

Movicon NExT
19.0 ProLean
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1. Pro.Lean

1.1. What is Pro.Lean?

Pro.Lean is an add-in for Movicon NExT which allows users to create and manage master data and indicators for the analysis of production performance in the manufacturing sector. Pro.Lean provides the connection to the field devices to collect data (counters, states and events), aggregate and historicize them in the database. These data are then the objective basis on which Pro.Lean calculates the key performance indicators (KPI) on which users can perform the analysis of inefficiency and downtime. In fact, using the web-based standard reports of Pro.Lean, users can analyse and visualize KPIs for each machine, work and shift. Plant personnel have therefore a tool to analyse and monitor in detail the aspects of availability, productivity and quality, namely the three components which constitute the OEE (Overall Equipment Efficiency) index.

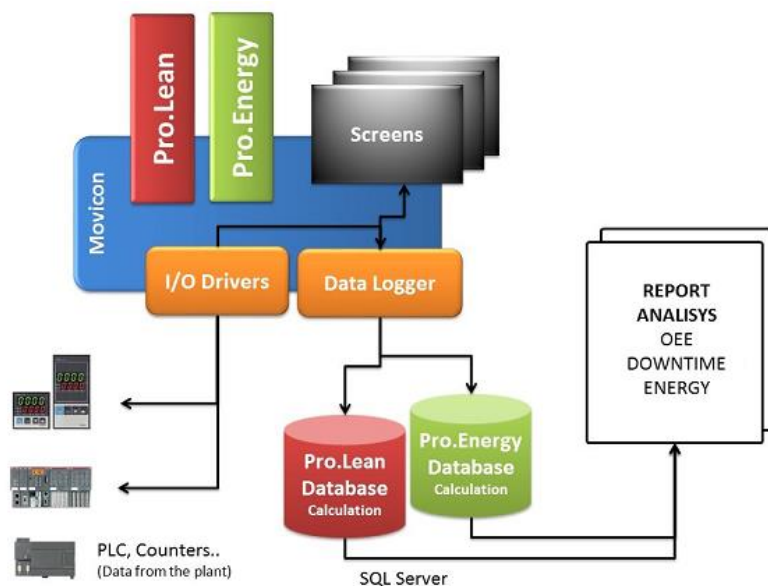
Pro.Lean is a "Manufacturing intelligence" solution, based on an equipment-centric view. Each production machine connected to the system populates the Pro.Lean database with detailed data such as number of pieces produced and production events. These data are then contextualized thanks to the master data present in the database and made available for analysis through standard reports and Movicon NExT.

To ensure that companies can actually learn and improve their production performance, it is necessary to implement a system that collects, aggregates and contextualizes production information. This is the main task of a Manufacturing Intelligence solution, such as Pro.Lean.

Its purpose is to help plant operators to answer the fundamental questions: "How much is my system producing and how is it performing?", "Why I cannot reach the expected performance?".

Pro.Lean not only provides the answers to these questions, but allows the sharing of strategic KPI parameters "on-the-fly" across the enterprise organization.

The following picture illustrates the architecture and the concepts upon which Pro.Lean is based:



Picture 1 – Pro.Lean overall structure

Movicon NExT interfaces field devices (PLCs and machine control systems) to provide the value of counters, states and machine events that are manipulated in the database in order to calculate efficiency metrics.

The configuration wizard creates and manages master data needed for performance calculation (i.e. units of measure, manufacturing machines), including the link to real time variables (Movicon NExT Tags), creation of the data loggers to historicise data in the database.

The Pro.Lean SQL Server database makes available to the plant personnel information through standard reports (developed using Movicon.NExT) and database views for further development and creation of custom reports. These views are also used by Movicon NExT for creating real time dashboards (one screen for each production resource managed by the system).

Intended audience

This manual contains a description of Pro.Lean add in for Movicon NExT including the configuration wizard, the SQL database, the standard reports.

The manual is intended for organizational figures within the enterprise dealing with the configuration and maintenance of production master data, and system integrators who want to provide to their customers a tool for analysing performance metrics and production data.

This document does not cover installation and operation of Movicon NExT or how to connect to the individual field devices via I/O Drivers and OPC technology.

1.2. The advantages of measuring production performances

Collecting information in real time from production machines is the best way to measure and consequently improve the performance of production assets. Pro.Lean users will be able to know the actual value of OEE, calculated on a timely manner based on data acquired in real time, and to analyse the downtime causes that determine production losses, which affect the production costs.

Thanks to the analysis of these aspects, users can understand the real causes of efficiency losses of the production system (downtime, slowdowns in production and waste) and implement the necessary corrective actions to reduce inefficiencies, eliminate waste and, therefore, increase productivity.

The advantages of using Pro.Lean are:

- To identify the real causes of inefficiency: the interpretation of the OEE indicators allow users to identify the reasons that impacted negatively on production efficiency.
- To implement the necessary actions for continuous improvement: detailed data, collected and shared within the organization, allow users to focus in a timely manner their attention on those areas in need of improvement in order to increase the performance, supporting a strategic plan focused on continuous improvement.

Monitoring these data users can better understand what is really happening on the production floor. Furthermore, the collection of detailed events can be used to analyse the specific causes of inefficiencies (downtime causes, running slow, ...).

OEE definition

To measure the performance of a production system, Pro.Lean uses the standard model based on the Overall Equipment Effectiveness (OEE) indicator. The OEE model produces a performance evaluation for each area of activity monitored and provides a simple methodology to determine in a timely manner if each production area is producing at its best.

The OEE value can be used to represent the performance of a single production unit over time or to compare the performance of a unit with another. OEE is applicable to any production unit: machine, line or plant.

The three key components that contribute to the calculation of OEE are:

$$\text{OEE} = \text{Availability} * \text{Performance} * \text{Quality}$$

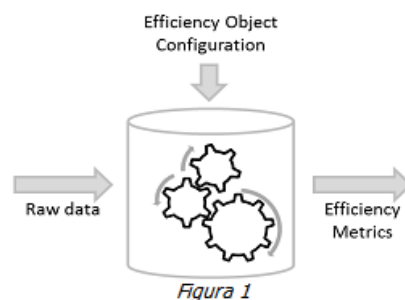
Each of these factors is a number expressed as a percentage and the value of OEE is the product of these three components. In particular:

- Availability is the ratio between the time in which the machine is in production (in running time) and the available time. Available time is defined as the total duration of the shift, minus the stops scheduled by management (such as scheduled maintenance).
- Performance is the effective yield of a machine with respect to the expected performance (ideal cycle time)
- Quality is the ratio between the pieces produced without defects and total pieces produced.

Key elements to measure production efficiency

For any production unit monitored, the control system has to provide a number of counters and signals to Pro.Lean:

- Total products / good products / rejected products
- Recipe (or type of production that can be processed by any single production unit)
- Availability status
- Running status (i.e. production unit is working)
- Downtime statuses (up to 128 for each unit).



Then, the Pro.Lean wizard allows users to configure the master data and context data (machine, recipes, shifts and the relationship between them) to calculate the OEE and other parameters that describe the system from the point of view of production performance effectively carried out (the impact of downtime on the total, causes of downtime, causes of lost productivity ...).

1.3. Getting started: configuring the system

Using the configuration wizard, users can adapt the system to their reality, by defining the operating parameters required by the system to calculate the performance indexes that will be displayed in reports.

