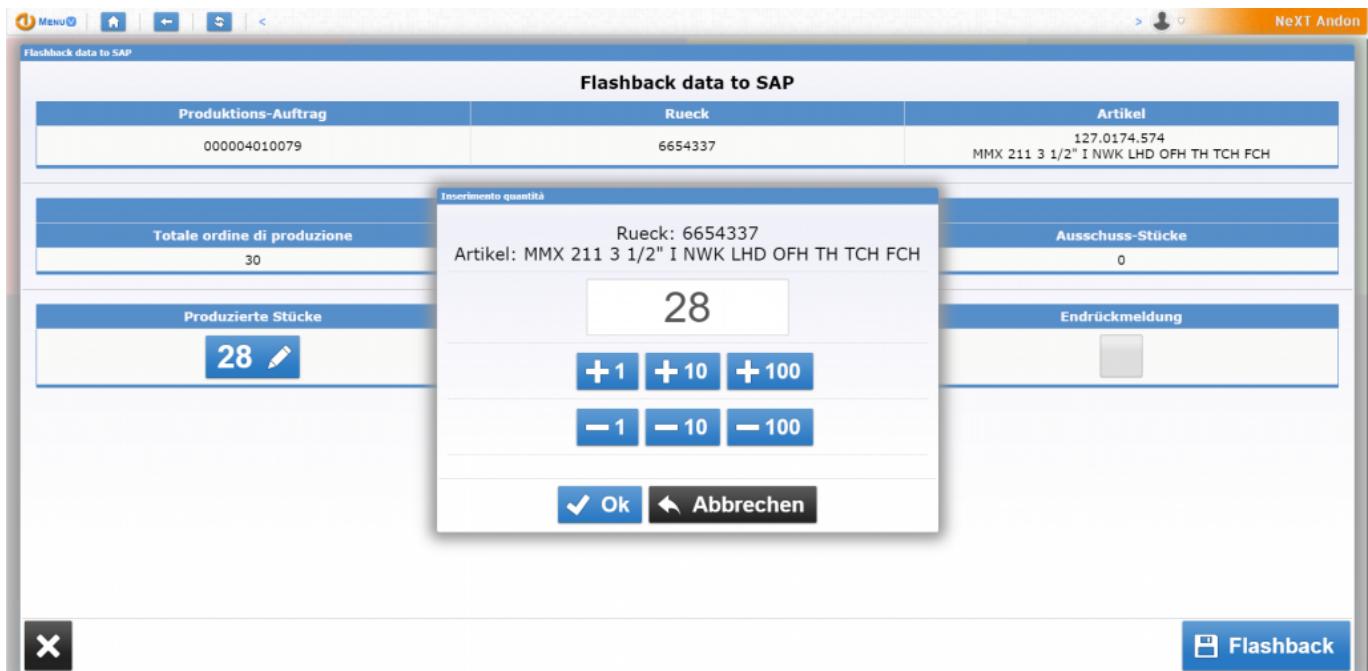
- Enter the RUEK code. By default, the system proposes the current production code.



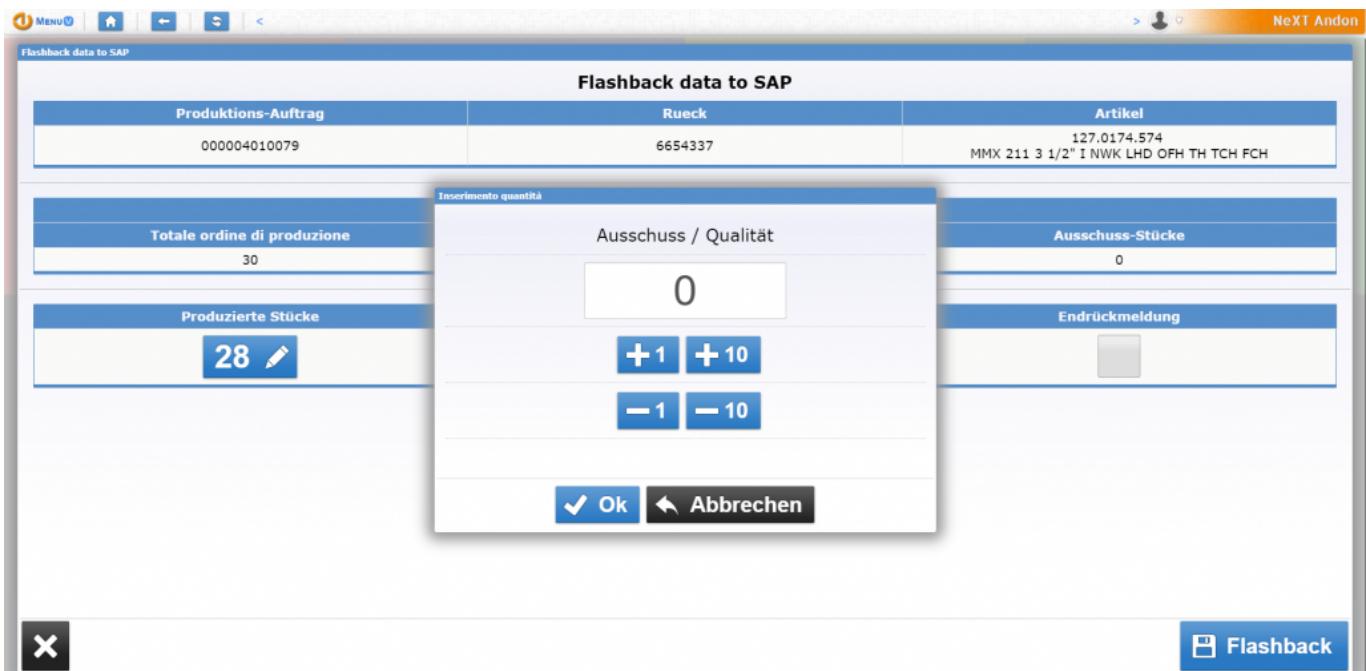
- From this screen the operator can communicate the quantity of units produced up to that time, and the quantity of non compliant items. The operator may also modify:
 - the quantity of units produced (1)
 - the amount of non compliant items (2)
 - he can declare the order completed (3)
 - finally, the operator must press the "Flashback" button at the bottom right (4)



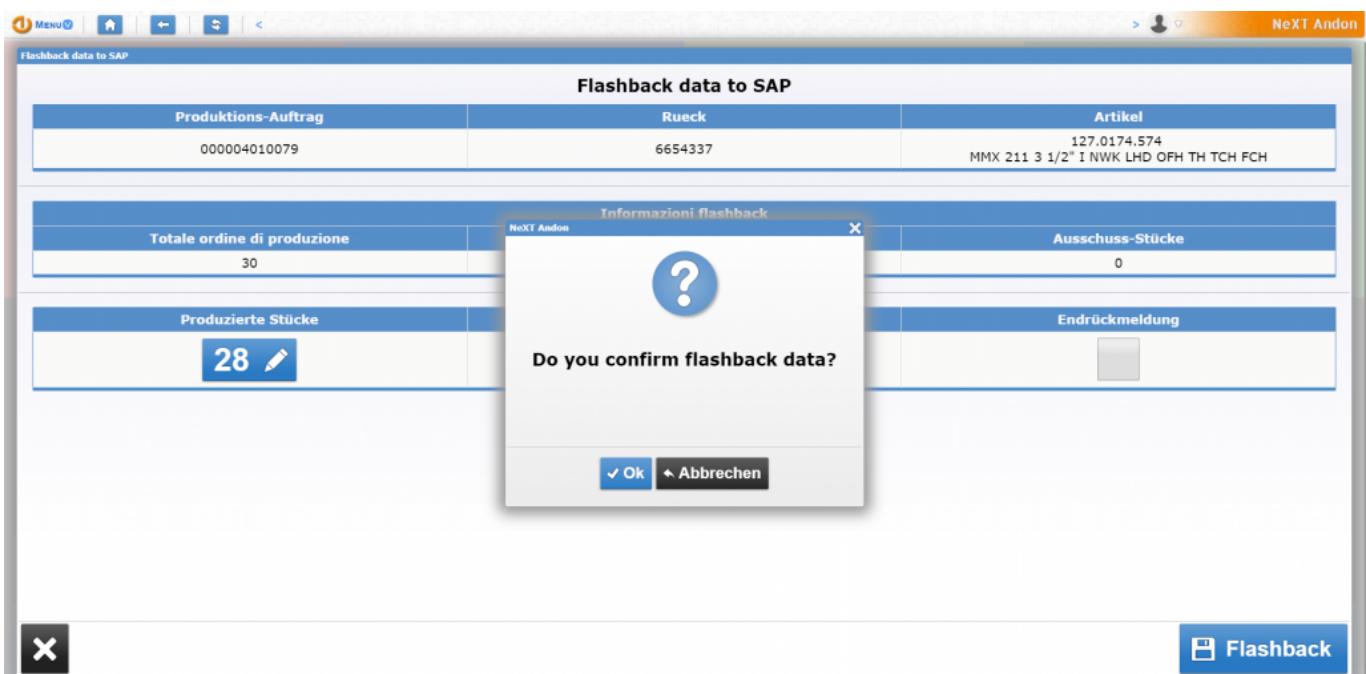
- This is the screen to change the amount of units produced.



- This is the screen to change the amount of non compliant items.

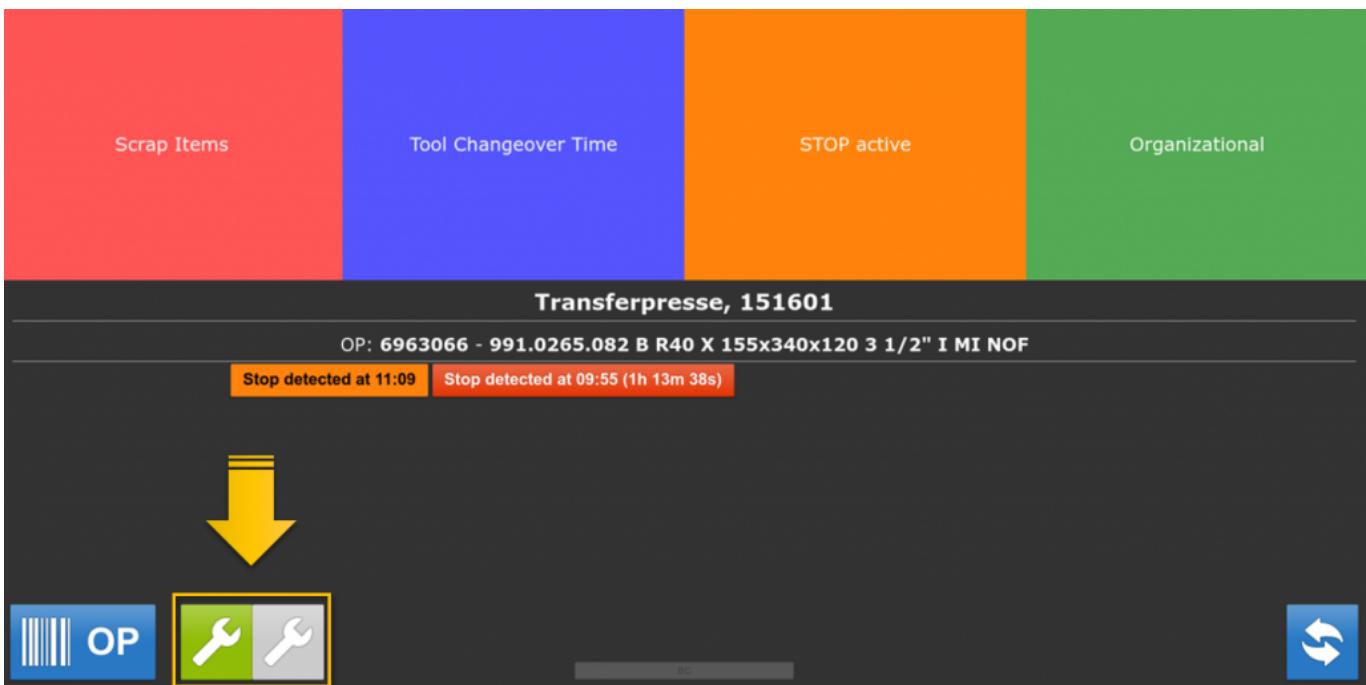


- When the operator presses the "Flashback" button, the system asks for confirmation of the operation



Tracking maintenance

It's possible to **track the maintenance** during a stop machine. When the resource has a stop machine running, two additional buttons will be shown.



The operator will press the green one with the wrench icon and then will confirm the choice.

Success / error message will be shown based on the result of the operation.

Now, the green button become grayout (disabled) and the other button with the wrench icon become red: the operator has to press it to end the maintenance.

The running stop machine remains as is until the operator press the yellow blinking button "failure / slowdowns".

In the office

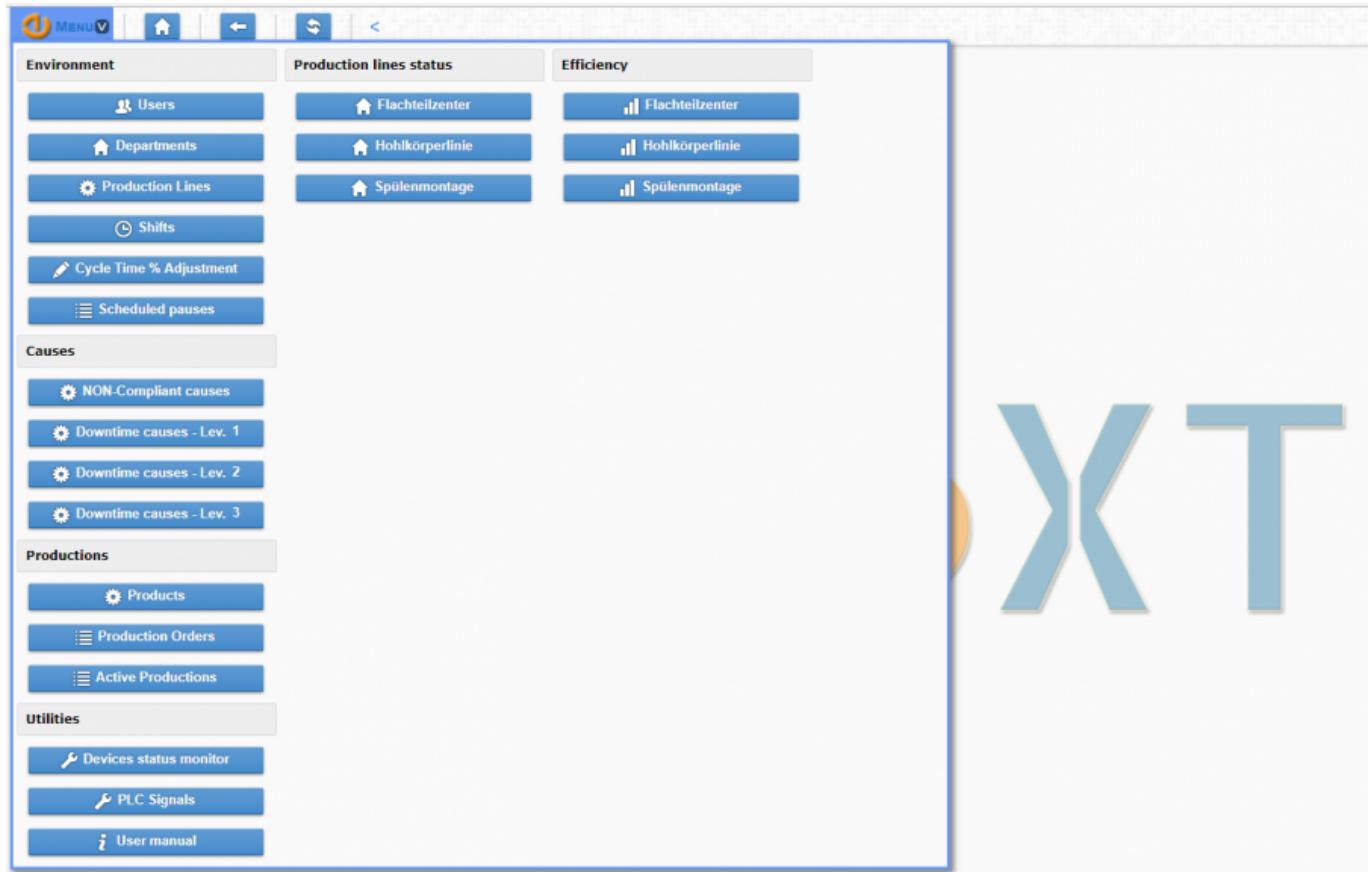
NIS web platform

The main menu

From the office the user will be able to **view**, **manage** and **customize** the entire NIS system.

All the operations the user can do are listed in the main menu. The menu provides different entries, depending on who is logged.

This is the menu that can see a user with the role of administrator.

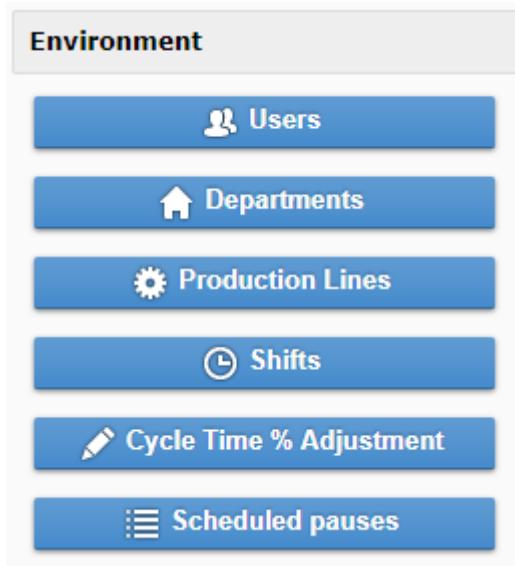


The screenshot shows the main menu of the Next software. The menu is organized into several sections:

- Environment:** Includes buttons for **Users**, **Departments**, **Production Lines**, **Shifts**, **Cycle Time % Adjustment**, and **Scheduled pauses**.
- Production lines status:** Shows **Flachteilcenter**, **Hohlkörperlinie**, and **Spülenmontage**.
- Efficiency:** Shows **Flachteilcenter**, **Hohlkörperlinie**, and **Spülenmontage**.
- Causes:** Lists **NON-Compliant causes**, **Downtime causes - Lev. 1**, **Downtime causes - Lev. 2**, and **Downtime causes - Lev. 3**.
- Productions:** Includes buttons for **Products**, **Production Orders**, and **Active Productions**.
- Utilities:** Includes buttons for **Devices status monitor**, **PLC Signals**, and **User manual**.

