



**Movicon.next**<sup>TM</sup>  
Automation Platform.next generation



**Movicon NExT**  
**18.0 Proenergy**  
Ver.3.4.268



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# 1. Pro.Energy

## 1.1. What is Pro.Energy?

Pro.Energy is the Movicon add-in for energy management, that enables users to collect data of energy consumption from energy meters, record them in the database and analyze them through a series of pre-configured reports or through the dynamic analysis thanks to the dedicated client.

Using web-based standard reports, designed according to the criteria of comprehensiveness and user-friendliness, users can record, display and analyze energy performance indicators (EnPI, Energy Performance Indicators).

Plant personnel or energy manager will be able to perform all the analysis of consumption for the main energy vectors such as:

- Water = m<sup>3</sup>
- Compressed air = m<sup>3</sup>
- Gas = sm<sup>3</sup>
- Electric energy = kWh or kVar
- Steam = sm<sup>3</sup>

A standard unit of measure has been defined for each energy vector so that one measurement can be compared to another.

Pro.Energy can also be used to define environmental measures (temperature, humidity, illumination, etc.,) to record and use as references for energy carriers: for example the monitoring of external temperatures while calculating gas consumption during certain periods.

Pro.Energy will enable users to identify the best opportunities for efficient management of company assets from the point of view of energy and to keep consumption monitored and controlled with the aim of optimizing it.

Equipped with effective analysis tools, Pro.Energy is a powerful aid for users to identify opportunities to improve efficiency and to monitor the effects of any corrective actions implemented.

Measuring is essential to eradicate any preconception about energy consumption. Knowing exactly where, when and how much is wasted helps to implement the necessary corrective actions and save energy. This results in a quick return on the investment made for installing the system.

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

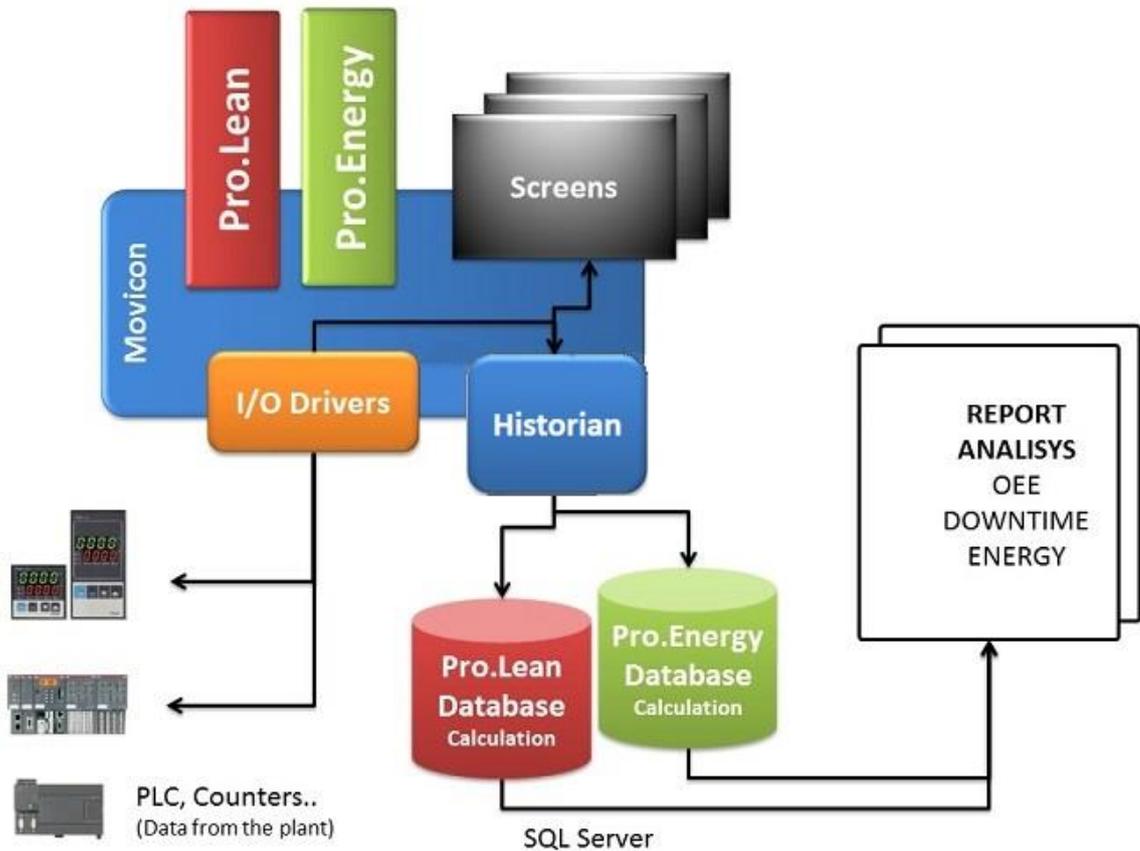


Diagram 1 - Pro.Energy overall structure



The Movicon software handles the connectivity with field devices (e.g. PLCs, energy meters) and provides values which are, then, managed and manipulated in the database in order to calculate various indicators of energy performance (EnPI).

A Wizard will automatically create all the objects needed to manage data, assign field tags, create historian prototypes to record data on DB and all else that is needed to configure the system correctly by definition of context of use: energy vectors, measures, energy consumption thresholds.

The sampled energy consumption data, collected by Movicon from field measuring instruments, are recorded on the Pro.Energy's SQL Server database. This data is then appropriately cross-referenced and compared with previous data in the context defined with the wizard. The resulting information is then shared with factory personnel on standard Movicon.NExT reports. In addition Movicon.NExT graphically displays real-time data on screen by connecting calculated data to dynamic tags using designated database views, as documented in the 'Movicon' topic, which contain data such as units of measurement, exceeded thresholds of each meter or counter and current day energy consumptions.

### Intended audience

This manual contains a description of Pro.Energy add in for Movicon including the configuration wizard, the SQL database, the standard reports and the client for dynamic analysis using pivot table.

The manual is intended for users which operate in the field of energy analysis and system integrators who want to provide to their customers a tool for analyzing energy consumption data.

This document does not cover installation and operation of Movicon nor how to connect to the individual field devices via I/O Drivers and OPC technology.C.

## 1.2. The advantages of measuring energy consumption

The collection of real-time data is the best way to improve energy efficiency. The use of Pro.Energy allows users to gain knowledge of the actual energy consumption levels, comparing them with historical data. Having the possibility to monitor energy data users will get a true picture of what is really happening to their assets. Once the detailed data are collected, users will be able analyse them to identify improvement areas and causes of inefficiency. This will support users in decision making and in identifying and implementing improvement plans.

Benefits obtained from the use of this type of solution are:

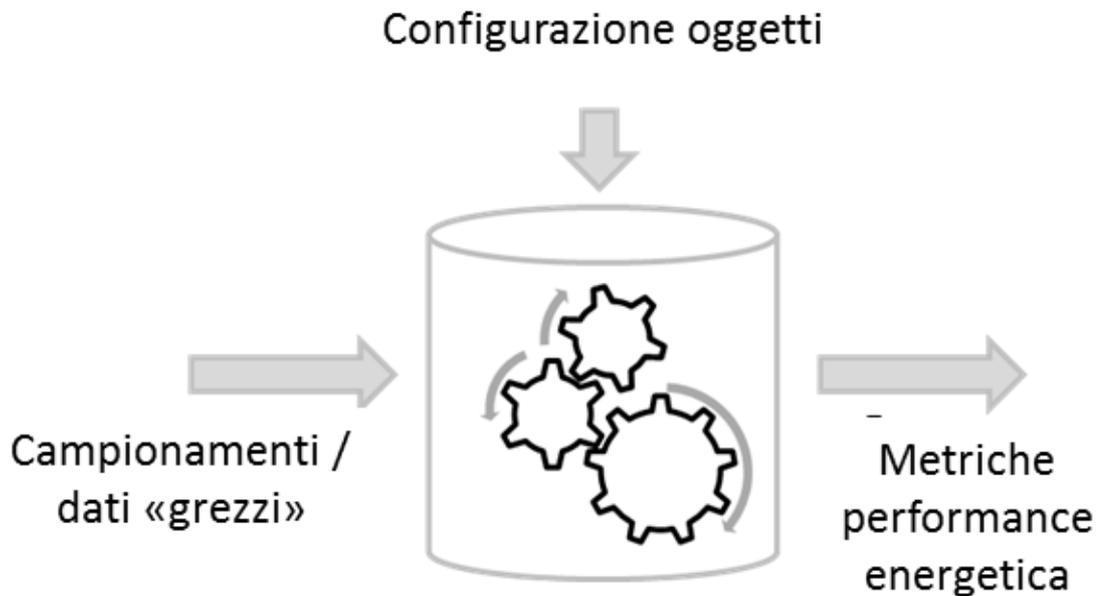
- increased visibility into energy consumption data;
- optimization of existing energy systems;
- identification of areas where energy can be saved;
- acquisition of skills required for the implementation of a systematic method of managing energy efficiency;
- immediate reaction to alarms and peaks in energy demand;
- monitoring of EnPIs;
- accurate costs allocation;
- control of billing and optimization of supply contracts;
- ISO 50001 certification.