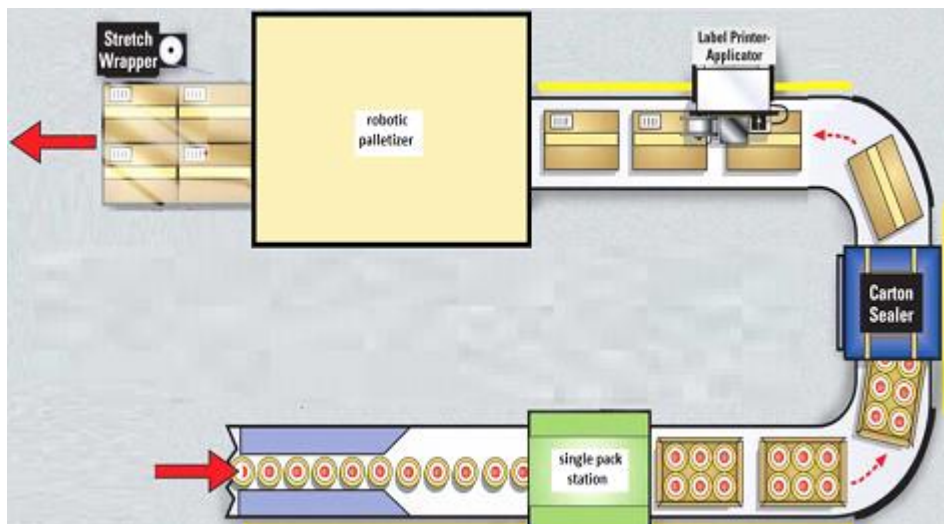
Before entering the wizard users must connect via Movicon NExT to all field devices (PLCs, counters, ...) and define the tags needed for data collection.

The example below shows a packaging line with two machines, in order to provide an idea on how to properly configure Pro.Lean:

- **Packaging Machine (SPS):** this machine receives from the line upstream the single bottles and packs them in boxes. The output of the machine is a single box, containing a number of bottles variable according to the recipe selected by the operator for the machine in a specific moment.
- **Palletizer (RT):** this machine receives the boxes and put them on a pallet. The number of boxes arranged on a pallet depends on the recipe.



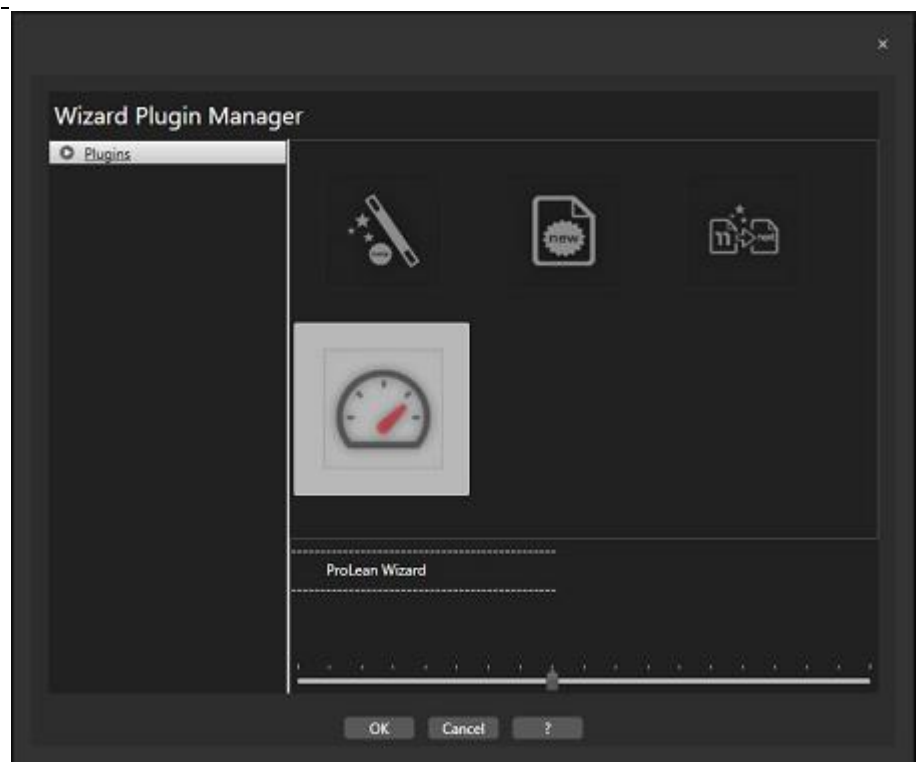
Each of these two machines works at a certain expected productivity rate ("Ideal Run Rate") which depends on the recipe.



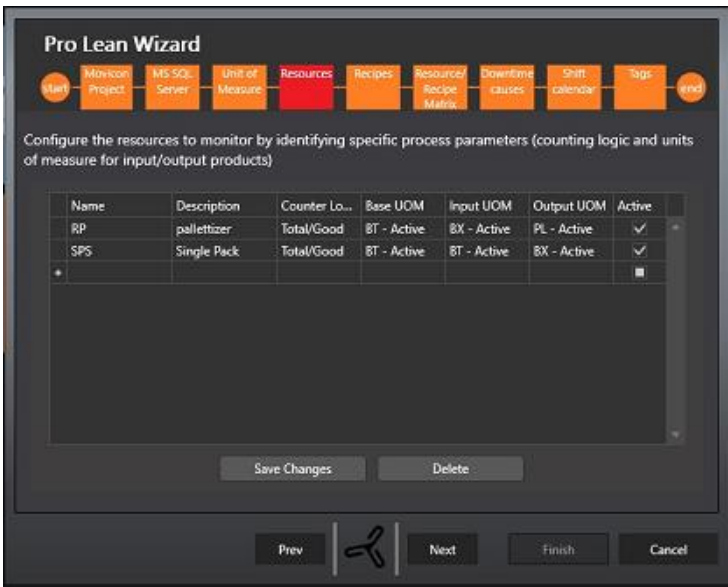
Picture 3 - Example of plant model in Pro.Lean

1.4. Accessing the wizard and understanding its structure

The Wizard is a Po.Lean project configuration tool that is accessed from the wizard manager from within the Movicon NExT environment or from the StartUp page.



The picture shows where to find the command to start the Wizard. All the pages of the wizard are organized with the structure described in the following picture:



Picture 5 - Wizard interface structure

The name of the master data to be configured in each step is displayed in the window header inside the squares.

In the upper part of each window there is a small section of text that provides an overview on the object to be configured and its definition. General data are displayed on the first two rows. When clicking on the columns of the configuration table, below the first two lines, specific messages may appear to clarify the meaning of the selected column.

The table in the centre of the window is used for entering / editing data linked to the object that is being configured. The functions that apply to this table are:

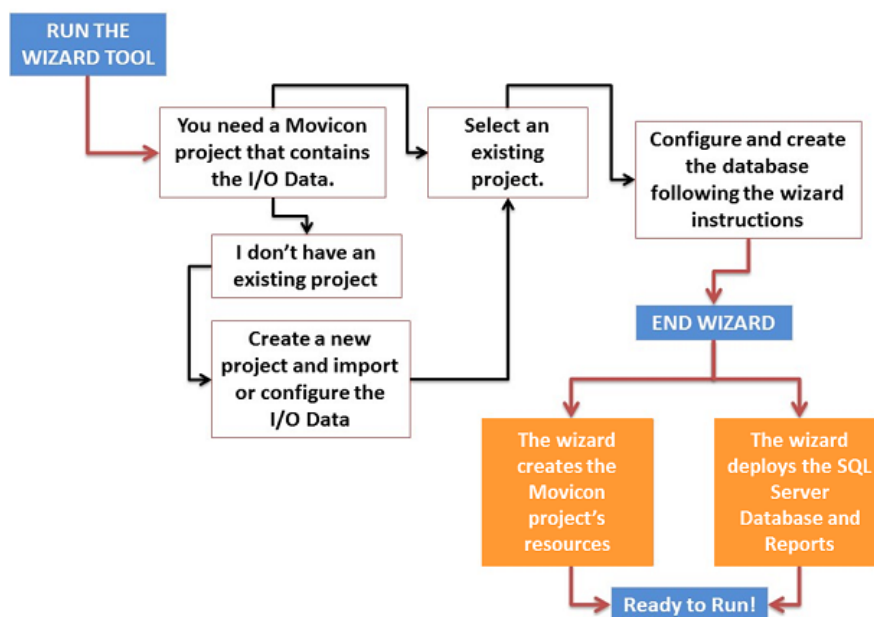
- Save: to save changes into the database
- Delete: to delete the selected row
- Duplicate: this command, if present, can be used to copy the data of the selected row to a new row.