The «**Environments**» section contains some general voices describing users, departments, lines, shifts, cycle time adjustments and scheduled pauses.

Through each single entry the user will be able to make settings and changes related to the context. We will deepen this topic in the paragraphs «**Users**» and «**The environment**».



This is a zoomed-in view of the **Environment** section of the software menu. It lists the following items:

- Users**
- Departments**
- Production Lines**
- Shifts**
- Cycle Time % Adjustment**
- Scheduled pauses**

The «**Causes**» section represents the list of possible downtime or non-compliant causes.

We will deepen this topic in the paragraphs «**Non-compliant causes**» and «**Downtime causes**».

Causes **NON-Compliant causes** **Downtime causes - Lev. 1** **Downtime causes - Lev. 2** **Downtime causes - Lev. 3**

The «**Production**» section contains the list of products, the list of production orders, and the list of active productions at the moment.

We will deepen this topic in the paragraph «**Productions**».

Productions **Products** **Production Orders** **Active Productions**

In the «**Utilities**» section, there are three entries «**Devices status monitor**», «**PLC Signals**» and «**User manual**».

The first, gives access to the list of all devices involved and some control functions; the second shows the signals of a specific PLC; the third gives direct access to a web version manual.

We will deepen this topic in the paragraph «**Utilities**».

Utilities **Devices status monitor** **PLC Signals** **User manual**

The «**Production line status**» section lists the monitored lines.

Through this list you will be able to view the data of each line, relating to the Andon: you will be able to view the screen of the Andon board (TV LED) and also the screen of the touch panel.

We will deepen this topic in the paragraph «**Production line status**».

Production lines status

 430A Granite Cell

 430B End Load Cell

 430C VS Polished

 430D VS Prefinished

The «Efficiency» section lists the monitored lines.

Through this list you will be able to view the OEE of today's turn, but you will also be able to view the OEE of that line in a certain period of time.

We will deepen this topic in the paragraph «**Efficiency**».

Efficiency

 430A Granite Cell

 430B End Load Cell

 430C VS Polished

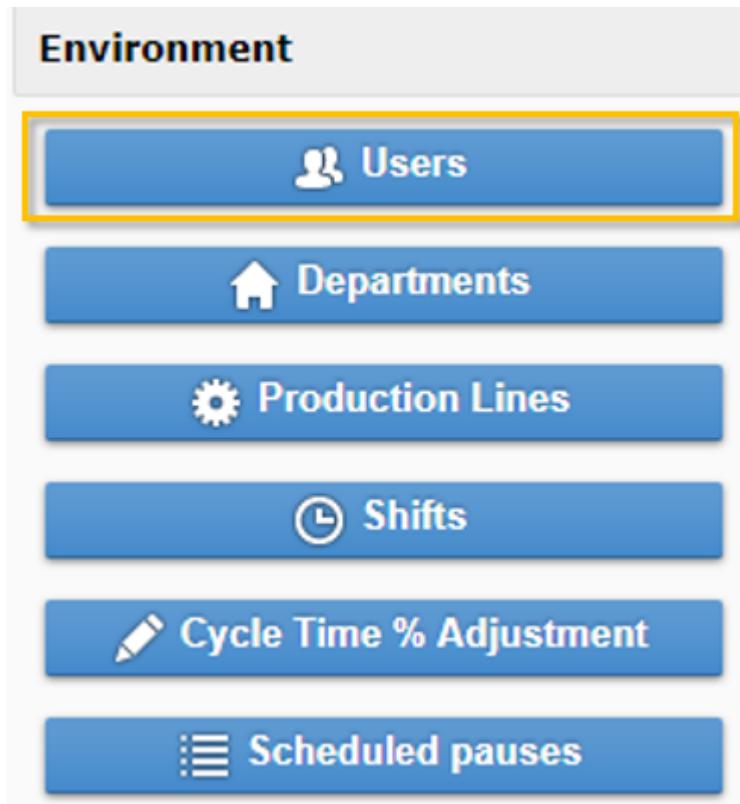
 430D VS Prefinished

Users

The NIS web platform has several roles.

Using the "**Users**" button, you can add new users, associating it with one or more roles. Depending on the role, each user will have access to different views and functions.

Users and groups can be managed only if the logged in user has the «**Administrator**» level of rights.



After clicking on the "Users" button, the user have access to the list of already registered users, displaying *Name, Surname, username, e-mail, and the roles associated with each of them.*

Operators list

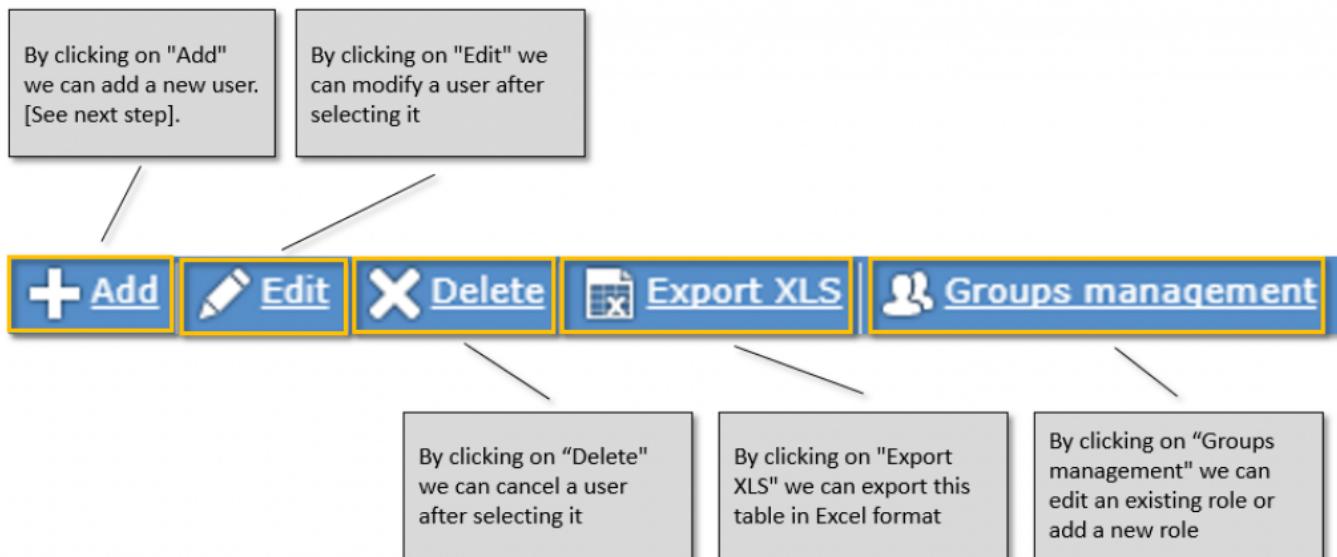
Code	Name	Password	Email	Groups
fernando.m...	fernando.m...			
simon.f...	simon.f...			
richard.f...	Richard.F...	*****		Supervisors,OEE Managers,Master data manage,Administrators
jordan.f...	Jordan.F...		jordan.f...@franke.com	Supervisors,OEE Managers,Master data manage
richard.f...	Richard.F...		richard.f...@franke.com	Supervisors,OEE Managers,Master data manage
simon.f...	Simon.F...		simon.f...@franke.com	Supervisors,OEE Managers,Master data manage,Administrators
steven.g...	Steven.G...		steven.g...@franke.com	Supervisors,OEE Managers,Master data manage
terry.m...	Terry.M...		terry.m...@franke.com	Supervisors,OEE Managers,Master data manage,Administrators
paolo...	Paolo.P...			

+ Add | Edit | Delete | Export XLS | Groups management

1 / 1 | 20 rows per page / 9 total | Quick filter

- «Add»: by clicking it, we can add a new user.

- «**Edit**»: by clicking it, we can modify a user after selecting it.
- «**Delete**»: by clicking it, we can cancel a user after selecting it.
- «**Export XLS**»: by clicking on it, we can export this table in Excel format.
- «**Groups management**»: by clicking on it, we can edit an existing role or add a new role.



To add a new user, you have to click on "**Add**". This is the form to fill in to add a new user: "**Code**" (username) and "**Name**" are necessary.

Inserting Information

Code *	<input type="text"/>
Name *	<input type="text"/>
Password	<input type="text"/>
Email	<input type="text"/>
Groups	-
Home Page	<input type="text"/>
Save	

Groups

By clicking on "**Groups management**" you can access the list of existing roles. Currently they are: *Administrator, Master Data Manager, OEE Managers and Supervisors*.

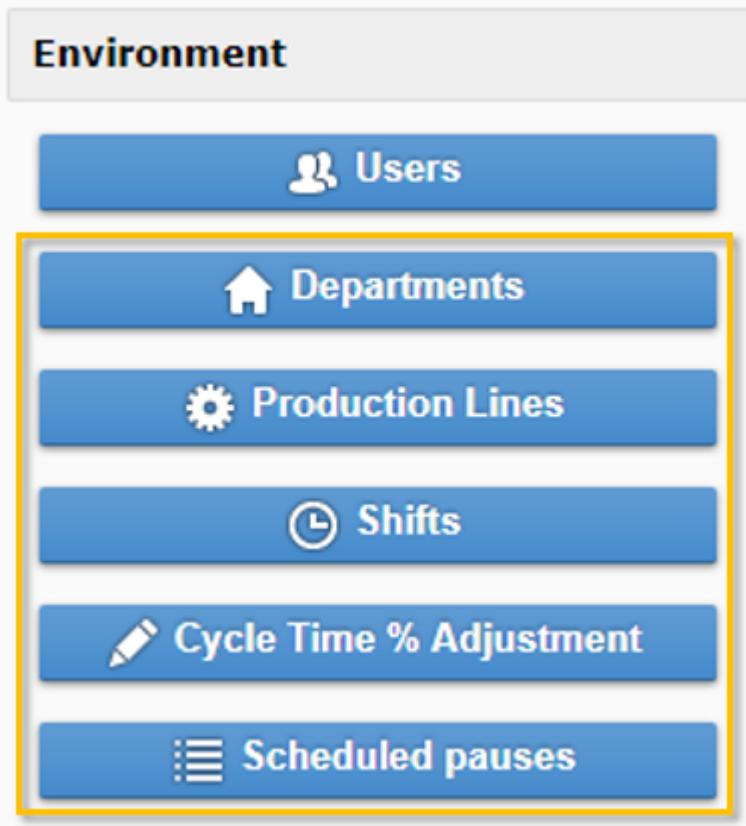
Each role is enabled to perform specific functions:

- **Administrator:** all functions enabled.
- **OEE manager:** environment configurations, scrap and stop machine causes, OEE summary, reports.
- **Supervisor:** all functions except users and groups management

The environment

The remaining entries of the menu "**Environment**", are used to define the environment in which the NIS system is operational.

So this section include the departments and lines involved, the length of the shifts, the cycle time adjustment, and the the scheduled pauses.



Departments

This section will show the list of departments where the NIS system is installed.

A department can contain one or more production lines.

The user who has the rights to edit this section can add new departments or edit/delete existing ones, or export this table in Excel format.

The screenshot shows a software interface for managing departments. At the top, there is a navigation bar with icons for 'MENU', 'Home', 'Back', 'Forward', and a user profile. To the right of the navigation bar is the text 'NeXT Andon'. Below the navigation bar is a table titled 'Departments' with two columns: 'Code' and 'Description'. The table contains four rows of data. At the bottom of the table is a toolbar with buttons for 'Add', 'Edit', 'Delete', 'Export XLS', and 'Quick filter'. There are also navigation buttons for 'Back', 'Forward', and 'Search', along with a page number indicator '1 / 1' and a 'Rows per page' dropdown set to '30'.

Departments	
Code	Description
430a_vs	430A Granite Cell
430b_vs	430B End Load Cell
430c_vs	430C VS Polished
430d_vs	430D VS Prefinished

Buttons: + Add | Edit | Delete | Export XLS | Quick filter

Page Navigation: Back | Forward | 1 / 1 | Rows per page / 4 total

Production lines

This section will show the list of production lines where the NIS system is installed. The user who has the rights to edit this section, can add new production lines or edit/delete existing ones, or export this table in Excel format.

NeXT Andon

Production Lines

Code	Description	Department	Workers	Shift	Cycle Time Factor	OEE limit red/yellow	OEE limit yellow/green
430A	Granite Line 1	430A Granite Cell	1	2 Shifts	100%	85%	83%
430B	End Load Cell	430B End Load Cell	1	2 Shifts	100%	85%	83%
430C	Polished Pack Cell	430C VS Polished	1	2 Shifts	100%	85%	83%
430D	Prefinished Pack Center	430D VS Prefinished	1	2 Shifts	100%	85%	83%

+ Add | Edit | Delete | Export XLS | 1 / 1 | 30 rows per page / 4 total | Quick filter | 

The user, when adds or edits an existing line, will have to set some values such as:

- the department to which the line belongs
- the number of workers (zero means gathered from ERP)
- the number of shifts
- setting **OEE percentages**, which will be represented by red, yellow and green
- setting the **Cycle Time Factor**
- setting the thresholds for OEE, failure, tooling and scraps reports (monthly and daily) (see also paragraph **«Reports»**)

Resource configuration

Master data

Department	430a_vs - 430A Granite Cell		
Code	430A	ERP code	430
Description	Granite Line 1		
Workers	1	Shift	2 Shifts

OEE

OEE limit red/yellow	83 %	OEE limit yellow/green	85 %
Cycle Time Factor	100 %		



OEE reports thresholds

Monthly	0 %	Daily	0 %
---------	-----	-------	-----

Tooling reports thresholds

Monthly	0 %	Daily	0 minutes
---------	-----	-------	-----------

Failure reports thresholds

Monthly	0 %	Daily	0 minutes
---------	-----	-------	-----------

NON-compliant reports thresholds

Monthly	0 %	Daily	0 %
---------	-----	-------	-----

Save | Close

Shifts

this section will show the list of planned shifts.

The user can add a new shift, or edit an existing shift. He will have to set the start and end of each turn. The user can also delete an existing shift.

Code	Description	
normale	Normal shift	T1 (07:00 - 16:00)
t12	2 Shifts	T1 (05:00 - 13:00) T2 (13:00 - 21:00)
t123	3 Shifts	T1 (05:00 - 13:00) T2 (13:00 - 21:00) T3 (21:00 - 05:00)

Add | **Edit** | **Delete** 3 total rows Quick filter

Cycle time % adjustment

The Cycle time is based on the cycle time gathered from ERP or manually entered by the operator in case of NO ERP data exchange.

It's coupled by articole code and the line involved. Examples of coefficient adjustments.

- 50% ⇒ cycle time halved
- 100% ⇒ no change applied
- 200% ⇒ cycle time doubled

Cycle Time Adjustments

Line	Article	Coefficient	Original cycle time	Computed cycle time
430A	DIG62D91-GRA	32.00%	373	119.36
430A	SGR3322-1	20.00%	373	74.6

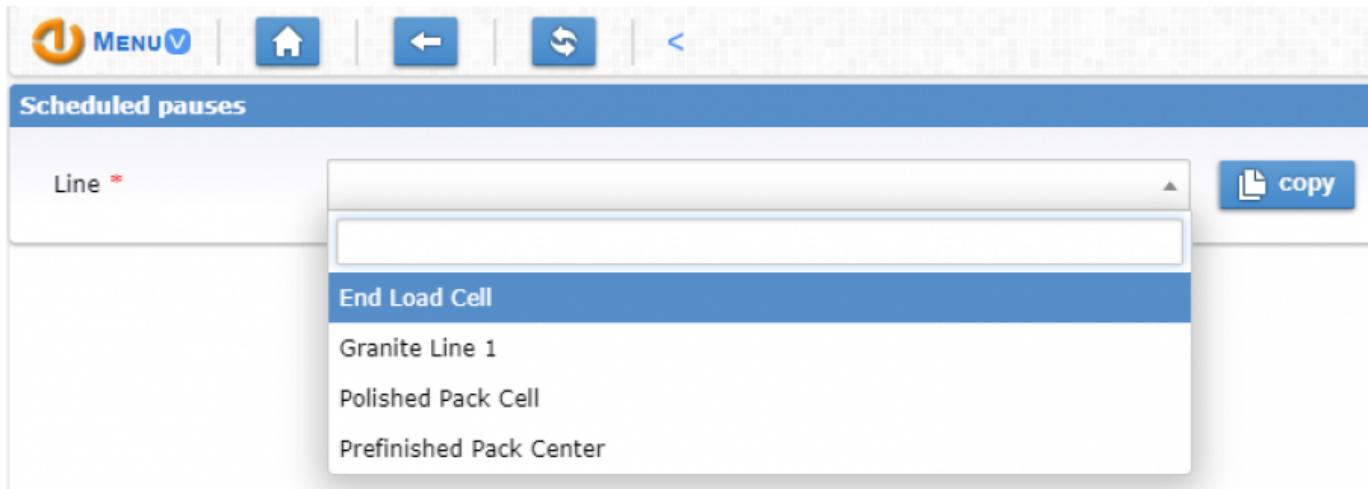
Scheduled pauses

this section shows the list of scheduled pauses. The user can add a new scheduled pause.

