

# 2020 Series

...simply effective!

## Software for electrical and photovoltaic engineering

### CADelet, iDEA, Eplus - Electrical CAD

#### CADelet now supports AutoCAD 2020

CADelet line software is now compatible with AutoCAD from 2007 to 2020 at 32-bit or 64-bit.

#### Bookmark for diagram sheets, with notes, status, priorities and classifications

A bookmark is a container of descriptive properties that can be assigned to a sheet in the diagram as a reminder. The purposes to use bookmarks can be a lot, so some of the properties available can be applied according to criteria that can be defined for your needs. For example, you can note checks to be performed or requests for changes, then assign the "To verify" or "To execute" properties to the bookmark; afterwards, these properties can be switched to Verified or Executed.

Each bookmark can have a title to identify it in the list of Bookmarks and a description as the main content of the reminder; it is possible to fill in the Responsible to indicate the person to whom it is addressed; catalog it according to custom categories; assign a priority to it, according to a customizable criterion.

It is also possible to choose one of the following status options based on the purpose for which you decide to use the bookmark: To verify, To execute, Note, Verified, Executed.

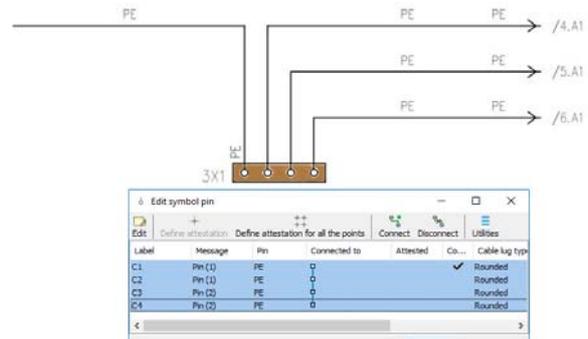
Each bookmark automatically shows the name of the drawing and the mark of the sheet to which it is associated.

A special window lists the bookmarks of the project grouping them according to their properties: Status, Priority, Manager, Category, Design.

#### Management of equipotentiality bars on the scheme

CADelet, iDEA, Eplus 2020 introduce the possibility of set an equipotential link among different pins of a component in order to have the same number in the wires connected to them.

The easy *Edit pin component* dialog box allows you to customize the pin data of each component of the diagram and interconnect them together also. Moreover you can also save changes to the component in the Symbol Library for the following projects.



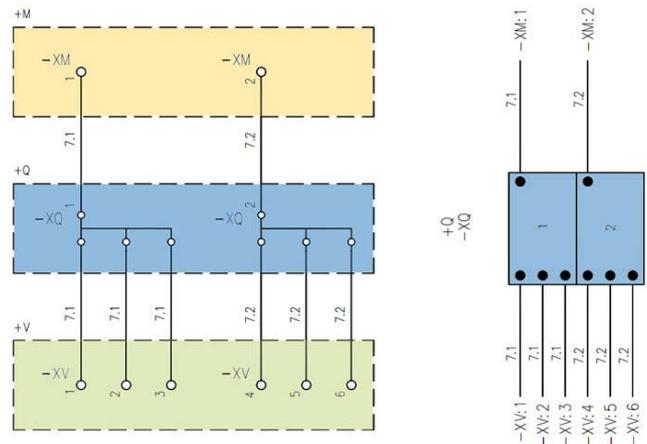
#### Wire constraint and wire number propagation between equipment pins

The equipotentiality between pins of the same component can include the constraint of the number of connected wires.

#### Terminals with three or more pins

It is now possible to represent single-level or multi-level pass-through terminals, with three or more connection points. Terminals of this new type are available in the Symbol Library. The connection between the pins can be edited using the Edit pin symbol functions.

The next picture shows two terminals with four equipotential pins each one.



With such a configuration the wires connected to the four pins of the component will assume the same num-

ber. In the representation of the terminal block, optionally, all the pins of a terminal can be represented with a single element, as for the multi-way terminals.