The navigation buttons are located in the bottom area of the window:

- Back: to return to the previous window
- Next: to go to the next window
- Cancel: to exit the wizard
- Finish: this button is active only in the last window the wizard, it saves the configuration defined in the wizard, updates the Movicon NExT project and deploys the standard reports.



The configuration process using the wizard requires a Movicon NExT project previously created to define the data sources and the field tags.



The wizard is structured in different steps, the first ones concerning Movicon NExT and, in particular, the selection of:

- The Movicon NExT project
- The SQL server engine

The second part concerns the configuration of the master data in the database and, in particular:

- Units of measure

- Resources
- Recipes
- Recipes/machine matrix
- Downtime causes
- Shift schedule
- Connecting variables to I/O

1.5. How to use the step-by-step wizard

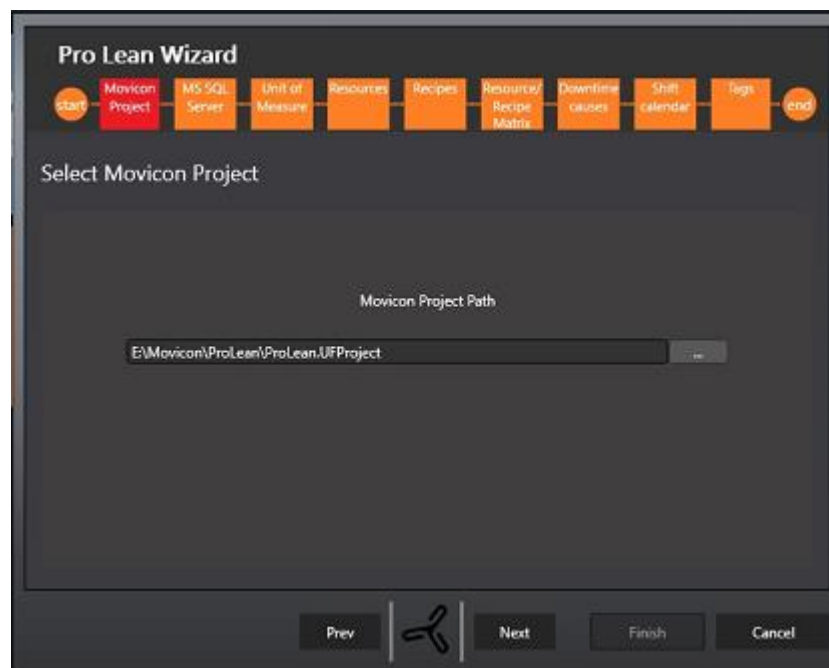
The following chapter describes how to configure the system step-by-step using a series of screens provided by the configuration wizard to set the parameters that are needed to make the system function correctly.

Select an existing Movicon NExT project

The data source is the first thing that must be selected while using the wizard. This is the source in the Movicon NExT project containing the I/O tags from the field. If there are no existing projects, you will have to launch Movicon and create a new one with the desired communication drivers and tags needed for Pro.Lean.



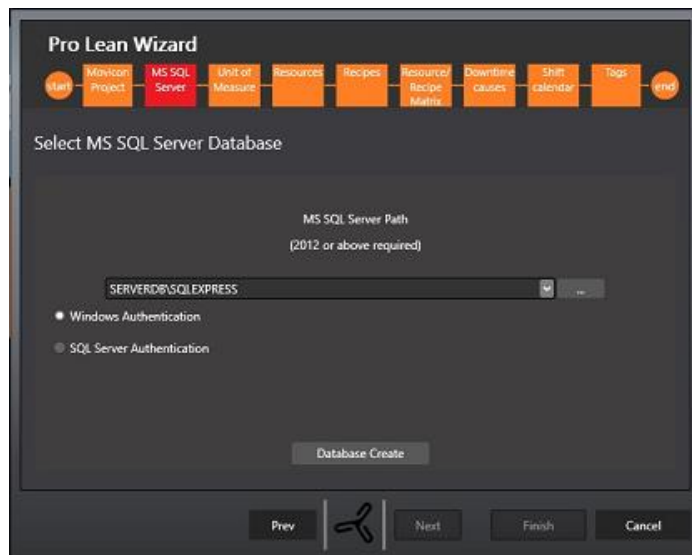
The Movicon NExT project must not be kept open while using the ProLean wizard.



Screenshot 7 - Select Movicon NExT Project

Set SQL connection

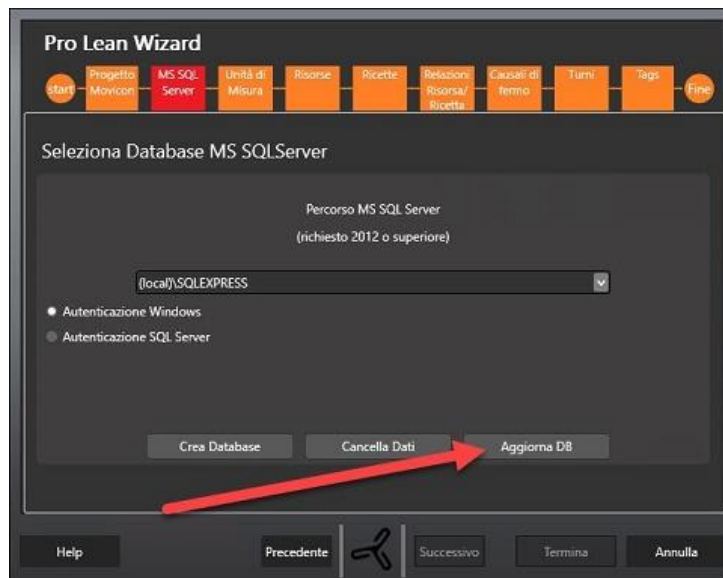
Select the SQL Server database engine among those installed in the system. Pro.Lean uses SQL Server as the DBMS engine for recording data.



Screenshot 8 - Set ODBC connection

Once the DBMS engine is selected and before proceeding onto the next step, the wizard will automatically create the database with the master data to be configured in following steps and the values collected from the field by Movicon NExT. The name of the database will have the following structure: "[Movicon NExT Project Name]_OEE".

The Clear Data button is used to eliminate all the production data from the database while keeping the configuration intact in terms of resources, recipes etc.



The Upgrade DB key only appears when the project's database has become obsolete in respect to that of the Wizard's. Once this key is pressed, the database structure will upgrade maintaining the production data accumulated up to that moment.

Units of measure

In this step users define all the units of measure (UoM) that will be used to model the production plant in Pro.Lean.

It is necessary to define all the UoM needed to configure the production facility so that the entire production line is modelled as well as all the single production machines for which the OEE will be calculated.

To view and properly calculate performance, it is necessary to define the

“Base UoM”: the unit of measure that is common to all stations of the production line and to which each can be related to: a sort of unity of normalization. Usually it refers to the smallest item that is produced by the plant (e.g. bottle, biscuit, can, ...). In the above example the Base UoM would be the single bottle.

Other units of measure are groupings of Base UoM (for example a box of 6 bottles, a tray of cans 12, and a package of 8 biscuits).