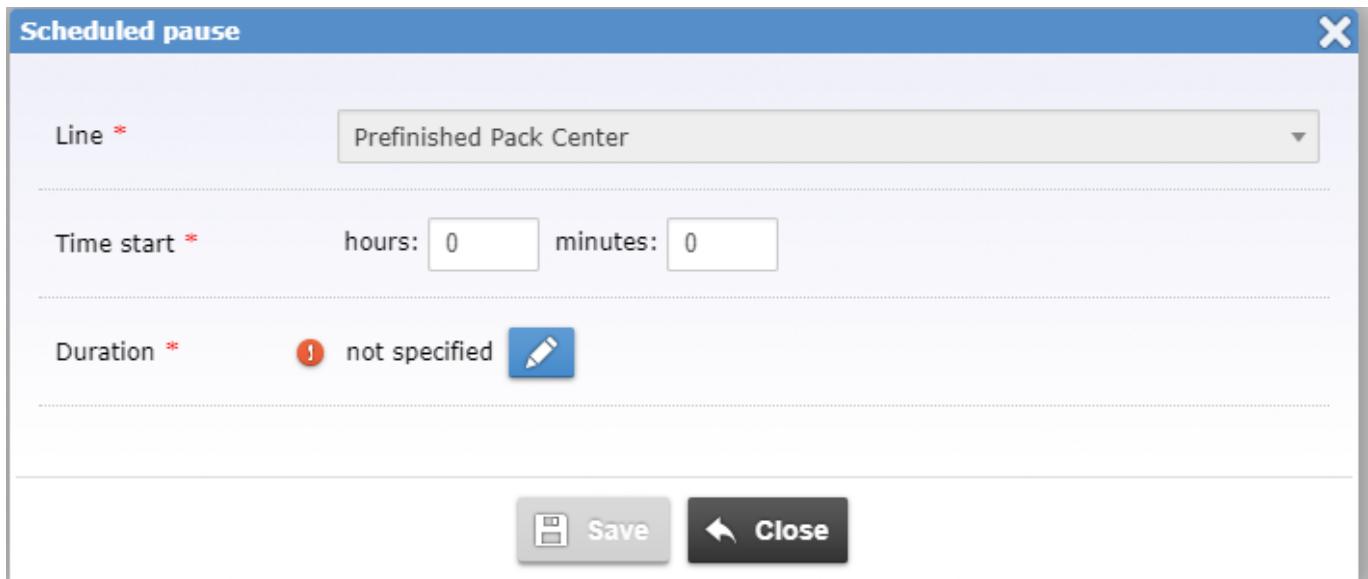
Scheduled pauses

Line	Time start	Time end	Duration
Montagelinie 1, 400791	08:30:00	09:00:00	30m
Montagelinie 1, 400791	18:00:00	18:30:00	30m
Montagelinie 1, 400791	12:00:00	12:30:00	30m
Montagelinie 1, 400791	21:00:00	09:00:00	3h

Before adding a new scheduled pause, the user will need to select a production line.



Finally, the user have to specify the start time of the pause and its duration.



Non-compliant causes

The "Causes" section allows the user to manage both the causes of quality problems and machine stops

Causes

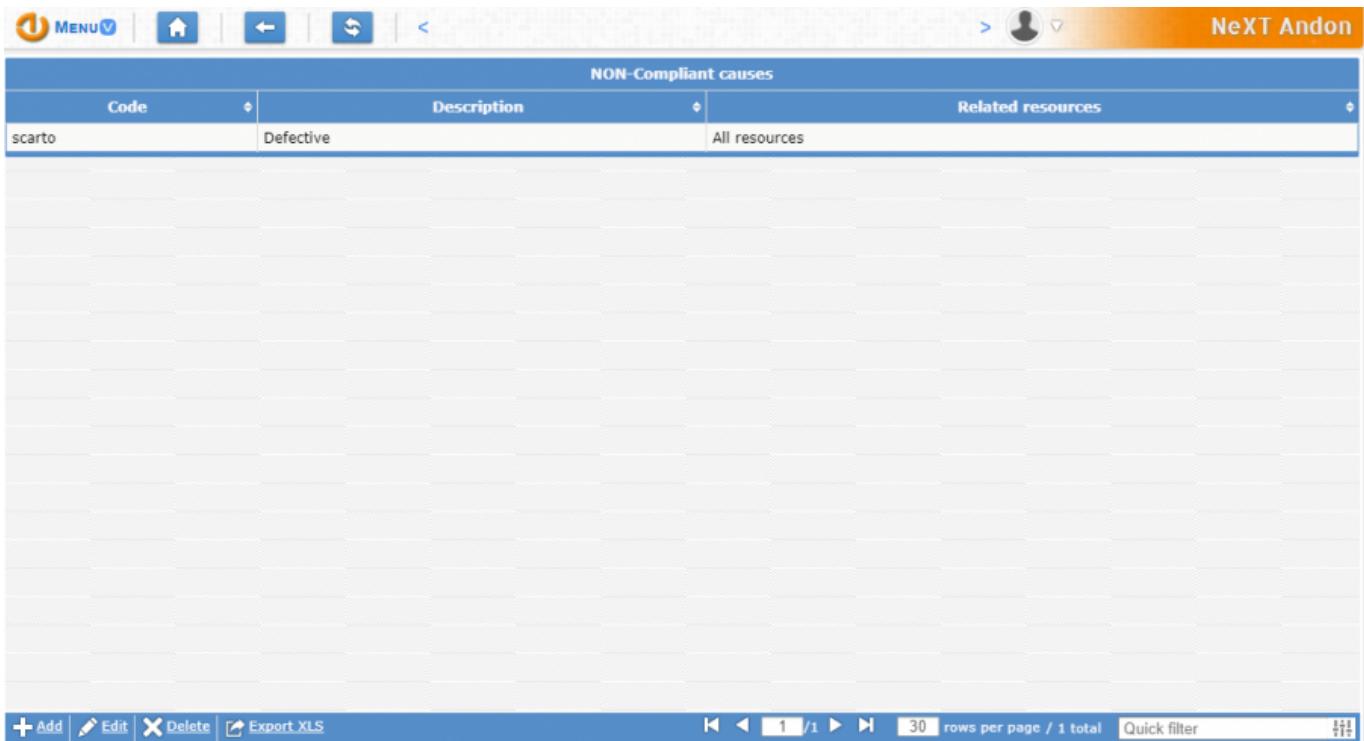
NON-Compliant causes

Downtime causes - Lev. 1

Downtime causes - Lev. 2

Downtime causes - Lev. 3

The section **Non-compliant causes** shows the list of non-compliant causes provided. The user can add a new cause, cancell or modify an existing one.



NON-Compliant causes		
Code	Description	Related resources
scarto	Defective	All resources

Actions:  Add  Edit  Delete  Export XLS

Page Navigation:    /1   30 rows per page / 1 total Quick filter 

When adding a new non-compliant cause, the user have to give a description and to associate a resource (a production line).

NON-Compliant cause

Master data

Code * ERP code

Description *

Details

All resources NO YES Select resources *

Filter: Check all Uncheck all

- 430A - Granite Line 1
- 430B - End Load Cell
- 430C - Polished Pack Cell
- 430D - Prefinished Pack Center

Downtime causes

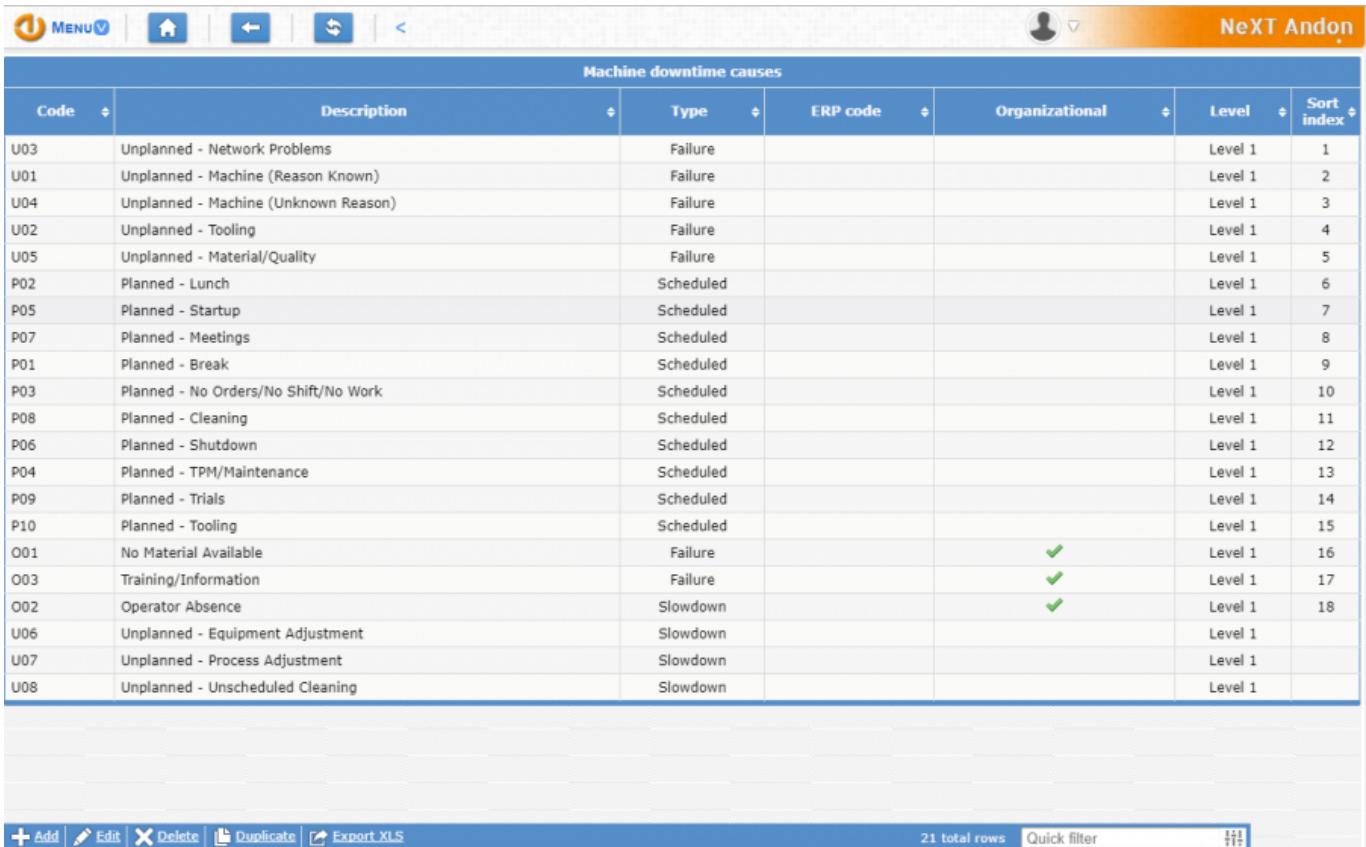
The **downtime causes** are all those causes that lead to a stop in production.

Causes can be of different kind (*failure, scheduled or slowdown*) and have been organized in three different depths, helping to define more and more in detail the cause of stop

Downtime causes - Lev. 1

This section shows the list of causes for first level.

Each item in the table specifies an identifier code, a description, the type (failure, scheduled or slowdown), the level (1st, 2nd or 3rd).



Machine downtime causes						
Code	Description	Type	ERP code	Organizational	Level	Sort index
U03	Unplanned - Network Problems	Failure			Level 1	1
U01	Unplanned - Machine (Reason Known)	Failure			Level 1	2
U04	Unplanned - Machine (Unknown Reason)	Failure			Level 1	3
U02	Unplanned - Tooling	Failure			Level 1	4
U05	Unplanned - Material/Quality	Failure			Level 1	5
P02	Planned - Lunch	Scheduled			Level 1	6
P05	Planned - Startup	Scheduled			Level 1	7
P07	Planned - Meetings	Scheduled			Level 1	8
P01	Planned - Break	Scheduled			Level 1	9
P03	Planned - No Orders/No Shift/No Work	Scheduled			Level 1	10
P08	Planned - Cleaning	Scheduled			Level 1	11
P06	Planned - Shutdown	Scheduled			Level 1	12
P04	Planned - TPM/Maintenance	Scheduled			Level 1	13
P09	Planned - Trials	Scheduled			Level 1	14
P10	Planned - Tooling	Scheduled			Level 1	15
001	No Material Available	Failure		✓	Level 1	16
003	Training/Information	Failure		✓	Level 1	17
002	Operator Absence	Slowdown		✓	Level 1	18
U06	Unplanned - Equipment Adjustment	Slowdown			Level 1	
U07	Unplanned - Process Adjustment	Slowdown			Level 1	
U08	Unplanned - Unscheduled Cleaning	Slowdown			Level 1	

The user who has the rights to edit this section can add new downtime causes or edit/delete existing ones, or export this table in Excel format.

Adding a new downtime causes, the user will have to set some values such as:

- Code and ERP code
- A description of the downtime causes (Ex. «Planned – Lunch»)
- A type («Failure», «Scheduled» or «Slowdown»)
- If it is or not, an organizational causes
- The resource (line) involved
- The level
- Sort of index
- OEE stratification (the user have to select a reason of the stop. See also the paragraph «**Reports**»)

Machine downtime

Master data

Code * ERP code

Description *

Tipologia

Type * Failure Scheduled Slowdown Organizational

All resources YES Select resources

Details

Level * Sort index

OEE stratification

Downtime causes - Lev. 2 & 3

The tables relating to the downtime causes of 2nd and 3rd levels are similar to each other, *but are different from the table of the downtime causes of 1st level.*

Machine downtime causes

Code	Description	Type	ERP code	Organizational	Level	Level 1	Sort index
U0104	First Draw Press	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0105	Second Draw Press	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0106	First Trim Press	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0107	Second Trim Press	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0108	Sink/Box Lift	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0109	Sealed Air Machine	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0110	Wrap Machine	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0111	Washer	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0112	Oiler	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0113	Tape Machine	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0114	Wrap Labeler	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0115	Line Conveyor	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0202	First Draw Lines	Failure			Level 2	Unplanned - Tooling	
U0201	First Draw Corrugation	Failure			Level 2	Unplanned - Tooling	
U0101	Metabo 1	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0102	Metabo 2	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0103	Metabo 3	Failure			Level 2	Unplanned - Machine (Reason Known)	
U0203	First Draw Re-shim	Failure			Level 2	Unplanned - Tooling	
U0204	Second Draw Marks in Form	Failure			Level 2	Unplanned - Tooling	
P1001	Total Tool Change	Scheduled			Level 2	Planned - Tooling	
P1003	Change in Material Thickness	Scheduled			Level 2	Planned - Tooling	
P1002	Depth Change	Scheduled			Level 2	Planned - Tooling	
P1004	Planned Stamp Change During Run	Scheduled			Level 2	Planned - Tooling	
P1005	Planned Faucet Hole Change	Scheduled			Level 2	Planned - Tooling	

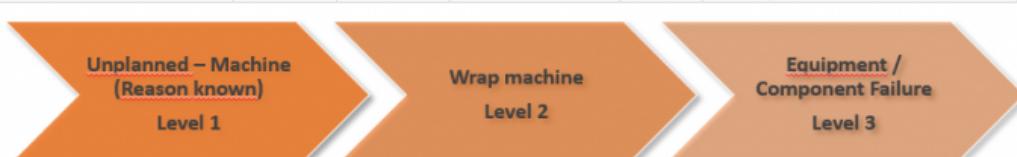
Actions: [+ Add](#) [Edit](#) [Delete](#) [Duplicate](#) [Export XLS](#)

65 total rows [Quick filter](#)

In these tables there is a column reporting the description of the previous level («Level 1» or «Level 2»): in this way it is clear at what level, each sub-level belongs.

Machine downtime causes

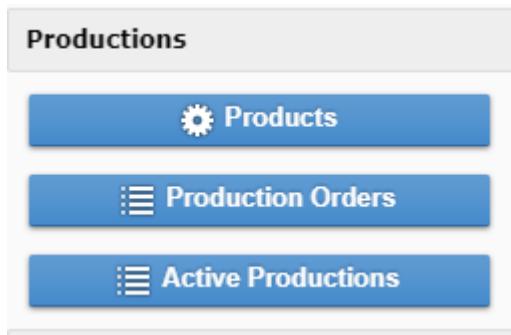
Code	Description	Type	ERP code	Organizational	Level	Level 1	Level 2
U01101	Equipment/Component Failure	Failure			Level 3	Unplanned - Machine (Reason Known)	Wrap Machine
S010101	Air Line Head	Slowdown			Level 3	Unplanned - Machine (Reason Known)	Metabo 1
S010301	Air Line Head	Slowdown			Level 3	Unplanned - Machine (Reason Known)	Metabo 3



Productions

In this section, the user will be able to manage all the products and related production orders and to view and

modify the active productions.



Products

This section shows the list of all products.