## Marking and coding of wire or bar bridges on the diagram

Jumper connections between terminals, made with wire or bar bridges, can now be marked in the wiring diagram and coded to appear on the list of materials. These connections can be designed using wires with a special section with configurable color. Consequently, all the data of this particular type of bridge are on the terminal board and are managed by Cabo.

## Design multiple-level terminal blocks with custom plans

A new automatic terminal block drawing mode is now available for separate levels. According to the new terminal board design mode, the terminals are divided into distinct groups for each level. The terminal block thus distributed can be drawn on different sheets. The multiple-level terminal blocks can be customized with detail for each floor. The graphic configuration of the traced terminal block is managed with customizable profiles.

## Data exchange of PLC operands with Siemens TIA Portal

The PLC Management module in CADelet and iDEA now manages project configuration formats for Siemens TIA Portal ©. The Open and Save as functions allow you to import and export files in SDF, XML, XLSX format specific to the Siemens TIA Portal © project configurator. The export for files in Siemens format can be configured with a series of options.

## I/O modules and flexible management of PLC operands

In the new Plc manager running in CADelet and iDEA it is now possible to create representations of peripheral modules on external bus. This feature allows to design a PLC card with a series of connectors, each of which is dedicated to a group of Plc operands.

## Thermal verification of the panels, with integration and calculation of forced ventilation and conditioning

The verification of the internal overtemperature of the switchboard is carried out using the method reported in the IEC 60890 standard.

The verification of the internal overtemperature of the switchboard can be performed in CADelet, iDEA and Eplus, starting from the data of the equipment present in the wiring diagram.

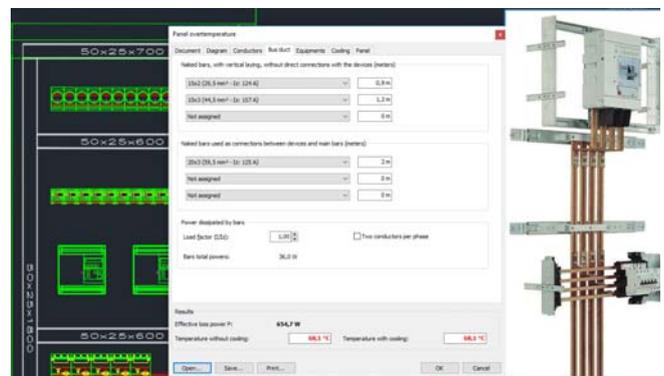
The function now allows:

- take into account any bars present inside the cabinet or panel;

- calculate and evaluate a cooling unit, if necessary.

**Bars:** it is possible to assign up to three types of copper bars with vertical arrangement and up to three types of copper bars for connection to devices (horizontal). The software allows to estimate the power dissipated by the bars defined.

**Cooling:** if the maximum temperature inside the electrical panel is higher than the maximum allowed, it is possible to add a cooling device to decrease the panel temperature. As an alternative to natural ventilation, you can choose between a fan and air conditioner. Air conditioners are managed in the archive with the Chiller type, and with cooling capacity specified according to the DIN 3168 standard.



## New project configuration management

The configuration profile of the processing parameters and graphic preferences is assigned to the job order at its creation. It is possible to manage different profiles, for example, for different customers, different countries, or for different types of projects. In CADelet, iDEA or Eplus 2020 all parameters and preferences are organized in two new windows. The settings and preferences that affect the drawing environment, multi-sheet management and data processing can be changed in the dialogs that are activated with the Preferences function (EGPREF command).

**Configuration parameters:** allows to edit the parameters related to the graphical structure of the multi-sheet and management of the electrical diagram. Here it is also possible to modify the parameters referring to the drawing of the floor plans and topographic diagrams.

