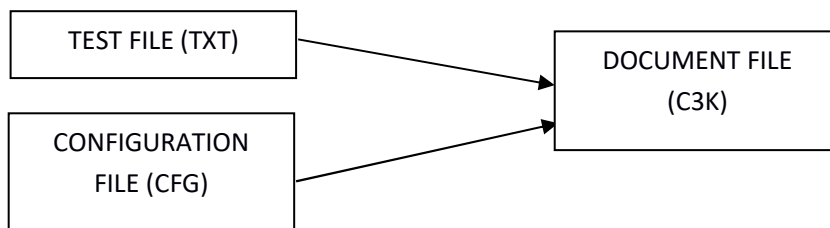# Cube 3k

User manual

# Summary

1.0 Test view

1.1 Loading test

To load a test, click on the File / Load test menu. After selecting the test file to load, the program will show the configuration selection window, then select the appropriate configuration and confirm with the OK button.
If you want to start a new configuration from scratch, you can press the **New** button and start from a completely empty sheet.
If, instead of loading the data relating to a single test, you want to compare those from multiple tests, the program provides the compare tests function, this function, always inserted in the File menu, allows you to drag and drop all the files you want to compare.

The "Load document" menu allows you to upload a previously created complete document instead.
A document is a C3K type file, which represents the union of a configuration template and a test file.
Unlike loading a test, which always requires the choice of a layout template (or CFG configuration) to be displayed, the document file is a complete file that alone contains both test data and the display configuration.
For the creation of a model see the next chapter.

```
┌─────────────────────────┐
│   TEST FILE (TXT)       │──────┐
└─────────────────────────┘      │      ┌─────────────────────────┐
                                 └─────▶│   DOCUMENT FILE         │
┌─────────────────────────┐      ┌─────▶│       (C3K)             │
│   CONFIGURATION         │──────┘      └─────────────────────────┘
│   FILE (CFG)            │
└─────────────────────────┘
```

1.2 Document viewing window
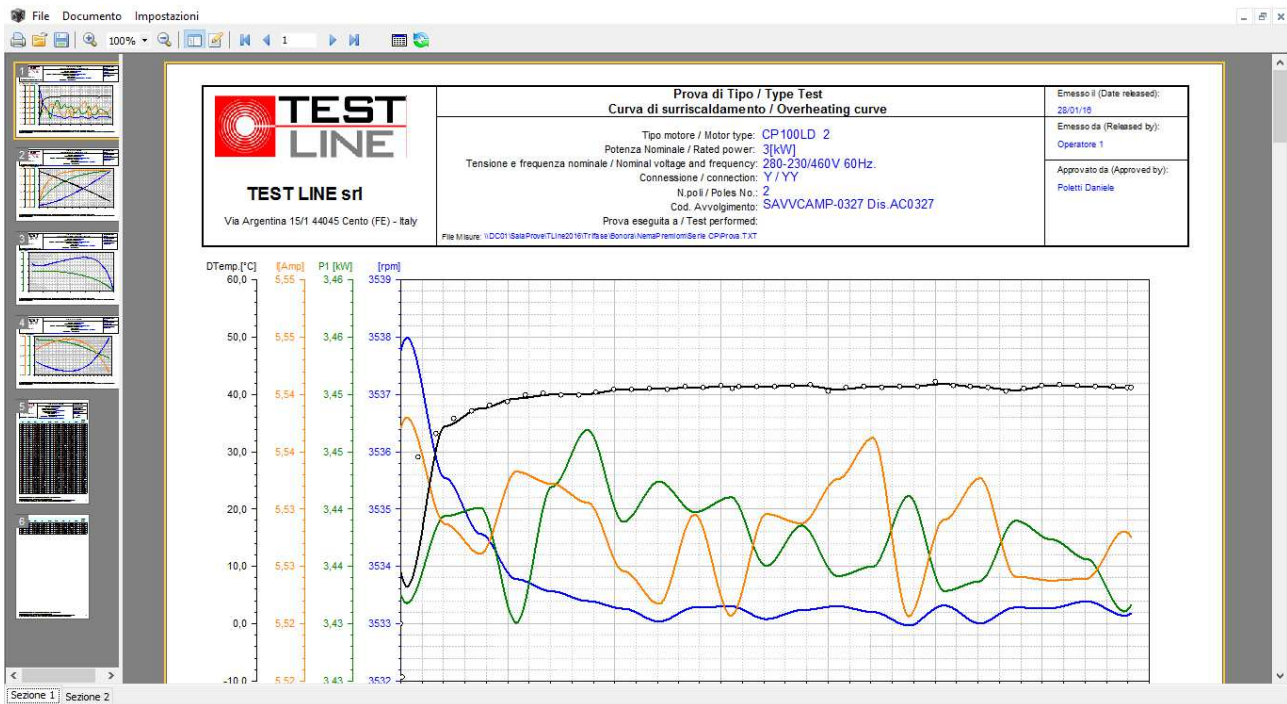
This is the window where all the tests are displayed.
A Cube3k document is determined by the union of one or more data sources (tests) and a configuration file, which contains the information to view the data in the desired format.
The document is made up of one or more sections, which can be selected by clicking on the relevant bookmarks at the bottom left of the document window, each section is made up of one or more pages.

The left column displays the thumbnails of all the pages that make up the section currently selected, while the page is displayed within the main pane.
By clicking on the various thumbnails you can directly access the relative page.

This is the structure of the menu that allows you to access all the functions available in the display window:

Documents->
> **Save document:** allows you to save the current project in a document file that represents the sum of the loaded data and the display model.
> **Configurations**->
>> **Load**: Upload a display configuration (.CFG file)
>> **Save**: Save this display configuration
>> **Save as**: Saves the configuration allowing you to change its name
>> **Print**: Print the pages of the current section
> **Convert**->
>> **Microsoft Excel 2000**: Converts the document to Excel 2000 format
>> **Microsoft Excel 2007**: Converts the document to Excel 2007 format
> **Settings**->
>> **Configuration Editor**: allows you to access the document configuration window (see 2.0).
>> **Value editor**: Activates the window for viewing and editing the data of the current test (see 1.2.1).
>> **Edit data source**: Activates the window for editing data sources (see 1.2.2)
>> **Add Section**: Adds a new section
>> **Delete section**: delete the current section

Combine sections: activates the window that allows you to combine several sections into one (see 1.2.3).

Positioned horizontally in the upper part of the window there is a bar with various icon buttons, which allow you to access some functions more quickly:
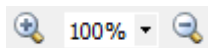
This button allows you to print the document.

This button allows you to load a new display configuration.

This button allows you to save the current display configuration.
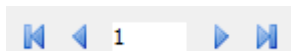
100% ▾ These buttons allow you to manage the viewing zoom of the pages.

Allows you to enable or disable the display of the thumbnails of the document pages.

Allows access to the page configuration window (see 2.0)

1 This section allows you to move between the various pages that make up the document.

Allows you to access the data editor window relating to the loaded test see 1.2.1.

Allows you to access the window for editing the data sources that make up the current configuration.

It allows the refresh of the whole report, useful if numeric data has been modified using the value editor window.

1.2.1 Values editor

This window allows you to view and modify the data that the program has loaded from the selected test (s). When Cube3k loads a test, it automatically creates two different data tables, one that contains the plate data, the information that indicates the properties of the test, the other instead contains the data matrix.
The Tables selector allows you to view which of the two to display. By selecting the Values element, the columns of the channels present in the test file will be displayed in the grid, by clicking on Targa instead you switch to the display of the test data, this table, unlike that of the values, is always formed by a single row of data.
As for the display of the values table, the program also allows you to make filters in order to display the groups of data that you want to control more quickly.
In the Filter box you can select the field on which to perform the filter, the comparison operator and finally the filter value. Once the button is pressed, only the rows that meet the criteria entered will be displayed in the grid.

1.2.2 Change data source

All the data that is displayed within the program derives from two separate tables, which the program creates each time a test is opened. While the plate data table is made up of a single row of data and can therefore be considered as a simple vector, the test data table can instead contain an unspecified number of rows (we therefore speak of a data matrix).

Whenever you use data from the Test data table, it is easy for them to be filtered so that you can work exclusively on a very specific sub-group of them. To make this type of choice, the program provides simplified functions that allow you to create real selection queries to isolate the desired data groups.