By having the possibility to monitor energy data, users can get a realistic picture of what is going on in their company assets. Once the detailed data is collected, users can then analyse them to detect the the areas and causes of inefficiency. This will enable them to identify ways and make the right plan of action to improve efficiency where needed.

### Context definition for energy management

The control system must first of all be capable of periodically providing, for each component of the system to be monitored, the consumption data ("raw data").

If this is possible, users can use the wizard to create the objects and context or master data (unit of measurement, thresholds, physical measures, costs and groups) in order to calculate consumption with a granularity of 15 minutes.



### 1.3. Getting started: configuring the system

Using the configuration wizard, users can adapt the system to their reality, by defining the various energy meters, the consumption parameters and the reports.

Before accessing the wizard users must connect by means of using Movicon to the all tools from which they wish to collect data and create the variables in Movicon that are needed to communicate with the field meters and collect consumption data. These variables will then be available for associating the physical measures defined in the wizard.

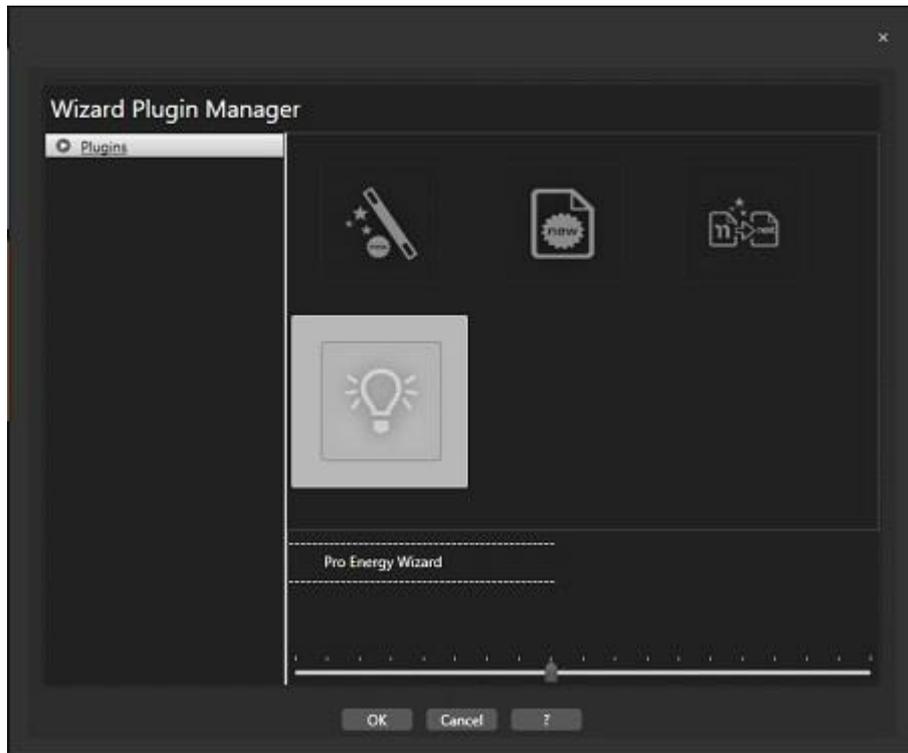


The variables created in Movicon for recording energy consumptions must be INTEGER or FLOAT type and higher or equal to 0. It is therefore advised to create specific script for each tool type (model and make), so that all the data are managed correctly by the wizard;

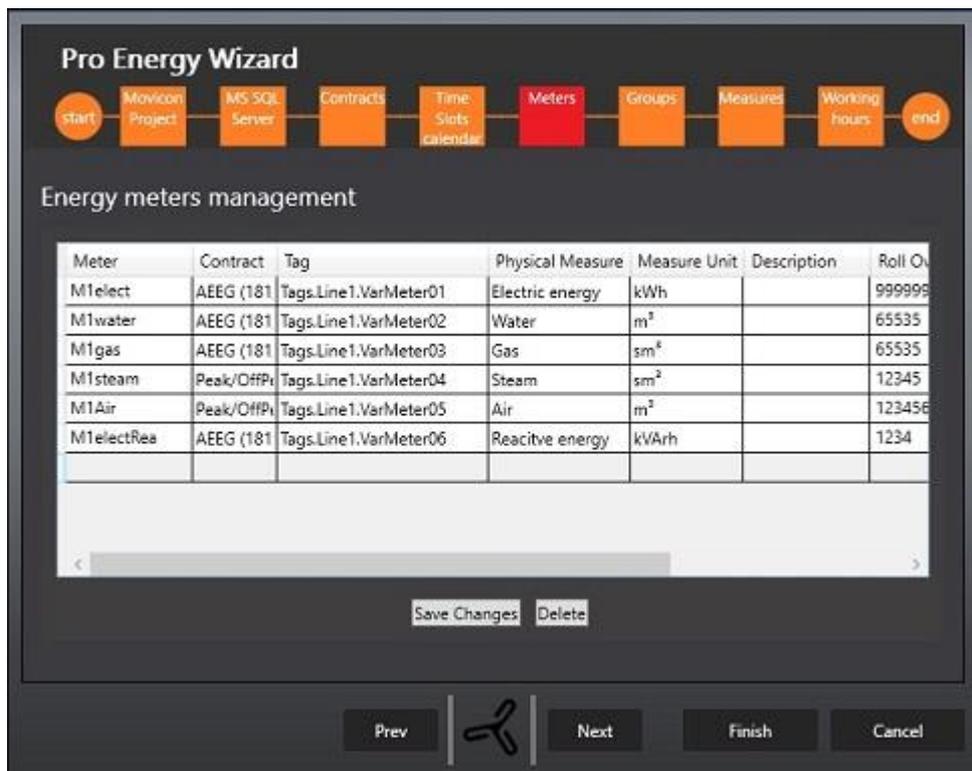
#### Accessing the wizard and understanding its structure

The Wizard is the Pro.Energy project's configuration tool and can be accessed from the Wizard manager within the Movicon Next environment or from the Movicon NExT StartUp page.

All the pages of the wizard are organized with the structure described in the following picture:



All the Wizard's screen pages are organized using the structure shown in the screenshots below:



The name of the data being configured is displayed in the highlighted square at the top of the screen. 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. When positioning the cursor on various elements displayed on screen, messages will show giving detail of the column selected. The table in the center 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** Changes: to save changes into the database
- **Delete**: to delete the selected row in table

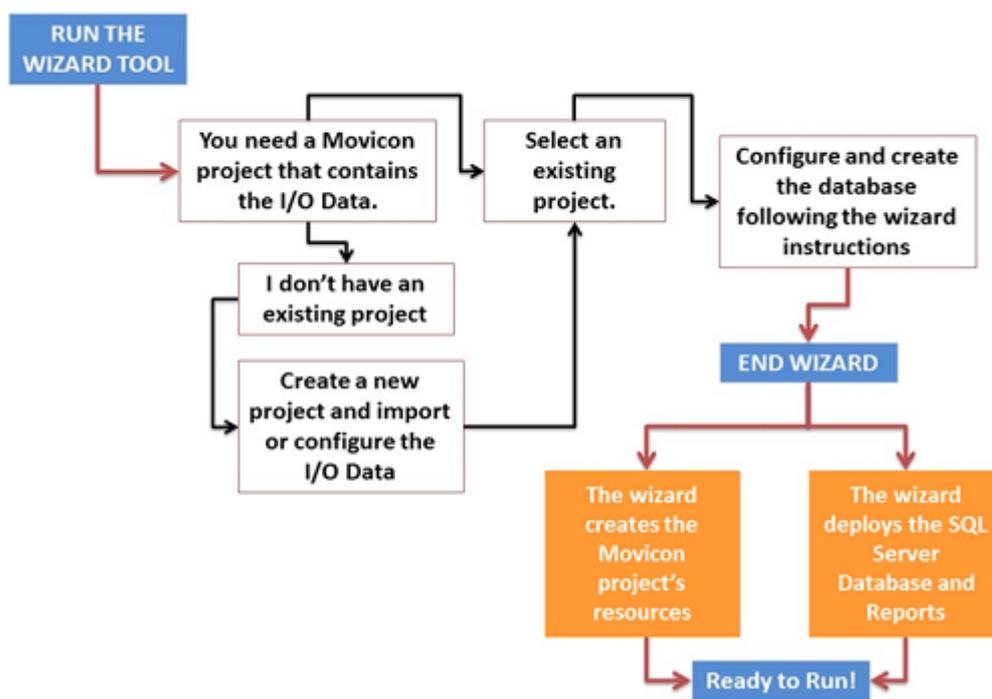
The navigation buttons are located in the bottom area of the window:

- **Back**: to return to the previous window
- **Next**: to go to the next window
- **Cancel**: to exit the wizard
- **Finish**: this button is active as soon as possible, it saves the configuration performed in the wizard, updates the Movicon project and deploys the standard reports.

