Software for electrical and photovoltaic engineering

The Electro Graphics software for electrical and photovoltaic design, creates an environment with flexible solutions and integrated resources, in order to respond to the real needs day by day. Wiring diagrams, bill of materials, calculation reports, plant layouts and budget and accounting documents communicate with each other to offer the tranquility of a safe and reliable design. The best use of desktop and mobile tools, make diagrams and design data accessible in the simplest way, where they needs.

Compatibility with AutoCAD

The software CADelet are now compatible with AutoCAD version 2007 to 2018, 32 or 64 bit.

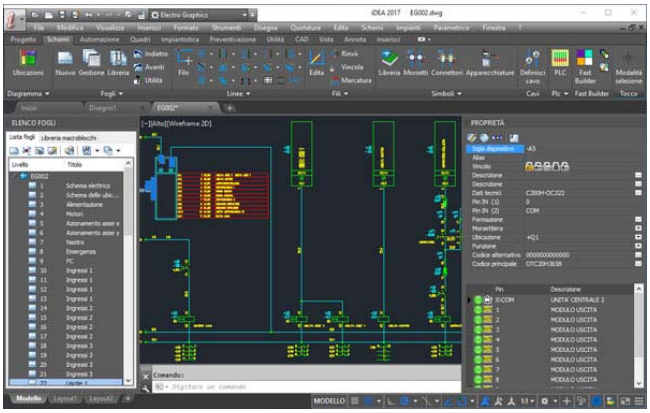
iDEA Eplus are based on AutoCAD® OEM 2018 a 64 bit

One of the most important innovations on the Electro Graphics products is the transition from the 2013 version to the 2018 version of the Autodesk AutoCAD® OEM engine inside iDEA and EPLUS.
Below we put the focus only on the most significant features introduced in Autodesk AutoCAD® OEM 2018 64-bit.

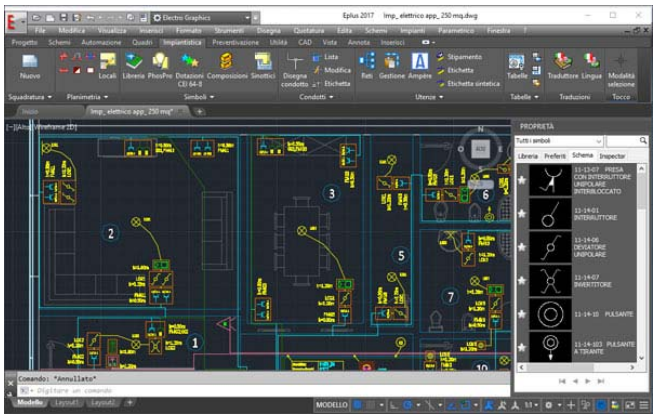
- Interface display with dark theme

The new dark interface, not only looks attractive, but also reduces eye strain. Thin lines, buttons and text are more evident. You can switch from dark to traditional light, setting one of the general options in the CAD.

iDEA with dark theme

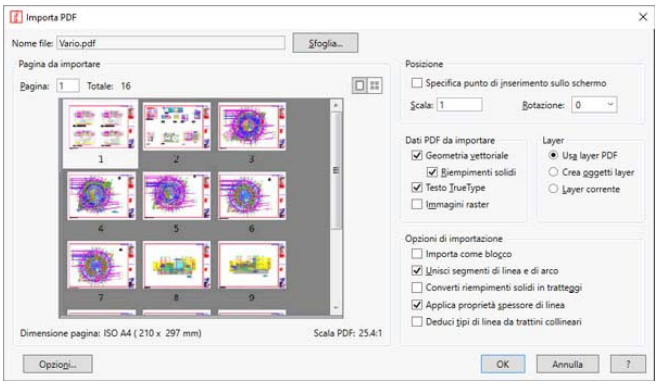


Eplus with dark theme



- Import PDF

The new version allows you to import geometry, fills, raster images and TrueType text objects from a PDF file into the current drawing. the PDF data can come from a PDF attachment to the current drawing or any specified PDF file. Some properties, such as scale, layers, line thicknesses and colors can be maintained.



- Improvements of the revision cloud

You can now create revision clouds (REVCLOUD command) with greater flexibility and modify them just as easily. Just draw revision bubbles around the new changes into a drawing to make updates quickly identifiable.

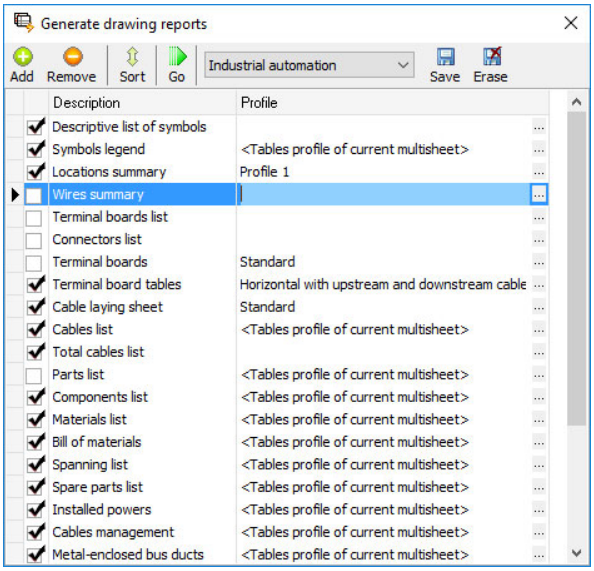
If the revision cloud is rectangular, polygonal or free-hand, changing the size and shape is easier to grip.

- 2D and 3D graphics improved

The new version offers stability, accuracy and performance.

Generate drawing reports

The Generate drawing reports function draws a set of required report in the wiring diagram. The function allows you to select a set of reports to draw (legend, symbols table, terminal tables, cable lists, ...) and define the characteristics of each one; moreover you can save the set settings in different profiles.



Drawing rear buttons panel

After drawing the button panel using the Panel layout window, you can also lay the draw of the back contacts with the Drawing rear buttons panel function.
When starting the drawing function requires you to select a rectangle that represents the panel plate including all components previously drawn with the Panel layout function. The layout profiles that are detected within that rectangle determines the drawing of related contact blocks with pins and connections.
If the selected profiles are correctly recognized in the current diagram, the function requires a point to start drawing the mirror version of the panel. At this point you can also choose the option New Sheet (type N on keyboard and press Enter) to proceed with the insertion of a new sheet where to select the insertion point of the plate.
In the following picture on the left you can see the layout of a push button panel drawn with the Draw panel layout function. On the right picture you can see the drawing of the back of the push button with the specified buttons connections; this drawing has been realized with the Draw rear buttons panel function.