It is mandatory to enter at least one UoM to continue to the next step.

UoM Name	UoM Description	Active
BT	bottle	✓
BX	box	✓
PL	pallet	✓
+		■

Screenshot 9 - Units of measure



In the previous example, the units of measure of the packaging line are:

- Bottle [BT]
- Box [BX]
- Pallet [PL].

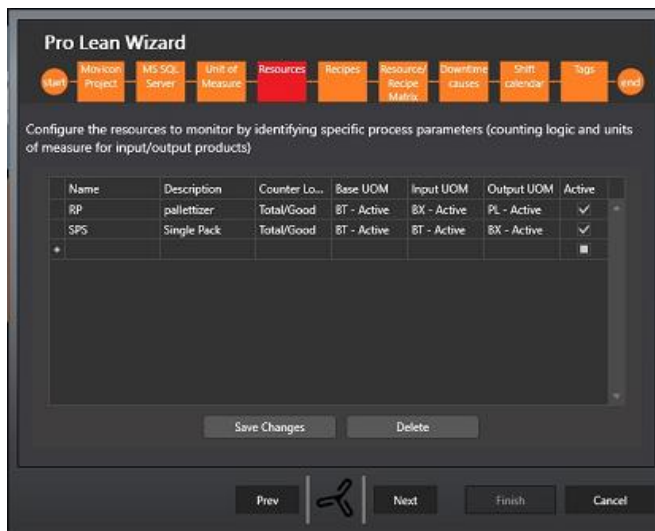
Bottle [BT] can be considered the “Base UoM”.

Each UoM is defined with a code and a description.

Only the rows marked as "Active" will be available for use in all subsequent screens.

Resources (Productive units)

In this step users define the manufacturing resources (productive units) for which Pro.Lean will calculate the OEE identifying the specific process parameters. In particular, users must identify the input and output of each machine, in order to convert the counters acquired (total products, good products and rejected products) to the Base UoM. This allows normalizing the calculations to the Base UoM making the gathered data comparable between the different machines.



Screenshot 10 - Machine master data

Each machine is defined by this set of data:

- **Code:** alphanumeric code (maximum 20 characters) identifying each machine.
- **Description:** enter a description that better defines the measure (maximum 128 characters)
- **Counting rationale:** select from the list the counting logic to be used for the machine. It is possible to acquire for each machine, the total number of pieces produced, the number of good pieces and the number of wasted pieces. It is not necessary to collect all three counters; only two of them are needed and the third is obtained by difference. The logics available in the system are:
 - Total / Good: to be selected if the PLC counts the total number of pieces produced and the good pieces. The system will automatically calculate the value of "rejected pieces" as a difference.
 - Total / Rejected: to be selected if the PLC counts the total number of pieces produced and the rejected pieces. The system will automatically calculate the good pieces as a difference.
 - Good / Rejects: to be selected if the PLC counts both good and reject pieces. The system will calculate the total number of pieces as the sum of these two values.
- **Base UoM:** select the unit of measure which is common to all the machines of the line. This allows comparison between heterogeneous resources.
- **Input UoM :** select the unit of measure used by PLC to count the products entering the machine.
- **Output UoM :** select the unit of measure used by PLC to count the products produced the machine.

Only the rows marked as "Active" will be available for use in all subsequent screens.

Recipes

In this step users define the recipes that can be processed by the previously defined machines.

Every recipe is identified by these parameters:

- **Code:** alphanumeric code (maximum 15 characters) that identifies each recipe
- **Description:** enter a description that better defines the recipe (maximum 50 characters)

- **Input factor:** conversion factor between the counts of input pieces provided by the PLC and the Base UoM. Enter a number (decimals are also accepted).
- **Output factor:** conversion factor between the counts of output pieces provided by the PLC and the Base UoM. Enter a number (decimals are also accepted).

Pro Lean Wizard

Start Movicon Project MS SQL Server Unit of Measure Resources **Recipes** Resource/Recipe Matrix Downtime causes Shift calendar Tags End

Configure all the recipes/jobs that can be processed in the plant, by specifying, in particular, the multiplication factors, namely the relationship between outgoing and incoming products (e.g. 9 pieces in input are transformed into 3 outgoing boxes)

Ratio between output products counted in its typical unit of measure and output products counted in the base UOM. I.E. if the base unit of measure is the single product and the machine produces boxes containing 3 packs (of 8 products each), the multiplicative factor is set to 24

Name	Description	Input Factor	Output Fac...	Active
BOX-6	box of 6 bottles	1	6	✓
PAL-8 - BOX-6	pallet of 8 box	6	48	✓
+				■

Save Changes Delete

Prev Next Finish Cancel

Screenshot 11 – Recipes



In the absence of a recipe management system for the production machine, at least one default entry must be set with input and output parameters set to 1.

In the previous example, set these recipes:

- BOX- 6 (for SPS): Box containing 6 bottles
- PAL – 8 – BOX - 6 (for PL): pallet with 8 boxes (each containing 6 bottles)

Parameters to be set therefore are:

Recipe	Input Factor	Output Factor
Box 6	1	6 (Considering that the output is a box with 6 bottles)
Pal 8 Box 6	6 (Considering that the input is a box with 6 bottles)	48 (Considering that the output is a pallet with 8 boxes of 6 bottles each)

Only the rows marked as "Active" will be available for use in all subsequent screens.

Recipe/machine matrix

In this step users define the relation between recipes and machines previously defined. Only rows marked as "Active" in the previous steps are made available for use in this step.

The following data must be set in each row:

- **Recipe:** select a recipe from the list

- **Code:** input the alphanumeric code used in the PLC to identify the previously selected recipe for the selected machine (maximum 15 characters)
- **Ideal Run Rate:** input an integer which represents the expected productivity of the selected recipe on the selected machine expressed in Base UoM. This number depends from the machine: the same recipe can have different IRR depending on the machine on which it is produced.

Pro Lean Wizard

start Movicon Project MS SQL Server Unit of Measure Resources Recipes **Resource/Recipe Matrix** Downtime causes Shift Calendar Tags end

Associate each configured machine with all possible recipes that can be processed on it. For each association created declare the expected productivity (expressed in base pieces / hour)

Resource: RP

Recipe	Recipe Code	Ideal Run Rate	Active
PAL-8 - BOX-6	1	7200	✓
+			■

Save Jobs Delete

Prev Next Finish Cancel

Screenshot 12 - Recipe/Machine matrix

In the previous example, the recipe BOX-6 is coupled to SPS and PAL-8-BOX-6 to PL. In particular:

- SPS in ideal conditions can produce 20 boxes / min, therefore its expected productivity (in Base UoM) is calculated as follows:

20 (Number of boxes) * **6** (Number of bottles in each box)* **60** (number of minutes in one hour) = **7200 BT/ora**