## 1.4. System configuration using the Wizard



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



The wizard is structured with a step-by-step procedure. The first part relates to Movicon and, in particular, the selection of:

- The Movicon project
- The SQL server engine)

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

- Groups
- Contracts / Cost of energy supply
- Physical measurements
- Environmental measurements
- Work model management

## 1.5. The steps of the wizard

The following chapter describes how to configure the system using the guided steps of the configuration wizard, which provides a series of screens for setting the parameters required for the proper functioning of the system.

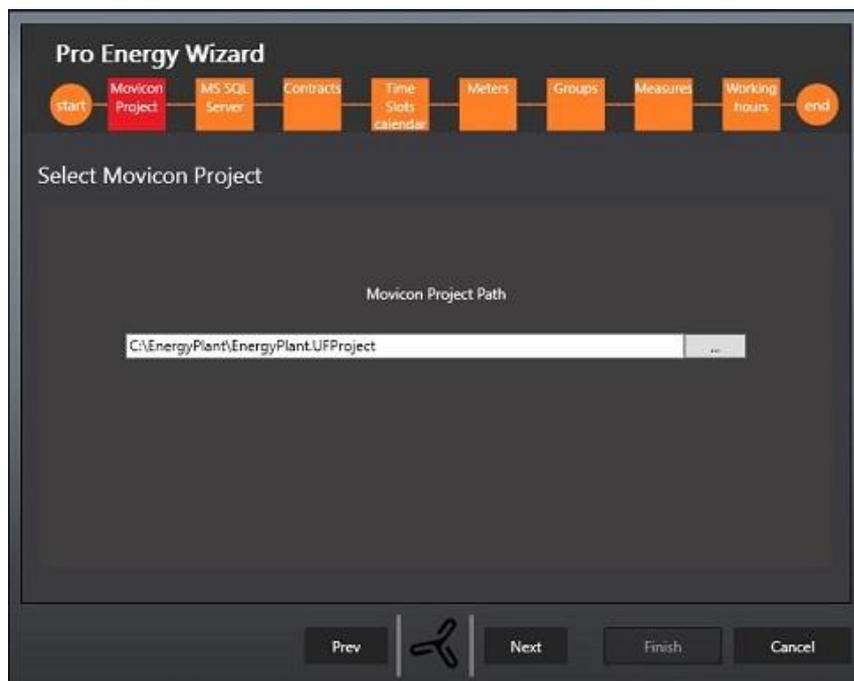
### Select an existing Movicon project

The first thing to do when using the wizard is to select the data origin, i.e. the path where the Movicon project containing the I/O tags is saved.

If a Movicon project does not exist, launch Movicon and create a new project by inserting the desired communication drivers and configuring the I/O tags that are needed for Pro.Energy.



Warning: The selected Movicon Next project must not remain open in Movicon while using the ProEnergy wizard.



Screenshot 6 - Select Movicon Project

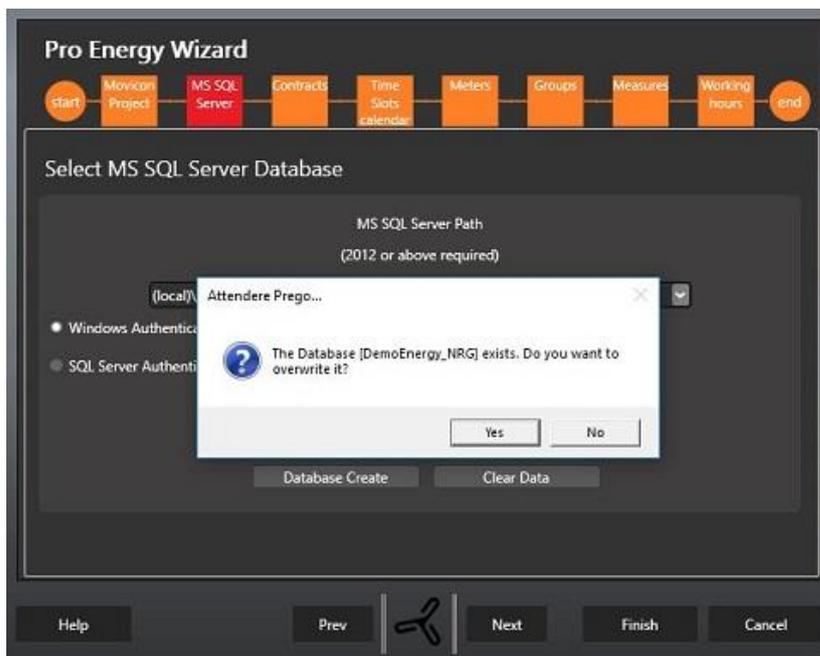
### Set SQL connection

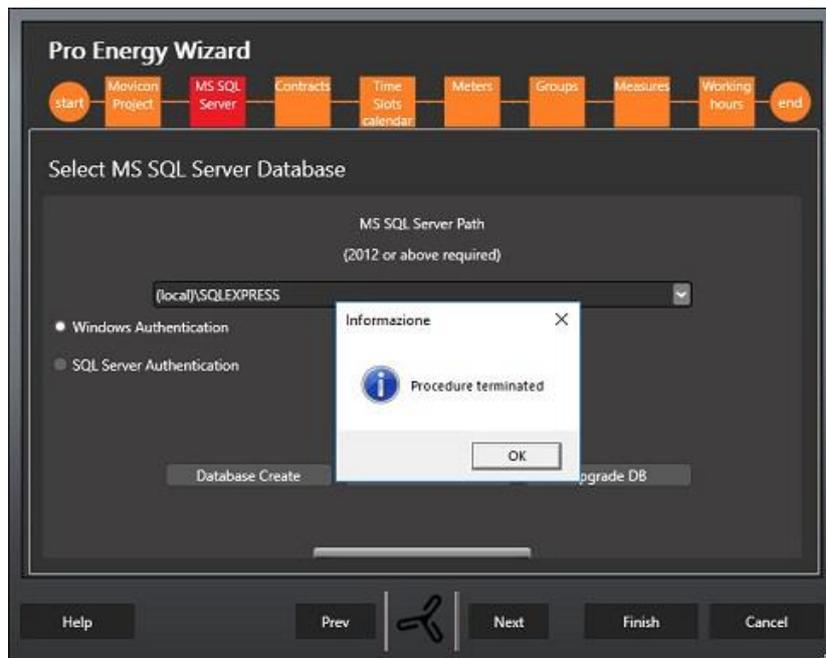
After having selected the Movicon project, select the SQL Server database engine from those installed in the system. Pro.Energy uses SQL Server as the DBMS engine for recording data.



Screenshot 7 - SQL connection configuration

The Create Database button is used to create the database that will contain the data to be configured in the next step and also the data samples collected by Movicon. The name of the database will be structured as: "[NomeProgettoMovicon]\_NRG". You will not be able to continue on to the next step without an existing database. If the database you are trying to create already exists, the following message will show.





The **Clear Data button** is used to delete all the production data from the database while keeping the configuration intact in terms of meters, measure units and contracts.

The **Upgrade DB** only appears when the version of project's database is obsolete in respect to the one used by the wizard. Once pressed, the database structure will be upgraded while maintaining all production data collected up to that moment.