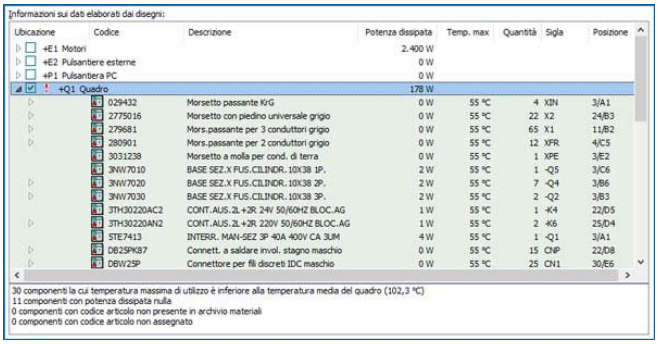
The information to draw near the contacts can be customized.

Panel layout from preliminary list

A new feature lets you to draw the layout of a panel, cabinet or control panel starting from a preliminary list of materials and in the absence of the circuit diagram. For this purpose, the Panel layout feature can now acquire the components of a preliminary list created by the software Tabula.
Simply define a preliminary list with the components of the panel to draw: in Tabula create a new bill of materials, open the Article database, search for the items to include in the panel, and drag them to the list. You can also take advantage of the Export and Import from Excel functions.
In CAD (CADelet / iDEA / Eplus), start the Panel layout function and activate the Include shapes extracted from Tabula file: the components list, within the Panel layout window, will show the shapes from which to draw the layout.
The new function Layout panel from preliminary list, can be used even if the components of the panel have already been extracted from the circuit diagram, and is only necessary to add some items to the list such as carpentry and accessories. In this case you can edit the bill of materials extracted before drawing the layout.

Panel overtemperature

The panel overtemperature verification feature, also present in previous versions of CADelet / iDEA / Eplus, has been improved specifically in the part about checking the power dissipation of components acquired from the circuit diagram.



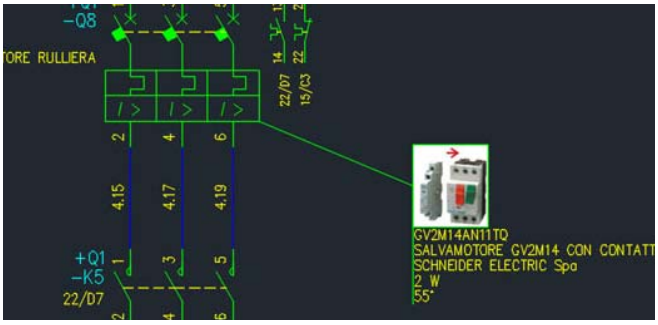
For each component acquired from the circuit diagram, the main grid display the technical data collected from the article database (code, description, power loss, maximum temperature of use), and the data acquired

from the circuit diagram (quantity, designation, location in the diagram).
In the box below shows the information messages and error conditions; the components with errors are highlighted in the list with an icon.
- Components with operating temperature lower than the average temperature on the panel.
- Components without power loss.
- Components with article code, not present in the Article database.
- Components without article code.

When you need to edit the specifications of a selected component in the list you can double-click or select the command Edit technical data, available in the menu that opens with the right mouse button: the changed data are saved in the Article database so they are valid for all components with the same code.
The Power dissipated by components box displays the data to check components: total dissipated power, the derating factor editable, and the actual power dissipated.

Symbol label

The Symbol label function draws a table of information about the articles associated to a symbol, and extracted from the Article database. The list of data in the table can be customized and saved as profiles.
When you start the command, select a point over the symbol. This selection point corresponds with the point of origin for the callout. Then select the point where to draw the label.
Example of label of an automation diagram symbol:



Example of label of a electric plant symbol:

Orders

The window with the list of orders, which can be open to select a job order, now display the Search box. This new utility allows you to filter the list of orders and quickly display only the orders that meet the search criteria. In particular, the text filled in the box above the list of orders, is searched by the software inside many order data such as job name, title, client, company, performer.

Drag from the article database and dictionary to a spreadsheet

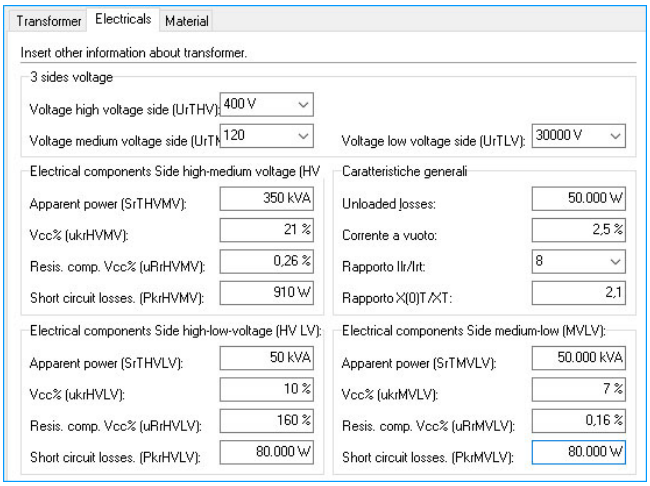
A useful function allows you to insert in a cell in a spreadsheet, the code of a article item, taking it from the Article database.
This function is useful, for example, to assign a code to a list of materials, exported in a spreadsheet from Tabula. The operation can start after open of the spreadsheet and the article database: simply select an item in the grid items, drag and drop it when the Excel cell is highlighted.

Protection devices database: new options on the search box

In the Protections devices database, the new Filter panel displays the fault currents according to the standard EN 60898 (civil) and EN 60947 (Industrial).
For the differential protection you can filter by Application class (A, AC, B, F) and by differential releaser current up to 3A.

Trasformers database

The Transformers devices database, now manages three-winding transformers. The data to assign to each device follows the standard IEC 60909-4. The short-circuit loss can be set both in percentage (Resistive component Vcc%) and in Watts (Short circuit loss).



Cable database

The data that can be assigned to a cable have been increased, with the main purpose of having all the information relating to it, especially when it is not possibile obtain them from the designation field.

In the Properties dialog of a cable, the following fields have been added:
• *insulation*;
• *sheath*;
• *armor*;
• *Maximum temperature cable (operating temperature at rated current)*;
• *reference temperature for installation in the air and inground*;
• *resistivity and depth in the ground to put inground laying*;
• *last modified date, out of production, year of production*;
• *favorite; type of insulation, maximum cable sheath and armor temperature*.

Now the archive is complete to be able to provide all the features of a cable when a manufacturer assigns a 'special designation', that is commercial rather than technical. The insulation type XLPE (Cross-linked polyethylene) is now managed. It is fully applicable with the laying IEC 60502-2, which has specific load charts for this insulator. Now you can enter detailed specifications of some manufacturers, which provide the reference temperature of the flow for installation in the air and inground. For, the inground laying, you can now specify up to two pairs flow / ground resistivity.

