

# Movicon NExT

## 8.0 Reports

Ver.3.4.268



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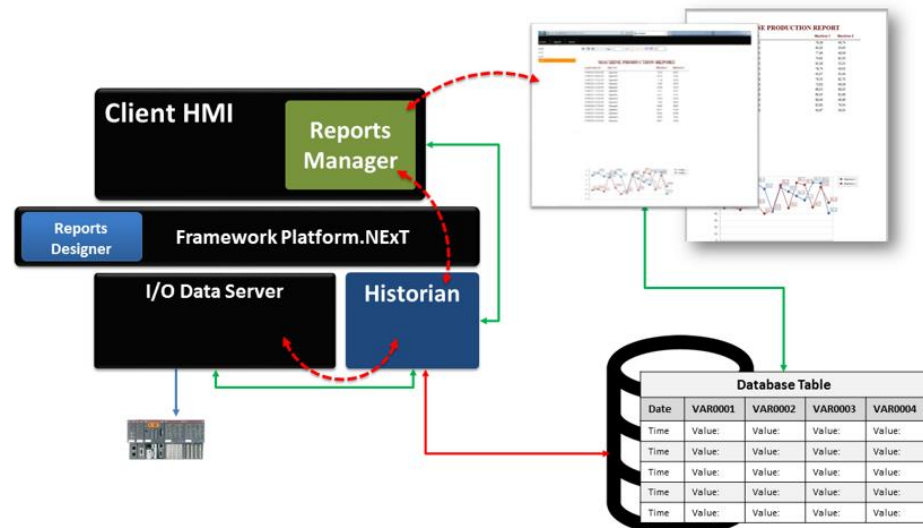
# 1. Reports

## 1.1. Report Manager

The Platform.NExT Report Manager is the Reports management module that is used to edit and execute in runtime powerful analytical reports on data recorded by the Historian modules and available on database.

The Report tool is used for displaying and printing recorded process data according to specific time and date range. Thanks to Platform.NExT, managing Reports becomes easy ensuring the openness needed to obtain previews and prints of data analysis Reports adapted exactly to each individual need of the end user.

In addition to accessing historical data recorded by the Historian or Data Loggers, the Reports can in fact be used to access data by any period for any analysis or statistical analysis type. This also includes displaying and calculations of totals, averages and differences by selecting which type of time range, production batch, operator and shift.



In order to perform these types of activity, which are typical of systems that analyse process data, Platform.NExT come with a built-in resource designed for this purpose. This resource is called the "Report" resource and can be found in the project's tree structure along with the other resources. This resource uses the ".NET" component on the DevExpress license for realizing (designer mode) powerful Reports integrated in the Platform.NExT system and executing them runtime.

Reports created in designer mode are then managed in runtime to represent analysis on historical data which are connected as data sources using the relevant commands available from HMI screen "Commands List". The Reports will be displayed according to how they were configured by the programmer using independent windows or the "Report Viewer" object from the toolbox.

By using the Platform.NExT Report Manager, the supervision project will be able to:

- Display reports according to the values recorded in the database, using queries to filter specific data

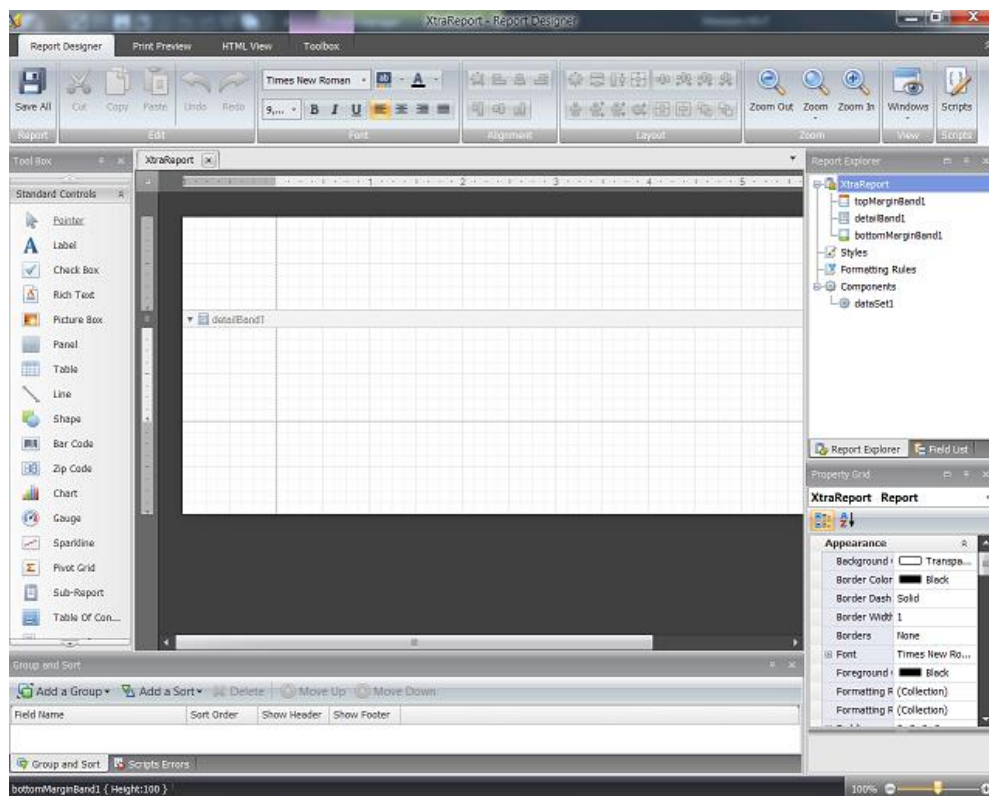
- Print Reports using the predefined or desired printer
- Save or export the Report in PDF, XLS, XPS, XLSX, CSV, RTF or HTML format.
- Send Reports by Email in the formats available
- Display Reports on the web using the Platform.NExT HTML5 Web Client