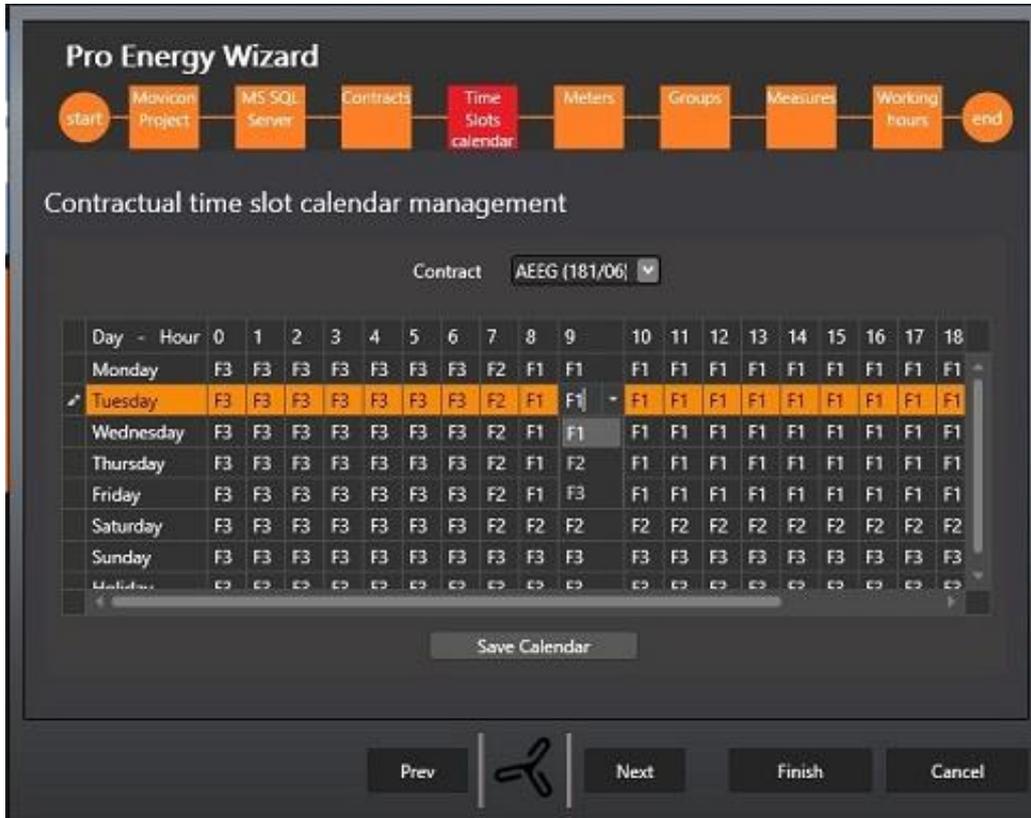
## Contracts / Costs of energy supply

In this step users define the costs of energy supply indicating unit costs for each time slot.



Screenshot 9 - Contracts and time slots

Two default energy contracts are managed automatically by the system: AEEG (181/06) and Peak/Off-peak. It is not possible to change or delete these contracts, but it is possible to add new ones or delete previously added ones if no longer needed. Once the slots that characterize the calendar and the unit cost of each slot are configured, users must allocate every hour of every day of the week to a specific time slot. Holidays (Christmas, Easter, etc.) are all handled in the same way in the last row at the bottom of the table.



Screenshot 10 - Demand slot calendar

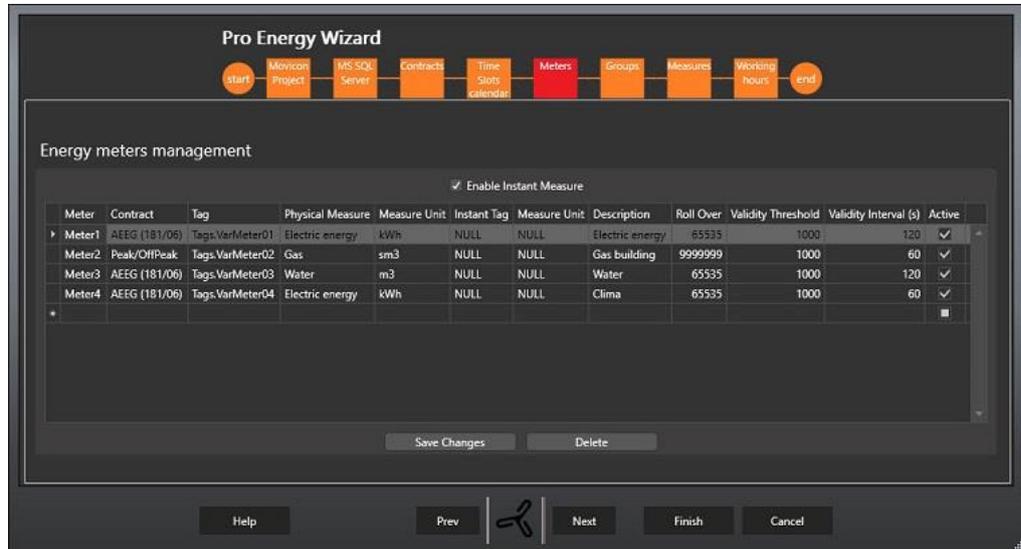
The column Holidays manages all the dates in which the energy provider applies a different unit cost. The holiday calendar relates to the configuration language chosen in the set up (English or Italian) and is managed with a specific table that will count the fixed public holidays and those that might vary (e.g. Easter bank holiday) to allow maximum customization according to culture.

For example the fixed Italian public holidays managed by Pro.Energy are:

<b>1 january</b>
<b>6 january</b>
<b>25 april</b>
<b>1 may</b>
<b>2 june</b>
<b>15 august</b>
<b>1 november</b>
<b>8 december</b>
<b>25 december</b>

## Physical measures

In this step users define all the physical measures to be monitored by the system. "Physical" means that it corresponds to a measure coming from a meter or a PLC tag. It is assumed that the value obtained at each sampling time is absolute (i.e. consumption in the quarter of an hour is calculated as the difference of two subsequent samples).



Screenshot 11 - Physical measures

The data needed to define each physical measure are listed in the table below:

Field	Description
Meter(*)	Alphanumeric code (maximum 30 characters) that identifies the measurement
Contract	Select one of the listed contracts to apply the measurements to if you wish to perform a cost analysis, otherwise leave blank.
Tag (*)	Select one of the listed contracts to apply the measurements to if you wish to perform a cost analysis, otherwise leave blank.
Group	Select the group that the measure belongs to from the list. Only active groups can be selected.
Physical measure	Select the energy carrier of membership of the extent of the list
Measure Unit	If necessary set the measure unit
Measure Description	Enter a description that clearly defines the measure you are creating (maximum 50 characters)
Rollover (*)	This is the maximum limit the meter can reach before resetting to zero.
Validity (Rate of change) threshold	Rate of change (ROC) is the maximum acceptable increment of a measure in a specific time interval. This value is specified in standard units for each energy vector (for example: kWh for electrical energy). Therefore, the threshold for ROC represents the maximum acceptable value of consumption increase in a specific time interval (in seconds). The validity interval must be set to a value equal or greater than the sampling interval of the historian prototype (default 60 s). Consumption values greater than the ROC threshold are skipped.
Validity (Rate of change) interval [sec]	

	Consumptions higher than the ROC threshold are rejected.
Istant Tag	This is used to indicate any eventual tag from which the value of the amount measured is read instantaneously. Reading is skipped in cases where the value is NULL.
Measure Unit	This is used to indicate the instantaneous value's measure unit which is automatically set when selecting the measure unit for the physical size.
Offset	A new reference value can be inserted in this field, which is normally set to NULL, to calculate the meter consumptions. In cases where you have to replace the measuring tool for example, the memorized start value can be indicated in the new tool. This setting must be done before the meter is physically replaced. Once the tool has been replaced, the system will manage its values based on the values indicated in the Offset field to then reset it to NULL.
Active	New defined measures are marked as active by default. When the measure is disabled, the consumption data for the measure are ignored.

Fields marked with an asterisk are mandatory.

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

The **Enable instantaneous measures** Flag is used to enable or disalbe the instantaneous measure management.

- When enabled, the Instantaneous Tag, Measure Unit and run time columns will appear and all the measures will be retrieved for all the meters that indicate a correct instantaneous Tag value.
- When disabled, the instantaneous measures will not be taken account for any of the configured meters.

## Groups

In this step all the groups that are needed to organize the previously defined measures are to be configured. There is no limit to the number of groups that you can use to model the system but make sure you include all the groups that characterize the various energy resources to be analyzed.