INDUSTRIAL AUTOMATION

Diagram analysis

- Automatic update of wire numbering

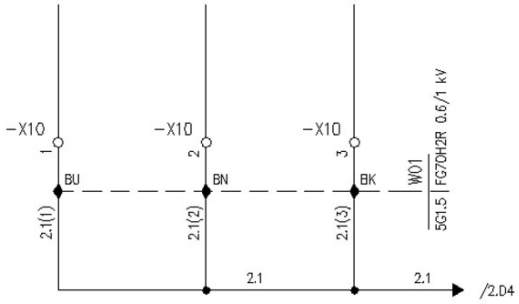
The automatic update of wire numbering is an operation of the CAD, that in response to some changes to the wiring diagram, updates the numbering of the wires in the current sheet. This operation is equivalent to execute the diagram analysis with the Current sheet option selected.It is executed in response to drawing operations or modification of wires, and the insertion of symbols on the wires.
At any time you can turn it off and turn it on.

- Automatic update of terminal block

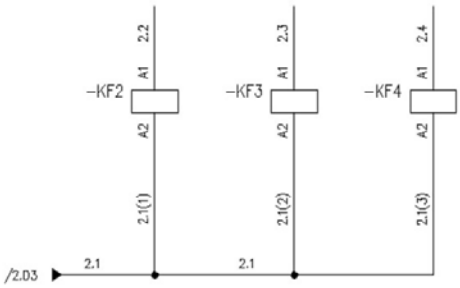
The automatic update of terminal strips is an operation of the CAD, that keep updated the diagram analysis result files such as connection files (* .clm) and terminal block files (* .tbl).
The automatic update enables the production of terminal blocks, tables, loop diagrams and other graphics updated with the current status of the circuit diagram.
The function detects changes occurred to the wiring diagram such as to invalidate the status of connections and terminal blocks and automatically updates the necessary information.
At any time you can turn it off and turn it on.

Wire constraint with multiple connection levels

It may be necessary, along the same wire to control the connections between terminals connected to the same potential. Refer to the example of the figure below.



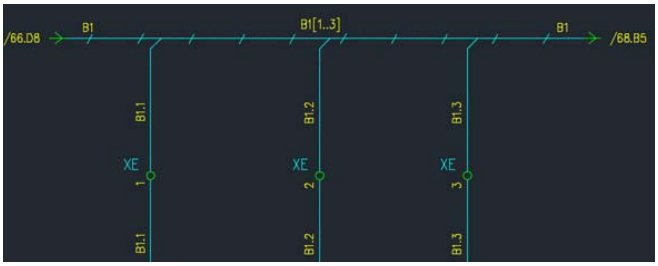
In the example, the terminals -X10 are connected to pins A2 of relays -KF2, -KF3, -KF4 via the same wire 2.1.



The use of wire bonds now allows you to assign a connection level to the captive wire. The analysis considers the scheme as related only the threads with the same level of constraint. In our example the resulting connections are:
-X10:1, -KF2:A2
-X10:2, -KF3:A2
-X10:3, -KF4:A2

Bundle of wires

The new series introduces a new entity and a new tool to simplify the drawing of power lines in an automation diagram.
The bundle of wires, allows you to draw a single line representing a set of wires with the same path in the wiring diagram: for example, a field bus and a power supply line. The use of the bundle of wires allows for an easier representation and enhances the legibility of the wiring diagram.



- Drawing bundle of wires

To draw a bundle of wires run the Bundle of wires function. It is similar to the Wire function; in the Connections dialog box you can set all wires data: section, color, type of junction,...
The bundle of wires is characterized with a specific line type, in order to improve the correct readability of the diagram. The default line type for the bundle of wires (EG_BUS line type) can be customized or replaced.

- Use of a single wire on a bundle of wires

To draw a single wire that derives from a boundle of wire, you can just run the FILO command and click the line of the boundle on the point of derivation. The program detects the connection to a bundle of wires and displays a dialog box where you can set the signal to use for the wire you are tracing. You can choose a signal from the list of the signals already present in the bundle or add a new one.

Executing the diagram analysis (automatic running for default) bundle of wires is marked with the pattern Bundle name [signals List] while each wire connected to the bundle is market in with the pattern Bundle name.Signal name.

Rules for the Panel-Field orientation of components connected to terminal boards

The analysis of the diagram processes for terminal wiring information in the circuit and determines the side connection of the components connected to the terminal blocks. The new rules for the orientation of the components connected to the terminal blocks will prevent any devices are drawn in the wrong side of the terminal.

Setup of diagram analysis

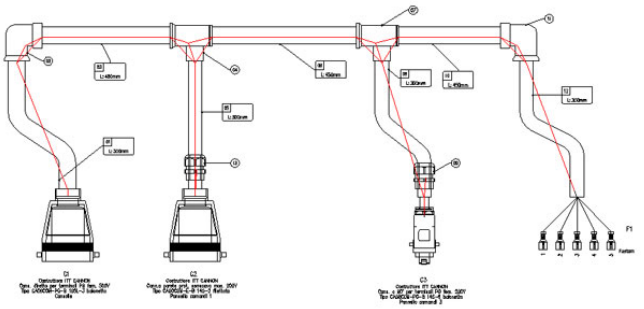
The diagram analysis settings, and in particular those referring to the numbering of wires, have been reorganized. In the Wire section dialog box you can customize the assignment between sections of conductors and color used for draw it on the diagram and set which sections must be numbered and which not. It is possibile to save your settings in different profiles that can be recalled in other diagrams.

Marking of cable on drawing

The Marking of cable on drawing function allows you to draw a label representing the data of a cable and its conductors. Before, you must execute the assignmento of cable data to a wire line by the Define a cable on drawing function or by the software Cablo.
You can customize the drawing characteristics of the label and save different profiles to be used for other diagrams.

Pre-wired cable layout

The Pre-wired cable layout function, allows you to plan and drawing specific electrical wiring made with pre-wired cables where you need to combine a functional circuit diagram of connections and a drawing usefull to the production of the cable, with construction details regarding materials and characteristics about conduits, fittings, cable glands, etc.
The pre-wired cables are mainly used in the automotive, rail, marine, machinery and appliances.
Cables defined with this tool fits perfectly with Cable software.
From the drawing you can obtain lengths, features and path of individual wires which constitute a pre-wired cable. The editing of the pinout of layout shapes allows to automatically assign type and material code of cable terminals connected to each wire.



- Drawing the cavo layout

The Pre-wired cable layout function opens a dialog with all functions to
manage pre-wired layout cables.