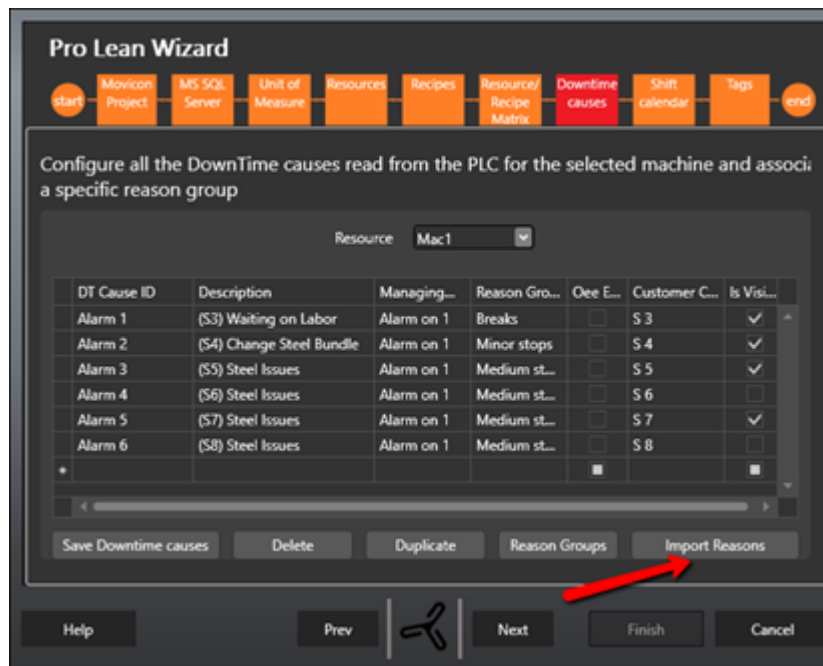
- PL in ideal conditions can produce 2,5 pallet / min, therefore its expected productivity (in Base UoM) is calculated as follows:

2,5 (Number of pallet) * **48** (Number of bottles in each pallet)* **60** (number of minutes in one hour) = **7200 BT/ora**

Only the rows marked as "Active" will be available for use in all subsequent screens.

Downtime causes

Select a machine and define the downtime causes related to it. It is possible to define up to 128 downtime causes for each machine and associate each cause to a reason group.



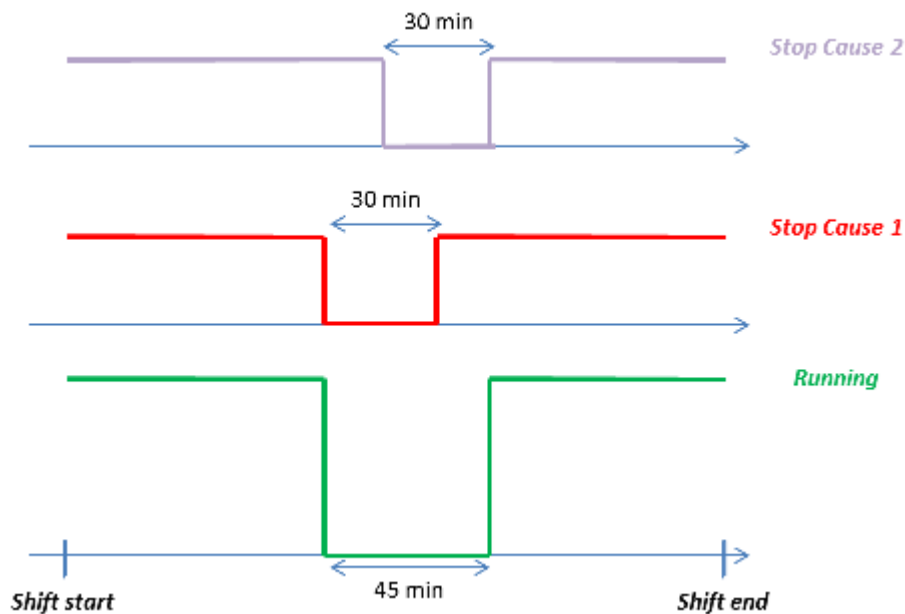
Screenshot 13 - Downtime causes

Each downtime cause is defined by these parameters:

- DT Cause ID: select from the list the downtime ID. In the list there are 128 available downtimes. It is not possible to select the same ID more than once for each machine.
- Description: enter a description that better defines the recipe (maximum 128 characters).
- Rationale: select the logic that the PLC uses to communicate the alarm status for that downtime cause (alarm is active if the variable from the PLC equals 0 or 1)
- Reason Group: select the reason group to which the downtime cause is associated.
- Available groups are: Man, Machine, Material, and Organization. The grouping allows better understanding of which causes contribute to determine loss of production efficiency.

It is recommended that the downtime events read from the PLC are active one at a time, i.e. only one downtime cause triggers a machine stop. This will ensure that any downtime or loss of productivity shown in the Pareto graphs actually correspond to the times calculated for OEE.

As shown in the following example, on an 8-hour shift, it should be noted that the machine has stopped for 45 minutes. The downtime causes must be mutually exclusive; otherwise the sum of the two downtime causes will not be consistent with the time in which the production status is set to 0. In fact, the sum of the stop time (production status to 0) is 45 minutes, but the sum of the contributions of two distinct downtime causes is 60 minutes.



Screenshot 14 - Example of downtime cause calculation

In this screen there is also the Duplicate button that can be used to create a new reason for the stop that has characteristics similar to an existing one.

When duplicating, Pro.Lean creates a new row with ID following the last one created and a description copied from the previous one followed by the suffix "(-2)": users must then change the description before saving.

Once that the configuration of downtime causes is completed for all the machines, press Save and Next. The wizard will warn if there are some machines without associated downtime causes. Press YES if this is correct otherwise select NO to complete the configuration.

When data entered in the table are saved, the description, the logic and the group can be modified.

Importing causes

The downtime causes can be imported from the excel file with the following formats:

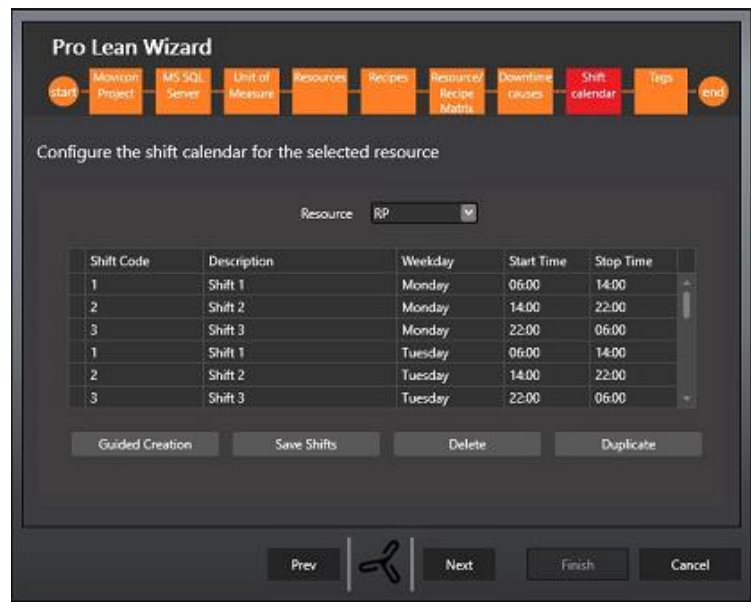
Costumer DT code	DT Description	DT Category	Selected
S1	(S1) Waiting for Fork Lift	Minor stops	-
S2	(S2) No Materials	Minor stops	-
S3	(S3) Waiting on Labor	Breaks	YES
S4	(S4) Change Steel Bundle	Minor stops	-
S5	(S5) Steel Issues	Medium stops	YES
S6	(S6) Steel Issues	Medium stops	YES
S7	(S7) Steel Issues	Medium stops	YES
S8	(S8) Steel Issues	Medium stops	YES

- Customer DT code must be unique: causes with the same customer code of others will not be imported
- DT category (group), if such group does not exist, one will be created
- Selected, if YES, the cause will be imported.

Attention! The spreadsheet must be given the 'Reasons'
Cause groups can also be managed with Wizard by pressing the button with the same name.

Shift calendar

In this step users can configure the shift calendar for each active machine. It is possible to define up to 4 shifts in a day. Shifts can span two days.
If there is no need to manage a shift calendar, users must create a single shift for the first machine with a start time of 00:00 and then copy this calendar on the other machines, using the Duplicate button.



Screenshot 15 - Shift configuration



Screenshot 16 - Creating Shift Calendar

The Guided Shift Creation function helps users to configure the shift calendar by entering the number of shifts and the start time, the software will automatically generate shifts for all days of the week.