Sometimes, however, when loading a test it may be necessary to change these filters on the fly, which perhaps on this particular occasion instead of working on group X must do it on group Y, in this case the data source modification function must be used.
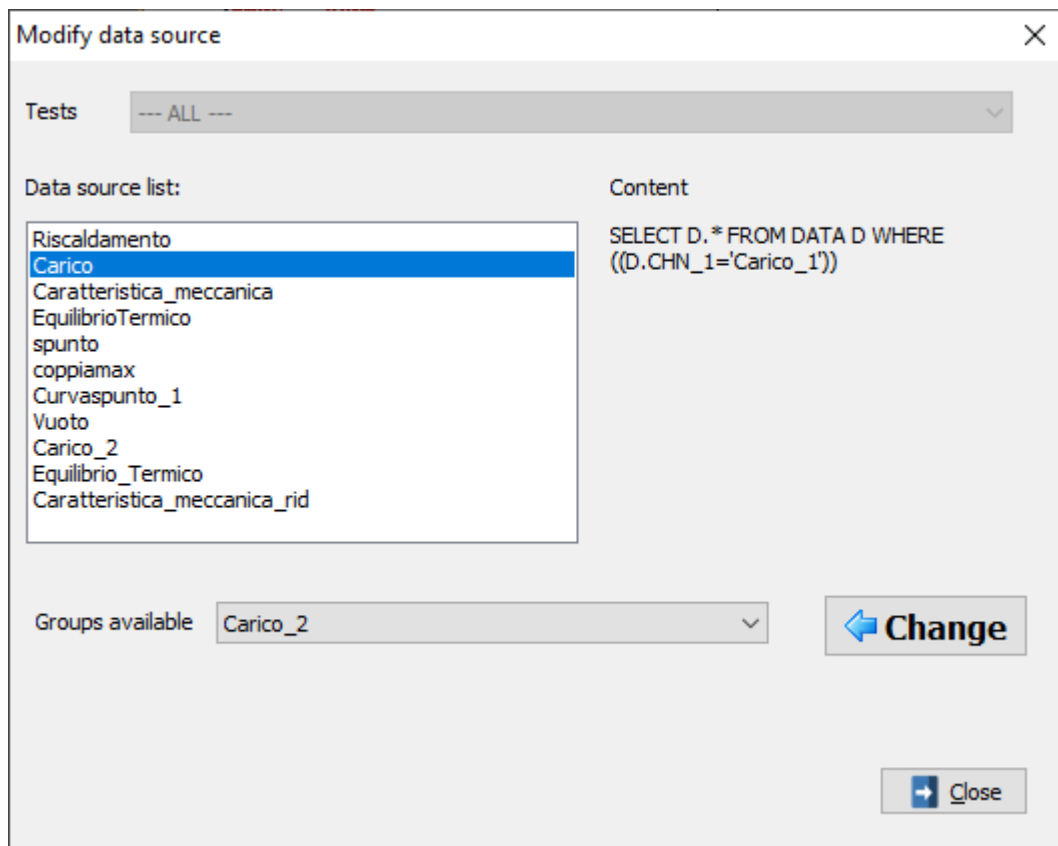

In the visible window, the box that lists the data sources available within the loaded section. Selecting one of these items in the right part, under Content, will show the selection query attributed to the selected data source. To modify this query, select the new data group to be assigned to the data source in the Available groups list and then press the **Change** button. Everything that used to refer to the selected data source will now refer to the new group.

NB: in the example the data source called "**Carico**" which referred to all the data of the **Carico_1** group will now be diverted to the **Carico_2** group.

1.2.3 Graphical value viewer

The program allows the dynamic display of the values relating to a graph in relation to the movement of the mouse on it. To activate this function click on the graph for which you want to activate the function.
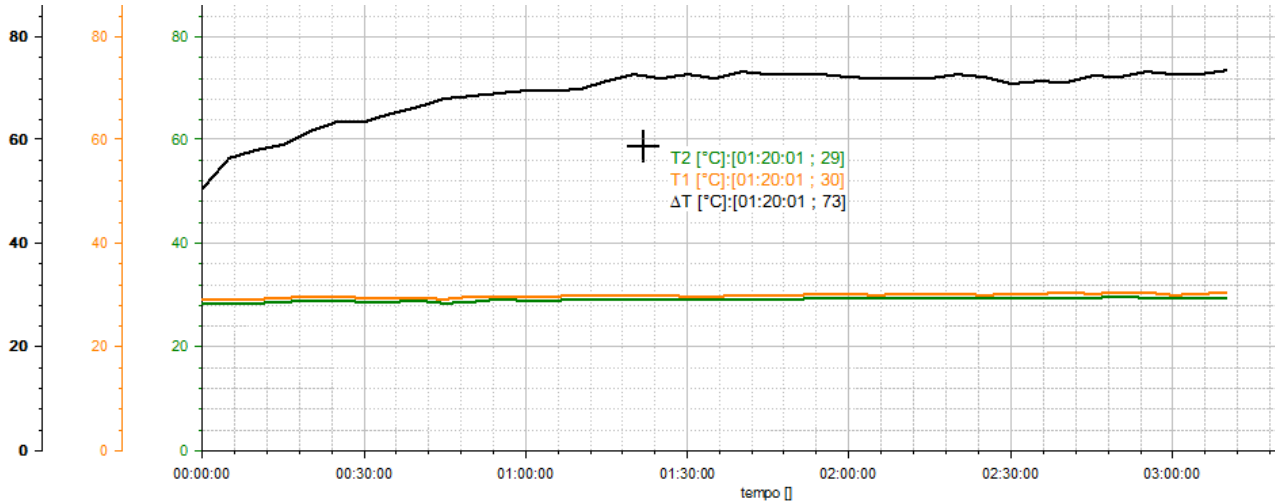

At this point, in correspondence with the mouse cursor, a series of data will appear that will show the values detected in the graph according to the position of the mouse, each row represents an axis and takes on the color of the axis itself.

The program can work in two different modes: the first displays only the values that actually exist in the data relating to the graph, then it will always display the existing value closest to the cursor position. The second mode, on the other hand, allows you to activate the "position" display, so the values shown will be those referred to the position of the mouse cursor.

To switch from one mode to another, press the CTRL key while moving. In the top left, the name of the selected mode will appear for a few seconds.

1.2.4 Combine sections

As previously stated, each document is made up of sections. If you need to merge different sections into one then you need to use this function.
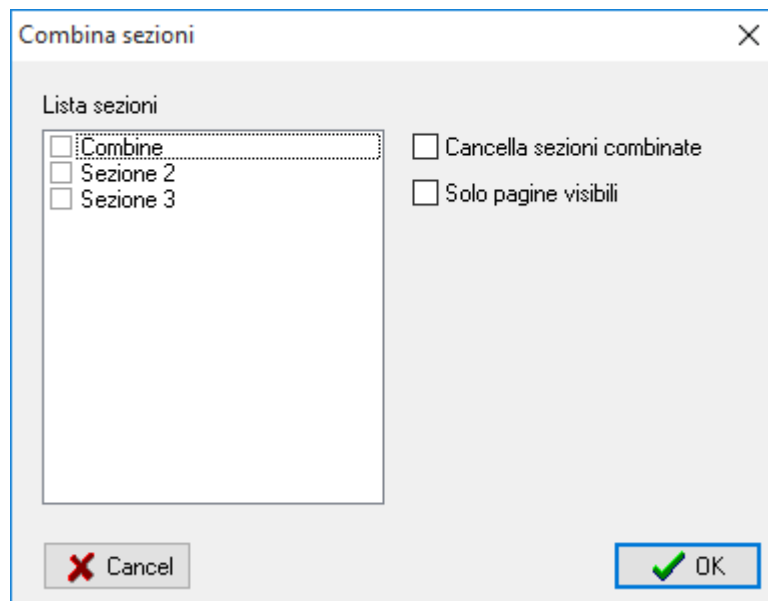
The window displays all the sections that make up the document, by clicking on the box that precedes the name of each section it is possible to specify the sections to be joined.

The Delete combined sections box, allows you to specify whether at the end of the operation the sections that have been merged should be deleted from the document.

The Only visible pages box allows you to specify whether only those pages of the section set in this way should be considered in the merging operation.

By confirming with the OK button the procedure will be carried out and the selected sections will be combined.

2.0 Document design

To enter the document design window, select the *Settings / Configuration* editor menu from the display window, or press the button ✎ .

The designer window is a very complex tool, first let's quickly highlight the components into which it can be divided.

Tools bar

Document structure

Property editor

Page selector

Main bar

References lists
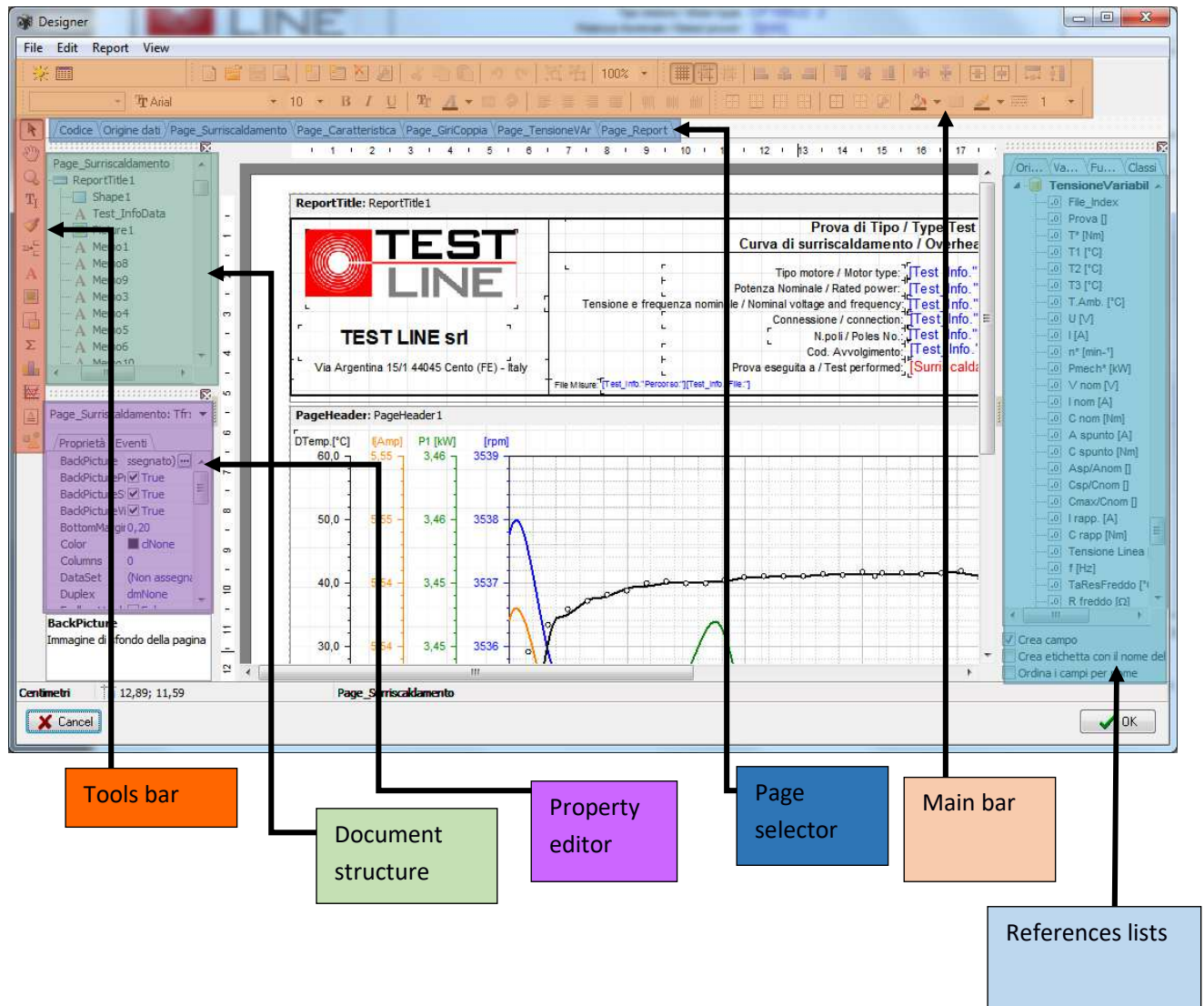
2.1 Tools bar

The toolbar contains objects and functions that allow you to insert or modify the objects present on the report pages.