It is advisable to use groups to identify all the "energy loads", meaning any object which consumes energy or raw materials (electric power, water and gas) and which may possibly have accessory data, such as currents, voltages, temperatures, humidity and operating status. For example, when defining an "electric motor 1" load, you could then correlate it with active energy and reactive energy measures and so forth.

The groups are defined in a tree structure



Screenshot 12 - Groups

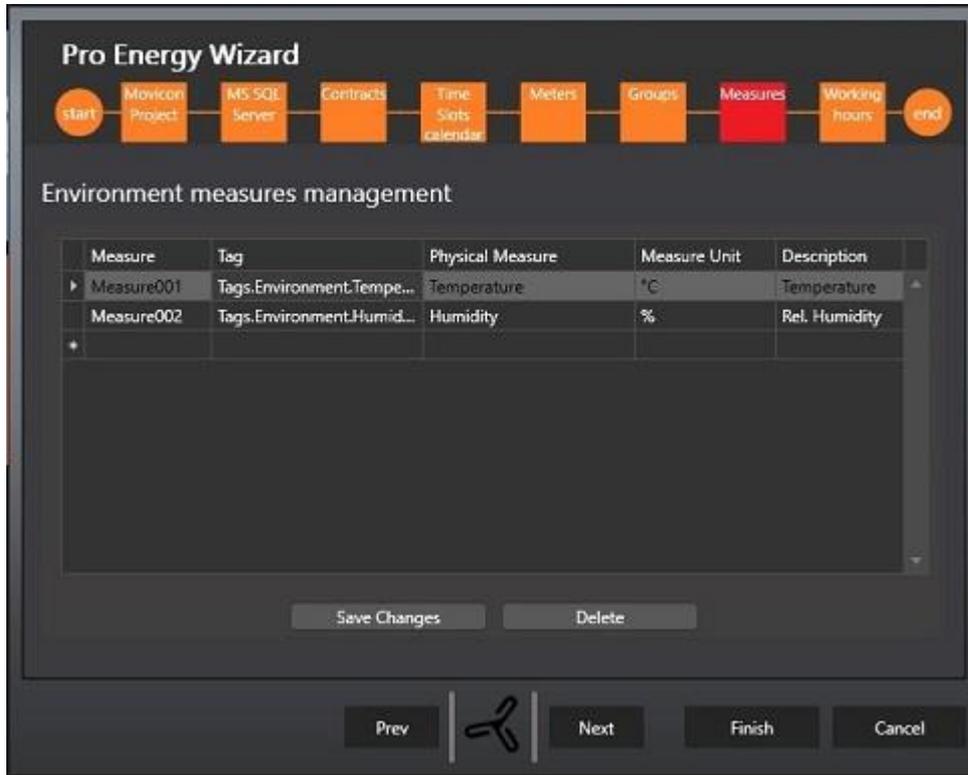
Each group is identified by a code and a description. Each group can be assigned a meter. Only one meter of the same type can be assigned to a group and not to any other group within the same Plant group hierarchy. For example, as shown in the screenshot below, the M1elect meter belongs to G1 and therefore also the Plant group as a whole.



Screenshot 13 - Meter assignment

## Environmental measures

The screen below is used to define all the physical environmental measures such as temperature, relating humidity, light etc., that are to be monitored by the system.



Screenshot 14 - Environmental measures

The data needed to define a physical environmental measure:

Field	Description
<b>Measure</b>	Alphanumeric code (maximum 30 characters) that identifies the measure
<b>Tag</b>	Select from the list the tag that contains the value of the physical measure created. The list presents the tags previously defined in Movicon.
<b>Group</b>	Select from the list the group to which the measure belongs to. Only active groups can be selected.
<b>Physical Measure</b>	Select the physical energy vector dimension for the measure
<b>Measure Unit</b>	If necessary set the measure unit
<b>Measure Description</b>	Enter a description that better defines the measure (maximum 50 characters)

## Working hours model

This screen is used to define the weekly working hours.

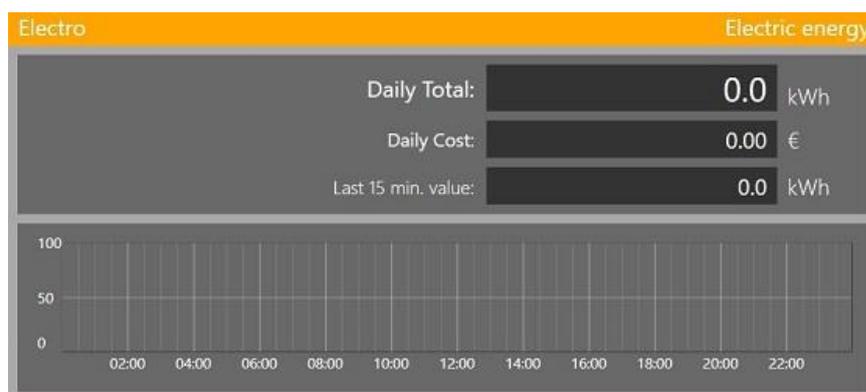


Screenshot 15 – Working hours model

Tick the hours you wish to set as working hours and click the Save Work Model button to save changes.

### Creating Movicon screen Templates and deploying reports

Pressing Finish will complete and create the system energy model, selected in step 1 in the Movicon project, as a power symbol template in the project's symbol library. This symbol can be used whenever needed by placing it on the desired screen and connecting it to one of the NRG\_Meter\_nnn tags created by the Wizard.



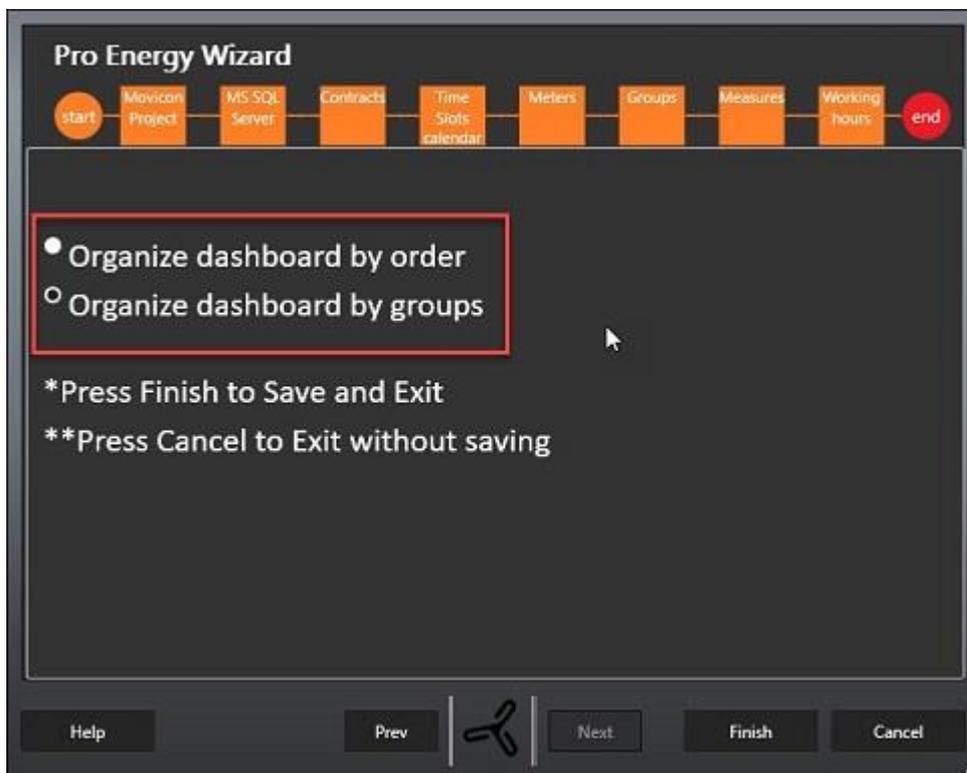
Screenshot 16 - Power Template



Screenshot 17 - group Template

Pro.Energy reports will also be created in the Report folder at the same time. At the end of the procedure a EnergyText.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 ProEnergy use.

The organization of the navigation of the screens will depend on the choice available in the last step of the wizard



In which it is possible to choose whether to create a "linear" (flat) configuration for navigation, in which the meters follow each other in the same order in which they are defined in groups of 4, or for groups, in which navigation is based on the presence of the meters in groups, group by group.