For example, for configuring the shift calendar for the "conveyor belt" that works on 3 shifts per day, user must select 3 from the list on the top of the screen. The Pro.Lean Wizard will create a row for each shift, with a progressive code uniquely assigned. At this point the user must only enter the start time for each shift (using the format HH: MM).

When saving, the shift calendar is associated to the machine selected for each day of the week. The shifts are defined for all the days of the week including public holidays: 'work days' are not identifiable. This is due to the fact that programmed nonworking periods (downtime) are identified by each machine's 'Availability status' and acknowledged by the PLC with the 0 value.

In this way, if the machine operates work activities outside normal working shifts (such as overtime performed on a Sunday, when usually the plant is shut down), the system collects data anyway.

Use the Duplicate function to generate the calendar of a machine that has similar characteristics to another one already created.

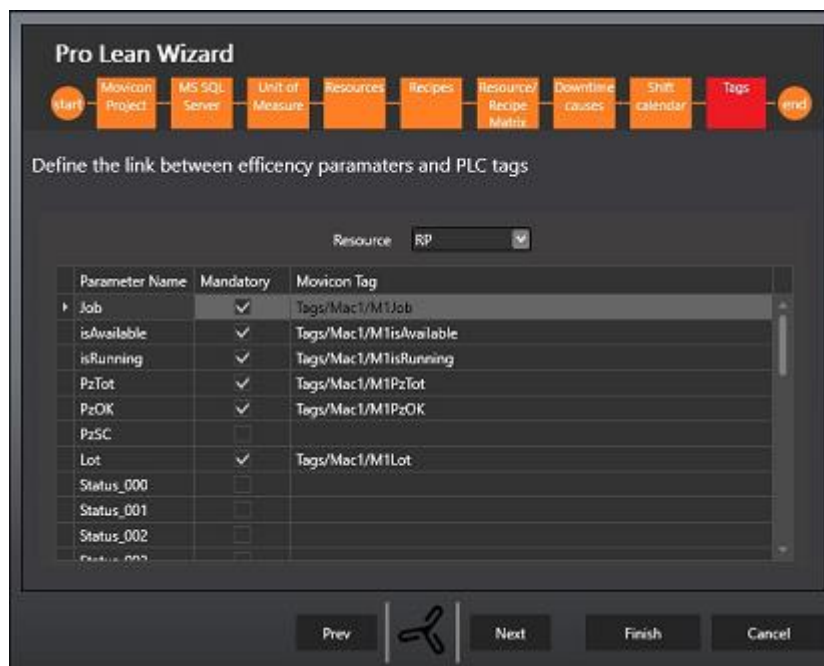
If the user generates a schedule for a machine that already has one, the system displays a warning message: it is possible to overwrite the existing one. The new calendar will be active from now on.

Connecting variables to I/O

At this point all the objects required for the calculation of OEE have been configured.



The last step is to connect the variables to the PLC tags that have already been defined in Movicon NExT before starting the wizard.



Screenshot 16 - Connecting variables to I/O

Select a machine from the drop-down list (only active machines are listed) and assign the Movicon NExT tags to the parameters listed in the table (not all parameters are mandatory). The table is structured as follows:

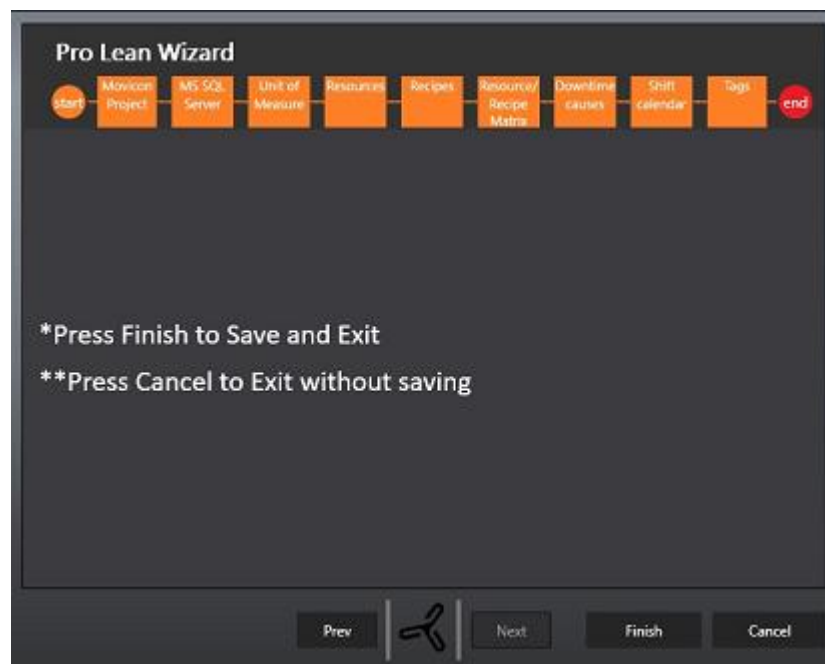
- Parameter name: read-only field in which all the available parameters are listed
- Mandatory: in this column a flag indicates if the parameter is mandatory or not. In particular, this flag for the three parameters total /good/ rejected pieces varies according to the "counting logic" selected for each machine.
- Movicon Tag: select the I/O tag to be assigned to the parameter. The list contains all the tags available in the Real Time DB of the Movicon NExT project selected at the beginning of the wizard.

In order to perform downtime analysis, also connect the downtime (alarms) parameters to the I/O tags.

Ending the wizard: synoptic creation and Movicon NExT project update

This last screen activates the automatic creation of one Movicon NExT synoptic for each configured (and active) production resource. The synoptic shows the real time trend of Key Performance Indicators (KPIs), and OEE in particular, while historical analysis is performed by the reports.

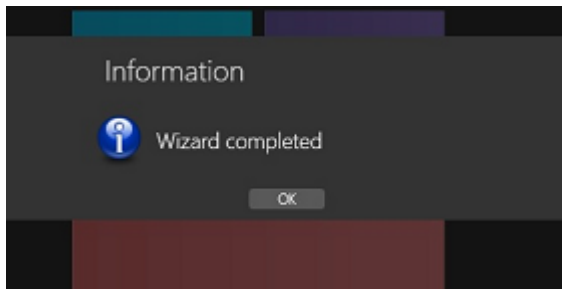
At the end of the procedure a LeanText.csv file will be copied to the project containing the Italian translation of strings used in objects created with the wizard. This file can then be imported by the Movicon NExT Texts resource, containing the integrated languages you wish to use in the project, to create a text table for ProLean use.



Screenshot 17 - Movicon NExT synoptic and reports deploy

When the Finish button is pressed, the Movicon NExT project will update with the plant model as configured in the wizard.

At this point it will be necessary to wait a few minutes until the all the objects are created. When completed a confirmation dialog will appear like the one in the screenshot below:



Screenshot 18 - Wizard procedure completed successfully

1.6. Movicon.NExT

The following chapter provides some general information about the Movicon.NExT tags required for Pro.Lean to function correctly.

Configuring variables in Movicon.NExT

Before launching the wizard it is necessary to create a Movicon.NExT project to define the tags to be assigned to the parameters defined in the wizard.

The tags must be configured using the appropriate I/O Drivers according to the specific protocols used by field devices, or via OPC.

The tags required for the OEE calculation are:

- **Machine Available:** this status indicates that the production machine is available for production. The OEE value will be affected only when the machine is available and not when the machine is unavailable. Data Type: Boolean.
- **Machine Running (RUN):** this indicates that the machine is running. It is very important to distinguish what mode it is in. When the machine is available but not running, the availability value will decrease. Data Type: Boolean.