- Drawing shape of connectors

The ends of the cable drawn you must return the shapes representing the equipment or the connectors on the functional diagram. Three alternatives modes are possible.
• Drawing shape from Panel layout window.
• Drawing shape from the Connectors window.
• Filling-in a shape already in the drawing by the drawing shape function.

- Routing and table of cabling

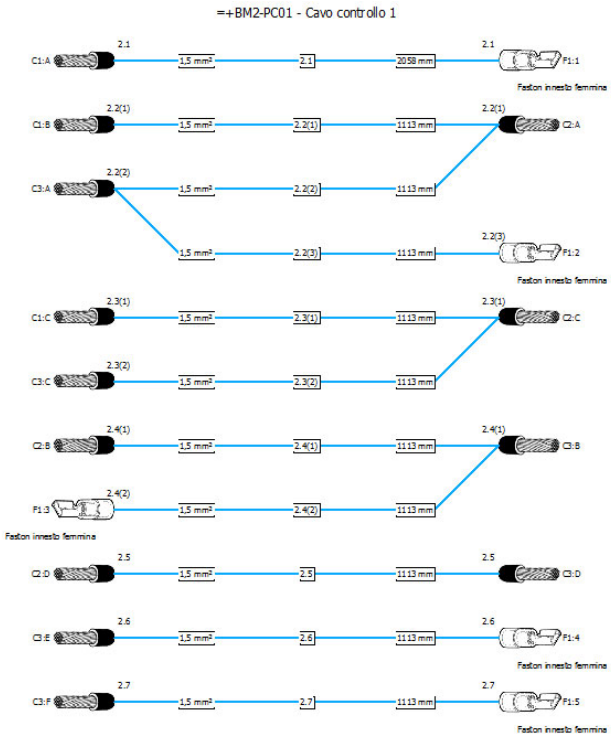
After the construction of the pre-wired cable, or cables, the wiring assignments can be done with the same mode of the Automatic routing of panel function.

- Table

You can draw the Table of identifying conductors that shows lengths and routes of each conductor. To draw that table choose the command from the Utilities menu on the Pre-wired cable layout dialog.

Conduttore	Sezione	Lung. (mm)	Percorso
2.1	1.5	2057.5	01 03 06 10 12
2.2(1)	1.5	1112.5	01 03 05
2.2(2)	1.5	1112.5	05 06 08
2.2(3)	1.5	1112.5	08 10 12
2.3(1)	1.5	1112.5	01 03 05
2.3(2)	1.5	1112.5	05 06 08
2.4(1)	1.5	1112.5	05 06 08
2.4(2)	1.5	1112.5	08 10 12
2.5	1.5	1112.5	05 06 08
2.6	1.5	1112.5	08 10 12
2.7	1.5	1112.5	08 10 12

In Cablo various printouts and graphics of cables are available. In particular, the wiring table for this type of cables is shown in order to highlight the different conductors of the connections.



Identification conforming to IEC 61082-1

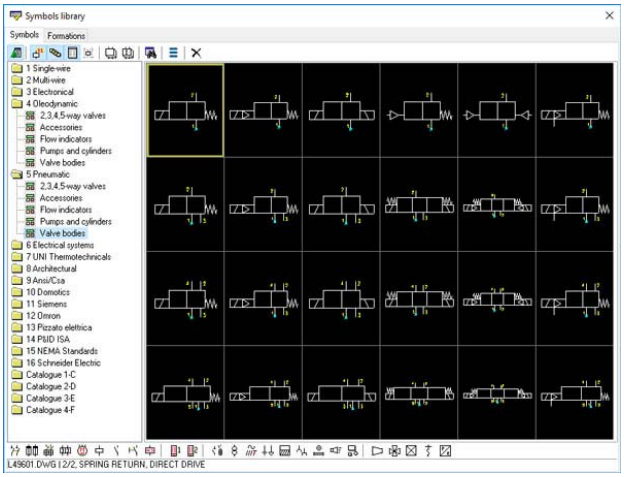
On cross reference of wires and devices now the position can be represent according the standard CEI EN 61082-1 with the pattern /SHEET.CELL.

Hydraulic and pneumatic diagrams

Hydraulics and Pneumatics symbols libraries

In the Symbol library simbols according with standard ISO 1219-1 2012 III Ed. are now available. Thy are useful for drawing pneumatic and hydraulic diagrams. These libraries have some symbols with the same graphic part but different pinout. The pneumatic and hydraulic have following pages:

- Accessories
- Valves bodies
- Flow indicators
- Pumps and cyilinders
- 2, 3, 4, 5 way valves

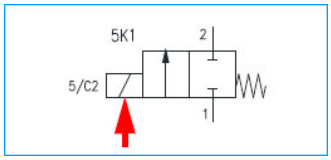


- Cross reference between electric and pneumatic diagrams

In CADelet/iDEA/Eplus you can draw a pneumatic diagram associated with the corresponding wiring diagram. In addition to the new Hydraulics and Pneumatics symbol libraries you can now manage boards consisting of electric elements and pneumatic elements.

For the management of the formations coil (solenoid) + valve (pneumatic) it has been introduced a new management function that allows cross-compiling in the attribute of the Cross reference position in both symbols.

In the Hydraulics and Pneumatics libraries are availables some symbols about Fluid valve symbols with electric drive; they are graphically marked by the solenoid block as the symbol in the following figure.

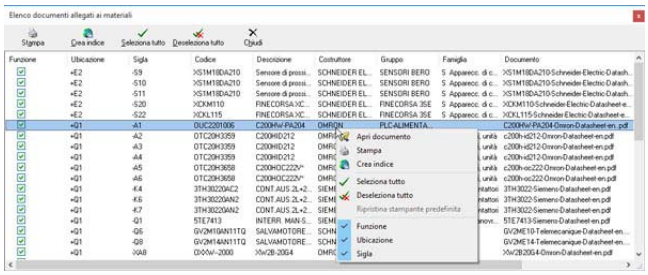


The formations may be constituted by one electrical command, and one or more pneumatic symbols, although usually are 1 to 1. In the case of one to many, the coil shows the positions of all referenced pneumatic devices. The Cross reference function notifies any electrical drives without pneumatic devices and vice versa.

Improvements about the Technical document of devices

You can automatically extract all the technical documents of the devices used, starting from the wiring diagram in CAD (CADelet / iDEA / Eplus) or the Bill of Material in Tabula. This is useful for the creation of the supporting documentation or "plant technical file" or

"machine handbook" containing the identification data of the project equipments and their maintenance. The compilation of this document, also available in previous versions of the software, has been improved and enhanced.