Activate selection tool.

Activate scroll page report tool.

Report page zoom tool (left mouse click zooms in, right click zooms out)

Text insertion tool

Format copy tool, allows you to select the format of a text and assign it to another.

Band object type selection button.

Insert label object button.

Insert image object button.

SUB-Report object insertion button.

Button for inserting a graphic object.

Rich text insertion button.

Shape object insertion button.

2.1.1 Objects band

Press the button to access the band type selection menu.

The concept of band in Cube3k is very important, the program allows you to put objects directly on the report page, but if you want to organize the layout in a more orderly way, it is absolutely necessary to use a band object.

The stripe objects can be considered as containers, what is inserted inside these containers is interpreted by the program in a particular way: for example, there is a report header stripe, everything it contains is printed at the beginning of the report, or the stripe page header, everything it contains will be printed at the beginning of each page, or there are bands that allow the iteration of data belonging to a specific group (assigned via data source) etc.

The list of available band objects is as follows:

- **Report Title:** contains everything that must be printed at the beginning of the first page of which the document is composed. It is always the first band starting from the top.
- **Report summary:** as for the previous band, everything that must be printed only at the end of the last page of the report must be entered here.
- **Page Header:** what is inserted in this container is printed at the beginning of each page generated by the report.
- **Page footer:** what is inserted here is printed at the end of each page generated by the report.
- **Header:** this band allows you to specify the header of a data iteration band (main database type), what is entered here will be repeated every time the data iteration generates a page break. This band always requires that then there is a "Master data" band.
- **Footer:** As for the Header object only that allows you to specify what must be entered at the end of the data iteration. This band always requires that there is a "Master data" band first.
- **Master data**: this is a very important type of band as it allows the iteration of data relating to the selected group from the assigned data source. In practice, the program allows you to generate data selections (queries), these selections, which in the program are called "data source", can be assigned to one of these bands, when a data field is entered into this collector, the program will generate a row for each record that the data source has.
  To assign a data source to a band of this type double click in an empty area of the band.
  Example: consider having a data source called **Load_Test**, which contains 10 records (that is, there are 10 memorizations that refer to this type of test), if the user inserts the Torque field within a main database type data band that has been assigned to this data source, will obtain a printout of the 10 torque values assigned to it.
- **Child:** This type of band allows the insertion of a section at the end of the one to which it is associated. Each type of band has a property called "Child", to associate a "Son" band you need to go to the child property of the desired "parent" band and set the child band you want to use as a child. It is also possible to assign a child band to another child band.
- **Column header:** allows you to define the header of a report generated in column mode.
- **Column footer:** allows you to define the footer of a report generated in column mode.

- **Overlay:** what is inserted in this type of section is printed over the other data.
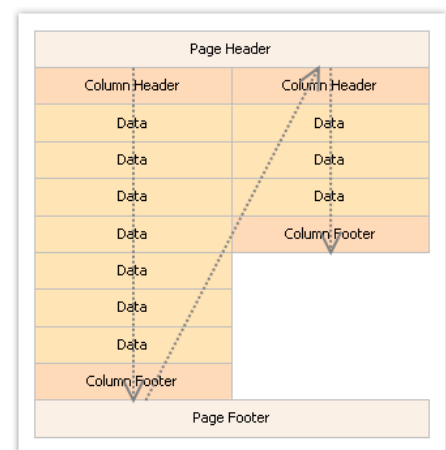
2.1.2 Label object

Using this button ![A] it is possible to insert a label object.

The label object allows you to enter text that will be subsequently processed by the program.

This object is usually inserted inside a band container, and can contain simple free text, references to database fields, complex expressions or combinations of all this.

Double clicking on a label object opens the configuration window:

In the **Text** tab you can enter the content of the label.
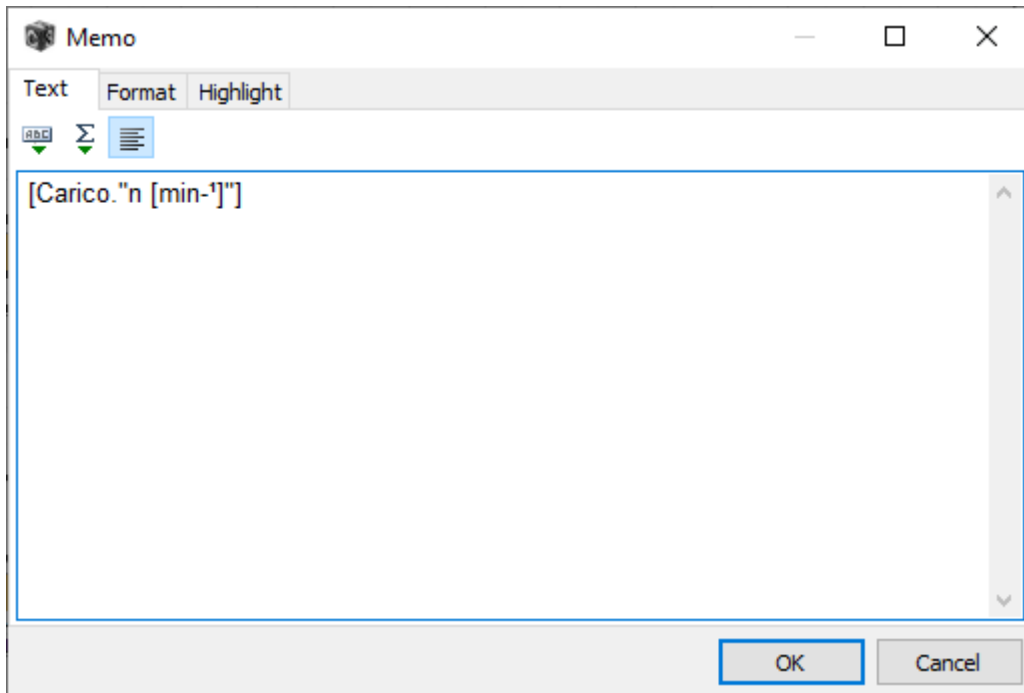
The program distinguishes between free text and expressions, the expressions are inserted within two delimiter characters. When the program finds these delimiters, it knows that the text inside must be interpreted, it is therefore not treated as normal text, but considers it as a reference to a variable / function, so it will try to solve it by calculating it. The delimiters can consist of one or more characters, the important thing is that the initial one is different from the final one. By default, the program uses the characters "[" and "]", but through the Expression delimiters property of the label object selected, you can set the desired ones.
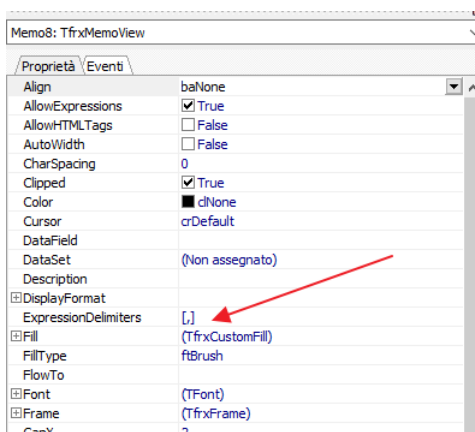

It is necessary to pay attention that if some text is inserted in a label object that contains the characters used as Expression delimiters, the program could then give an error because it will not be able to resolve the relative variable.

Ex:

if we insert the text "**Torque [Nm]:**", the program will believe that **Nm** is a variable because it is inserted between two expression delimiter, if you do not want to change the characters used to define the unit of measurement, it will therefore be necessary to change those used from the relative expression delimiters property, inserting others as desired, such as: "<,>".