Code	Description	Related production line	Save date
0-614496	SEASONS UM 18G SGL 18CAB		14/06/2017
0-614498	ASPEN TM 20G SGL 21CAB		28/08/2017
0-614499	ASPEN DM 20G SGL 24CAB		26/08/2017
10300	TRIFLOW STYLE TO FRCNSTR OR FR		15/09/2017
133.0289.134	8CT METAL CLIP PKG WIDE		22/06/2017
171193	BAG OF LONG CLIPS FOR MOEN - S		14/07/2017
173043	BAG OF CLIPS FOR MOEN 133.0289		13/09/2017
500564	ASPEN 18 GAUGE SB UM BX		11/07/2017
500566	SEASONS 18 GA. DBL UM BX		27/09/2017
500588	ASPEN 4 HOLE SINGLE BOWL		26/09/2017
500589	ASPEN SINGLE BOWL 3 FAUCET HOLES		26/09/2017
500590	ASPEN 4 HOLE DOUBLE BOWL		27/09/2017
500591	ASPEN 3 HOLE DOUBLE BOWL		26/09/2017
500592	ASPEN DOUBLE BOWL 3 FAUCET HOLES		27/09/2017
500593	ASPEN DOUBLE BOWL 4 FAUCET HOLES		27/09/2017
500594	ASPEN 4 HOLE DOUBLE BOWL		22/09/2017
500596	ASPEN 2 HOLE BAR SINK		26/09/2017
500857	ASPEN 21 GAUGE 4 HOLE ADA DB BX		14/06/2017
500859	ASPEN 22 GAUGE 3 HOLE ADA SB BX		30/08/2017
500862	ASPEN 20 GAUGE 3 HOLE SB BX		18/09/2017
500863	ASPEN SINGLE BOWL 4 FAUCET HOLES		11/09/2017
500872	ASPEN 20 GAUGE 3 HOLE DB BX		22/09/2017
500874	ASPEN 21 GA 4 HOLE SB BX		27/09/2017
500875	ASPEN 3 HOLE SINGLE BOWL		27/09/2017

Adding a new product or editing an existing one, the user will have to set some values such as:

- a code
- a description
- the related production line (optional)

Article manage

Article code *

Description *

Related production line

Save **Close**

Production order

This section shows the list of production orders.

Production orders					
Production order	ERP code	Article code	Description	Items	
30015441430C	30015441	DIG61091-MOC	GRANITE MOCHA LGE SINGLE BOWL	34	430C Cycle time: 6m 13s, Operators: 0 430B Cycle time: 6m 13s, Operators: 0 430D Cycle time: 6m 13s, Operators: 0 430A Cycle time: 6m 13s, Operators: 0
30015441430B	30015441	DIG61091-MOC	GRANITE MOCHA LGE SINGLE BOWL	34	430C Cycle time: 6m 13s, Operators: 0 430B Cycle time: 6m 13s, Operators: 0 430D Cycle time: 6m 13s, Operators: 0 430A Cycle time: 6m 13s, Operators: 0
30015441430D	30015441	DIG61091-MOC	GRANITE MOCHA LGE SINGLE BOWL	34	430D Cycle time: 6m 13s, Operators: 0 430A Cycle time: 6m 13s, Operators: 0 430B Cycle time: 6m 13s, Operators: 0 430C Cycle time: 6m 13s, Operators: 0
30015441430A	30015441	DIG61091-MOC	GRANITE MOCHA LGE SINGLE BOWL	34	430C Cycle time: 6m 13s, Operators: 0 430B Cycle time: 6m 13s, Operators: 0 430D Cycle time: 6m 13s, Operators: 0 430A Cycle time: 6m 13s, Operators: 0

Add **Edit** **Export XLS** 1 / 68 30 rows per page / 2028 total **Quick filter**

The information in this table relates to:

- the article
- the code of the production order
- the ERP code
- the number of items provided
- the lines where it is possible to work the article, its cycle time and the number of workers involved

Production order

Production order information

Article *	DIG61091-GRA - GRANITE GRAPHITE LGE ...	OdP *	30015453430C
ERP code *	30015453	Items *	68

Cycle time information

Line *	Granite Line 1	Cycle time *	6.22
Operators *	0	+ -	
Line *	End Load Cell	Cycle time *	6.22
Operators *	0	+ -	
Line *	Polished Pack Cell	Cycle time *	6.22
Operators *	0	+ -	

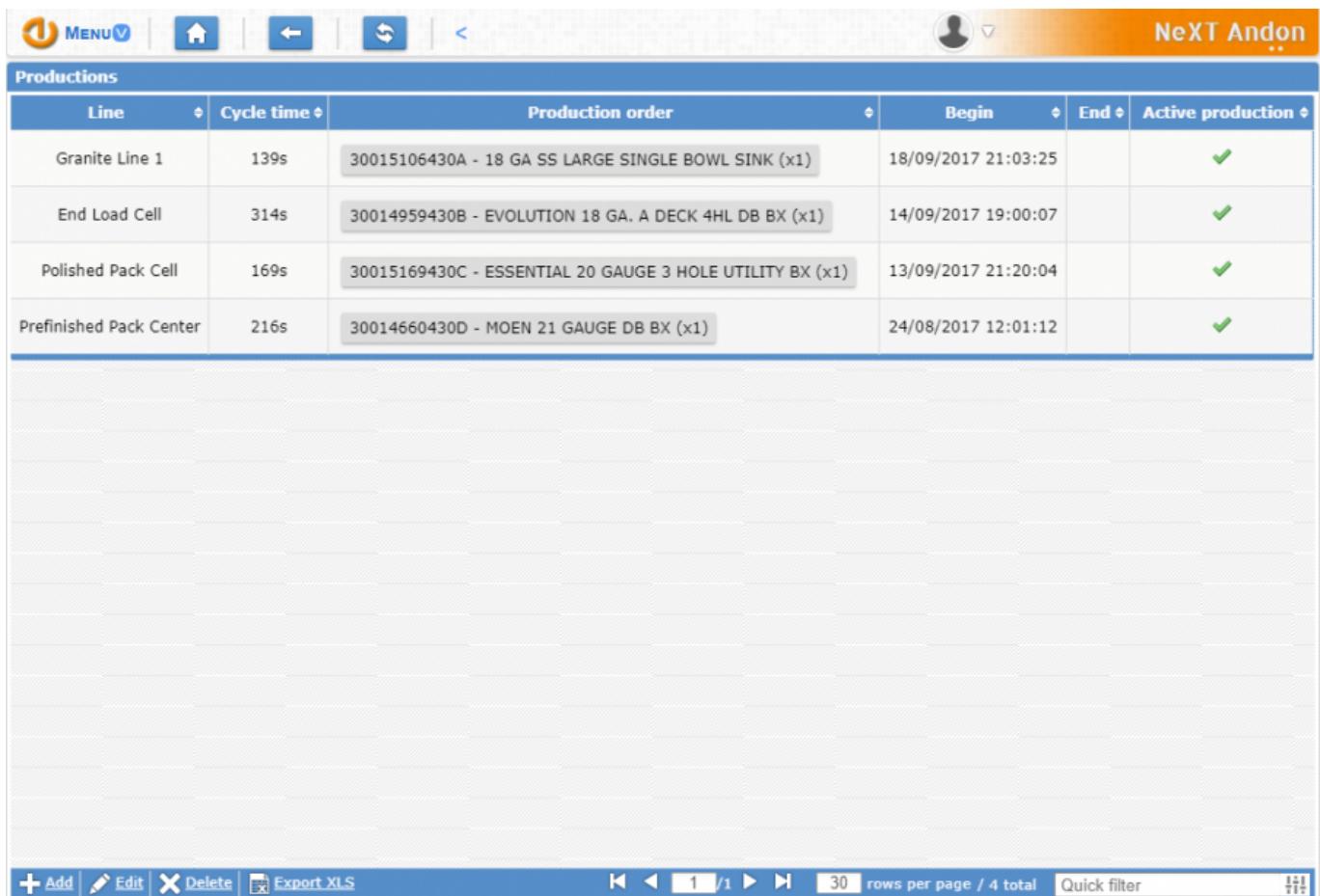
Buttons

Save **Close**

Active productions

This section shows the list of active productions at this time.

The information in this table relates to the production order being processed in each line, the cycle time and the start time.



The screenshot shows a software interface for production management. At the top, there is a header with a logo, a 'MENU' button, and navigation icons. To the right of the header is a user profile icon and the text 'NeXT Andon'. Below the header is a table titled 'Productions' with the following data:

Line	Cycle time	Production order	Begin	End	Active production
Granite Line 1	139s	30015106430A - 18 GA SS LARGE SINGLE BOWL SINK (x1)	18/09/2017 21:03:25		✓
End Load Cell	314s	30014959430B - EVOLUTION 18 GA. A DECK 4HL DB BX (x1)	14/09/2017 19:00:07		✓
Polished Pack Cell	169s	30015169430C - ESSENTIAL 20 GAUGE 3 HOLE UTILITY BX (x1)	13/09/2017 21:20:04		✓
Prefinished Pack Center	216s	30014660430D - MOEN 21 GAUGE DB BX (x1)	24/08/2017 12:01:12		✓

At the bottom of the interface, there are buttons for 'Add', 'Edit', 'Delete', and 'Export XLS'. To the right of these buttons are page navigation icons, a page number '1 / 1', a 'rows per page' dropdown set to '30', a 'Quick filter' search bar, and a help icon.

Adding a new active production or editing an existing one, the user will have to provide some data:

- the line
- the production order
- the takt time

Production configuration

Master data

Line *	430A - Granite Line 1
Production order *	30015453430A - GRANITE GRAPHITE LGE SINGLE BOWL
Takt-time type *	Minimum
Takt time *	373 seconds

+

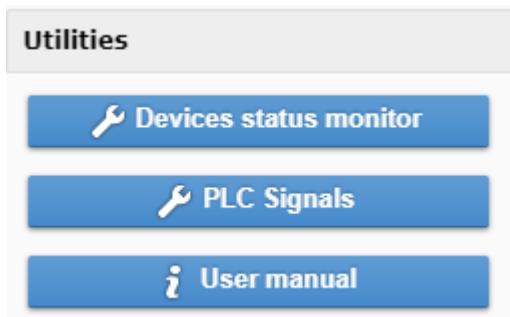
Configured production

Line	430A	Production order	30015106430	Article	FBSLD904-18BX - ...
Produced items / work cycle	1	Takt time	139		trash

Save **Close**

Utilities

The "Utilities" menu allows the user to navigate some aspects of hardware



Devices status monitor

This section shows the list of all devices involved in the NIS system.

For all devices it is possible to know: *IP address*, *MAC address*, *Name*, *Type* (Tablet, PLC, Computer), *Asset (NeXT ID)*, *ID Kiosk*, *Status* and *History*.

IP	MAC Address	Device name	Type	Asset	Kiosk ID	Status	Links
10.5.168.16	7C:CB:E2:E0:2D:EE	FWK	Tablet	1711		Check	History
10.5.168.15	B8:27:EB:47:A0:56	FWK	Computer	1595		Check	History
10.5.168.12	7C:CB:E2:E0:38:A0	FWK PC	Tablet	1710		Check	History
10.5.168.13	7C:CB:E2:E0:39:64	FWK PC	Tablet	1709		Check	History
10.5.168.5	7C:CB:E2:E0:38:FA	FWK PC Android, Pannello Touch Linea	Tablet	1704		Check	History
10.5.168.2	7C:CB:E2:E0:2F:E4	FWK PC Android, Pannello Touch Linea 821102A	Tablet	1701	C-2E-FE4-20-EB	Check	History
10.5.168.3	7C:CB:E2:E0:39:48	FWK PC Android, Pannello Touch Linea 821102B	Tablet	1702		Check	History
10.5.168.4	7C:CB:E2:E0:2F:EC	FWK PC Android, Pannello Touch Linea 821102C	Tablet	1703		Check	History
10.5.168.14	7C:CB:E2:E0:2F:C8	FWK PC Android, Pannello Touch Linea 831101A	Tablet	1705		Check	History
10.5.168.9	eth0 7C:CB:E2:E0:38:E8	FWK PC , Pannello Touch Linea 834003A	Tablet	1706	C-2E-8E8-30-EB	Check	History
10.5.168.7	eth0 7C:CB:E2:E0:2D:F4	FWK PC , Pannello Touch Linea 834004A	Tablet	1707	C-2E-DF4-20-EB	Check	History
10.5.168.8	eth0 7C:CB:E2:E0:38:E6	FWK PC , Pannello Touch Linea 834005A	Tablet	1708	C-2E-8E6-30-EB	Check	History
10.5.168.203	28:63:36:A4:BF:9B	FWK PLC Linee 2*821100A/831101A	PLC	1677		Check	History
10.5.168.207	28:63:36:AF:12:4D	FWK PLC Linee 3*740102	PLC	1681		Check	History
10.5.168.201	28:63:36:A4:BF:BF	FWK PLC Linee 730301/730403/730402	PLC	1675		Check	History
10.5.168.202	28:63:36:A4:BF:81	FWK PLC Linee 821102A/821102B/821102C	PLC	1676		Check	History
10.5.168.204	28:63:36:AF:8D:42	FWK PLC Linee 834001/834002	PLC	1678		Check	History
10.5.168.205	28:63:36:AF:8D:0F	FWK PLC Linee 834003/834004/834005	PLC	1679		Check	History
10.5.168.206	28:63:36:A4:BF:93	FWK PLC Linee 861127	PLC	1680		Check	History
10.5.168.11	B8:27:EB:4B:9C:66	FWK Raspberry 3	Computer	1606		Check	History
10.5.168.6	B8:27:EB:59:DB:26	FWK Raspberry 3, Monitor Linea 821100A/831101A	Computer	1624		Check	History
10.5.168.1	B8:27:EB:52:82:8F	FWK Raspberry 3, Monitor Linea 821102A/821102B/821102C	Computer	1617		Check	History
10.5.168.10	b8:27:eb:26:f1:a4	FWK Raspberry 3, Monitor Linea 834005A	Computer	1612		Check	History
10.100.145.20	00:50:56:ae:ee:46	Server Andon	Server			Check	History

[+ Add](#) [Edit](#) [Delete](#) [Export XLS](#) [Check all](#)

Through the column «**Status**» the user can to check the status of the device, if it is working or not.

Status
OK
Check
Check

The "**History**" feature allows the user to see the history of the device's status. These are automatically recorded every 5 minutes.

Date Time	IP	Description	Live	X
03/10/2017 09:50:05	10.5.168.16	FWK	✓	
03/10/2017 09:47:01	10.5.168.16	FWK	✓	
03/10/2017 09:45:05	10.5.168.16	FWK	✓	
03/10/2017 09:40:06	10.5.168.16	FWK	✓	
03/10/2017 09:35:05	10.5.168.16	FWK	✓	
03/10/2017 09:30:06	10.5.168.16	FWK	✓	
03/10/2017 09:25:05	10.5.168.16	FWK	✓	
03/10/2017 09:20:05	10.5.168.16	FWK	✓	
03/10/2017 09:15:06	10.5.168.16	FWK	✓	
03/10/2017 09:10:05	10.5.168.16	FWK	✓	
03/10/2017 09:05:08	10.5.168.16	FWK	✓	
03/10/2017 09:00:06	10.5.168.16	FWK	✓	
03/10/2017 08:55:06	10.5.168.16	FWK	✓	
03/10/2017 08:50:05	10.5.168.16	FWK	✓	
03/10/2017 08:45:05	10.5.168.16	FWK	✓	
03/10/2017 08:40:06	10.5.168.16	FWK	✓	
03/10/2017 08:35:05	10.5.168.16	FWK	✓	
03/10/2017 08:30:06	10.5.168.16	FWK	✓	
03/10/2017 08:25:05	10.5.168.16	FWK	✓	
03/10/2017 08:20:06	10.5.168.16	FWK	✓	

 Export XLS

◀ ▶ 1 /229

20 rows per page / 4572 total

Quick filter

...

PLC signals

This function allows the user to monitor the signals of a specific PLC.

Entering the **PLC Asset Code (PLC NeXT ID)** will display all PLC inputs. For each input we can know the type of signal associated and the number of received signals.

Green color means that the signal is 1 (the machine is running or a pieces is counted); white color means that the signal is 0 (the machine is stopped or a piece is not completed)

NeXT Andon

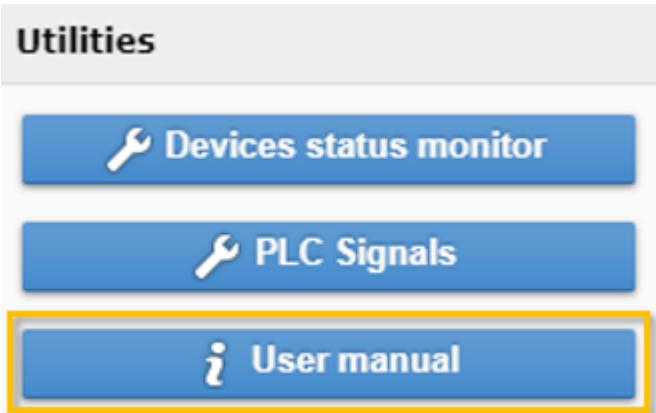
PLC status

PLC NeXT ID: 1676

IN 0	IN 1	IN 2	IN 3	IN 4	IN 5	IN 6	IN 7
4107	21864	3437	16962	10234	23456	1	1
821102A Run/Stop	821102A Items Counter	821102B Run/Stop	821102B Items Counter	821102C Run/Stop	821102C Items Counter	Unknown	Unknown

User manual

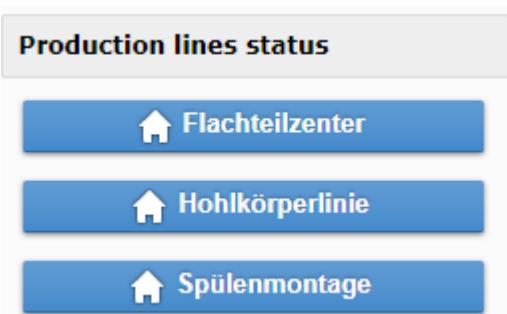
This function allows the user to open the *NIS system guide* in a web version.

**Reports**

Through the NIS web application the user can view some reports.

Production line status

This section shows the list of departments involved in the NIS system.



By clicking on one of the departments (for example, «*Hohlkörperlinie*»), the user can see a summary of the real time efficiency of the lines (six in this case) in that department.