Once the wizard is finished, we will have the screens created, organized as follows:

- NRG folder: containing all the 930x420 pixel screens (Figure 16 and Figure 17).  
A screen will be created for each configured meter and for each physical quantity in each group.
- Row folder: containing the following synoptics:
  - ScreenNRGDashboard: the main navigation screen, containing four embedded screens in which the synoptics defined in the configurations visible in the upper combo box will be inserted at run time (Figure 19)
  - ScreenNRGManageDashboard: synoptic to manage the configurations to be used in the ScreenNRGDashboard, reachable by pressing the Screen List button from the navigation synoptic (Figure 20).
  - ScreenNRGContractsRates: it is used to edit the cost value of the energy contracts at run time (Figure 21).



Figure 19 – Dashboard

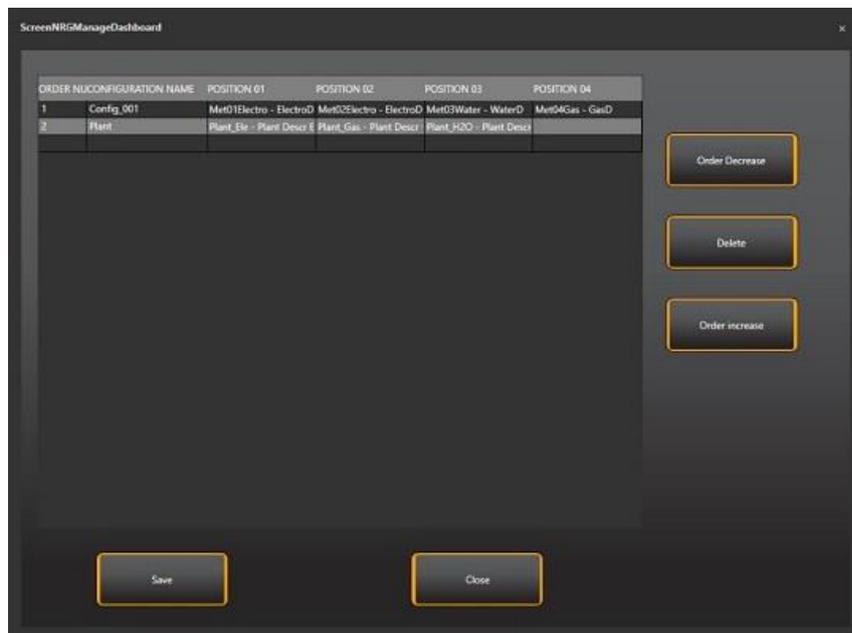


Figure 20 – Dashboard Configuration management

## 1.6. Movicon

Before launching the Pro.Energy wizard users have to create all the variables in Movicon that are used to communicate with the energy meters in order to collect consumption data. These variables can then be associated with physical measures defined in the wizard.



To facilitate the tag management with the wizard, you can create a view called NRG and associate it with all the tags that are used in ProEnergy only. In this way, the selection list of tags to use in the wizard's step-by-step procedures that need them, will only be composed of those tags needed omitting all the other project tags that might go into the thousands if the project has already been structured.

The algorithms and computations performed on the collected data are stored in the database. The database provides five consumption data views for any additional queries performed by external systems or for creating additional views in the SCADA interface:

1. **VwTodayValues15Min:** contains the consumption data for every 15 minutes of the current day in progress for each measure managed by the system.

The view only shows data of those measures that are active.

Column	Description
<b>MeterId</b>	Meter Identification
<b>MeterName</b>	Meter Name
<b>MeasureDescription</b>	Measure Description
<b>RecordDateTime</b>	Date and time when Recorded
<b>Year</b>	Year
<b>Month</b>	Month
<b>Day</b>	Day
<b>Quarter</b>	Every quarter hour of the day in progress
<b>Hour</b>	Hour
<b>Minute</b>	Minute
<b>Weekday</b>	Day of the week
<b>ConsValue</b>	Consumption Value
<b>UnitOfMeasure</b>	Measure Unit
<b>ConsumCost</b>	Consumption costs

2. **VwGroupValues15Min:** contains quarterly hour consumption data for each physical measure (energy carrier) grouped according to which group they belong to.

Column	Description
<b>GroupID</b>	Group Identification
<b>GroupName</b>	Group Name
<b>PhysMeasID</b>	Physical Measure identification
<b>PhysMeasName</b>	Energy Carrier
<b>RecordDateTime</b>	Date When Recorded
<b>GroupConsum</b>	Consumption Group
<b>UnitOfMeasure</b>	Measure Unit
<b>GroupConsumCost</b>	Consumption group Costs

<b>GrLevel</b>	Group Level
----------------	-------------

3. **VwGroupValues1hour:** contains the hourly consumption data for each physical measure (energy carrier) grouped according to which group they belong to. This view shows the same data as displayed by the previous view.
4. **VwGroupValues1Day :**contains the daily consumption data for each physical measure (energy carrier) grouped according to which group they belong to. This view shows the same data as displayed by the previous view
5. **VwGroupValues1month:** contains the monthly consumption data for each physical measure (energy carrier) grouped according to which group they belong to. This view shows the same data as displayed by the previous view.

## Historian prototype configurations for collecting energy consumption data

To being with the Pro.Energy Wizard automatically creates the Historian prototype in the Movicon project to associate the variables necessary to collecting consumption data.

The data logging time is automatically set to 1 minute. To ensure that the system functions correctly it is advised not to change this setting.

However, if there is a slowdown in performance due to a drastic increase in the number of tags to be collected or because the system is running on a low performing PC, you can change the Historian's recording time manually. When this is the case, the scansion time must be set with one of the following values only:

- 1 minute
- 3 minutes
- 5 minutes
- 15 minutes.

## 1.7. Standard Pro.Energy Reports

The standard reports used for data visualization and analysis are designed to be transparent and viewable via web browser.

These Reports are integrated in Movicon NEXT and can be managed by expert users according to the report functionalities documented in the platform.

### Consumption Cost table report

**Movicon Pro.Energy** **Evaluated Consumptions**

Selected Parameters:

Start Date: 10/05/2016  
End Date: 16/05/2016  
Scaled Time: Ora

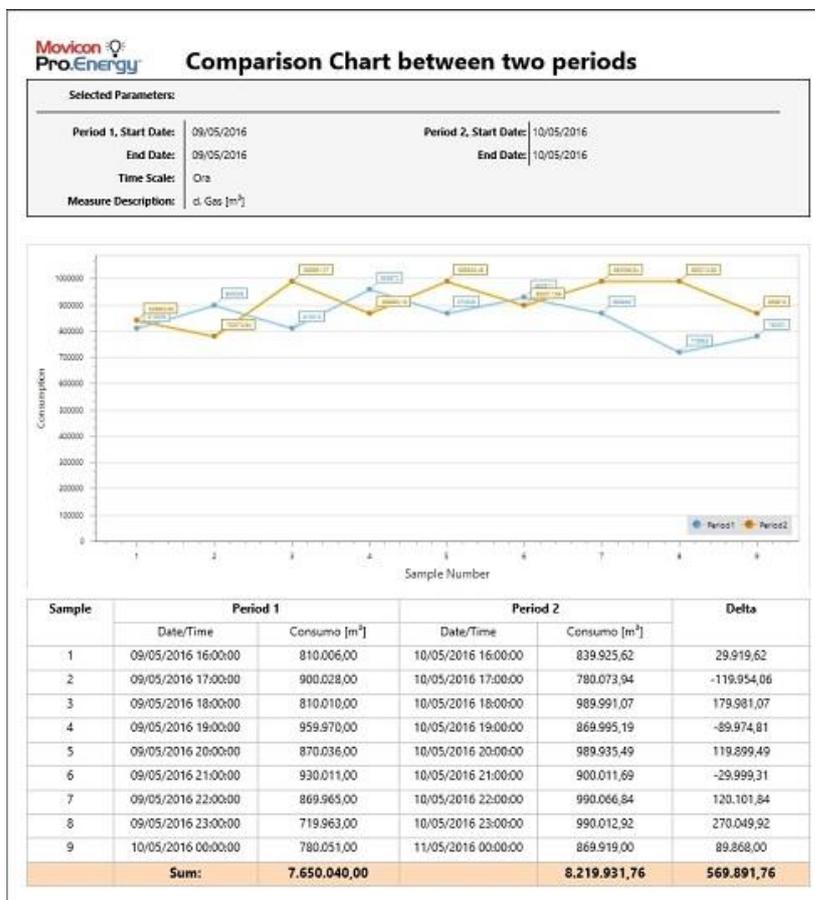
Measure	DateTime	Week Day	Consumption	Cost	Slot
d. Elettricit� Contratto:AEEG1	11/05/2016 05:00	mercoledì	420.009,99	21.000,50	F1
	11/05/2016 06:00	mercoledì	447.933,64	22.396,68	F1
	11/05/2016 07:00	mercoledì	434.065,90	21.703,30	F1
	11/05/2016 08:00	mercoledì	377.960,08	18.898,00	F1
	11/05/2016 09:00	mercoledì	364.050,31	18.202,52	F1
<b>Sum:</b>			<b>13.621.980,90</b>	<b>681.099,05</b>	

Screenshot 17 - Consumption table report

The parameters to be selected for viewing the report are: the start date and the end of the period under analysis, the measure descriptions (one or more) and the data analysis granularity.