## 1.2. Report\_Designer

The Report Designer is a powerful tool which is integrated in the Platform.NExT Report Manager. It is used for creating editing and creating reports based on data recorded in the databases. These databases are the Reports' data sources and they are usually created by the project using the Historian and Data Logger functions. However, reports do not necessary have to use a database created and managed by Platform.NEXT as a data source.

The Report configuration interface is available from the platform's design mode environment and is located in the **Reports** resource listed in the project tree structure.

The Report Designer can be called by using a new report command in the "Reports" resource. This button will open the Report Designer enabling you to edit your report:



*This is an example of the Platform.NExT workspace with the Report Designer.*

This command will open the Report Designer window. The Report Designer opens showing its "Tool Box" on the left and the "Report Explorer", "Field List" and "Grid Property" on the right. The report Layout is in the centre.

By using the Movicon commands the report will open with the database connection already configured with the original object's data table fields listed in the "Field List" for reference (DataLogger/Recipe table variable TraceDB or Historical Log).

The report is composed of "Band" objects, which are inserted using the "Insert Band" command accessible with a right click on the report layout area. The Bands are:

- **Top Margin:** one per page only. Represents the top limit of the report page
- **Report Header:** one per report only. The first thing printed and only on the first report page
- **Page Header:** page header and is printed at the top of every page
- **Group Header:** you can use more than one group header per report to represent the beginning of a data group
- **Detail:** contains the data to be shown
- **Group Footer:** closes a data group and always corresponds to a Group Header
- **Report Footer:** printed at the end of the report on the last page
- **Page Footer:** closes each report page
- **Bottom Margin:** one only per page. Represents the report page's bottom limit

Only the Detail Band is needed to build a simple report. The fields you wish to display can be dragged from the "Field List" and when the report is executed these fields will show with all the records existing in the table.

### Filters

You can use the xtraReport object's Grid "FilterString" property (select the extraReport in the Report Explorer Window). This property must contain the expression criteria (WHERE (Es. [col] > 0, where "col" is the name of a data table column).

### Groups

You will need to insert a Group Header Band and use the "GroupFields" property for setting the second field to group data. You can also specify the data order in the same property.

### Data Summary

The report can execute summaries (totals, counts, averages,..) on data groups. This is done by inserting a "Label" band, linked to a field from the Field List. The "Label's" "Summary" property allows you to set the summary type you wish to create using the dialog window which contains:

- **Bound field:** name of field in which operation is to be executed
- **Summary function:** operation type to be executed
- **Format string:** format type for results where you can add measure units as text
- **Ignore NULL values:** specifies whether or not to ignore NULL field value records
- **Summary Running:** defines the environment in which to execute the operation. Obtains these values:
  - None = no calculation
  - Group = executed for all group members. This value resets at the beginning of the next group
  - Page = executed for the values presented on one page
  - Report = executed for all the values in the report

## 1.3. Report properties

When selecting a Report from within the Project Explorer Window, the Property windows will display the main Report features open to modification:

## General

### Full Path

This read only field indicates the complete path of the file in which the Report is saved.

### Top, Left, Width, Height

These fields are used for setting the position and size of the Report window when opened in runtime. These values are only acknowledged when the "WindowStartupLocation" property has been set to Manual.

### Resize Mode

This property is used for selecting whether the report window can be resized or not. The possible values are:

- **NoResize:** the Report cannot be minimized or resized
- **CanMinimize:** the Report can be minimized using the button on the top right of the Report's title bar
- **CanResize:** the Report can be minimized using the button on the top right of the Report's title bar and resized as well
- **CanResizeWithGrip:** the Report can be minimized using the button on the top right of the Report's title bar and resized as well. The sizing grip will appear on the window's bottom right corner.