Caution! make sure that the values received from the field are congruent and not contradictory. For instance, machine cannot be running when unavailable.

- **Job:** represents the code that identifies each recipe on each machine and the target performance. Data type: string (max char 100)
- **Total pieces:** absolute counter of TOTAL pieces produced. Data type: unsigned integer.
- **Good pieces:** absolute counter of GOOD pieces produced. Data type: unsigned integer.
- **Rejected pieces:** absolute counter of REJECTED pieces produced. Data type: unsigned integer.

The names of the variables corresponding to these parameters can be defined as pleased. However, it is advisable to use a name that clearly identifies what the variable refers to in order to make it easier to assign I/O data when using the wizard.

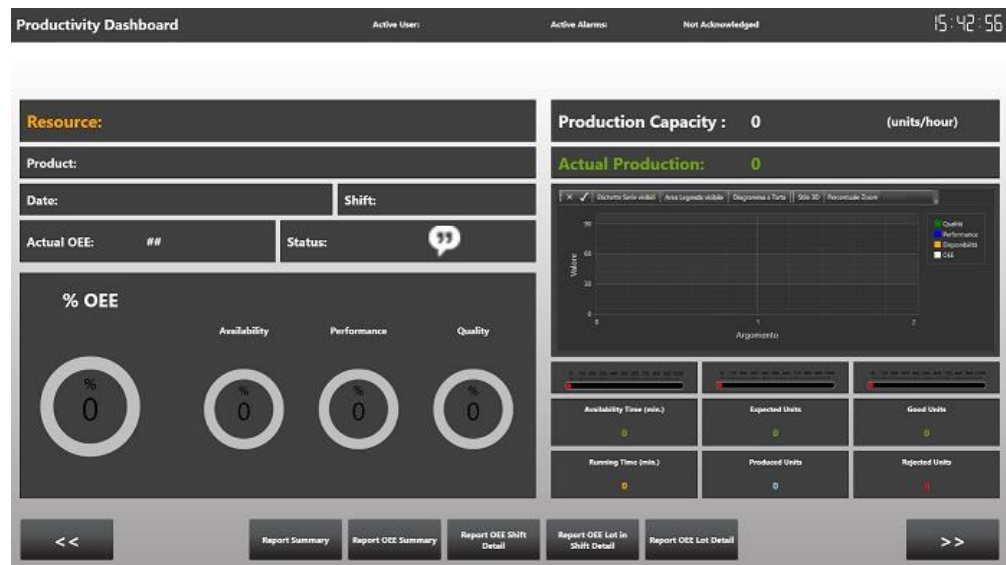
OEE View: To facilitate handling tags with the wizard, an OEE view can be created and associated with all the tags that are only used in ProLean. Therefore, the tag selection list displayed in the last step of the wizard will only show those needed for ProLean and all the rest used in the entire project that already structured could run into the millions.

The wizard will end with the creation in the Movicon NExT project selected as "ORIGIN OF DATA" of all the structure variables in the Real-time DB. Movicon NExT automatically creates the folder OEE and the structures that represent each machine. The structure representing a specific machine is called in this way: "OEE_ [Machine code defined in the wizard]".

Among the members of the structure is the CommStatus variable that represents the state of communication between Movicon NExT and field instruments: the variable equals 1 when the instruments in the field are communicating and is, therefore, possible to read the tag was "Availability" (Available).

However, it is always possible to create scripts to report any personalized communication error.

The following picture represents the standard synoptic created for every active machine configured in the wizard to display the data in real time and for consulting the report.

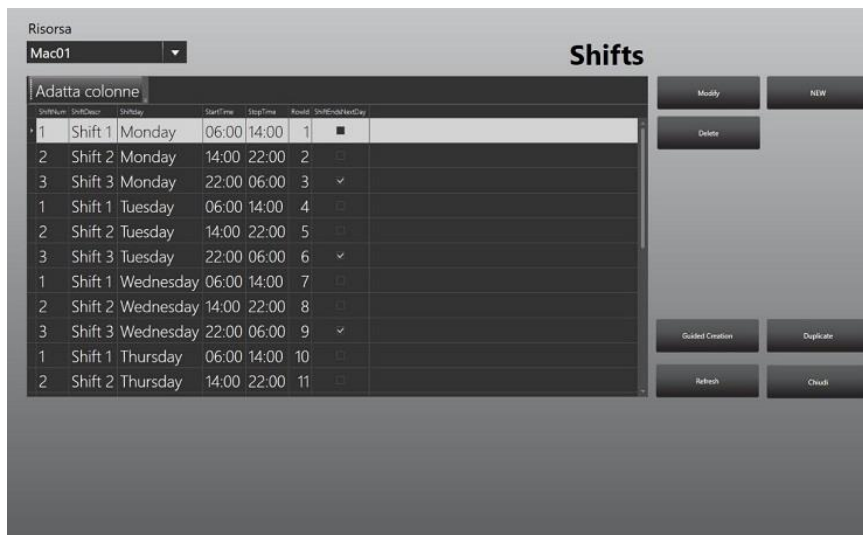


Screen shot 19 - Pro.Lean real-time dashboard

While in the screen shot below you will see two useful screens to configure the performance target (Job Rate) and the work shift timetable configuration at runtime.



Screen shot 21 – Job rates setting at run time – ScreenOEEJobRates screen



Screen shot 22 – shift configuration settings – ScreenOEEShifts screen

A view is available in the database (vwOeeSummary) which can be used to create a custom SCADA interface to show data relating to production KPI as described beforehand.

This view contains detailed data (meters, times, shifts, estimated productivity and KPI values) relating to the recipe run in the shift for each machine.

1.7. Pro.Lean standard reports

Pro.Lean standard reports are designed to allow a complete and intuitive data analysis of production performances.

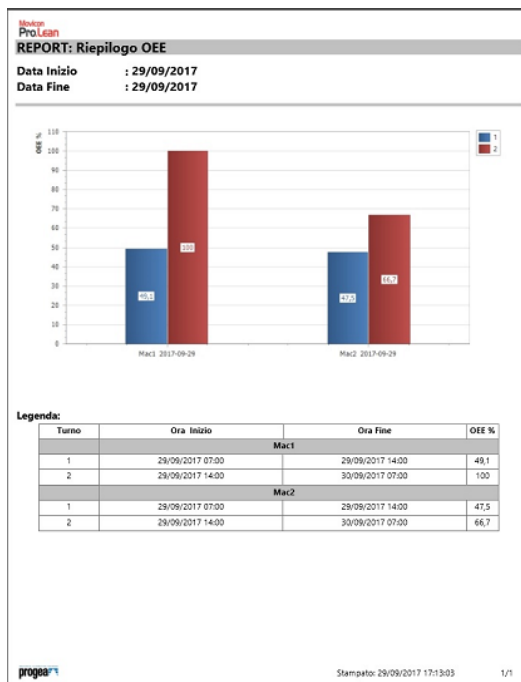
To view the reports, users can use the access buttons available in the Movicon NExT synoptic. Standard reports are described below. An advanced user can modify the structure using Movicon NExT developing environment. Each report can be exported locally in pdf or xls, or printed.

OEE Summary table

In the parameter setting area choose or enter the start and the end date on which to conduct the analysis.

This report shows the details of the production performance, sorted and totalled by machine / shift.