**Preferences graphical environment:** allows to edit settings, customizations and parameters that affect the design environment, data processing in CADelet, iDEA, Eplus and some options for interfacing with other Electro Graphics software. They are valid for all projects.

## Project configurations

In the new Organization of work profiles section, it is possible to set work profiles for each module of Electro Graphics software and save the set of settings within a single customized configuration. This configuration can

be assigned to a job order in order to find the predetermined work environment.

### PDF with bookmarks organized by sheets and grouped by titles, locations, functions and by components

CADelet, iDEA, Eplus create the PDF file of the multi-sheet wiring diagram with a high degree of customization given the numerous options and preferences available.

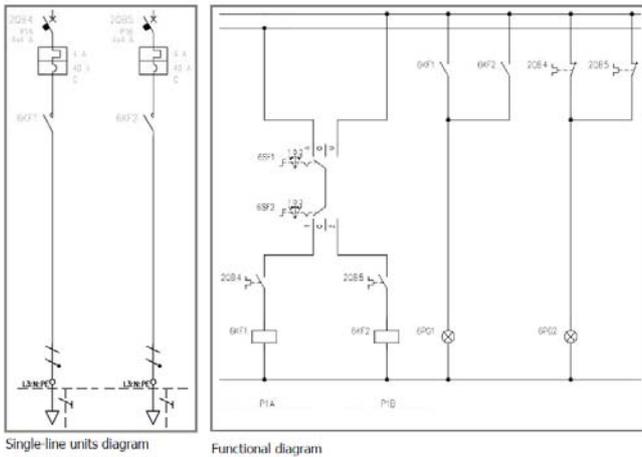
With the new version, in particular, the display of Bookmarks has been further developed, making the document interactive with the possibility of navigating among the various elements of the scheme. Bookmarks are automatically generated during PDF creation and displayed in the Bookmarks pane of the Adobe Acrobat Reader PDF viewer; with a click they refer everyone to a page of the document or to a particular view of it.

### Generation of functional diagram related to the devices used in the Ampère project

The automatic design of the single-line diagram can now include the auxiliary circuits that implement the command and control functions connected to the power devices of the electrical panel.

These circuits, defined as "auxiliary functional diagrams", can be assigned to the switchgear devices in Ampère (network calculation software) or in CADelet, iDEA, Eplus (electrical CAD); they can be selected from a library that can be completely customized in CADelet, iDEA, Eplus.

For the more complex cases, the auxiliary functional schemes can be composed of several elements also referring to several users.



## Cable - Wiring harness

### Multiple bundled cables connected to terminal blocks and connectors

For each cable in the project it is now possible to set a multiplier to define several cables in parallel connected to the same terminal block or connector. The number of

cables in parallel appears in the cable lists and terminal boards, and in the list of materials (in Tabula).

### Verification of compatibility of the section between terminals and connected conductors

A new feature allows you to check if the terminal section is adequate for the connected cables. The software highlights in red the terminals connected to wires with a section not included in the minimum and maximum pre-set section limits for the terminal; if the data are not available the terminals are highlighted in yellow.

### Coding each connection

it is now possible to code each connection present in the wiring diagram with an article taken from the Cables archive. This function is used to count the connections extracted from the automatic panel Routing, for the list of materials in Tabula.

The Summary of conductors printout specifies the designation, color, section, code, description and length of each conductor.

## Tabula - Materials list

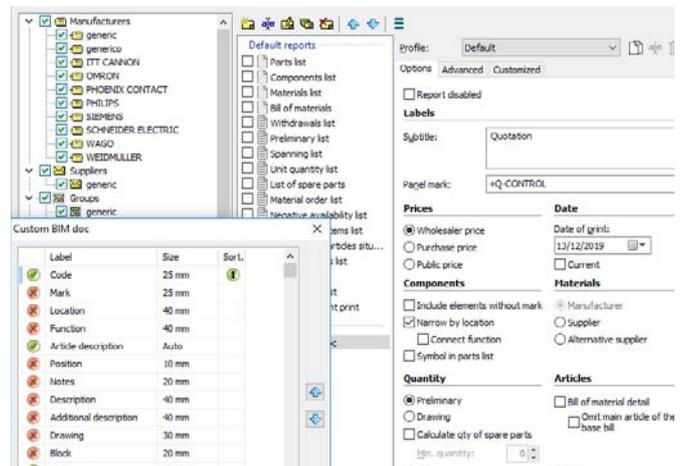
### Customizing print profiles

It is now possible to save all the models of the documentation to be printed and the set of settings in customizable profiles.