The easiest way to enter functions and expressions is to use the expression editor, which can be activated via the button ![icon] .
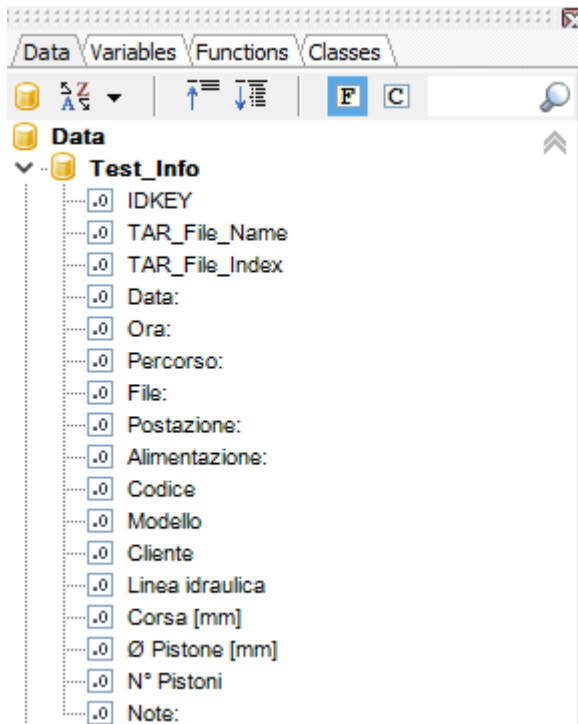
The expression editor consists of four tabs, Data, Variables, Functions and Classes.

The **Data** tab displays all the tables available within the project, opening the branch related to the name of the table will display all the names of the fields included in the table. To select a field double click on the desired name.

The **Variables** tab displays all the variables in the project, some of these are system variables so they always exist, such as Date, Time, Page etc., while others can be entered directly by the user via the variable editor.

The **Functions** box contains all the functions available within the program. These are divided into types and give the possibility to perform very complex operations on the data.

Finally, the **Classes** box contains the objects and related properties of the program, they are available only for reference but cannot be used.

Once the desired expression is completed, by pressing the OK button it will be inserted into the text box.

The **Format** box allows you to specify the formatting of the data contained in the text box.
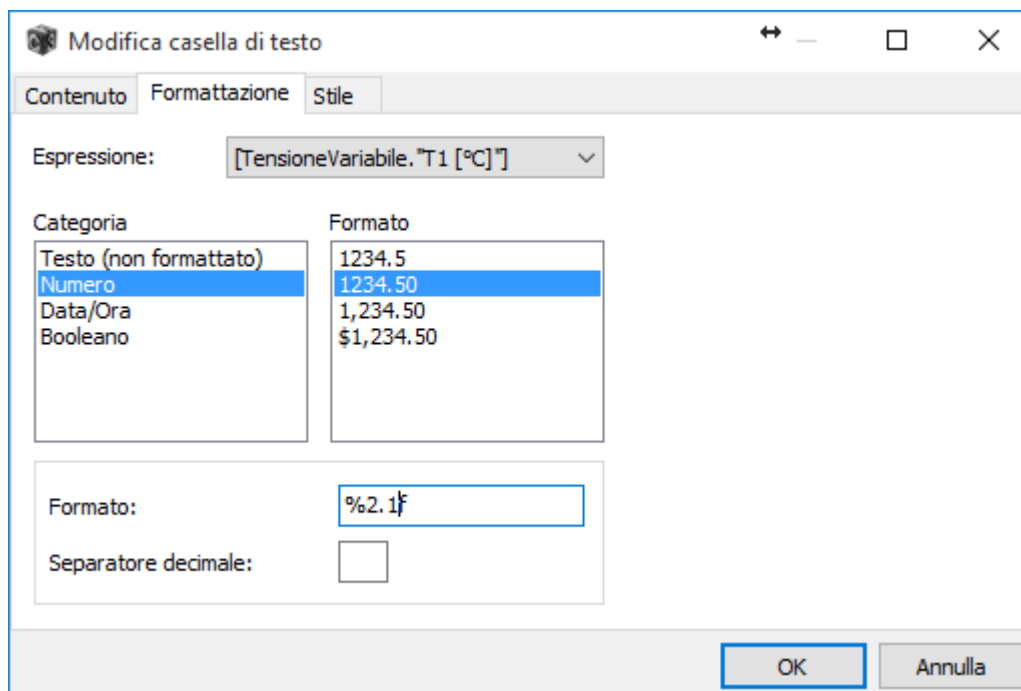

The Expression box allows you to select the expression for which to set the format, within the text box there can be multiple expressions, the program recognizes them according to the delimiter characters.

In the Category box it is possible to set a category relating to the data to be formatted. Then some options relating to the selected Category are displayed in the Format box. By clicking on one of these, the format is entered directly in the Format text box below, in which the user can make changes.

Ex: as shown in the figure, the Number category has been selected, then the format 1234.50, then in the Format box the value initially entered equal to %0.2f, which indicates a real number (FLOAT) with two decimal places, has been changed to% 2.1 f which instead will format the number with a single decimal.

For the Number category there is also an additional box called Decimal separator, in which it is possible to insert the character relating to the decimal separator to be used instead of the system one.

Finally, in the **Highlight** section there are various tools designed to allow a weighted formatting of the data.
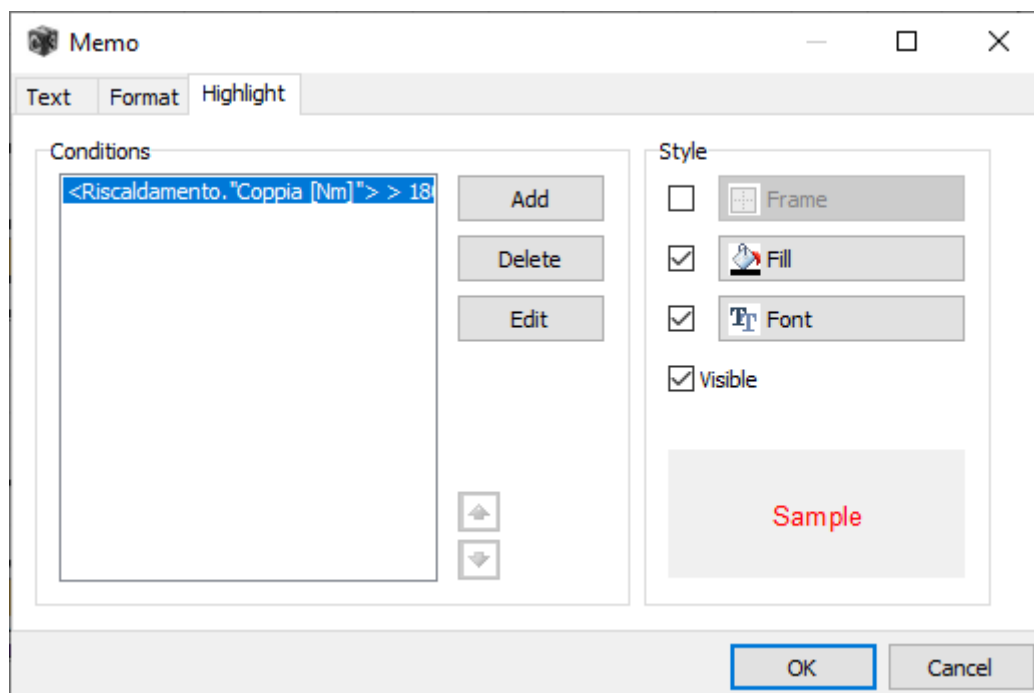

This box allows you to specify an "intelligent" formatting of the data, in practice it is possible to set styles using conditions, the first condition inserted in the list that is true determines the style of the field. This style can be specified in the style box and consists of: frame, fill, font, you can also set the visibility or not of the data.

Using this function it is very simple, for example, to change the font color if the data exceeds a certain value.

2.1.3 Image object

To insert an image object into a document, use the button [icon] and click with the mouse in the area where you want to insert. At this point the program will show a window that allows you to load the desired image.
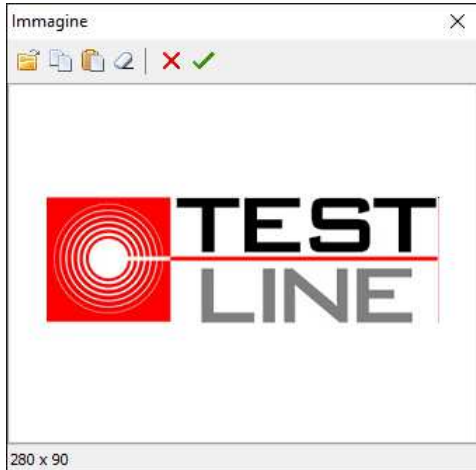
This button [icon] allows you to load the desired image file. The program allows the loading of raster files of type: BMP, JPG, PNG, ICO and vector files of type WMF and EMF.

[icon] It allows you to copy the image currently loaded on the system clipboard.

[icon] Allows you to paste an image file previously copied to the clipboard.

[icon] Delete the currently selected image.

These [icons] are the buttons that allow you to cancel or confirm the operation.