Hohlkörperperlinie			
630to VZ, 151301		630to NZ, 151302	
Geplant - Arbeitsende (1h 4m)		Pause geplant (1h 47m)	
OP: 7039540 200 - 70 = 130 items (2h 20m)		OP: 6992444 200 - 21 = 179 items (4h 17m)	
991.0055.162 B R25 X 450x400x180 3 1/2" CB		991.0055.210 B R25 X 550x400x190 3 1/2" CB	
Takt 1m 4s		Takt 1m 26s	
Expected items 70		Expected items 26	
Produced items 70		Produced items 24	
Right first time 70		Right first time 24	
shift OEE 94.3%		shift OEE 84.2%	
800to VZ, 151651		800to NZ, 151652	
Geplant - Arbeitsende (8h 0m)		Geplant - Arbeitsende (1h 17m)	
OP: 7009684 150 - 3879 = -3729 items (0m)		OP: 7009687 150 - 48 = 102 items (2h 36m)	
991.0185.060 B R12.5 X 500x410x175 D-W I CB NOF		991.0185.060 B R12.5 X 500x410x175 D-W I CB NOF	
Takt 1m 20s		Takt 1m 31s	
Expected items 0		Expected items 55	
Produced items 0		Produced items 48	
Right first time 0		Right first time 48	
shift OEE waiting for data		shift OEE 88.5%	
Transferpresse, 151601		Ungeplant - Maschine, Grund unbekannt (1h 15m)	
OP: 6991987 1000 - 594 = 406 items (0m)		991.0364.332 B R70 ARX 350x435x175 3 1/2" CS Mat.07	
Takt 0s		Takt 0s	
Expected items 0		Produced items 531	
Produced items 531		Right first time 531	
Right first time 531		shift OEE waiting for data	
Beckenpolieren APES, 151731		Geplant - Arbeitsende (1h 1m)	
OP: 6993008 200 - 68 = 132 items (4h 9m)		991.0050.282 B R25 X 550x400x190 I CB NOF	
Takt 1m 53s		Takt 1m 53s	
Expected items 121		Produced items 68	
Produced items 68		Right first time 68	
Right first time 68		shift OEE 62.3%	

At the top on the right of each box there are two buttons:

- the button on the left (1) allows to display the TV LED screen;
- the button on the right (2) allows to display the touch panel screen.

630to VZ, 151301	
Geplant - Arbeitsende (1h 4m)	
OP: 7039540	
200 - 70 = 130	
991.0055.162	
B R25 X 450x400x180 3 1/2" CB	
Takt 1m 4s	
Expected items 70	
Produced items 70	
Right first time 70	
shift OEE 94.3%	
800to VZ, 151651	

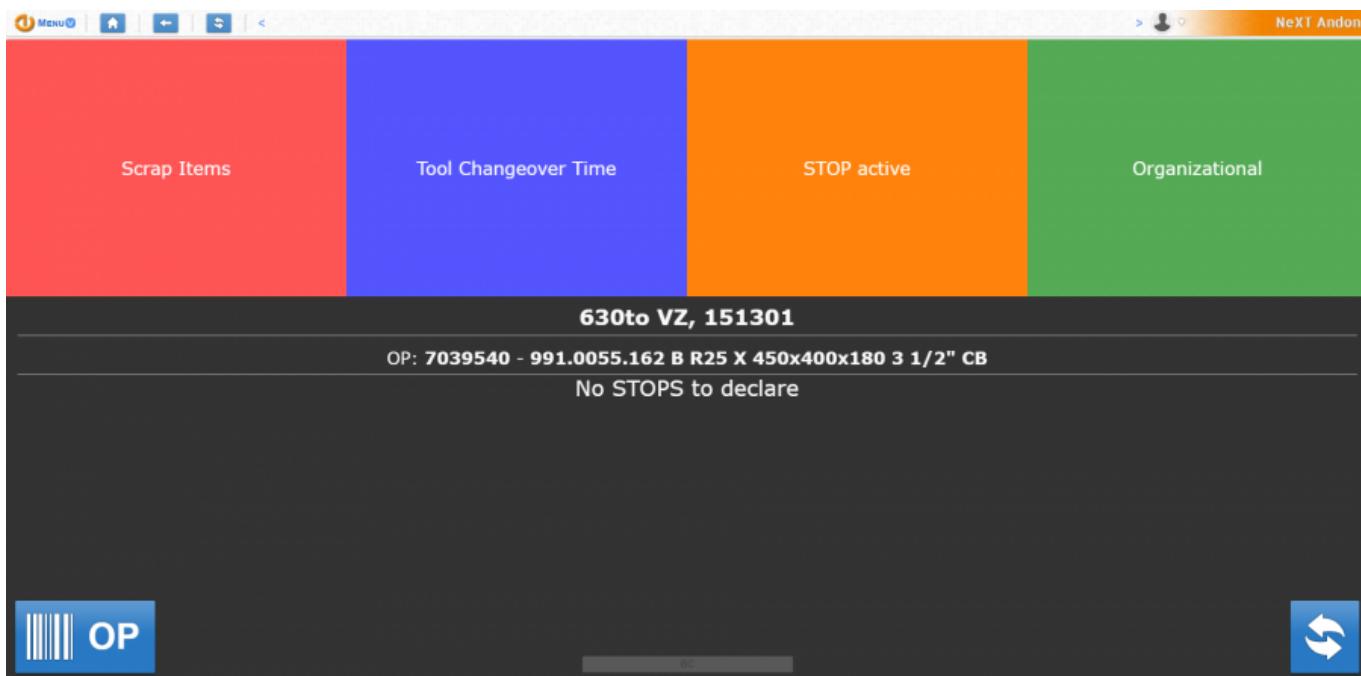
(1) This is an example of a TV LED screen, present on each line.

The detailed description of the information shown on the LED TV can be found in the paragraph «**The Andon board interface**»



(2) This is an example of a touch panel screen, present on each line.

The detailed description of the touch panel interface can be found in the paragraph «**The touch panel interface**»

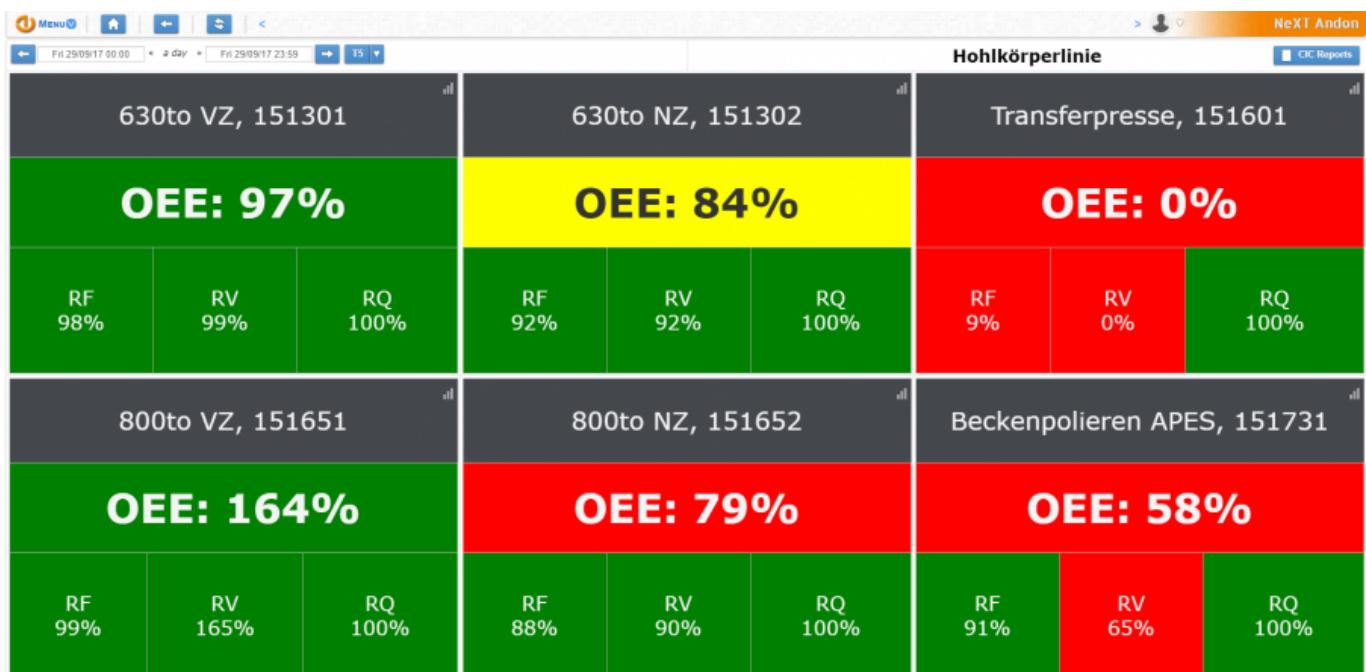


Efficiency

This section shows the list of departments involved in the NIS system.



By clicking on one of the departments (for example, «Hohlkörperlinie»), the user can see a summary of the Overall Equipment Effectiveness (OEE) value

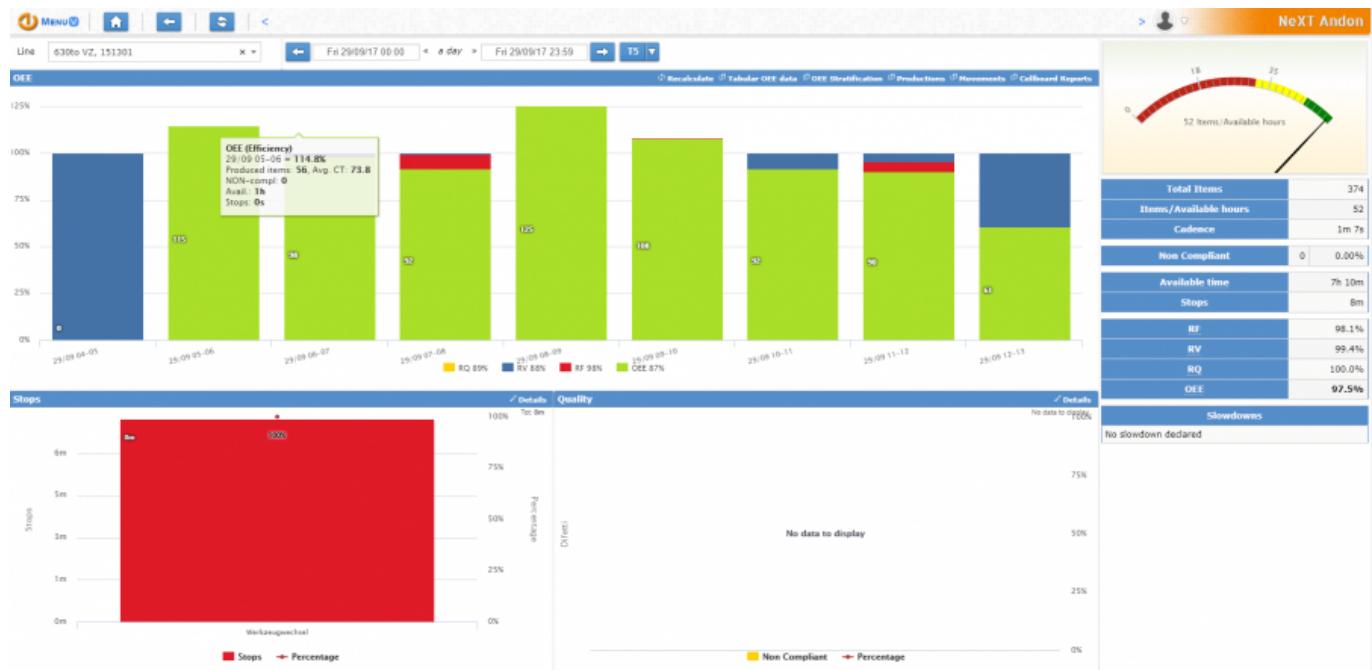


At the top on the right of each box there is a button. It allows:

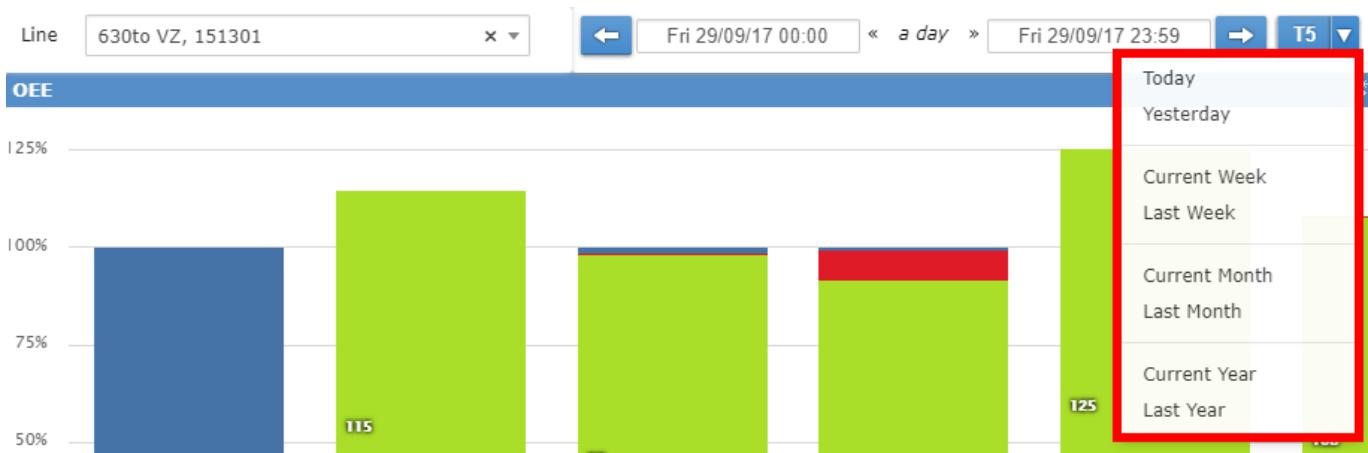
- to display the OEE value of that line, in a certain period
- to access to some reports



The following image shows the OEE interface. By default, it shows the OEE value of the current day, hour by hour, starting from the beginning of the shift.



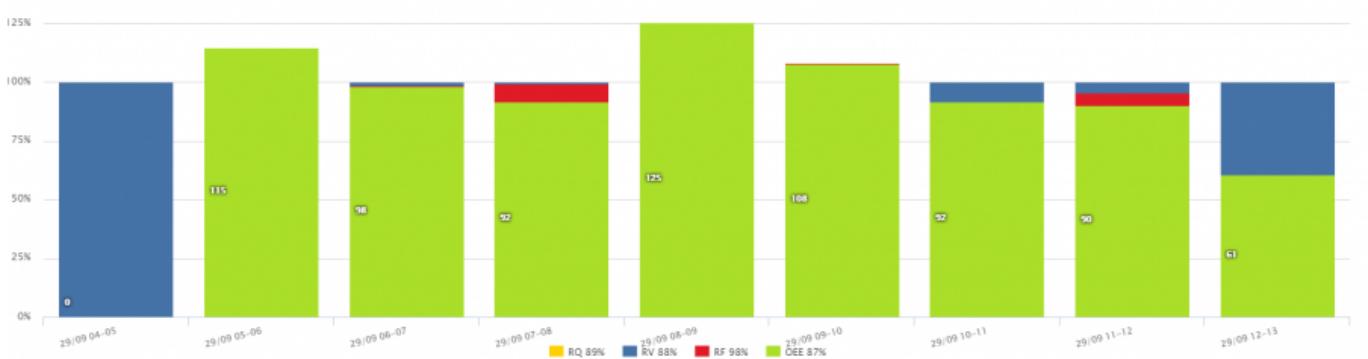
At the top of the interface the user can choose the line to be analyzed, the time span to view (today, yesterday, current week, last week, current month, last month, current year last year).



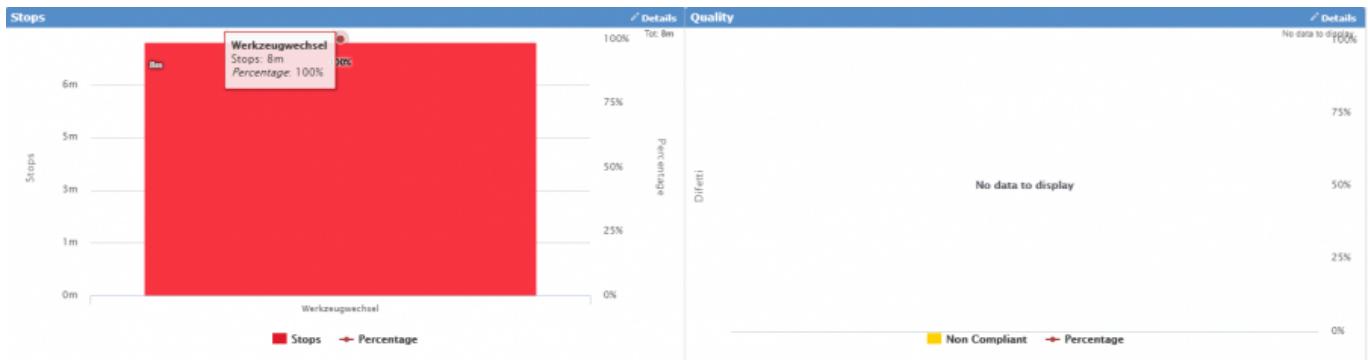
Below, we find a series of buttons that allow the user to view a series of reports. This topic will be discussed in the paragraph «**Reports**».

In the middle of the interface, a series of histograms show the OEE value, hour by hour. The different colors refer to:

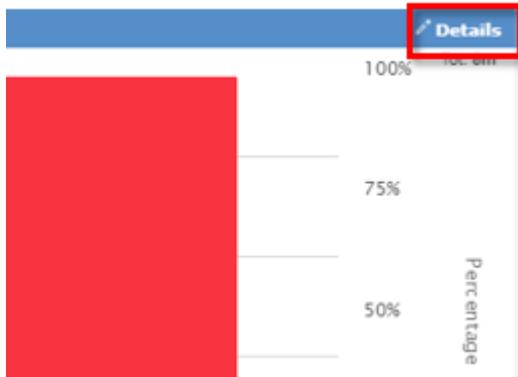
- Yellow: stop for a quality problem (scrap)
- Blue: speed loss
- Red: stop machine
- Green: the OEE



At the bottom of the interface you can see **details** about losses due to machine stops and scraps. The duration of each stop is immediately visible.