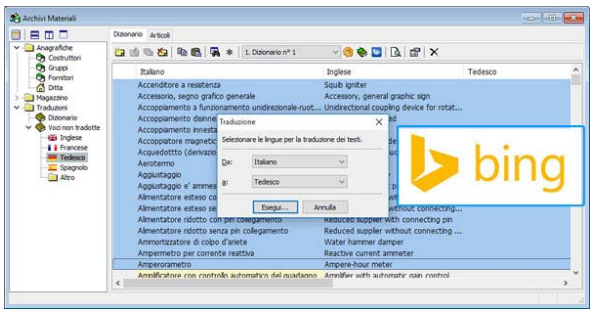
The List of documents attached to materials window, lists all the documents related to the materials used in the project. For each of the following information are listed: acronym, code, description, manufacturer, group, family, attached document, brand and legislation.
All documents can be printed or saved in one PDF file.
All attachments can be attached to the wiring diagram by the Save PDF to multi-function.
You can generate an HTML file that contains an index of all the materials, their descriptions and links to the technical document for quick access to all the information of the equipment.

Multisheet printouts filtered by location and function

The Save multisheet as PDF provides a new option that lets you to select one of the locations in the diagram and then print only the sheets in which there are components associated with that location.
A similar option lets you to choose one of the functions of the circuit diagram.

Automatic translation of texts by Bing® Translator

The production of reports with texts in multiple languages is very frequent. To facilitate the
translation of texts in the Electro Graphics software reports we developed a utility that allows you to perform an automatic translation that is based on the popular Microsoft Bing traslator.



The automatic translation functionality is available in the Dictionary and in the software Electro Graphics Translator, where you can translate the texts not translated, extracted from CAD drawings (CADelet, iDEA, Eplus) or document in Tabula, Cablo, Ampère, Solergo.

Upgrades in Fast Builder

Fast Builder is the tool to design and generate the drawing of a circuit diagram starting from a list of macro-blocks defined by the user.
This tool, introduced in the previous version, has been enhanced with the following utilities.
• Set the amount of macro of the same type to be inserted;
• Reorganization of the macro in the list using drag & drop;
• Enable / Disable macros programmed.

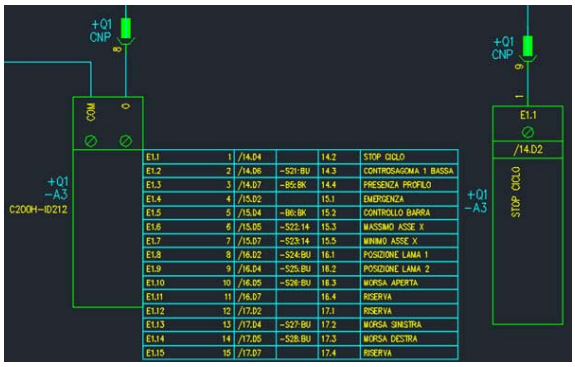
PLC - Typing fast on the grid

In the plc data grid you can now edit the description fields:
• Description 1 and 2;
• Notes;
• User label Description 1 and 2;
• Reference;
• Wire.

Therefore just click inside a cell in this column and type the information to be included.

PLC - Cross reference reporting wire and connected device

The Cross reference function is normally also used to report the reference between controller and PLC operands inside a circuit diagram.
In the cross reference blocks it is now possible to report more information such as wire number and mark of the connected component.
The following figure shows the cross reference table of a PLC unit containg two columns more that shows the new information.



Custom attributes in the symbols Plc

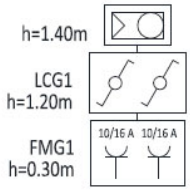
In the electrical diagram you can use two additional standard attributes for which you can customize the labels and descriptions.
In previous versions, the custom attributes are used to:
• extraction of the bill of materials;

• update the attributes in the drawing with the data of the bill of materials;
• draw of the synoptic representations;
• draw the cross reference tables.
Now, the defined custom attributes may also be filled for racks, boards and operands Plc, editing data in the software Electro Graphics Plc. When drawing Plc they are automatically added as new attributes on the respective symbols. No need to customize the symbols of the PLC blocks.

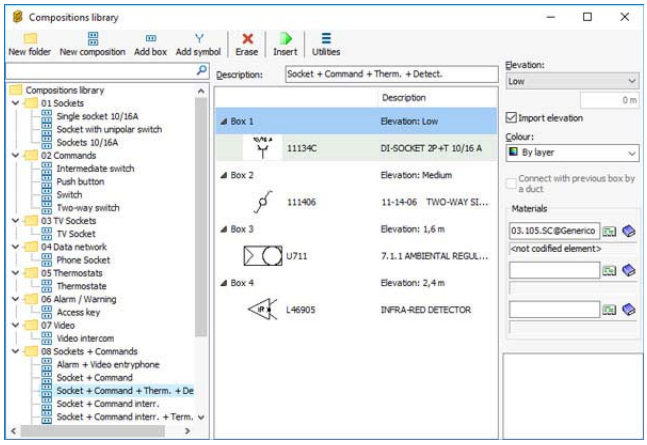
ELECTRICAL SYSTEMS

Compositions library

The Compositions of symbols for plants library allows you to easily create combinations of symbols to represent modular devices and wiring accessories (switches, sockets) inside a box.
A composition can optionally contain more independent boxes installed at different elevations, thus reproducing a "column" of wiring accessory boxes. The following figure shows an example of composition created by three boxes, respectively, with two sockets, two switches and one thermostat installed at different heights.



Each element of the composition may have an associated computation code or, alternatively, a material code to allow the extraction of the estimate, to be processed later with the Sigma software.
The rectangle that represents the box can be connected to cable conduits as any symbol of plant engineering and can be associated with one or more distribution devices using electrical The composition of boxes is full customizable and can be saved in the Compositions library, organized into folders and subfolders.



Following picture shows a detail of a plant of an apartment designed with the aid of the composition of boxes library.