2.1.4 Chart Object

Below we will analyze the structure and properties that underlie the operation of the graphic object.
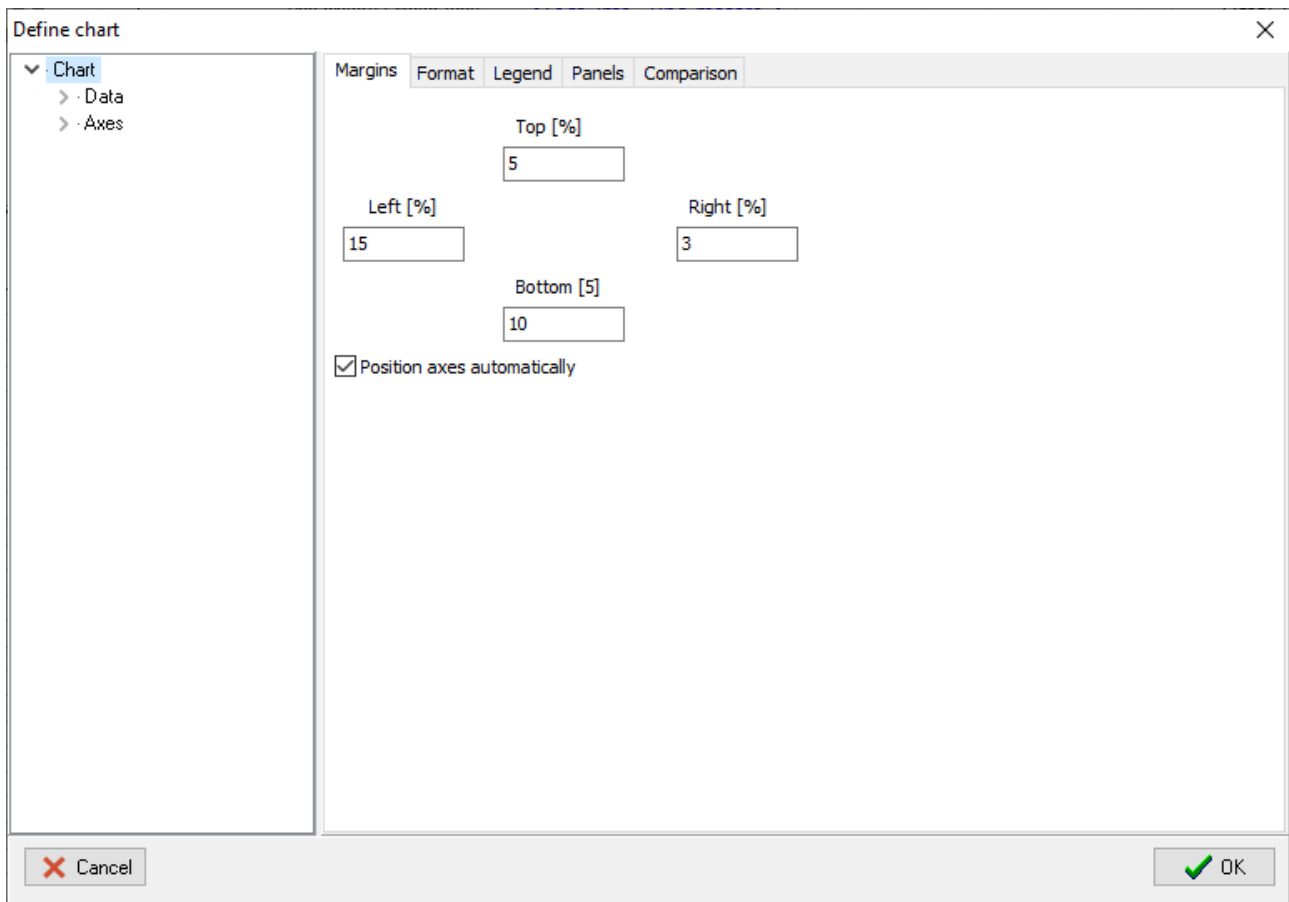
The structure of this object is quite complex as it allows a very high control over the final lay-out settings.
The properties window is divided into two sections, in the list on the left there are the objects of which the graph is composed, on the right pane the properties related to the selected object are displayed.

The list of objects is structured like this:
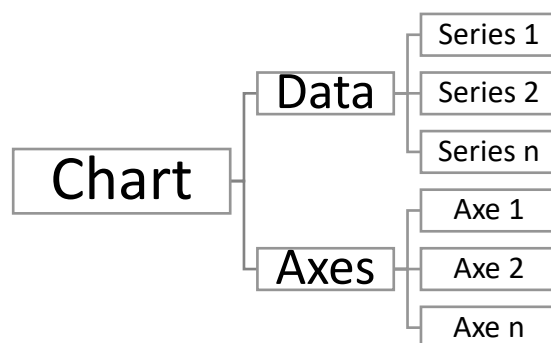
A series defines the data to be plotted, it must be connected to a data source, and allows you to define the two quantities to be used as X and Y, then it must be assigned to two axes (one vertical and one horizontal) to become visible on the graph .

Graph Properties
By clicking on the graphic object, various panels called: Margins, Format, Legend, Panels and Comparison are visible.
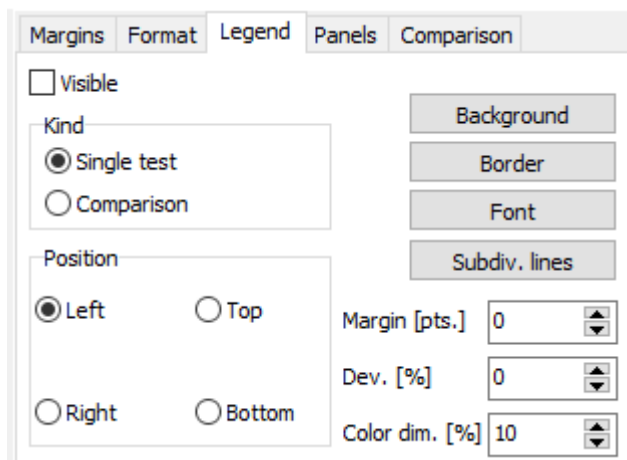*Margins*
This panel allows you to enter the values relating to the margins of the chart. The margins allow you to define the distance of the tracing frame of the curves from the external edges, practically they allow you to define the space to be allocated for the positioning of the axes.
The box called "**Position axes automatically**" allows you to activate the automatic positioning of the axes. For example, if we have created a graph with three axes on the left, using this property they will be positioned automatically dividing the available space into three. Without this property active the axes can instead be positioned using their positioning properties.
Format
This panel allows you to define the format relating to the internal and external panels of the graph.

Legend

This panel allows you to activate the display of the chart legend.

Visible: Activates the display of the legend.

Kind: Allows you to define the type of legend, Single test displays the names relating to the axes of the curves, Comparison instead writes the name relating to the file of origin of each test.

Position: Allows you to define where to position the legend relative to the graph.

Margin: Allows you to define a margin in points to detach the part relating to the legend entries from the margins of the legend itself.

Dev.: Allows you to shift the entire legend with respect to the zero in which it is printed. Depending on whether this is positioned at the top or bottom, or on the right or left, the deviation acts on the horizontal or vertical axis.

Color dim: Allows you to define the size relative to the reference color display box.

Panels

This section allows you to insert simple textual labels within the graph. To insert a new panel, press the button , then double clicking on the new element of the list you access the properties window where you can insert the text to be printed, its positioning and other characteristics.

Comparison

This section contains the styles used by the graph for displaying curves in comparison mode. This mode is automatically activated in the program when more than one test has been loaded. At this point the curves on the axes no longer use the style defined by them, but use the one defined in this list. By default the program puts 5 styles, which therefore allow the display of 5 distinct tests, but if necessary it is possible to add more.

Data Series Properties

The data series all belong to the list item called **Data**. The properties panel shows a bar at the top with various buttons, these allow you to perform the following operations.

[+]	it is active only when the Data element has been selected, and allows you to add a new series.
[−]	delete the currently selected dataset.
[↑]	allows you to move the selected series towards the top of the list.
[↓]	allows you to move the selected series towards the bottom of the list.
[NEW]	allows you to create a copy of the selected series.

Setup

Name: is the name of the data series

Data type: the graph allows you to use two types of data, one the first derives directly from the associated **data source**, the second mode instead allows you to create a real data matrix manually.

By selecting **Virtual table** you can access a window in which you can specify the number of rows and columns you want for the table. By double clicking on the header of each column, you can enter the name to be assigned to the column, while double clicking on the cell will display the window for creating the expressions to be assigned to the numerical value. The number of lines corresponds to the number of points in the matrix.

Each virtual table must have at least 3 columns, one for the X fields, one for the Y fields and the third for data differentiation. This type of tables allow you to create data sources which, instead of deriving directly from the data matrix of the test file, come from the header section.

The "isolated points" type path can use a feature of virtual tables that causes the points to have variable dimensions, both horizontally and vertically, according to specific values deriving from the associated virtual table. This is very convenient for creating boxes that will graphically represent areas of acceptability.

To do this, just create a table with 5 columns, the values of the fourth and fifth columns will be interpreted by the isolated points plot as the dimensions to be used for the display on the graph, in this way it is very simple to create points that report tolerance thresholds derived from calculations on the acquired data.

Fields: in this section it is possible to define the quantities to be used on the X and Y axes.
The assignment can be done in two ways, either by directly selecting the desired channel from the list (**Field X and Field Y**), or by directly writing the desired expression in the box below. The second method allows to trace data not directly present in the loaded file but which can however be derived as the result of a calculation.

The button [icon] next to the expression box allows you to activate an editor that simplifies the creation of the expression itself. The program, to trace the data, first checks if an expression has been entered, only if not it takes into account the selected field in the list.

Display axes: the box allows you to specify the axes of the graph that will be used to plot the series. Multiple data series can share the same axis.

Axis X: contains the channel that will be used for the X quantity.

Y axis: contains the channel that will be used for the Y quantity.

Visible: Determines the visibility of the series.

Sort on X axis: allows you to specify whether the values, before being plotted, should be sorted according to the X axis values.

Ignore with null X: it allows not to consider those data that have value X equal to zero.

Specials

Grouping: some properties are available in this panel that allow you to group the data of the series into subsets that depend on a third quantity, in order to determine n distinct curves.

Use field: allows you to define the field on which to perform the grouping.

Threshold: allows you to define the threshold that will determine membership of a group. In practice, each group of data must have an internal variability lower than the specified threshold.

Display format: next to each curve you can view a label that identifies the value of the group it represents. The display format specifies whether the grouping quantity is of the numeric type or of the string type, in the case of numeric grouping it is possible to define the decimal display format. The activation of the display of these labels must be decided in the track settings.

Format: Allows you to define the properties of the panel, font, color text alignment, etc.

Offset: Allows you to define a detachment offset of the labels from the left edge of the graph plane.

Use general styles: if you are running a comparison session, you can force the general style related to the test to be used.