This report presents consumption data for the selected measures by calculating each measure's total consumption and costs for the selected timeframe. The cost is calculated according to the cost associated to the measure (if applicable) and to the consumption time slot.

## Two period Comparison Report



Screenshot 18 - Report comparing two periods

This report shows a graph reporting the consumption trends of two selected measures for the two selected periods. The table below shows the consumption values of each sample for each of the two periods and the differences between them. The last row on the table shows the total sum for each period and the delta which identifies the difference in consumption between the two periods.

### Group Consumption and Cost

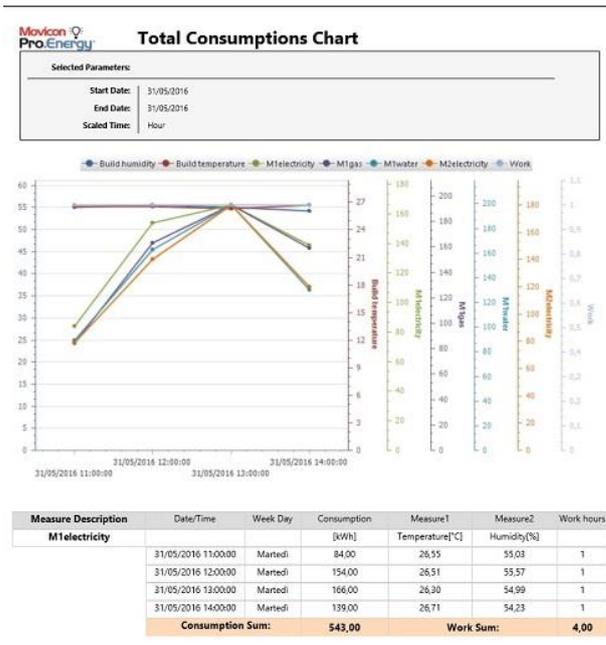
 <b>Evaluated Group Consumptions</b>					
Selected Parameters:					
Start Date:	31/05/2016				
End Date:	31/05/2016				
Scaled Time:	Hour				
Group Name	PhysMeasName	Unit of Measure	Data/Ora	Consumption	Cost
Linea1					[€]
	Electric energy	kWh	31/05/2016 11:00:00	239,00	28,68
	Electric energy	kWh	31/05/2016 12:00:00	445,00	53,40
	Electric energy	kWh	31/05/2016 13:00:00	521,00	62,52
	Electric energy	kWh	31/05/2016 14:00:00	395,00	47,40
	Water	m <sup>3</sup>	31/05/2016 11:00:00	250,00	30,00
	Water	m <sup>3</sup>	31/05/2016 12:00:00	478,00	57,36
	Water	m <sup>3</sup>	31/05/2016 13:00:00	552,00	66,24
	Water	m <sup>3</sup>	31/05/2016 14:00:00	395,00	47,40
	Gas	sm <sup>3</sup>	31/05/2016 11:00:00	242,00	121,00
	Gas	sm <sup>3</sup>	31/05/2016 12:00:00	475,00	237,50
	Gas	sm <sup>3</sup>	31/05/2016 13:00:00	564,00	282,00
	Gas	sm <sup>3</sup>	31/05/2016 14:00:00	428,00	214,00
	Steam	sm <sup>3</sup>	31/05/2016 11:00:00	77,00	38,50
	Steam	sm <sup>3</sup>	31/05/2016 12:00:00	141,00	70,50
	Steam	sm <sup>3</sup>	31/05/2016 13:00:00	191,00	95,50
Steam	sm <sup>3</sup>	31/05/2016 14:00:00	127,00	63,50	
<b>Sum:</b>					<b>1.515,50</b>

 <b>Evaluated Group Consumptions</b>					
Selected Parameters:					
Start Date:	31/05/2016				
End Date:	31/05/2016				
Scaled Time:	Hour				
Group Name	PhysMeasName	Unit of Measure	Data/Ora	Consumption	Cost
Linea2					[€]
	Electric energy	kWh	31/05/2016 11:00:00	250,00	30,00
	Electric energy	kWh	31/05/2016 12:00:00	474,00	56,88
	Electric energy	kWh	31/05/2016 13:00:00	548,00	65,76
	Electric energy	kWh	31/05/2016 14:00:00	433,00	51,96
	Water	m <sup>3</sup>	31/05/2016 11:00:00	254,00	30,48
	Water	m <sup>3</sup>	31/05/2016 12:00:00	472,00	56,64
	Water	m <sup>3</sup>	31/05/2016 13:00:00	540,00	64,80
	Water	m <sup>3</sup>	31/05/2016 14:00:00	416,00	49,92
	Gas	sm <sup>3</sup>	31/05/2016 11:00:00	242,00	121,00
	Gas	sm <sup>3</sup>	31/05/2016 12:00:00	482,00	241,00
	Gas	sm <sup>3</sup>	31/05/2016 13:00:00	581,00	290,50
	Gas	sm <sup>3</sup>	31/05/2016 14:00:00	396,00	198,00
	Steam	sm <sup>3</sup>	31/05/2016 11:00:00	81,00	40,50
	Steam	sm <sup>3</sup>	31/05/2016 12:00:00	151,00	75,50
	Steam	sm <sup>3</sup>	31/05/2016 13:00:00	189,00	94,50
Steam	sm <sup>3</sup>	31/05/2016 14:00:00	137,00	68,50	
<b>Sum:</b>					<b>1.535,94</b>

Screenshot 19 – Group Consumption Report

This report shows consumptions aggregated into pre-configured and selected groups.

### Total Consumption Chart Report



Measure Description	Date/Time	Week Day	Consumption	Measure1	Measure2	Work hours
M1 water	31/05/2016 11:00:00	Martedi	89,00	26,55	55,03	1
	31/05/2016 12:00:00	Martedi	163,00	26,51	55,57	1
	31/05/2016 13:00:00	Martedi	199,00	26,30	54,99	1
	31/05/2016 14:00:00	Martedi	130,00	26,71	54,23	1
	<b>Consumption Sum:</b>			<b>581,00</b>		<b>Work Sum: 4,00</b>

Screenshot 20 - Report showing consumption totals in chart format

This report highlights measure-by-measure consumption totals for the preselected day and times in comparison to the referenced ambient variables.

### Pie Chart Consumption Report

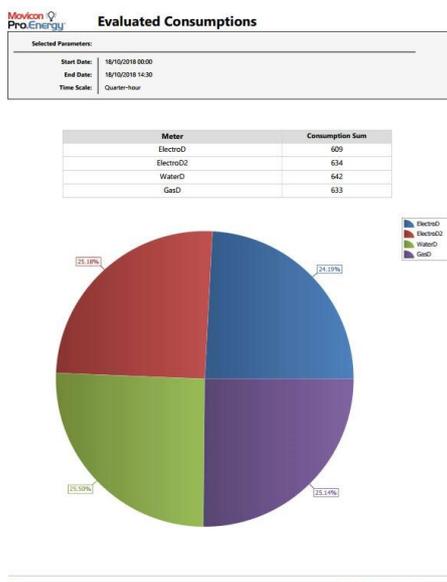


Figure 26 - Pie chart report for consumption in the period

In this report, the ratios between the consumption of the various meters in the selected period are highlighted in a form of a Pie chart