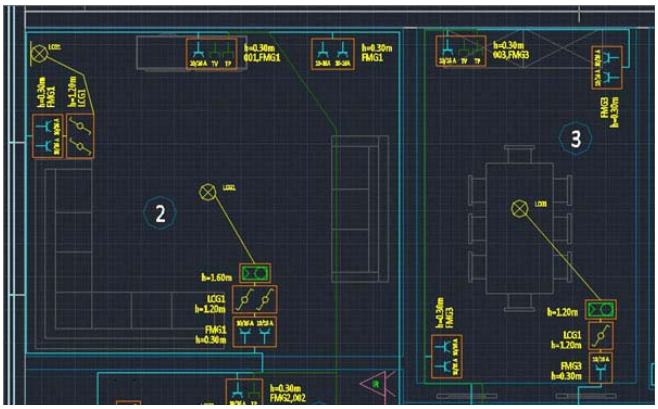
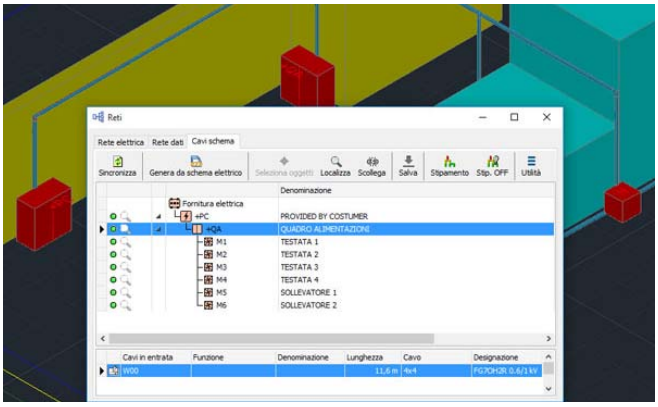


Diagram cables

The new Diagram cables page, in the Networks interface window manages the laying of cables defined in the electrical diagram inside the conduits on a system layout or a 3d layout of a machine.
The multi-sheet wiring diagram is processed and converted into a network formed by the panels and the board machine elements detected. These elements are connected with the appropriate cables defined in the wiring diagram. At this point you can associate each transition element (panel, junction box, equipment) acquired from the circuit diagram to a block inserted in an other drawing with the plant layout.
The following figure shows the layout of an automation system where it was executed the laying of cables acquired from the circuit diagram.



The automatic assignment of the cables identifies for each selected cable, the shortest path of conduit that connects the symbols of component connected by the cable. The cables connecting the two panels, for example, are assigned to the conduits lines that connect the symbols representing the two panels in the drawing. The path search considers the conduits that have the correct destination of use.
A window allows you to view any anomalies detected.
The cable lengths properly connected are updated and reported in the tables list of cable on multisheet and in the Cablo project.
In the Incoming cables box you can view and edit the incoming lines in every panel.
The preview of the packing check all conduits in the drawing, allows to evaluate the section occupied by the bundle of cables inside; to get immediate feedback the conduits sections are highlighted with colored lines representing the state of packing.

Implementation on the Networks window

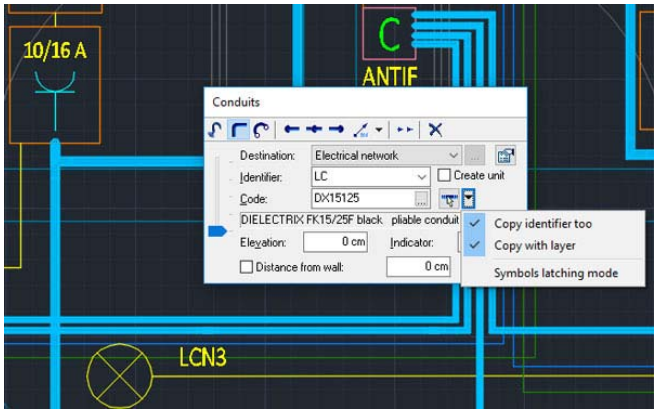
In the Networks management window the following new features are introduced.

Panel Incoming cables in Electrical network window
The grid below the list of the electrical grid shows the list of cable incoming to a selected panel. This grid allows both visualization and editing of all incoming units to the panel and therefore it is useful when there are more units defined. The window that appears for editing the unit data is also used in other unit editing features available in CAD (Units management, Units diagram management).

Data socket list
A new features allows to list the sockets of the data network (structured cabling) and the related cables. The "List sockets data" opens a dialog box that allows the selection of the correct sequence of data to includ in the descriptive table, to set title, text style, size and character.

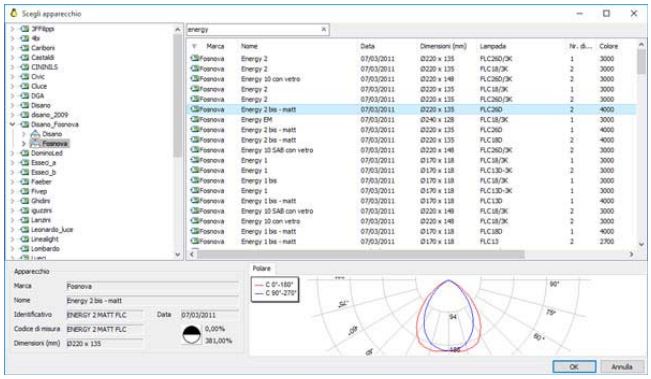
Drawing conduits

If you need to draw a conduit similar to one drawn previously, it could be useful to use a new option added in the Draw conduit window.
Clicking the Copy even layer button (see figure below) and selecting a conduit in the drawing, you can draw a new conduit in the same layer.



PhosPro lighting calculation

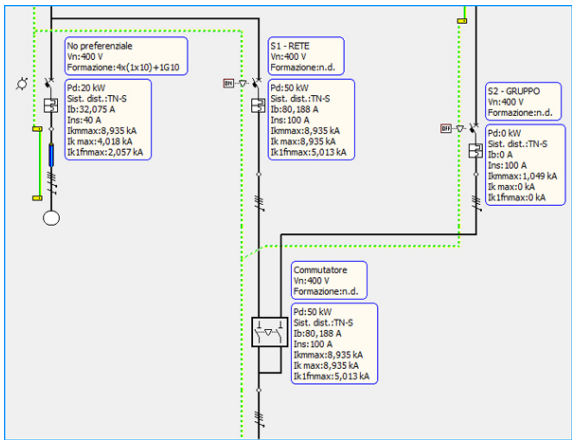
The Lighting devices database inside the PhosPro lighting calculation window, has been improved.
The device list shows more technical data of the lamps so it is easier to find a lamp you need simply scrolling the list. For a more specific search you can use the new search box that allows you to display in the grid only the lamps with any searched technical data. So you can search for a lamp by name or code, measures, power, luminous flux, etc. and you can sort the list based on one of these columns simply by clicking on the column titles.