Trends

Trends allow you to define how the data should be displayed on the graph.
There are three types of trends:
• linear: connects the points of the graph by means of a broken line.
• Interpolation (Fit): allows to use algorithms interpolation to soften the trend of the curves.
• Points (Dot): allows you to trace only the points acquired, without joining them.

It is possible to have multiple trend active simultaneously on the same data series, to add a type of trend press the "plus" button and select the preferred plot type from the dialog box.

Linear trend

Title: allows you to define the title of the track, to distinguish it in the list.

Stroke: allows you to define the characteristics of the path: color, type of line, etc.

Use axis attributes: if you check this box, then the defined layout format will be ignored and that of the Y axis to which the data series is associated will be used.

Visible: allows you to define the visibility or not of the path.

Show group label: if the grouping function has been defined on the data series (see Specials on page 18) then this will be displayed.

Show area: Allows you to activate the tracing of the area that subtends the curve of the series, the format that will be used can be defined using the Fill button.

Points

This type of trend allows you to view the points in the series as isolated points. These points can be of various shapes and sizes. It is possible to determine the stroke and the type of filling.

Tolerance range.

These selectors, when used in conjunction with a virtual table (see pag.19), allow you to have points of the size defined in that table. It is a useful function if you want to define regions for the acceptability of particular values.

Interpolation

The properties of the interpolation path consist of two different sections: Options and Interpolation. The first section is composed of the same properties already seen for linear type path, while in the Interpolation panel we find typical settings of this type of path.

Type: allows you to define the type of interpolation. It is possible to select the Polynomial type, which generates functional interpolations (least squares) or Spline. The first type is certainly more suitable when there are disordered distributions of points, this type of interpolation is able to generate a curve that brings out the prominent trend.
The second, of the **Spline type**, instead tries to create a curve that passes through all real points.

Degree: allows you to define the degree of the curve, for the Polynomial type interpolation the maximum degree is defined by the number of points of the distribution minus one, while for the Spline the degree defines more than one type of interpolation and you can get up to the degree 5.

Smooth: this box is visible only if you have chosen the Spline type interpolation and allows you to introduce a sort of smoothing of the data so that the curve is not characterized by too exaggerated peaks.

Minimum Value: allows you to define the minimum value to be used in the interpolation procedure. It is possible to decide whether to use the real minimum of the distribution of points, or the minimum present on the axis or finally a value of your choice.

Maximum Value: allows you to define the maximum value to be used in the interpolation procedure. It is possible to decide whether to use the real maximum of the distribution of points, or the maximum present on the axis or finally a value of your choice.

Axes property

The axes allow you to plot the data series on the chart. The program allows you to manage many axes at the same time, these can be arranged horizontally both in the upper and lower part of the graph, and vertically both on the left and on the right.

Each axis created is inserted as a child of the Axes element present in the object list.

As with the data series properties there is a bar that contains some buttons:

This button is active only when the Axes element has been selected, and allows you to add a new axis.

This button deletes the currently selected axis.

This button allows you to move the selected axis up the list.

This button allows you to move the selected axis towards the bottom of the list.

This button allows you to create a copy of the currently selected axis.

Options

Name: Allows you to enter the name of the axis.

Visible: activates the visibility of the axis

Data format: defines the axis data format, there are three types of data, numeric, date and time and number of seconds. The number of seconds format is used to represent as a time format a value that is expressed with units equal to seconds and not in the standard way in which a given date and time is usually saved.

Display format: allows you to define the numeric display format in relation to the selected data format. For numeric formats it is possible to express the number of decimals to use, eg: 0.00 will generate data with 2 decimal digits. While for the formats relating to dates / times we have the following encoding:

yy = year (yy = last 2 digits only, yyyy full year)
mm = month
dd = day
hh = hour
nn = minutes
ss = seconds
uuu = milliseconds

the format **dd / mm / yyyy** generates a date like **02/10/1969**

while **hh: mm: ss** represents **10:15:01**

Minimum: Allows you to define the minimum value of the axis, you can set the value directly, or by activating the Automatic box, set the automatic calculation of the minimum according to the data loaded.

Maximum: Allows you to define the maximum value of the axis, it is possible to set the value directly, or by activating the Automatic box, set the automatic calculation of the maximum according to the loaded data.

Increment: Allows you to define the increase value between the axis notches, you can set the value directly, or by activating the Automatic box, set the automatic calculation of the increase.

Logarithmic: Allows you to set the use of the logarithmic scale.

Structure

Length: allows you to specify the length of the axis. The maximum refers to the total length of the plane of the graph relating to the type of axis, therefore horizontal length for X axes or vertical for Y axes.

Sliding: allows you to specify the translation of the axis with respect to the plane (therefore horizontal for X axes, vertical for Y axes). 100% corresponds to the difference between the length of the chart plane and the length of the axis.

If an axis has a length of 100%, it cannot have any sliding, while an axis with a length of 40% can have a maximum slip of 60% of the length of the plane on which it resides.

Offset: the offset instead determines a transverse displacement with respect to its orientation, so X axes will move vertically, Y axes horizontally. Negative offsets move X axes down and Y axes left. This parameter is used only if the automatic positioning function has not been activated,

Positioning: allows you to decide the positioning of the axis, for X axes you can decide between Top or Bottom, while for Y axes between Right or Left. The placement determines the side on which the scale will be drawn.

Center: allows you to bring the origin to the center of the axis, it only works if the axis limits are set as automatic.

Enlarge: allows you to enlarge the interval determined by the automatic limits calculation algorithm by a percentage.

Link axis subdivision: sometimes several axes share the same plane of the graph, in this case the activation of the grid can become a problem because it is not certain that the relative axes all have the same step. In this case

it is useful to determine a main axis on which the grid display function will be activated, then hook all the others to this so as to have a single grid with a step common to all the axes involved.

Conversion scale reference: when it is necessary to create a secondary scale with a graduation in a measurement unit different from the available ones, it is possible to create it by first selecting the starting scale in the Conversion scale reference list, then entering the formula for its calculation in the Formula box. The formula must be expressed using the variable X instead of the value of the starting scale, therefore by inserting a formula equal to X * 2 you get a scale that shows numerical data equal to twice the starting one.

Format

The format section contains the properties that determine the format of the axis.
There are four different sections: Axis, Text Font, Value Font and Grid.

Asse

Title: allows you to define the title of the axis. By positioning on the data source, the axis will be called as the field relating to the chosen data source, otherwise by selecting Define you can specify the name directly.

Placement: allows you to define where to place the axis title.

Alignment: determines the alignment of the axis title.

Offset: allows you to specify a deviation of the title with respect to the insertion point.

Stroke axe: allows you to set the graphic attributes relating to axis trend.

Stroke curve: allows you to set the graphic attributes relating to curve trend.

These sections allow you to define the font to be used for writing the text and the values relating to the axis.


Grid

In this section you can activate the axis grids. The main grid is that relating to the main axis notches, those in which a numerical value is entered, while the secondary grid is related to the notches without numerical value. Pressing the section button you access the section configuration window.
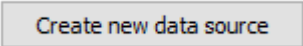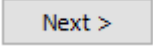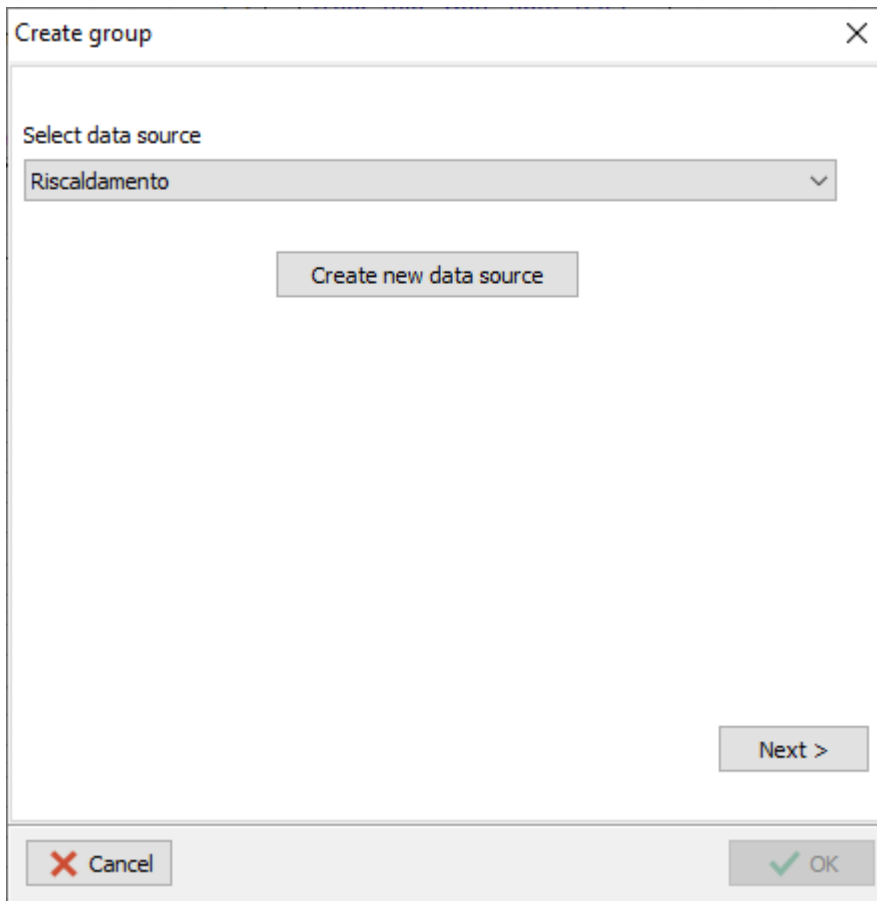
2.2 Data group creation

The program allows you to create tables called data groups.
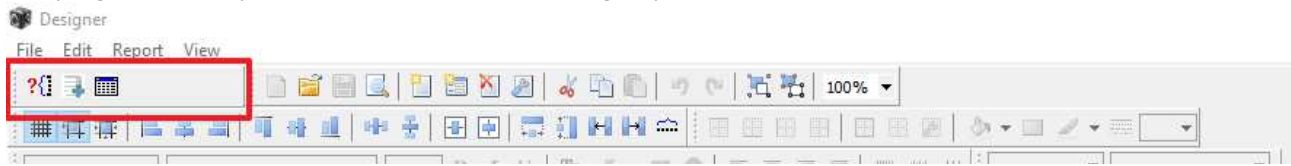
To create a data group, press the button from the appropriate bar

The creation of a data group involves the selection of a data source, if this is not among those already created it is possible to create one using the button ⟨Create new data source⟩, for the creation, see paragraph 1.2.2.