Saved profiles can be used in new projects; it can be useful to define custom profiles based on the type of project or the client.

Each profile saves the list of predefined and custom print templates, and for each of them the list of printed information, all options active or not, page and title block customizations, specific translations.

Within a Tabula print profile it is also possible to disable certain prints in order to create a list of only documents of interest.



**Quantity of spare parts in the bill of materials**

The parts list is the list of materials in the bill of a project, for which a certain number of spare parts is provided. For each item in bill of materials it is possible to specify the Quantity of spare parts, as a numerical value or a percentage value applied to the preliminary quantity or to the final quantity.

The spare parts list can be edited quickly by exporting and importing an Excel spreadsheet. It can be printed with the items ordered and grouped by material code as well as location and function.

The supply time of the material can now be filled in the availability data of each article in the Articles archive (materials archive). Therefore it is a value used in the material lists in Tabula.

**Parametric export of material and distinct archives**

A new function performs the export of the list of material codes present in a list in a text file in order to allow the processing of the list by management software or customized third party procedures.

**Deploying and updating database**

For all device types present in the database, new series were introduced.

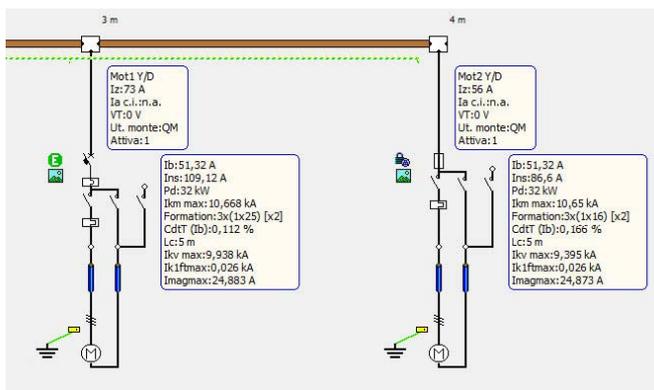
**Ampère line - Electric grid calculation**

**Starting asynchronous motors in direct, star / delta and soft starter mode**

Ampère 2020 manages four different types of engine starting defined as:

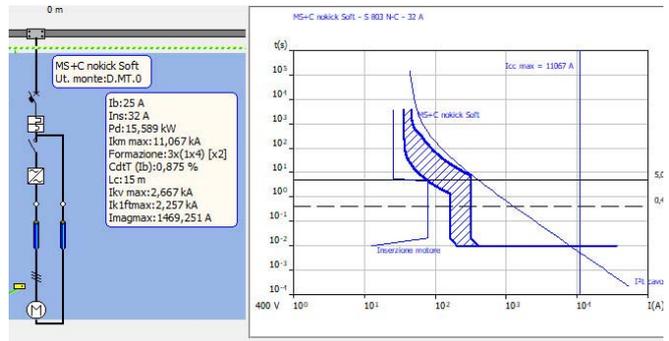
- Direct starter;
- Star / delta starter;
- In line soft starter;
- Soft starter delta.

Ampère 2020 allows the dimensioning and selection of all the elements of the starting system, with the analysis of currents and voltage drops, as well as failure analysis. In particular, the initial peak current has been added, calculated according to the IEC 60947-4-1 standard.