ELECTRIC CALCULATION - Ampère line

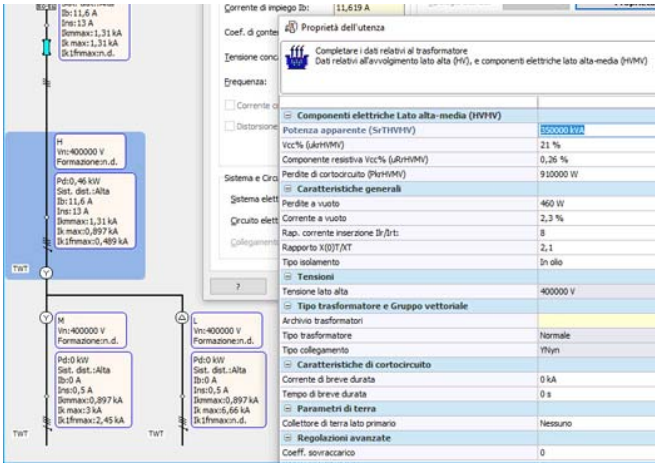
Lines switch unit

A line switch is a device, mechanical or electronic, which allows to feed one line alternately from one of two sources. In addition, it avoids that the two sources can be connected simultaneously.
In Ampere Professional, this function is entrusted to a distribution unit, defined as a network switch. It will have three main tasks:
• to hold the switch device, which can be chosen from the database;
• to control the two input devices from the two sources;
• to realize the downstream electrical junction of the two lines.
In the picture below you can see a network where there is a switch unit.



Third winding transformer

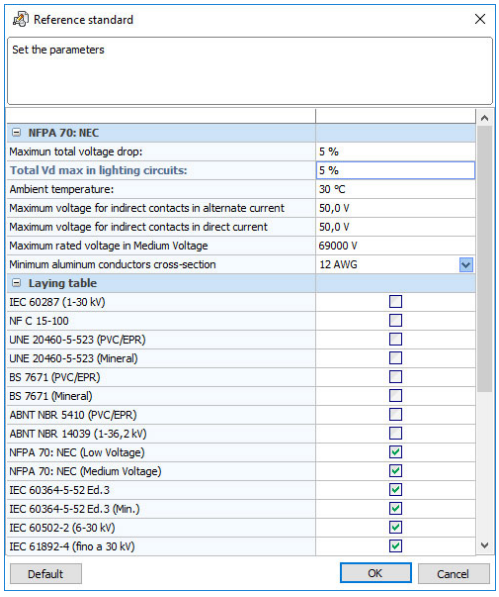
Ampère Professional now allows to insert and manage third winding transformer; this type of transformer is provided with a third winding more than the 'regular' primary and secondary.
The purpose of the third winding is mainly to make interact three lines at different voltage, using a single machine, instead of two transformers.



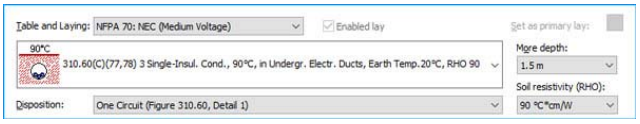
The calculation of networks with three windings transformers follows the standards CEI EN 60909-0, 60909-2 and 60909-4.
The Transformers database, has been updated to handle the third winding. The data to assign to each device follows the standard IEC 60909-4. It is possibile to fill in the loss due to short-circuit both as percentage or number in Watts.

Usa standard NFPA 70: NEC

Electrical Design in the United States, in civil and industrial sectors, refer to NFPA, National Electrical Code. NFPA stands for National Fire Protection Association, and is the national association that sponsors the Technical Committee which prepares technical standards NEC.
Creating a new project, in Ampère Professional now you can choose the Statement of NFPA 70: NEC 2011 edition (currently used by most of American States). It indicates the minimum section of the cables to be used, how to size the phase conductors, neutral and protective; It provides the flow of cables and the impedances of conductors; annex a derating tables for temperature, to close; It indicates which types of cable are enabled for each of the types of installation proposals, in low and medium voltage. Cable management is with the sections in AWG (American wire gauge).
In addition to the NEC, the program refers to the IEEE Std 141-1993 standard and IEEE Std C37.010 for general project settings: supply, frequency, voltage and current ratings, calculation of fault currents and checks.



The laying tables, used to NFPA 70: NEC (Low Voltage) and NFPA 70: NEC (medium voltage), manage AWG cables.



The US networks, in addition to being operated at 60 Hz, make extensive use of electric circuits 2F + N and the transformers with center socket w/Center, to which connect the neutral wire. Furthermore, the neutral to earth is normally executed with the TN system.

Laying tables

Two new laying tables have been added to manage the third edition (2009) of IEC 60364-5-52: one for plastic insulated cables and one for mineral insulated cables.
Totally new are the laying tables of IEC 60502-2 standards for medium voltage cables (6-30 kV) and IEC 61892-4 for offshore cables, in low and medium voltage up to 30 kV.
To use the laying tables, you must activate them in the Reference standard window, called up from the Rules and global constants tab in the Properties window.
Now you can use the standard IEC 35024/1 UNEL for aluminum cables for the poses in the air, by applying the same coefficient of 0.78 to the data for the inground laying.

Reverse sequence in the calculation of the fault

In the calculation of non-symmetrical fault currents, Ampère now also considers the negative sequence of the impedances, instead of approximate it equal to the direct sequence. This step improves the calculation in the presence of rotating machines, such as generators and synchronous or asynchronous motors. In them the inverse impedance is always comparable to the sub-transient impedance values, especially during the permanent fault.
Now Ampère manages the reactance of rotating synchronous machines at the zero sequence.

Cables database

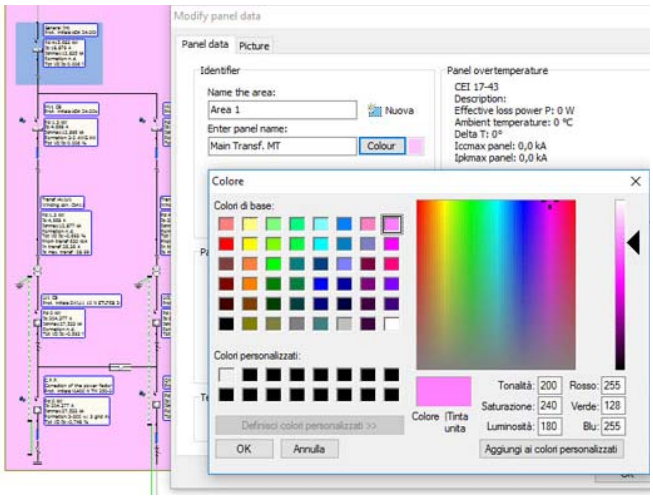
For the cables are now handled more properties: Isolator type, Maximum temperature of cable, Sheath and Armor. The section Capacities has been expanded, in order to fill in more detailed specifications provided by some manufacturers: reference temperature of the flow for laying in air and inground. For laying inground is now possible to specify up to two pairs flow / ground resistivity.

XLPE isulation

The introduction of the laying IEC 60502-2 table has requested the insulator management XLPE (Cross-linked polyethylene). The XLPE insulation has been extended to all compatible laying tables, although in fact only changes the ability to filter into the cable adapter.