By clicking on «**Details**» you can deepen the knowledge by going to see the start and end of each stop.



Here the user can see the stops (not scheduled) that contribute to the amount of minutes we saw in the previous screen. For each stop we know the start time and the end time.

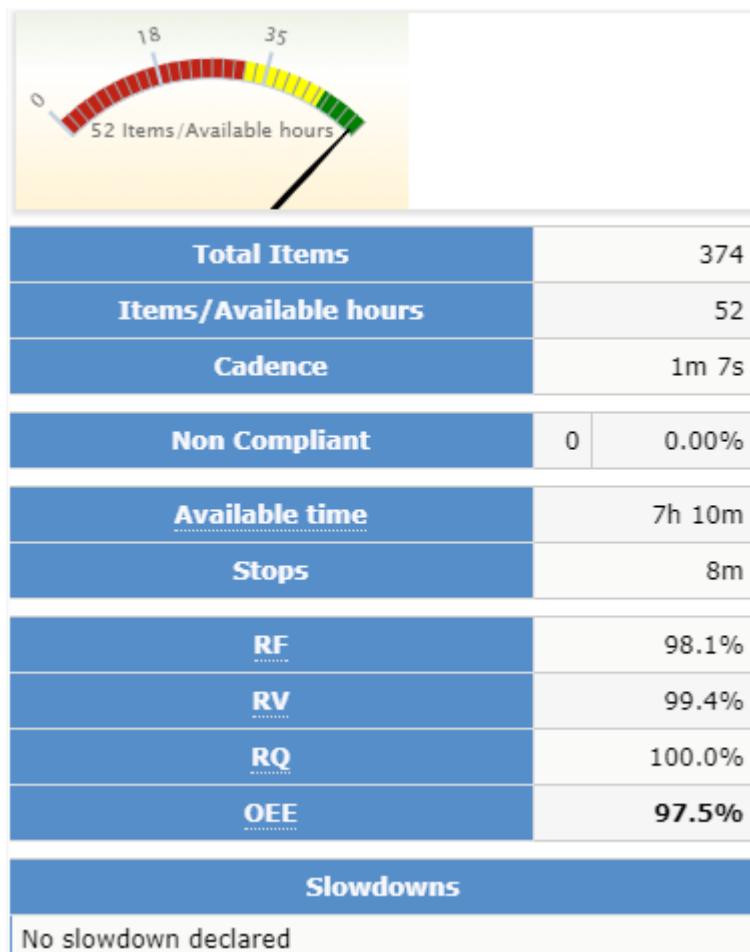
The user can export this table in excel format.

Machine stops						
Unique Code	Begin	Duration	End	Machine downtime cause	Machine downtime type	
1245925	28/09/2017 15:55:56	13h 3m	29/09/2017 04:58:56	Pause geplant	Programmata	
1248474	29/09/2017 06:56:54	9s	29/09/2017 06:57:03	Kurzunterbruch	Micro	
1249438	29/09/2017 07:12:45	4m 38s	29/09/2017 07:17:23	Werkzeugwechsel	Fermo	
1250171	29/09/2017 08:31:06	28m 7s	29/09/2017 08:59:13	Geplant - Pause	Programmata	
1251232	29/09/2017 09:29:32	6s	29/09/2017 09:29:38	Kurzunterbruch	Micro	
1254320	29/09/2017 11:17:43	3m 24s	29/09/2017 11:21:07	Werkzeugwechsel	Fermo	
1255801	29/09/2017 12:37:17	20m 33s	29/09/2017 12:57:50	Geplant - TPM / Wartung	Programmata	



In the following chart, the user can find a variety of information.

- total items produced
- items processed for one hour
- cadence
- non-compliant items
- time available
- stop minutes
- RF: Machine efficiency
- RV: efficiency of machine availability
- RQ: Object quality efficiency
- OEE



Reports

From the OEE interface, the user can view a series of specific reports

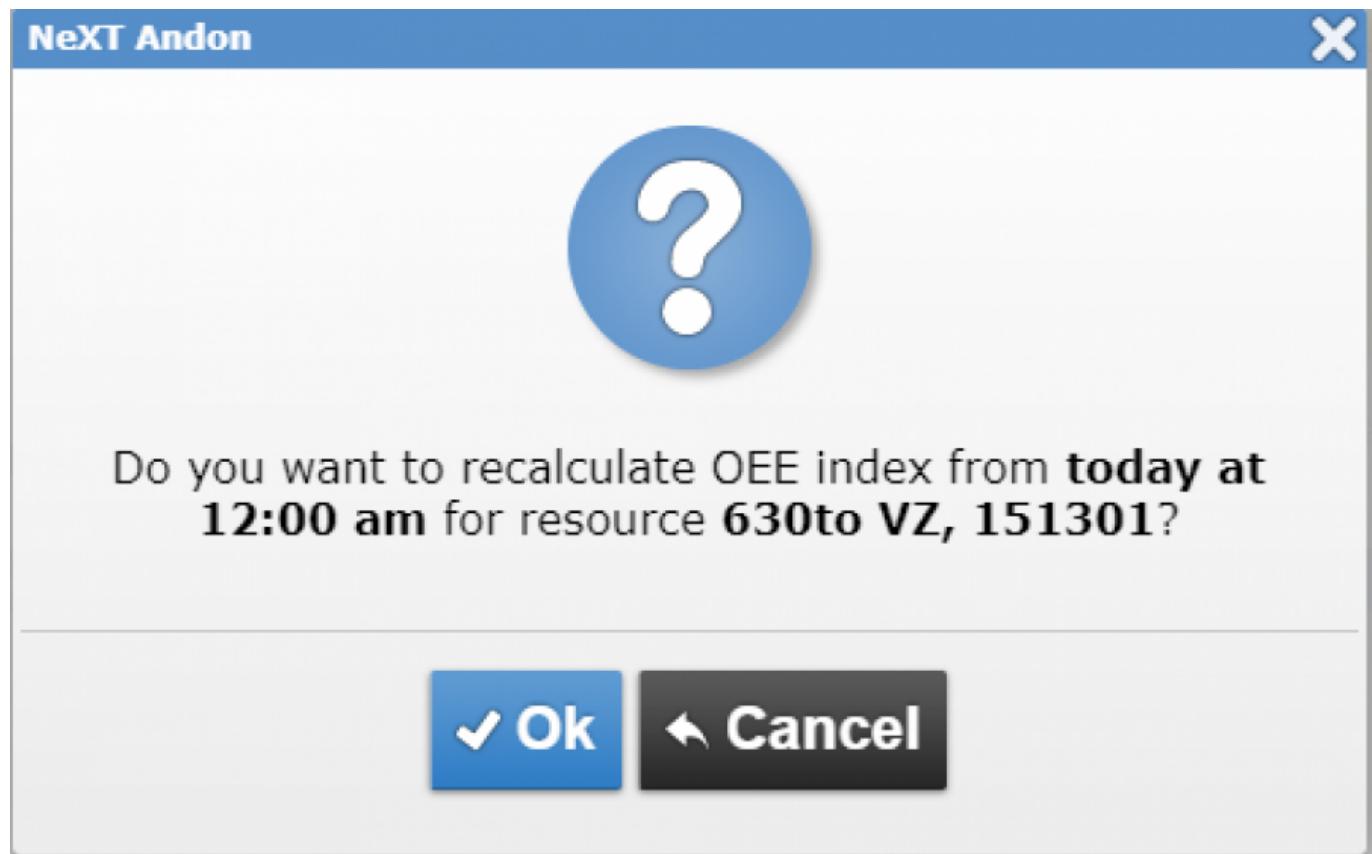


Recalculate

The "**Recalculate**" function allows the NIS system to recalculate the OEE.

For example, this function is very useful if, at a later time, the cause of a stop has to be changed: from a stop programmed to an unplanned stop.

This change affects the calculation of OEE, so a recalculation is required.

**Tabular OEE data**

This feature allows the user to view all OEE data in tabular form. This table can also be exported to Excel format.

Tabular OEE data															X
Date	Time	Availability	Machine downtime	Cycle time	Q.ty	NON-compl	RF	RV	RQ	OEE	RF loss	RV loss	RQ loss		
29/09/2017	05:00:00	01m	64s	00m	0s	0s	0	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
29/09/2017	06:00:00	01h 00m	3600s	00m	0s	73.8s	56	0	100.00%	115.00%	100.00%	115.00%	0.00%	-15.00%	0.00%
29/09/2017	07:00:00	01h 00m	3600s	00m	9s	73.8s	48	0	100.00%	99.00%	100.00%	98.00%	0.00%	1.00%	0.00%
29/09/2017	08:00:00	01h 00m	3600s	04m	278s	64.8s	51	0	92.00%	99.00%	100.00%	92.00%	8.00%	0.00%	0.00%
29/09/2017	09:00:00	31m	1913s	00m	0s	64.8s	37	0	100.00%	125.00%	100.00%	125.00%	0.00%	-25.00%	0.00%
29/09/2017	10:00:00	01h 00m	3600s	00m	6s	64.8s	60	0	100.00%	108.00%	100.00%	108.00%	0.00%	-8.00%	0.00%
29/09/2017	11:00:00	01h 00m	3600s	00m	0s	64.8s	51	0	100.00%	92.00%	100.00%	92.00%	0.00%	8.00%	0.00%
29/09/2017	12:00:00	01h 00m	3600s	03m	204s	64.8s	50	0	94.00%	95.00%	100.00%	90.00%	6.00%	4.00%	0.00%
29/09/2017	13:00:00	37m	2244s	00m	0s	64.8s	21	0	100.00%	61.00%	100.00%	61.00%	0.00%	39.00%	0.00%

[Export XLS](#)

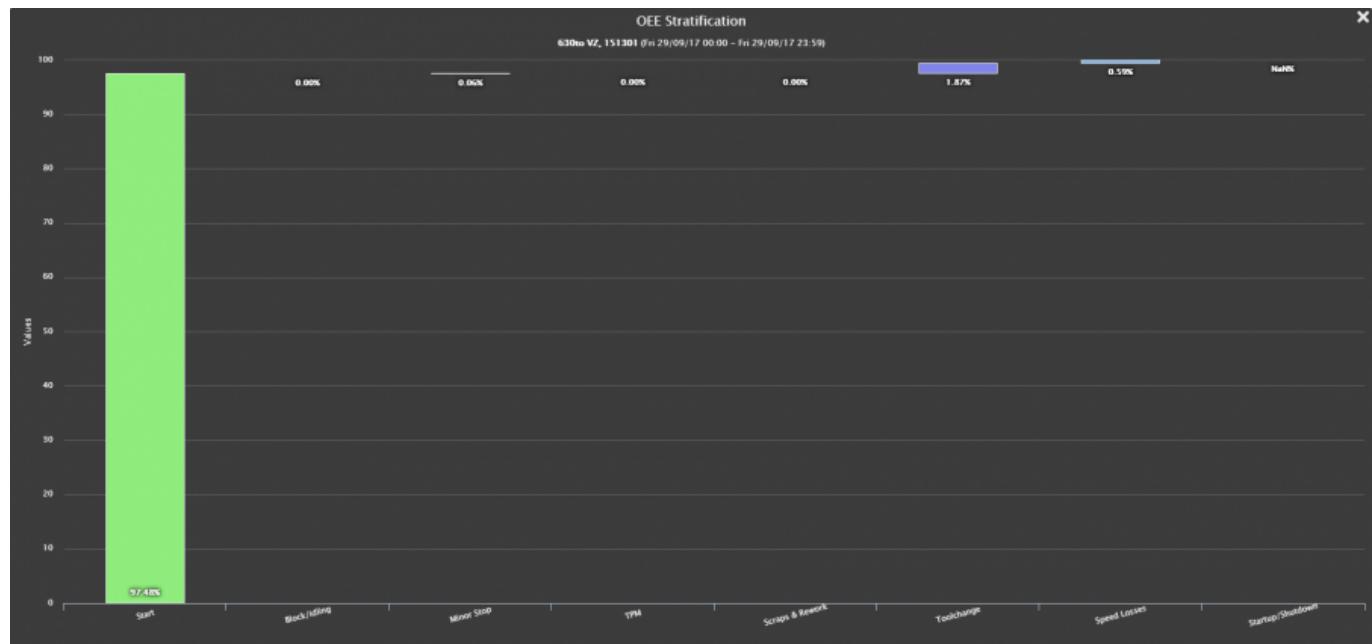
9 total rows

Quick filter

1/1

OEE stratification

The **"OEE stratification"** function allows the user to view all causes of stop (block, minor stop, TPM, Scraps & Rework, Toolchange, Speed Losses, Startup / Shutdown) and the value of the OEE. The goal is achieved using a graph that highlights the most frequent stops in the selected time span.



Productions

This function allows the user to view a list of productions made in the selected time frame in a table format. The user can read the order of production, the article code, the cycle time, the number of items produced, the number of non-compliant items, the start time of processing, the end time of processing.

Productions - 630to VZ, 151301							
OP	Article		Cycle time	Produced items	Non Compliant	Begin	End
7034940	991.0050.282	B R25 X 550x400x190 I CB NOF	1m 13s	104	0	29/09/2017 05:06:51	29/09/2017 06:53:43
7041942	991.0050.274	B R25 X 450x400x180 I CB NOF	1m 4s	200	0	29/09/2017 07:17:58	29/09/2017 11:00:30
7039540	991.0055.162	B R25 X 450x400x180 3 1/2" CB	1m 4s	70	0	29/09/2017 11:21:59	29/09/2017 12:37:09

Export XLS 3 total rows Quick filter

Movements

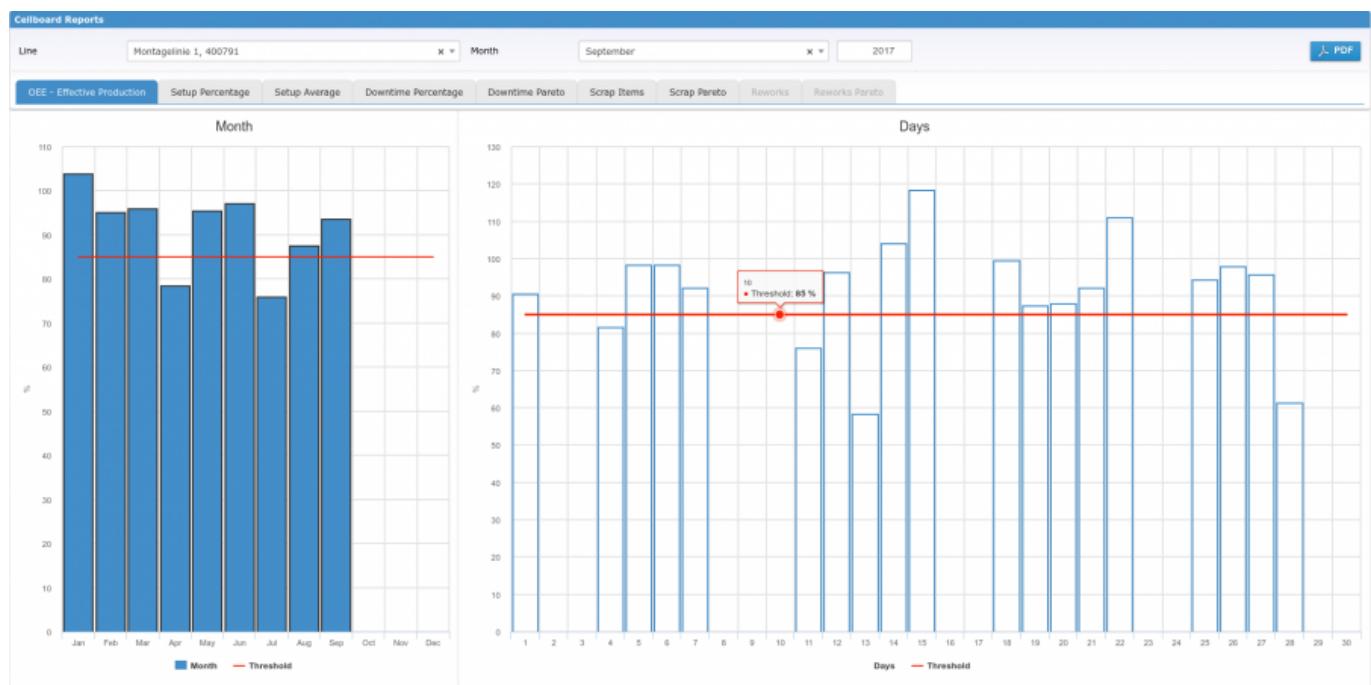
This function allows the user to view the entire list of events, in the time interval selected: produced items, cycle time, type of movement (load or downtime), cause of downtime, type of downtime, duration of downtime, non-compliant items.