### Two periods groups comparison report

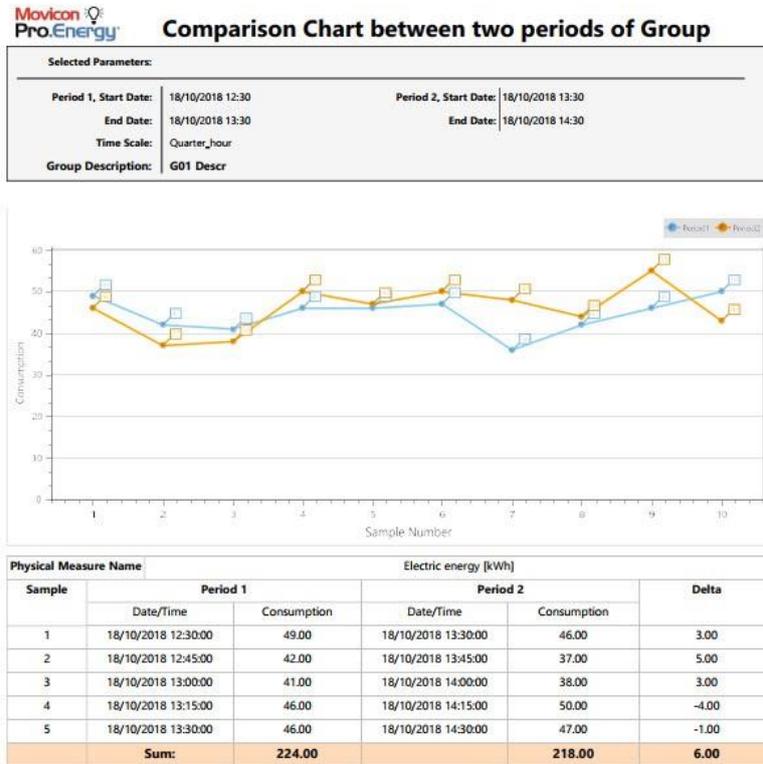


Figure 27 - Graphic report comparison between periods for groups

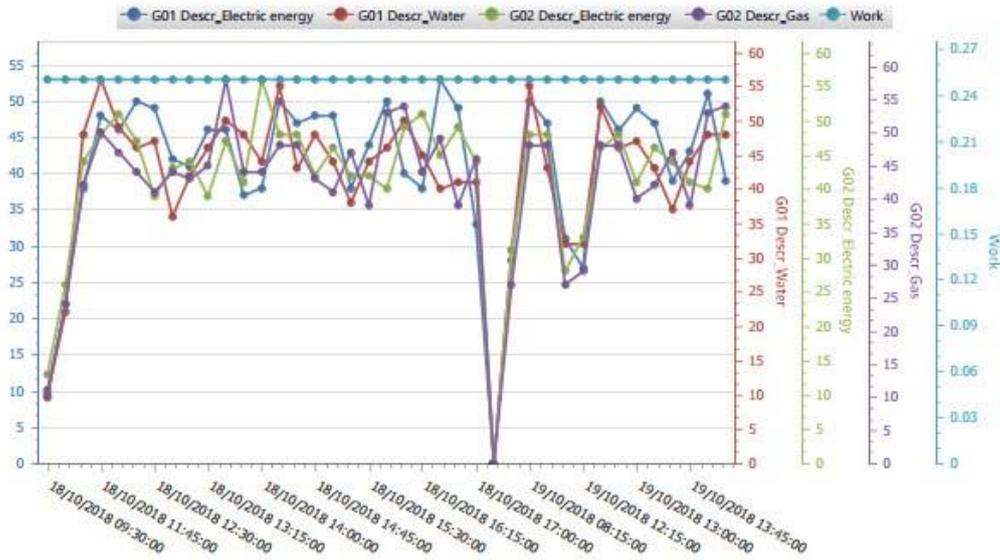
The report presents, for the selected group, the graph showing the trend of consumption values for the two selected periods and, below this, a table showing the consumption values for each sample for each of the two periods and the difference between the two consumption values.

### Total groups consumption chart

## Total Group Consumptions Chart

**Selected Parameters:**

Start Date: 18/10/2018 00:00  
 End Date: 18/10/2018 14:30  
 Scaled Time: Quarter-hour



Group Description	Date/Time	Week Day	Consumption	Measure1	Measure2	Work hours
<b>G01 Descr_Electric energy</b>			[kWh]			
	18/10/2018 09:30:00	Thursday	9.00			0.25
	18/10/2018 11:15:00	Thursday	22.00			0.25
	18/10/2018 11:30:00	Thursday	38.00			0.25
	18/10/2018 11:45:00	Thursday	48.00			0.25
	18/10/2018 12:00:00	Thursday	46.00			0.25
	18/10/2018 12:15:00	Thursday	50.00			0.25
	18/10/2018 12:30:00	Thursday	49.00			0.25
	18/10/2018 12:45:00	Thursday	42.00			0.25
	18/10/2018 13:00:00	Thursday	41.00			0.25

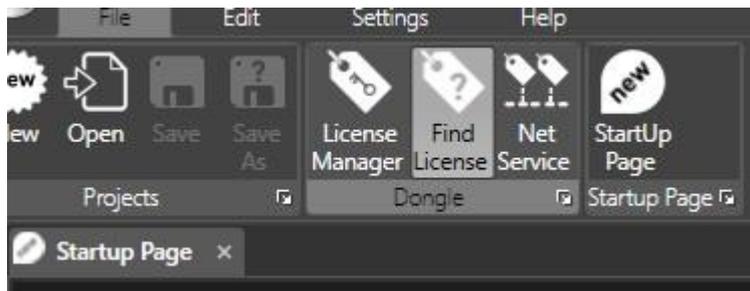
Figure 28 - Total consumption graph report Groups

The report presents, for the selected groups, the graph showing the trend of consumption values for the selected period and, below this, a table showing the consumption values for each sample in the period.

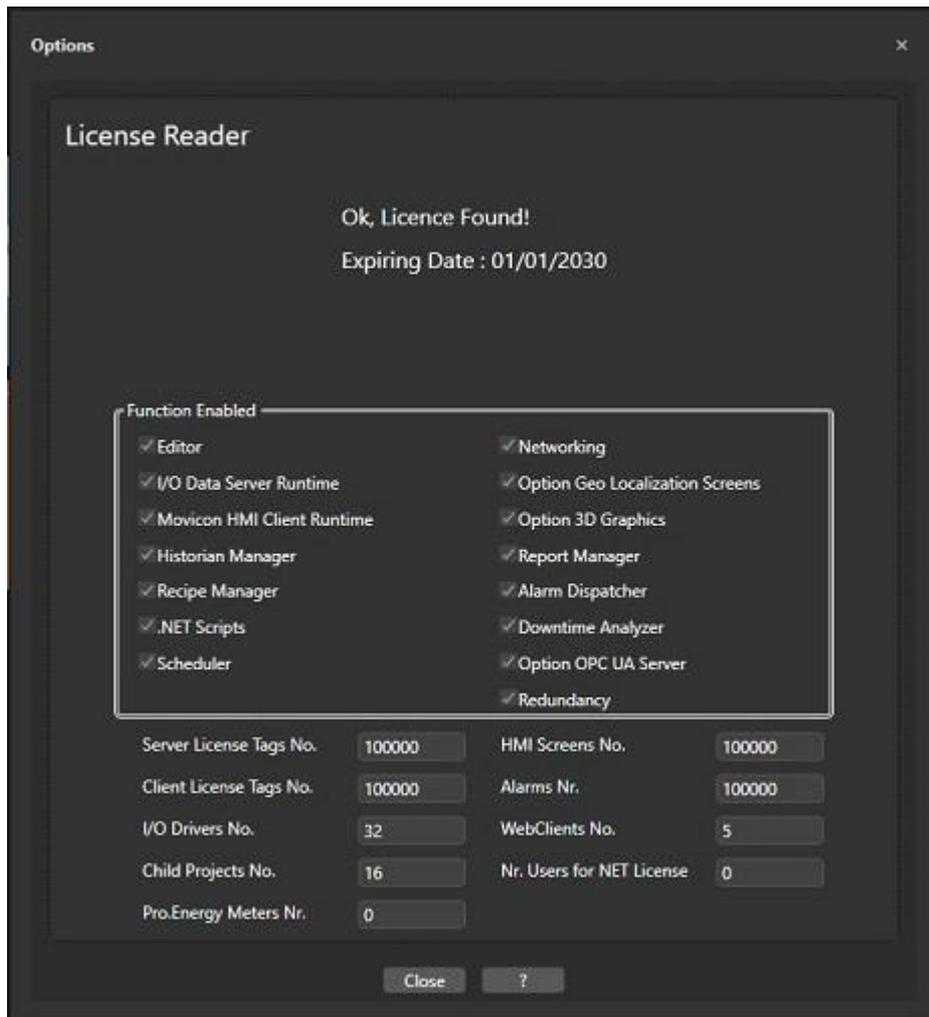
## 1.8. Pro.Energy license manager

The Pro.Energy module is an optional Movicon license functionality that determines how many energy carriers can be managed.

By using the Find License item from the Movicon NEXT File/Dongle menu



you will be able to check how many measures have been enabled.



Screenshot 21 - Licenses

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