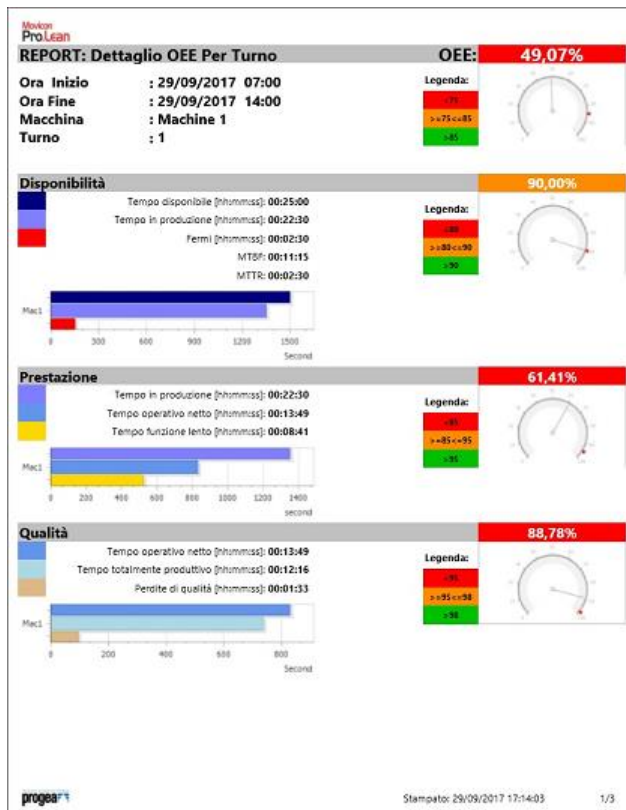
A display of this type is effective for those who want to quickly evaluate the actual performance of each machine, detailed for the different shifts of the workday. Above each histogram bar the value of OEE is shown as a percentage, with the colouring based on the comparison with the universally recognized standards.



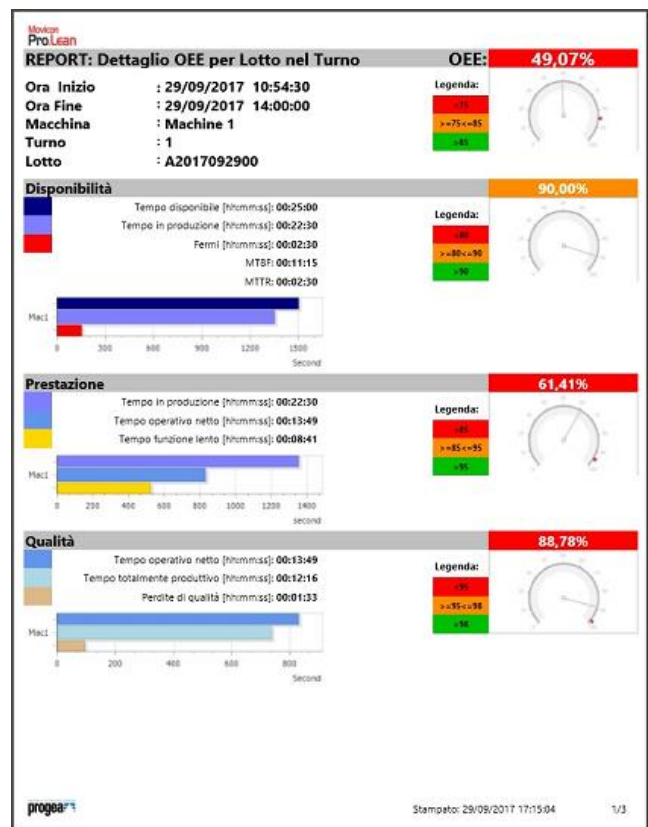
Picture 21 - OEE summary report

OEE details

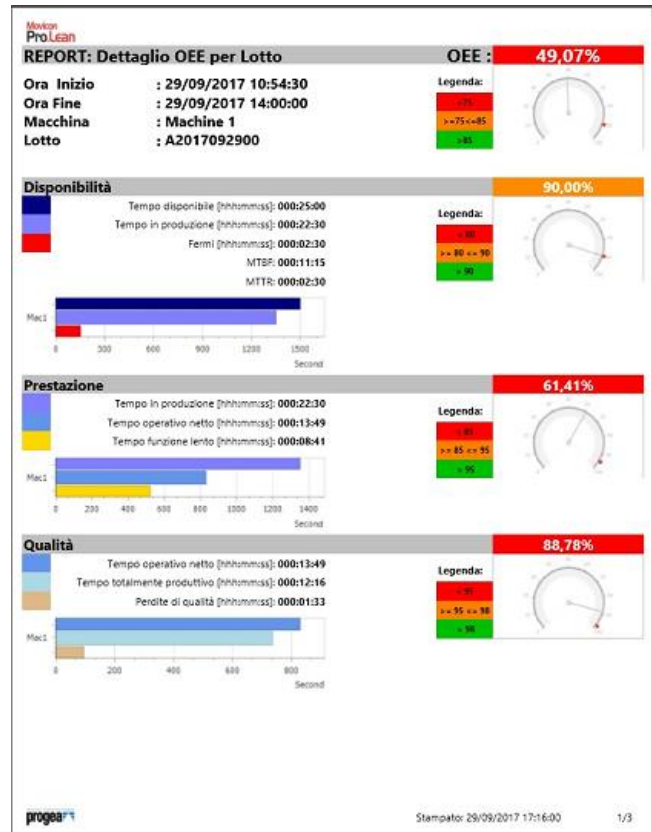
This report shows a schematic summary of availability, performance and quality for the shift and the machine selected in the header.



This report shows a schematic summary of availability, performance and quality for the shift , machine and lot selected in the header.



This report shows a schematic summary of availability, performance and quality for the machine and lot selected in the header.



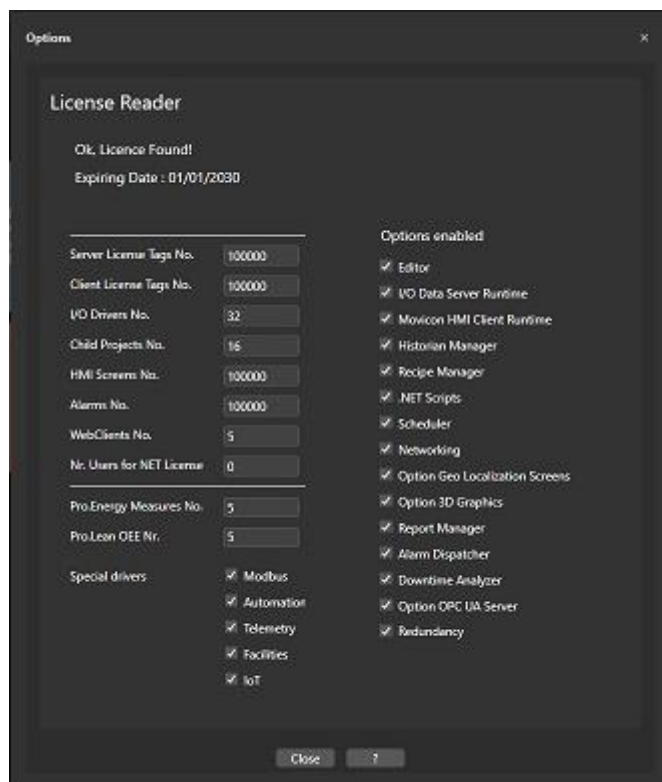
The report shows details for each KPI:

- The percentage value with background colour that varies according to the actual value compared to the expected value (the legend provided under the name of the KPI defines the meaning of the colour).
- Horizontal bar chart which displays how time is split on the various OEE components (for example, in the availability part: for how long it is available and for how long is running). This is the typical OEE waterfall display that provides a quick and intuitive way to assess which are the more important causes of inefficiency.

1.8. Pro.Lean license manager

The Pro.Lean module is an optional Movicon NExT license functionality that determines how many production resources can be managed.

By using the Find License item from the Movicon NExT File/Dongle menu. You will be able to check how many production resources have been enabled.



Picture 24 - Licenses

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