**Soft starter electrical characteristics**

Ampère now analyzes motor soft starter with direct or delta start-up mode, that is with direct or star-triangle connection.



**Auxiliary elements for control and protection devices on functional diagrams**

The automatic design of the single-line diagram can now include the auxiliary circuits that implement the command and control functions connected to the power devices of the electrical panel.

These circuits, defined as "auxiliary functional diagrams", can be assigned to the protection devices in the Ampère electric grid's units; The circuits can be selected from a library that can be completely customized in CADelet, iDEA, Eplus.

For the more complex cases, the auxiliary functional schemes can be composed of several elements also referring to several users.

**Management of square bars according to CEI UNEL 01433-72**

Ampère 2020 now manages calculation and verification of bars in the switchboard according to the CEI UNEL 01433-72 standard

In detail, Ampère 2020 manages the current flow rates for flat glossy bars of electrolytic copper with sharp edges in free air, with natural ventilation.

This is the sizing of copper bars used for the greater part inside the paintings, and not only.

**MT measurement and protection transformers (CT, VT and HT)**

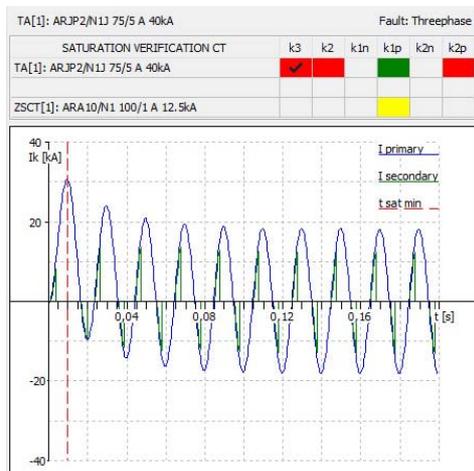
For medium voltage units it is now possible to insert the protection measure transformers CT, VT and HT.

For each device it is possible to set up to 5 different types of protection / measurement transformers, useful for translating the input (voltage or current) into an adequate signal for general protection.

For each CT / VT protection / measurement transformer it is possible to edit the transducer parameters or select it from the archive.

Ampère execute a dynamic analysis on all types of fault current (Ik, Ik', ik' and Io) for the purpose of saturating CT / HT

A chart represents the results of the individual saturation checks distinguishing linear CTs from non-linear CTs: positive results, errors and warnings are reported.



## Extension and updating of the device database

New series for all types of devices have been added to the Ampère database.

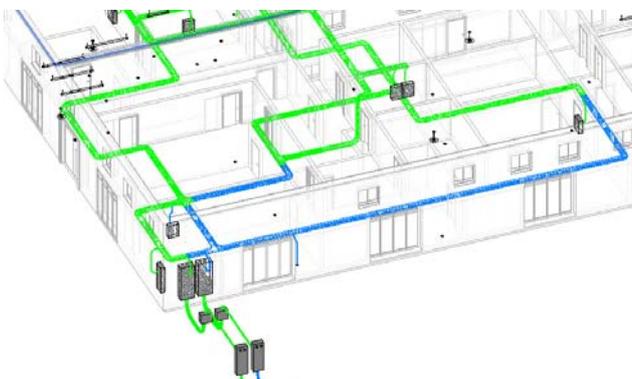
## Eglink - BIM data exchange

### Compatibility with Revit 2020

Eglink is now compatible with Revit 2020 also.

### Recognizing cable routes in Revit and cable routing

The new Eglink routing function recognizes the path of the cables among the electrical elements of a project. Eglink scans the cable tray and ducts designed in Revit and connected to electrical equipments and allows to evaluate the routing of electrical circuits. Eglink rebuilds the electrical grid and identifies the shortest path of each circuit in order to join the electrical panels and devices that this circuit connects. Eglink calculates the optimal cable routing, the real length and the proximity.



## Calculation of the optimal route for cables, real length and proximity

The routing of electrical circuits, an operation automatically performed by the Eglink software, allows you to have the following advantages.