Color of panels in the mesh

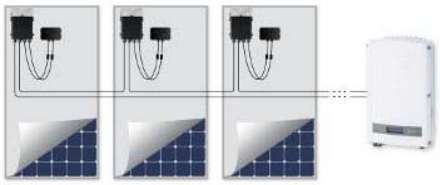
In the Panel dialog window you can choose the background color of the panel drawn in the mesh. It may be useful to mark different areas of a project, when the number of panels increases. Or as a reminder to the progress in the implementation of the project.



PHOTOVOLTAIC ENGINEERING

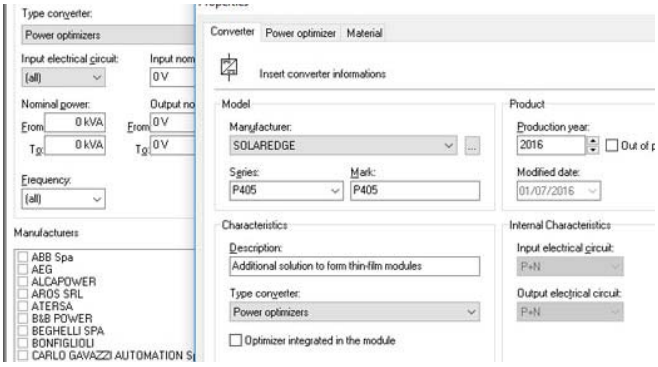
Power optimizer

The power optimizer is a DC/DC converter connected to each photovoltaic module replacing the junction box. The power optimizers increase the energy produced by the photovoltaic system by acting as impedance adapter and constantly monitoring the maximum power point (MPPT) for each module. In addition, some power optimizers, monitor the performance of each module and communicate to the inverter the performance data in order to improve the cost-benefit ratio in the module maintenance. The maximum power point (MPPT) for each module allows flexible system design with multiple orientations, inclinations.



Database of power optimizer

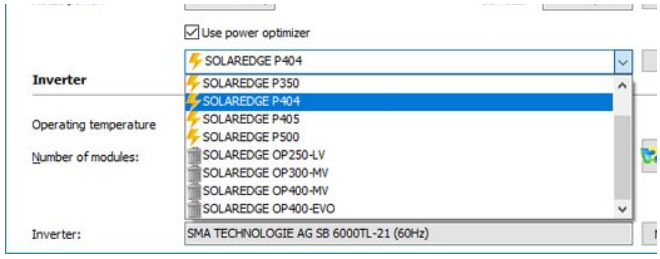
Power optimizers used in photovoltaic systems are a type of converter, so in Solergo they are included the Converters database. In addition to the default devices you can add more power optimizer filling in the data required.



System with power optimizer

In the configuration of a photovoltaic system with Solergo, inside the Components page, you can now set the use of power optimizers.

Once you choose the PV module you can activate the check box Use power optimizer; a drop-down list suggests all non-integrated optimizers compatible with the previously selected PV module. If the selected PV module has a built-in optimizer, Solergo automatically switches to the use of the optimizer.



Electrical checks in syetem with power Optimizers

Below is the list of electrical tests performed by Solergo in the presence of the power optimizers.

- Input power: maximum input power (maximum power of the module or group of modules) must be less than the nominal power DC optimizer.
- Lower voltage limit: minimum operating voltage of the pv module (Vn min) must be greater than the lower limit of the optimizer.
- Maximum voltage: Maximum working voltage (Vn min) of the pv module must be less than the maximum input voltage optimizer.
- Maximum vacuum operating voltage (Voc max) of the pv module must be less than the maximum input voltage optimizer.
- Maximum module output current (Isc max) must be less than the maximum current in the optimizer input.
- Maximum output current by the optimizer (ratio of installed power and voltage input inverter DC) must be less than the maximum current available in the optimizer output.
- Limits of elements in series (minimum, maximum and maximum power per string) must be according to indications of the house.

Producibility of system with power optimizers

In the presence of power optimizers the loss due to mismatching and decoupling of the modules are reset to zero. In the case of close shading, the power optimizers allow to limit the loss only to the shaded modules, without affect the producibility of the whole string of modules. This phenomenon is considered in the simulations for evaluation of losses due to close shadows only considering the loss of the direct components of irradiation in shaded modules.

Alignment to standard UNI 10349-1 2016 (italy)

The climate database in Solergo has been aligned to standard UNI 10349-1:2016 e UNI 10349-2:201.

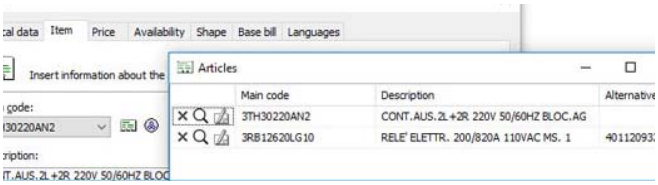
The UNI 10349-1 provides, for the Italian territory, the conventional climatic data required for checking the energy performance of buildings. The standard also provides the calculation methods to:

- split the solar irradiance into direct and diffuse component.
- calculate the radiant energy received from a inclined and oriented fixed surface.

COMPUTATION

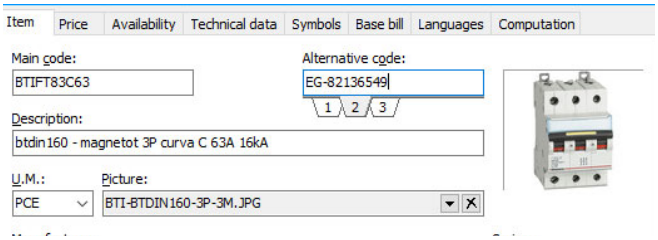
Concatenated material codes

An item in the bill of materials now can be an assembled article, so it can contain several materials codes.
These items can be extracted from a circuit diagram, so from symbols with more material codes concatenated in the Main code attribute, or be composed in Tabula.
Editing a distinct material item with several codes, in the Article tab, the main code box displays the list of assembled material codes. You can edit the code list using the button Archive materials aside, allows you to add, edit or delete each item.



Multiple alternative codes

For each material item now you can fill up to three alternative codes. You can code the items with custom code to suit your needs and warehouse management.
When editing an article in the Articles database in the Alternative code the new menu with boxes allows you to compile the custom codes.



News about printpouts

The window for the launch of Tabula printouts has been improved on the appearance by rearranging the layout of the many options available, in order to make the most clear and simple interface configuration to get personalized documents faster and more intuitive way.
A number of options have been added to in order to further extend the customization of the printouts. These options are valid for custom templates.
- Adapt row height
- Distances lines with different device-mark
- New page at Location change
- Group by Location and Function

Some options have been grouped in a form that can be open with the Advanced button. New are the following options.
- Print alternative code
- Do not print item descriptions not translated