Movements - 630to VZ, 151301												
Code	Line	Date Time	Production order	Identif.	Article	Qty	Cycle time	Movement type	Machine downtime cause	Machine downtime type	Duration	NON-compl
1256080	630to VZ, 151301	02/10/2017 07:02:39		151301		1		Downtime Ended	Geplant - Arbeitsende	P	2g 18h 4m 42s	
1256094	630to VZ, 151301	02/10/2017 07:05:34	7039540	000000000000538845	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256096	630to VZ, 151301	02/10/2017 07:06:03	7039540	000000000000538846	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256104	630to VZ, 151301	02/10/2017 07:06:34	7039540	000000000000538850	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256118	630to VZ, 151301	02/10/2017 07:07:41	7039540	000000000000538853	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256123	630to VZ, 151301	02/10/2017 07:08:13	7039540	000000000000538857	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256128	630to VZ, 151301	02/10/2017 07:08:43	7039540	000000000000538859	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256144	630to VZ, 151301	02/10/2017 07:09:34	7039540	000000000000538864	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256161	630to VZ, 151301	02/10/2017 07:10:04	7039540	000000000000538873	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256191	630to VZ, 151301	02/10/2017 07:10:35	7039540	000000000000538887	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256325	630to VZ, 151301	02/10/2017 07:13:17	7039540	000000000000538951	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256349	630to VZ, 151301	02/10/2017 07:13:48	7039540	000000000000538963	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256399	630to VZ, 151301	02/10/2017 07:14:51	7039540	000000000000538988	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256421	630to VZ, 151301	02/10/2017 07:15:21	7039540	000000000000538999	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256569	630to VZ, 151301	02/10/2017 07:18:39	7039540	000000000000539070	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				
1256592	630to VZ, 151301	02/10/2017	7039540	000000000000539082	991.0055.162 B R25 X 450x400x180 3 1/2" CB	1	1m 4s	Load				

Export XLS 1/1 300 rows per page / 191 total Quick filter

Cellboard Reports - OEE effective production

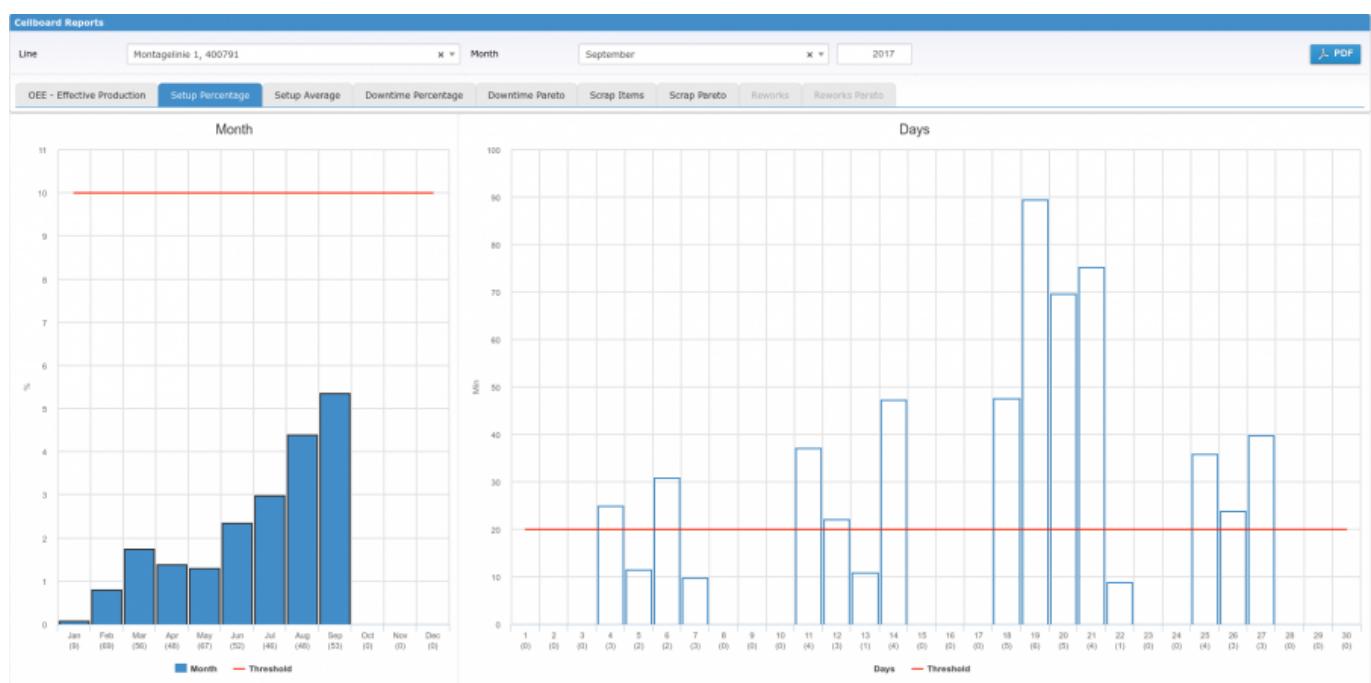
In this report, the user can see the monthly and daily OEE value (relative to the selected month). In red, the user can see the threshold limit configured under "Production lines" in the "Environment" menu.



Cellboard Reports - setup percentage

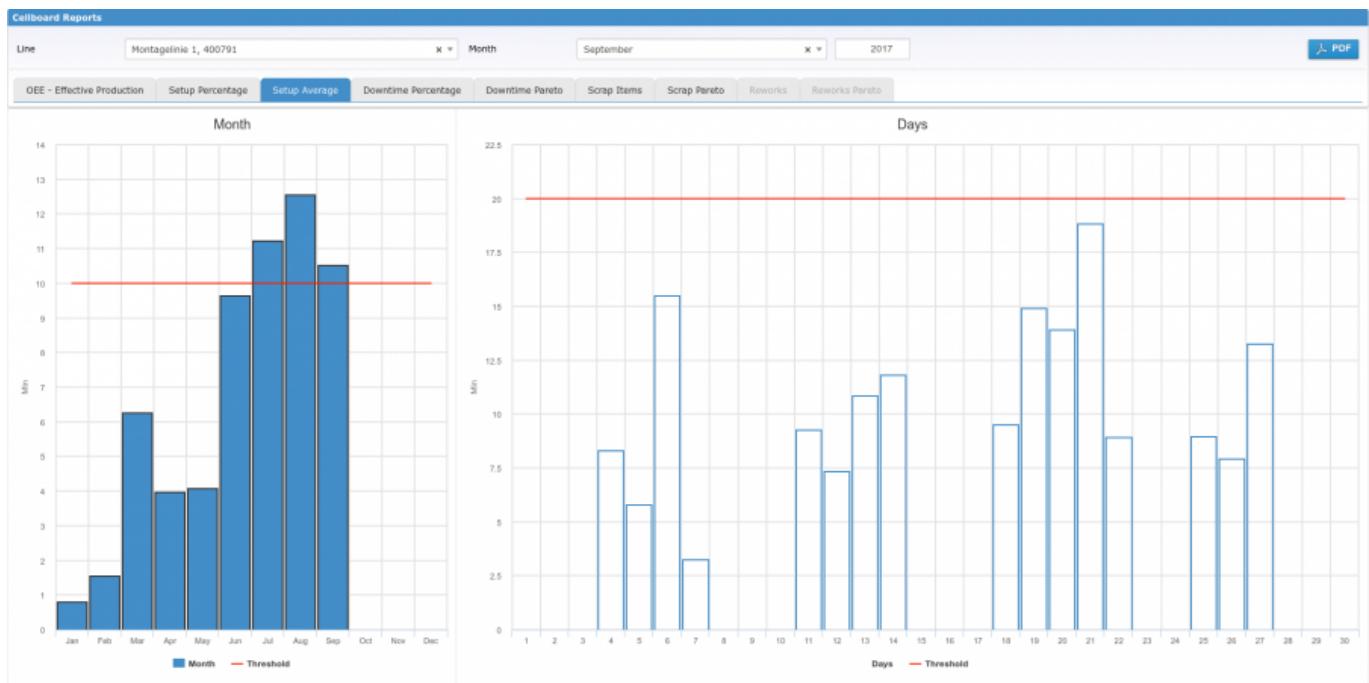
This function reports, on the left, as a percentage, the length of setup (tooling) over the entire time span (monthly).

On the right, this function shows, the time in minutes of setup, compared to the entire time span (daily).



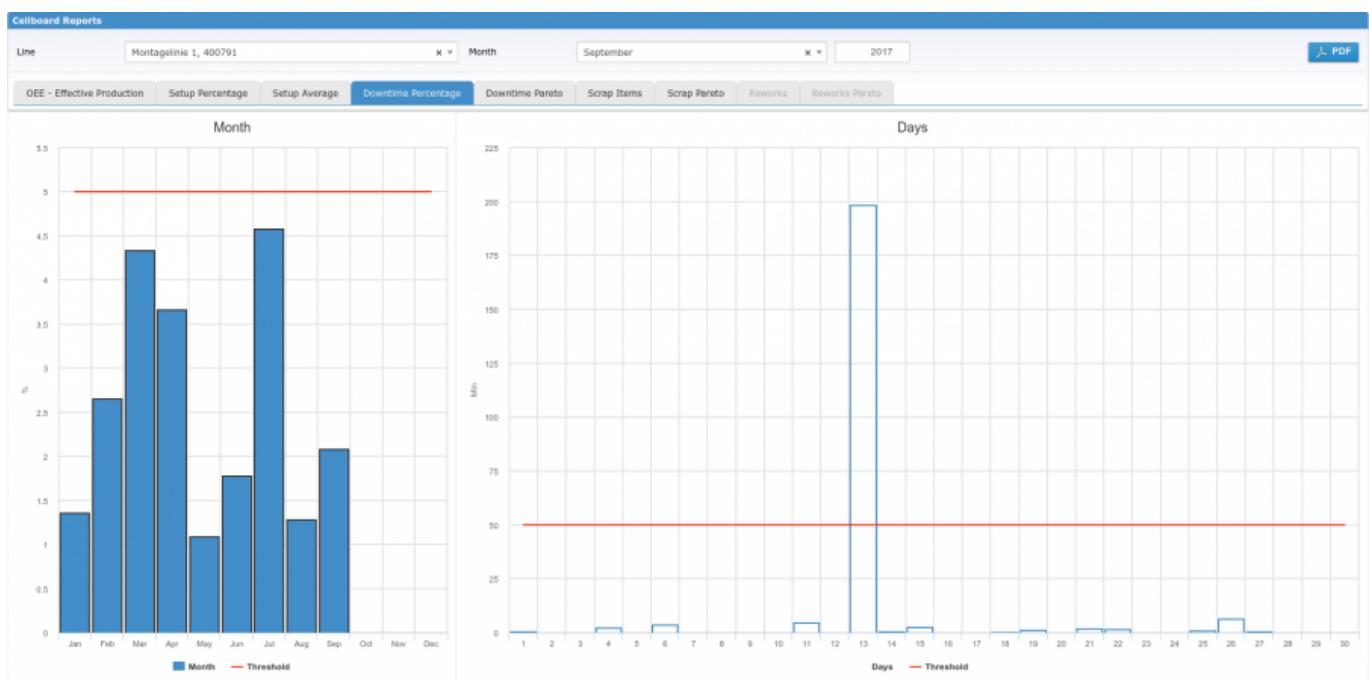
Cellboard Reports - setup average

This function shows the average length of the setup (tooling) in minutes, each month (on the left) or day by day in the selected month (on the right).



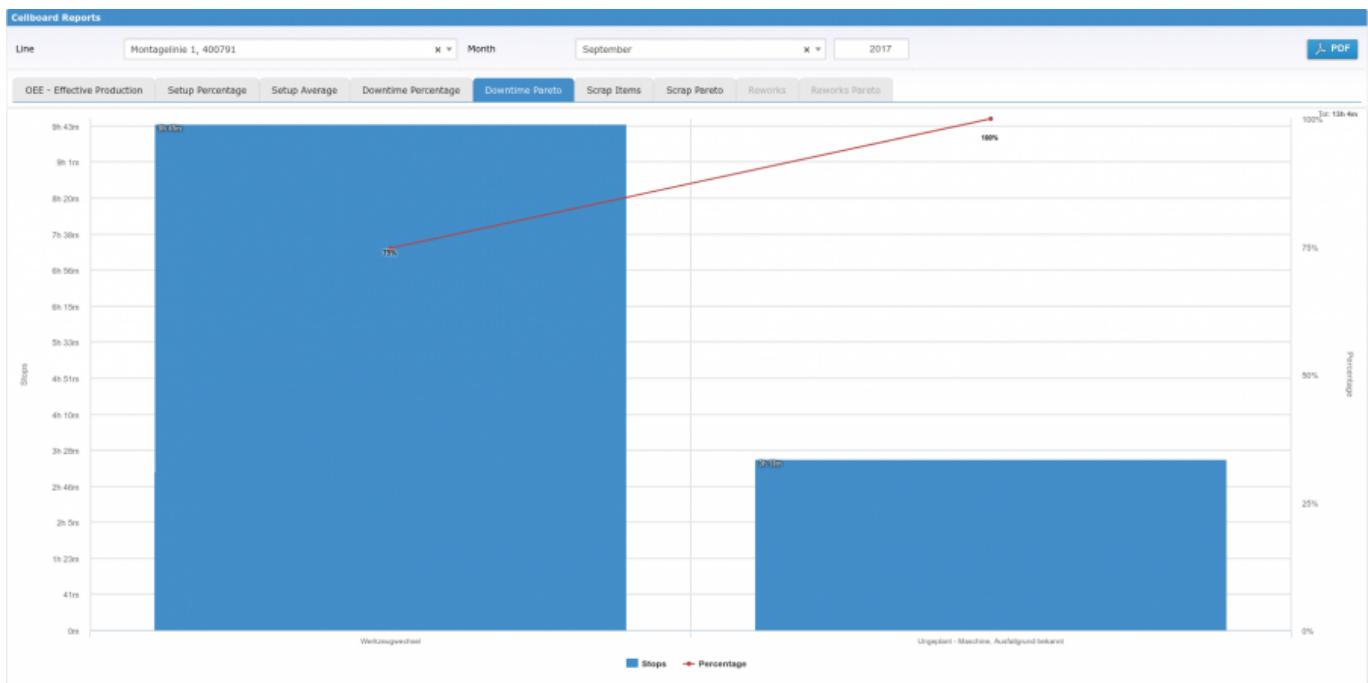
Cellboard Reports - downtime percentage

This function reports, on the left, as a percentage, the length of downtime over the entire time span (monthly). On the right, instead, this function shows, the time in minutes of downtime, compared to the entire time span (daily).



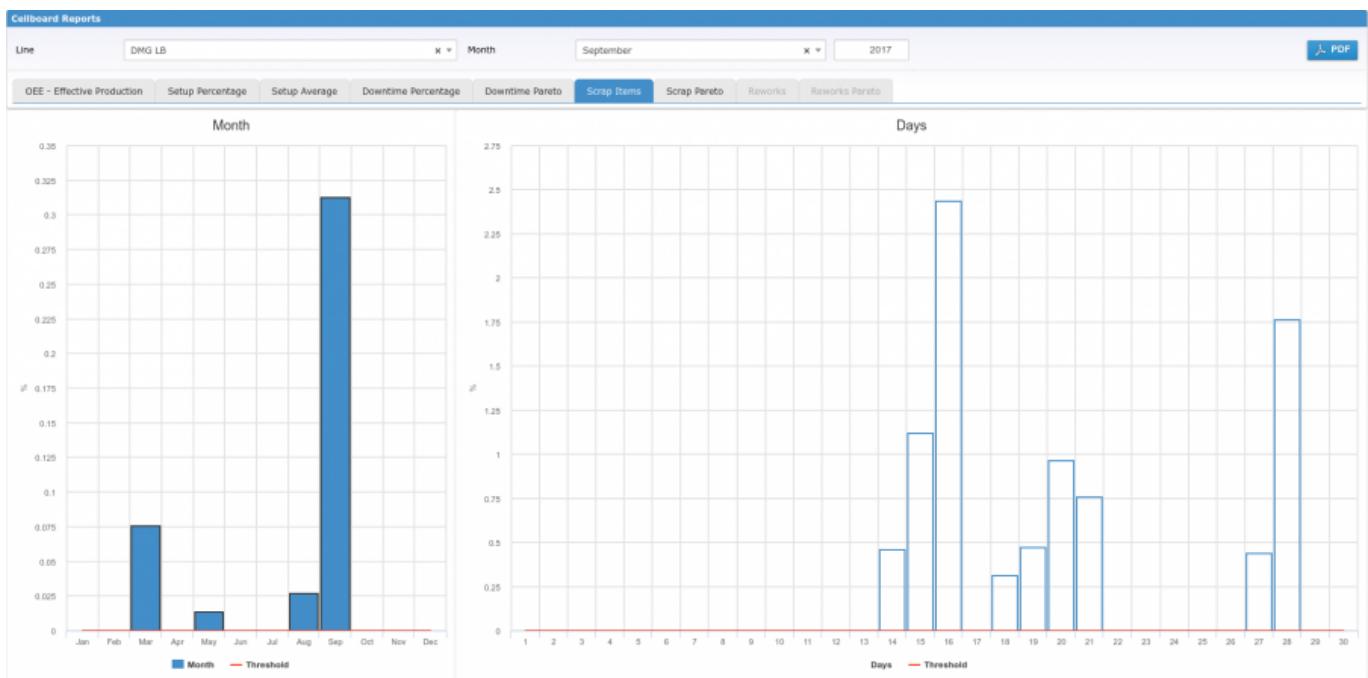
Cellboard Reports - downtime Pareto

This function shows the various causes of downtime that have occurred, in percentage, using the Pareto graph.