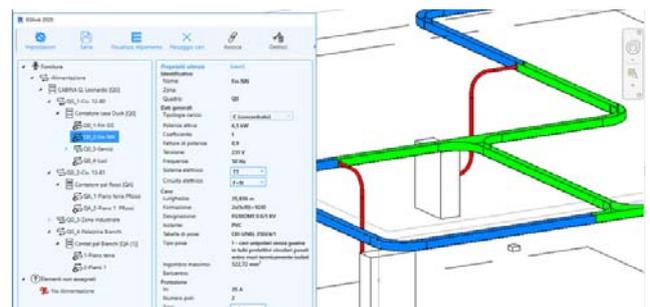
- Actual estimate of the length of the connection cables.
- Exact value of the number of proximity circuits, that is of the cables that share the same cable duct, for a correct calculation of the capacities.
- Assignment of the laying type to the unit depending on whether the cable passes through cableway or pipes.
- Check of the cramming, also with graphic display, to identify the elements that do not guarantee the removal of the cables according to the standards.
- Use of customized labels showing the data of the cramming and the list of circuits that transit on certain sections of cable trays.

Appropriate specific functions allow to modify the shorter routing calculated by the software if it does not represent the designer's needs.

It is possible to exclude specific sections of conduit and set routing rules based on the exclusions made: Eglink highlights alternative routes for a quick evaluation by the designer.

## Calculation of overall dimensions of cables and cable duct filling

The new function calculates the overall dimensions of the cables and allows you to preview of the filling of the cables inside cable tray and ducts drawn in the Revit model. The pipelines are highlighted with different colors based on the filling state.



## Solergo - Photovoltaic engineering

### Personalized incentive related to energy

It is now possible to set incentives that can be applied separately on the energy produced, self-consumed and fed into the grid; they can be combined together.

### Single plant layout in case of multiple generators

If the photovoltaic system is composed of several types of modules and / or more types of inverters, then split into several partial homogeneous generators, Solergo

prepares a layout for each generator but now also allows the creation of a single system layout.

When the Single system layout mode is activated, Solergo creates an overall layout of the elements of all the generators designed in a single plan. The final result of the positioning of all the elements of the plant and their automatic connection is the development of the layout of the entire photovoltaic system. It is therefore possible to evaluate the project in its entirety, including the simulation of losses due to shadowing near the modules.



### Flexibility in systems with optimizers

Selecting the components of a photovoltaic system it is possible to use power optimizers. Solergo allows to check different connection configurations to power optimizers:

- one photovoltaic module optimizer;
- one optimizer every two modules in series;
- one optimizer for every two modules in parallel (versions with double input for parallel connection of two modules).

The use of power optimizers allows the parallelization of strings formed by a non-homogeneous number of optimizers / modules. For this reason Solergo, in the presence of optimizers, highlights the different strings allowing flexibility in the composition of the connections of each inverter.

Under these conditions, it is also possible to vary the number of connected strings and the number of optimizers in series.

### Sizing factors for each inverter

Some grid-connected inverters provide the minimum and maximum sizing factors within which they can be sized in the relevant technical information. It is not uncommon to find inverters that can be oversized at 150%, external value of the default range. The inverter technical data sheet now allows the introduction of these two factors used by Solergo in carrying out the appropriate electrical checks.

### Extension and updating of the module and inverter databases

For all the types of devices that can be used in a photovoltaic system, new series have been integrated into the Solergo database.

### Service loads in plant where whole energy is sold

In pv plant where whole energy is sold (only one energy meter) now it is however possible to define the service loads (night lighting, alarm, cabin conditioning ...); they are installed specifically for plant services and participate in operating costs. The energy withdrawn from the grid for the service loads is reported in the economic analysis as annual costs. Self-consumed energy is not considered as savings due to self-consumption but helps to reduce grid energy withdrawn.