Once the data source has been selected, pressing the button ⟨Next >⟩ will open the channel selection window.
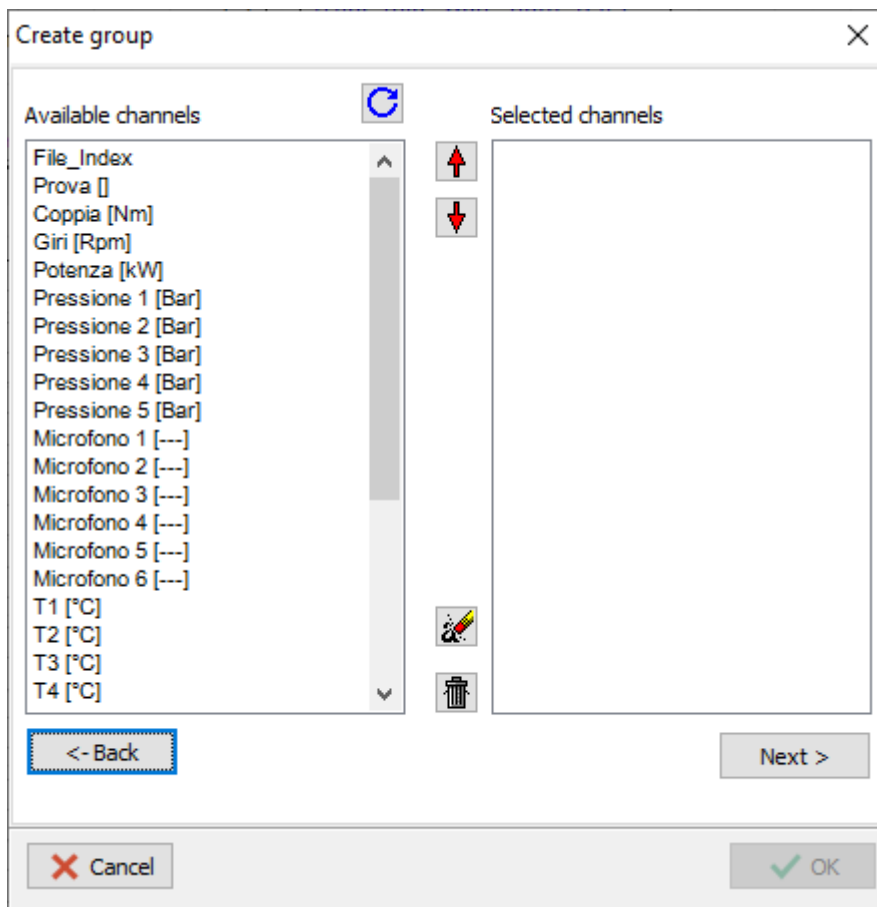
To select the channels to be displayed in the data group, select them and drag them into the appropriate box.

Once the list of channels to be displayed has been created, it can be modified with the following buttons.

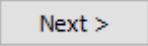|	
	This button allows you to move the selected channel up the list.
	This button allows you to move the selected channel towards the bottom of the list.
	This button allows you to delete a channel from the list of those selected.
	This button allows you to delete the entire list of selected channels.

Select the channel list by pressing the button [Next >] the table formatting window will open

This window allows you to set the name to be given to the data group using the appropriate text box, format the table by selecting the appropriate check boxes, define the size it will occupy on the page with any offset, the number of decimals and the alignment of values.

Title: allows you to define the title of the data group, it will be placed in the header.

Create channel header group: allows you to create the channel header where the title and name of the channels will be present with the relative unit of measurement.

Insert footer: allows you to insert a footer at the end of the table.

Insert numbering column: allows you to insert the row numbering column.

Insert vertical lines: allows you to insert vertical lines to the table.

Insert horizontal lines: allows you to insert horizontal lines to the table.

Leading unit of measurement: causes the unit of measurement to be printed on a new line at the end of the channel name.

Page use: allows you to select the size of the table with respect to the size of the sheet (by inserting 100 you get a table that uses 100% of the page size).

Lateral offset: allows you to move the table sideways.

Alignment: allows you to align the entire table in the chosen position.

No. of decimals: allows you to select the number of decimals visible in the table.

By subsequently pressing the button [✔ OK] the data group will be generated.

Once the data group has been created, it will be noted that the **header** and the **master data** consist of two parts.

Header: Header6

| U2 [V] | I1 [A] |

MasterData: MasterData7   Caratteristicameccanica

[Caratteristicameccanica."U2 [V]"]   [Caratteristicameccanica."I1 [A]"]

The header is the header of the data group and will be displayed at the beginning of it. Contains the names of the fields complete with units of measure and any title. By selecting the header it is possible to size it and format the various objects that compose it, and you can also access the properties in the appropriate properties pane.


Among the various properties of the **HEADER** group there are a couple that are worth keeping in mind:

ReprintOnNew: allows you to replicate the header whenever the data group exceeds the length of one page and continues into the next, by default this property is set to TRUE.

StartNewPage: allows you to create the data group at the beginning of a new page (by default this property is set to FALSE).

The **master data** is the part of the data group containing the data group values, a row is created for each existing record in its data source.

By selecting it, you can size it and format the various objects that make it up, you can also change the channel by clicking on the appropriate drop-down menu. Double clicking on it will open the data selection window.
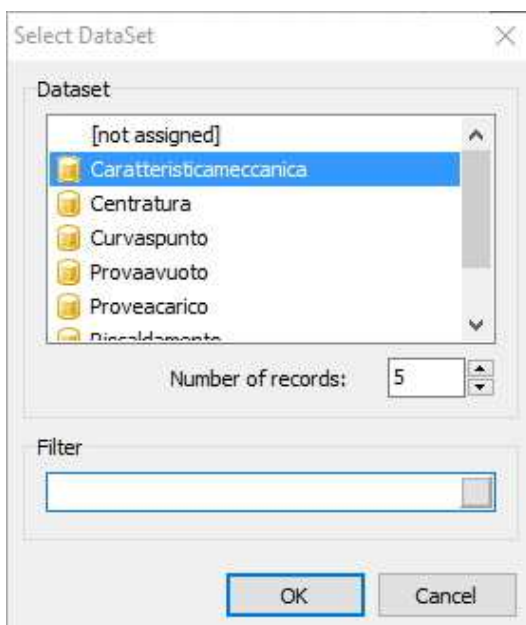
Dataset: allows you to select a new data source.

Number of records: allows you to select the number of rows you want to view, if the value is 0 they will all be displayed.

Filter: allows you to create a filter for viewing the data by selecting the channel and condition. The record will be printed only when the entered condition returns a TRUE result. Ex: inserting as a filter Torque> 30, only those lines with a torque value greater than 30 will be displayed.
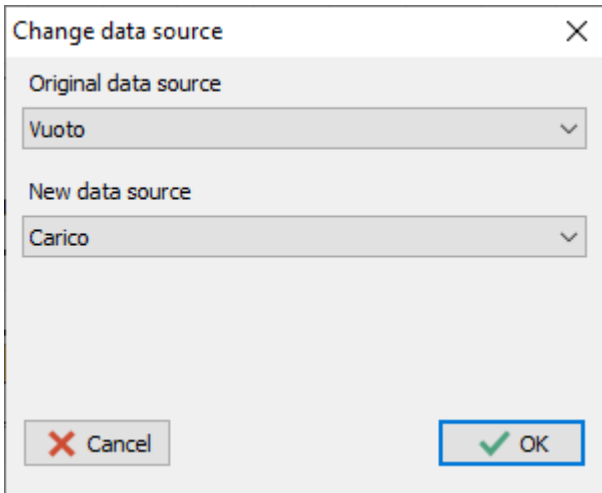
2.3 Data source modification

The button allows you to access a dialog box in which you can perform the data source modification operation.

Sometimes it happens that you have to change the data source of entire portions of a report. Changing one by one, each text box used in creating the report can become a lengthy operation, so the program provides a function that allows you to do everything quickly and easily.

First you need to select the boxes or the band, if you want to change them all, on which to perform the operation. Then press the button and enter respectively in the dialog box that will appear, the data source to be modified and the new data source to replace it with. Then just confirm with OK to see the procedure performed.

2.4 Subreport

To create a more complex report it may be necessary to insert blocks containing additional data positioned in different points of the document, Cube3k allows you to obtain it through Subreports.

To create a subreport press the button located in the toolbar identified by the following icon:

After selecting the position in which you intend to insert the subreport, a new page linked to the subreport object will be generated and opened. Everything that is inserted within a MasterData type band inserted in this page, will subsequently be replicated on the main page. The subreport page is just a container, it will not be directly rendered in the final view, only its content will be inserted where the subreport object that this page defines has been placed.