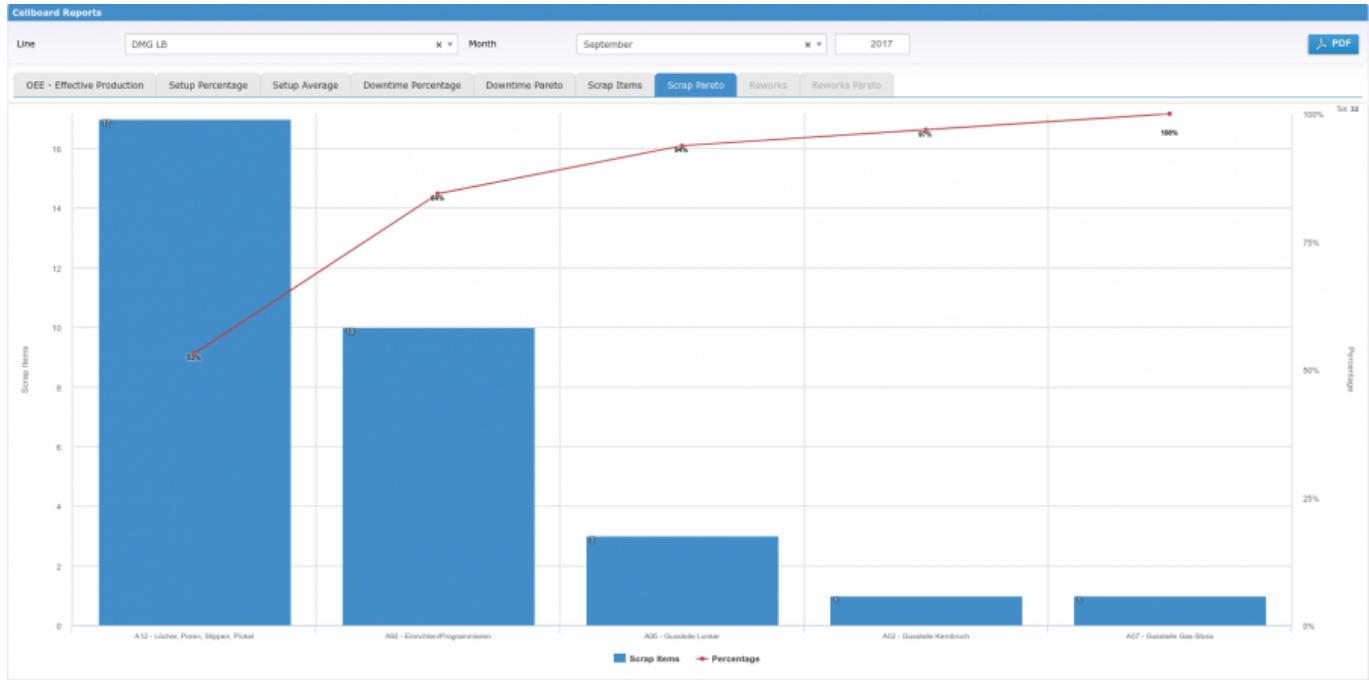
Cellboard Reports - scrap items

This function reports, as a percentage, the length of scrap items over the entire time span (monthly on the left, daily on the right).



Cellboard Reports - scrap Pareto

This function shows the various causes of quality problems that have occurred, in percentage, using the Pareto graph.



OEE overview

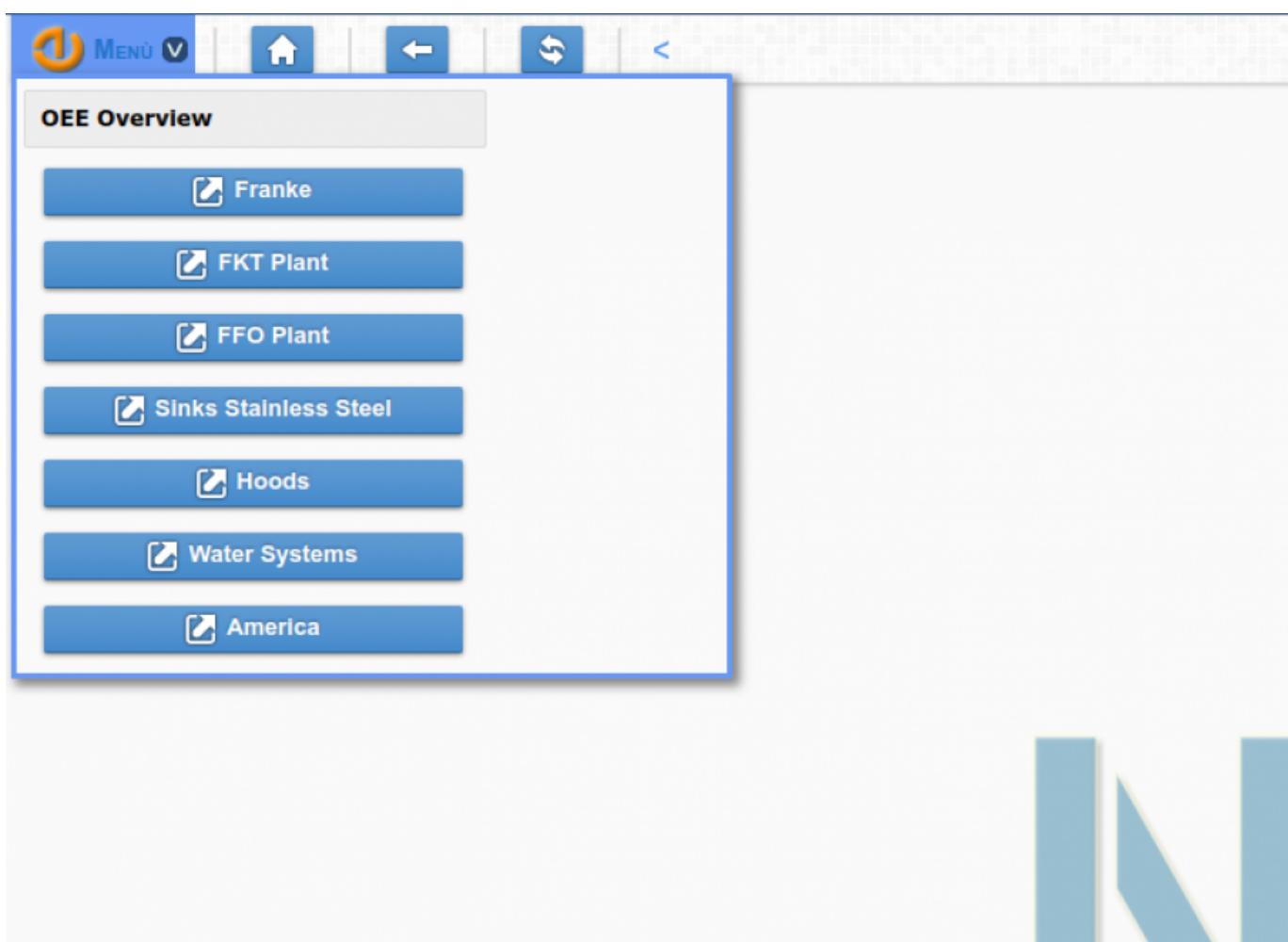
How does it works

The OEE overview is the central application for management. It allowed:

- hierarchical organization of the Franke group based on macro areas
- step by step focus on macro areas, plants, departments, production resources
- data warehouse used for computation

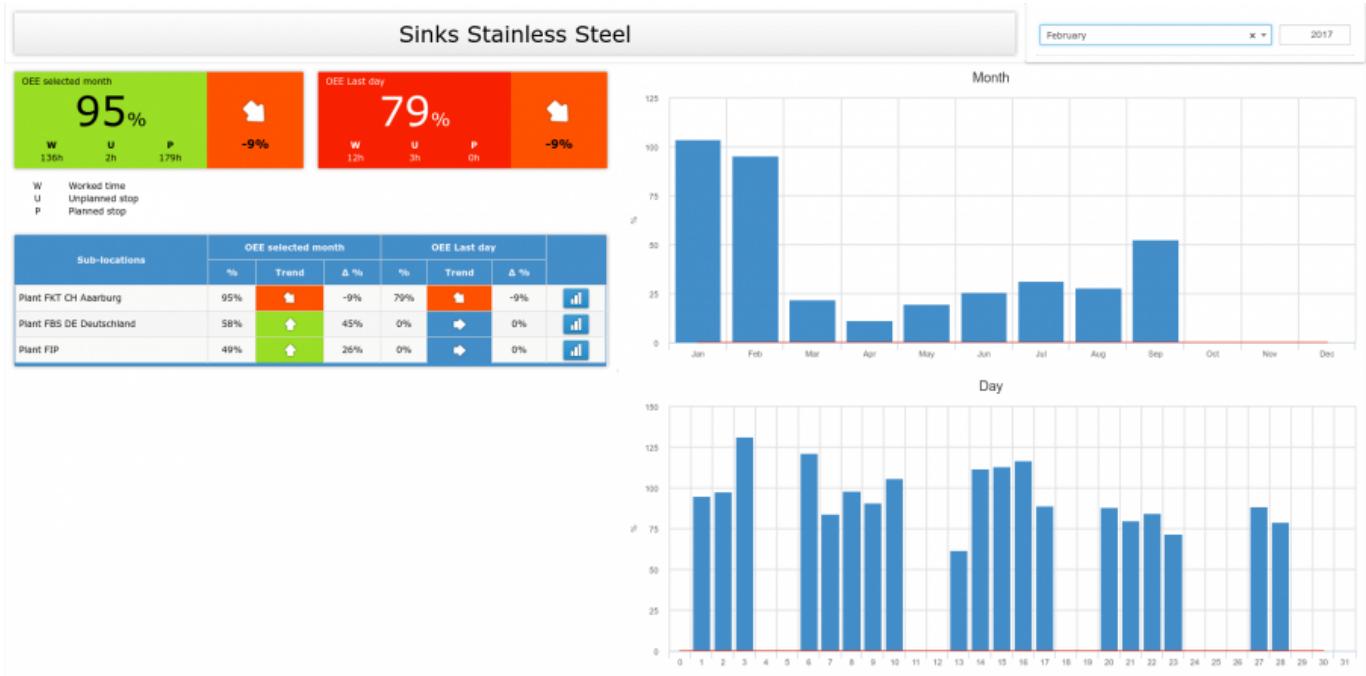
The hierarchical order is:

- Franke
- macroarea (eg "Sinks stainless steel")
- plants
- departments
- production lines



Once you click on a macro area, you can see:

- the plants that are part of it (sub-locations).
- the monthly OEE value (with graph)
- the last day OEE value (with graph)



Sub-locations tabular summary

- OEE of selected month with trend indicator (related to the previous month) and % variation
- OEE of last day with trend indicator (related to the previous day) and % variation
- direct access to detailed information of the single sub-location

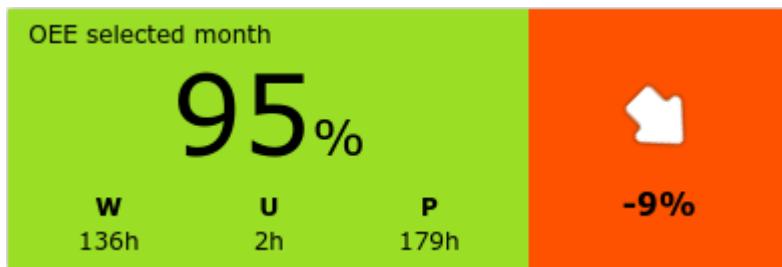
Sub-locations	OEE selected month			OEE Last day			
	%	Trend	Δ %	%	Trend	Δ %	
Plant FKT CH Aarburg	53%	↑	15%	60%	↓	-10%	
Plant FBS DE Deutschland	58%	↑	45%	58%	↓	-32%	
Plant FIP	49%	↑	26%	52%	↔	3%	

OEE of selected month

- W: worked time (hours)
- U: unplanned stops (hours)
- P: planned stops (hours)
- colors are based on OEE thresholds (same as andon boards)

Trend percentage between current selection and previous period

- selected month ⇒ previous month
- colors are based on predefined percentage values (-10%, -5%, 0, +5%, +10%)

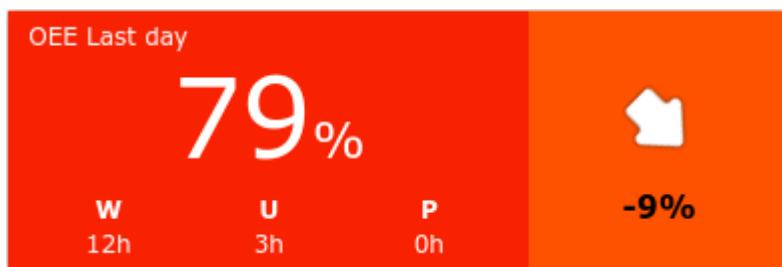


OEE of last day

- W: worked time (hours)
- U: unplanned stops (hours)
- P: planned stops (hours)
- colors are based on OEE thresholds (same as andon boards)

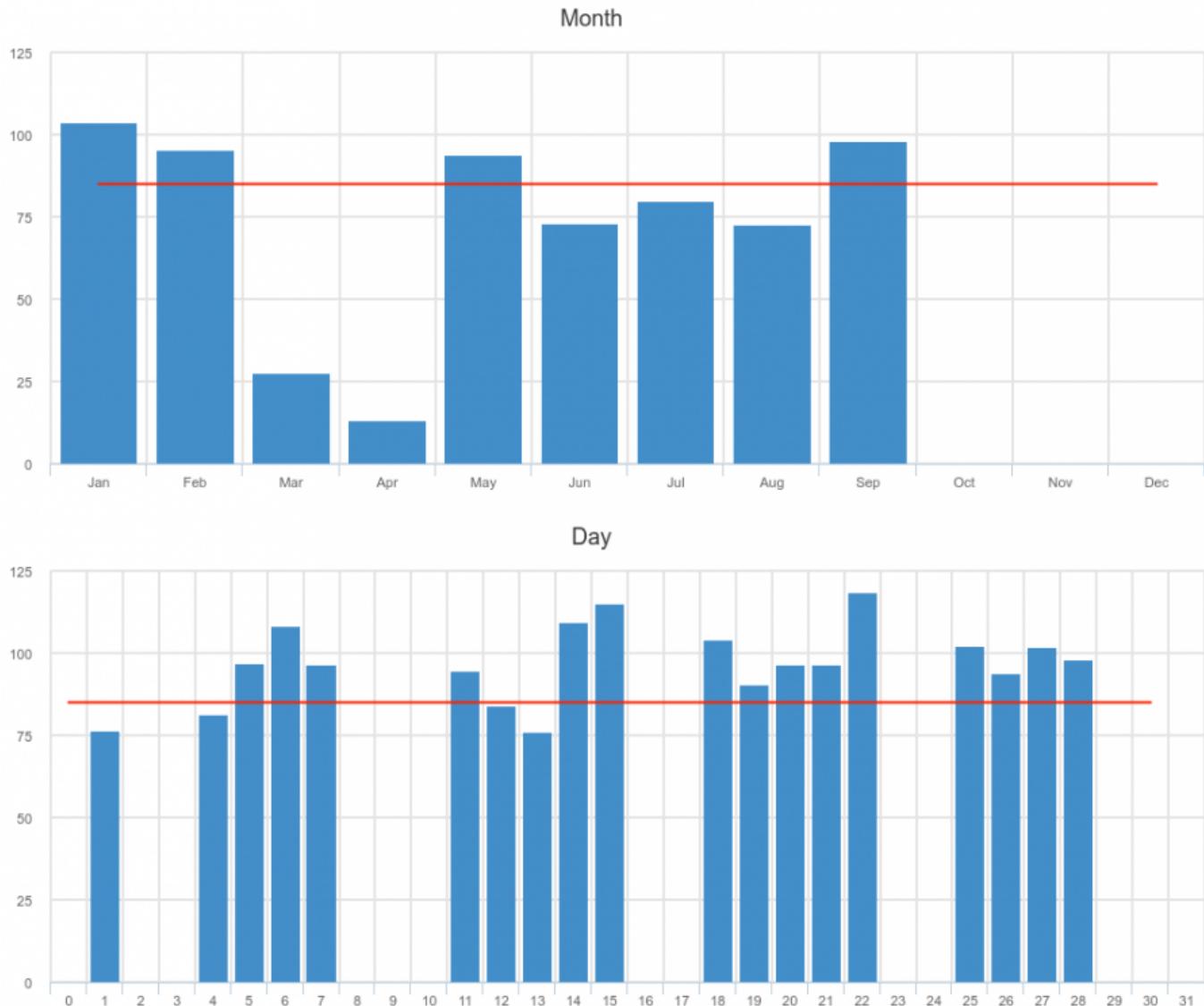
Trend percentage between current selection and previous period

- last month ⇒ the day before
- colors are based on predefined percentage values (-10%, -5%, 0, +5%, +10%)



Sub-locations graph summary

- monthly OEE
- daily OEE related to the selected period (month, year)
- thresholds defined for C.I.C. reports



The OEE

Definition

OEE (Overall Equipment Effectiveness) measures how close you are to perfect production (manufacturing only good parts, as fast as possible, with no stop time). OEE correlates **real production** with the **ideal production** planned.

The difference between these two values represents the loss of production in terms of:

- **RF = Availability (Time)**
- **RV = Performance (Speed)**
- **RQ = Quality**

There are three kind of losses:

- **Availability Loss:** an availability score of 100% means that the process is always running during

planned production time (the time your process is scheduled to run). Any time the process is not running due to an unplanned stop (e.g., some type of mechanical failure) or a planned stop (e.g., cleaning) is an Availability Loss

- **Performance Loss:** a performance score of 100% means that the process is running as fast as possible. Performance can be calculated as the ratio of **Actual Run Rate** to **Theoretical Maximum Rate** (the design capacity of a machine or process)
- **Quality Loss:** a quality score of 100% means that the process is only making good parts. Quality is the ratio of **Good Material** to **All Material**. Some process applications only produce good materials, while others may have Quality Loss due to non-conforming materials.

How to calculate the OEE

The OEE is simplified in the multiplication of the indexes described above, then **OEE = RF x RV x RQ**

- Availability (RF) = ? Run Time / ? Planned Production Time, that is » $RF=(d-s)/d$ [d=time availability; s=stops];
- Performance = ? (Ideal Cycle Time \times Total Parts) / ? Run Time that is » $RV=(Ct \times Np)/(d-s)$ [Ct= cycle time; Np=Number of pieces];
- Quality = ? Good Parts / ? Total Parts, that is » * $RQ=(Np-Nc)/Np$ [Nc= non-compliant pieces]

NIS classifies stop-cause in **3 classes**:

- **Not programmed Stop (F):** it's required a causalization of stop
- **Programmed Stop (P):** the worker set the begin and the end of this kind of stop using touch panel
- **Micro-stop (M):** it's not required a causalization of the stop