The "subreport" objects cannot contain all types of bands, it is forbidden to use bands such as "ReportTitle / ReportFooter", "PageTitle / PageFooter / PageBackground" or "ColumnTitle / ColumnFooter" within these structures.

Subreports allow you to simplify the creation of very complex lay-outs but also have the advantage of allowing replication by reference, thus allowing you to replicate the same section several times without having to recreate it and thus allowing easier maintenance.

When using a subreport object within a band of the main document, pay attention to the fact that if you need to insert something at the end of the text generated by the subreport, it could not be inserted directly, but it would have to be placed in a new band of type Child, so that the inserted text is not overwritten by the one generated by the subreport.
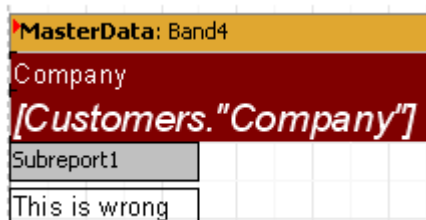
Wrong method
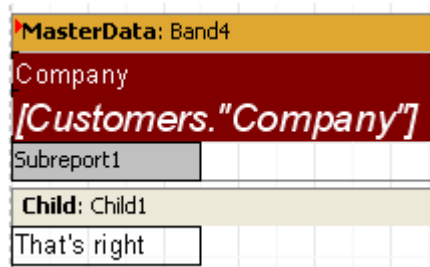
Right method

2.5 Main bar

The main bar contains objects and functions that allow you to format the objects on the report pages, generate a data source and generate a group.

At the top left there is the bar containing the two buttons for generating a data source and the one for generating a group.

2.5.1 Main report bar

They allow you to upload and save partial versions of the report. Although they can be useful in some rare situations, it is better not to use them because they save a file type that is not compatible with the one that is used by the program to save the display configurations.

Allows you to preview the report.

Create a new report page.

It allows you to create a new interactive page of the report.

Delete the current page.

Allows access to the settings window of the selected page in which it is possible to set all the relative characteristics.

2.5.2 Text formatting bar

This bar allows you to format text by changing style, font, color and alignment.

2.5.3 Object formatting bar

This bar allows you to format the selected object and change its color and add or remove borders.

2.5.4 Object alignment bar

This bar contains commands for defining the behavior of the positioning grid and contains functions for aligning and resizing objects.

Starting from the left we have the grid 1view button, then the grid align button, which automatically causes the objects as they are moved to be directly attracted to the positions relative to the defined grid. Finally we have the button that allows you to force the position of all selected objects to the distribution defined by the grid.

These buttons allow you to align two selected objects left, vertically and right

These buttons allow you to align two selected objects at the top, horizontally and at the bottom

These buttons allow you to space three objects vertically and horizontally

These buttons allow you to bring the size of the selected objects to the same size as the first selected object.

These buttons allow you to distribute the selected objects to the left or right. The program finds the object furthest to the left (or to the right depending on the function requested) among those selected and gradually moves the others that will be distributed following the order in which they are found. Eventually all the objects will be placed side by side.

Example: we consider these and objects
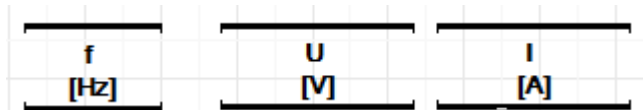
by selecting them and clicking on distribute on the left we will obtain:
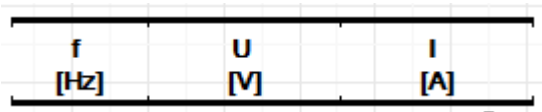
This function allows you to distribute the existing space between the leftmost selected object and the rightmost one in a homogeneous way. After using this function all objects will be perfectly aligned and will have the same size

. This function allows you to resize the first selected object until it matches the start of the second selected object, in order to perfectly fill the space between the two objects.

[1] To define the dimensions of the grid, select the Options command from the "Show" menu. A window will appear that will allow you to define all the properties of the grid.

2.5.5 Decimal selection bar

Numeric ▼ 0.1 ▼
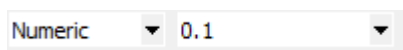
If you select a text object, you can use this bar to select the type of data present and any number of decimals.

3.0 Data Import

3.1 Create filter for Microsoft Access

The program allows you to create import filters for Micorosft Access MDB files.
To create a filter click on the File / Import / Create import filter menu, you will access a window in which you can select the type of filter. Once you have confirmed the import filter to be created, you will access the filter settings dialog box.

Filter title: in this box it is possible to enter the title relating to the filter being generated.

Import: this button allows you to load a previously created filter.

Database: enter the path relative to the database (.MDB file) you want to use here, you can directly select the file using the button on the side.

Selection query: this is where you enter the query that will allow you to subsequently select the records for loading.

Loading query: this query, on the other hand, allows the actual loading of the data. Unlike the selection query, in which only those fields that are important to see in the record selection phase can be entered, all the fields that you want to subsequently import into the program must be considered in the loading phase.

Read: this button can be pressed only after having entered at least the fields relating to the database and the loading query and causes the list called Field List to populate all the fields determined by the specified loading query.

Key field: it is the field to be used as a key in the selection of a record. In practice it is that field that uniquely determines the data record that constitutes a proof.

Field list: contains all the fields determined by the loading query. These fields will be gradually inserted in the list called Targa, which contains those fields to be considered as plate data, in the Data list, which contains the fields relating to the data.

Plate: the fields that must be considered as plate data must be entered in this list (a plate data is a unique information that identifies the test).

Data: the fields that must be considered as channels must be entered in this list.

Extra channels: this list can contain any channels to be calculated as the result of formulas related to other channels.
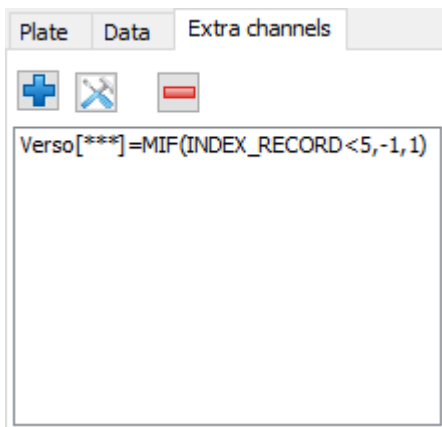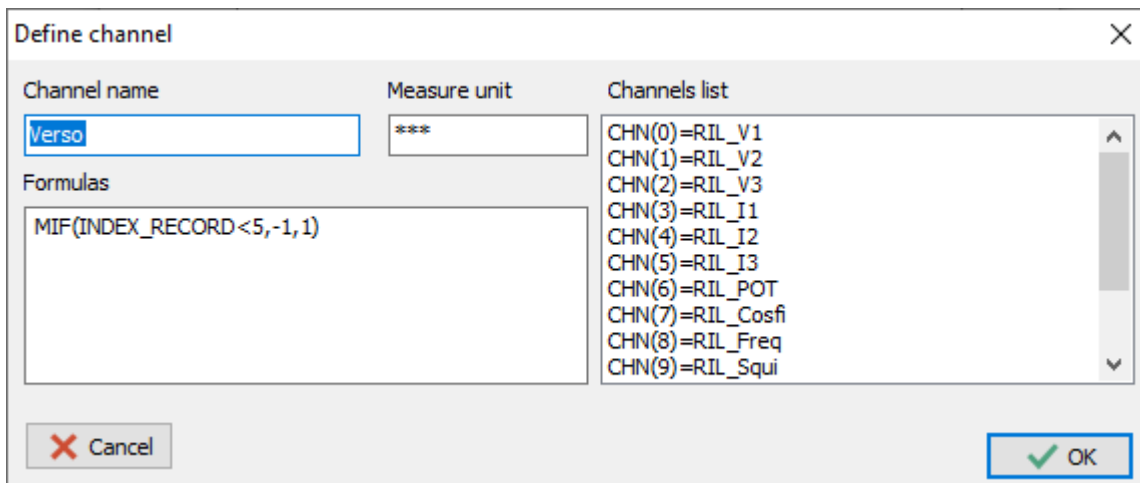

the button allows to add a new channel.

the button allows to modify an existing channel.

the button allows to delete a channel.

By creating or modifying a channel, you access a dialog box in which the desired formula can be entered.

By confirming with the OK button, the program will ask the user to save the filter.

3.2 Loading a test from database access

This window is activated after clicking the File / Import menu and selecting the acquisition filter to be used from those available.

The window displays a grid that contains the list of records generated by the select query specified by the filter. To improve the selection of a record, you can insert filters to limit the number of records displayed. These filters can be specified by first selecting the **field** in the Field box, then specifying the **operator** for the comparison and entering a **value**. At this point, by pressing the button ⊞, the filter will be added to the list[2]. It is also possible to quickly specify a reference time frame. First you need to select the **date** field you are referring to (there may be multiple date type fields), then specify whether you want to see the results with today's date (press the **Today** button), or those relating to a time interval (press **range** button and specify the range).

Then pressing the **SEARCH** button the filter will be activated, so only the filtered records will be visible in the grid.

---

[2]   All filters included in the list are then joined using the logical AND operator. Then the records found must meet all the criteria entered in the list.

Once the record to be loaded has been selected in the grid, it is possible, by pressing the **Select** button, to insert it in the selection list. It is possible to select more than one record, which will thus generate more documents.

In the list of selected records it is possible to establish the number of fields to be displayed using the **Display N ° fields box**, this choice has a purely reference value and relates only to the list of selected records, the selected fields follow the order from left to right of the columns of the grid fields, to change it then you need to change the order of the columns by moving them directly to the desired position.

Once the selection has been completed using the OK button, the program will load the tests.