### Window StartUp Location

This property is used for defining the Report's opening position when the "WindowState" property has been set to "Normal". In this case, the Report will open with its default sizes and the window's position will be based on the following options:

- **Manual:** the Report will be opened according to the coordinates defined in the "Top" and "Left" properties
- **CenterScreen:** the Report will open in the centre of the screen
- **CenterOwner:** the Report will open in the centre of the calling screen

### Window State

This property is used for defining the Report's open mode. The options are:

- **Normal:** the Report window will open with the default sizes defined in "Width" and "Height" properties
- **Minimize:** the Report window will be opened minimized i.e. reduced to an icon on the Windows bar
- **Maximize:** the Report window will open to full size

### Window Style

This property is used for defining the Report opening style. The options are:

- **None:** the Report will be opened in a window without a title bar
- **SingleBorderWindow:** the Report will be opened in a window with a title bar and a simple border
- **ThreeDBorderWindow:** the Report will be opened in a window with the title bar and a 3D border
- **ToolWindow:** the Report will be opened in a basic styled window with a title bar and a simple border



## Execution

### Reader Item Source Reference

This field is used for setting the Report's connection towards the data source. In the Data Source Editor window which opens when activating this command you find in addition to the selection of Servers and Data Bases that data selection queries with filter and order by clauses can be set as well.

The connection string use by the Report to connect to the DataBase can be defined in different points of the project. The sequence with which the Report will search for this string is as follows:

1. For default the Report will search for the connection defined in the report and can be modified using the properties window
2. If an invalid connection has been set in the report, the connection defined for the project's historicals will be used being the one set in the Server's "Historian Default Connection" parameter
3. If the historicals have been set with an invalid connection as well, the one defined for the project's events will be used instead being the connection set in the Server's "Event Default Connection" parameter

Failing this a notification will be alerted informing you that no valid connection exists.

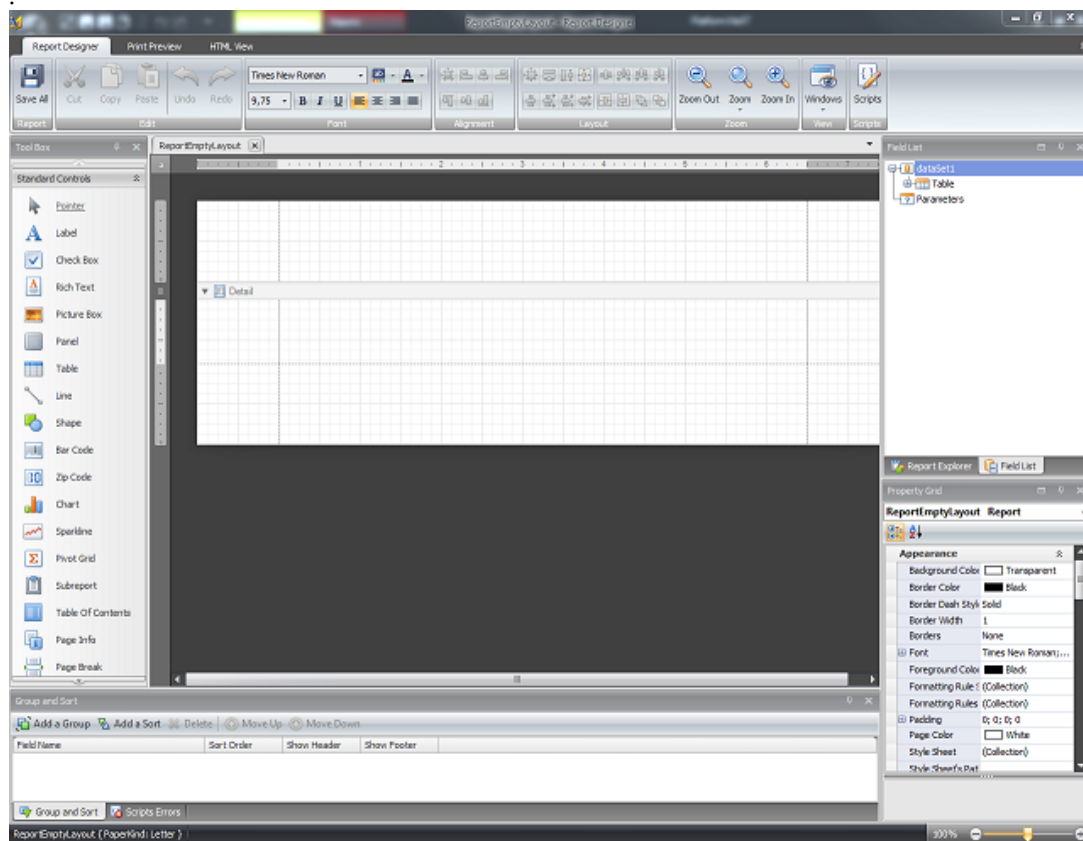
### Show In TaskBar

When this property is enabled the Report will also show in the Windows application bar when opened otherwise when this property is disabled the Report will not be shown in the Windows application bar.

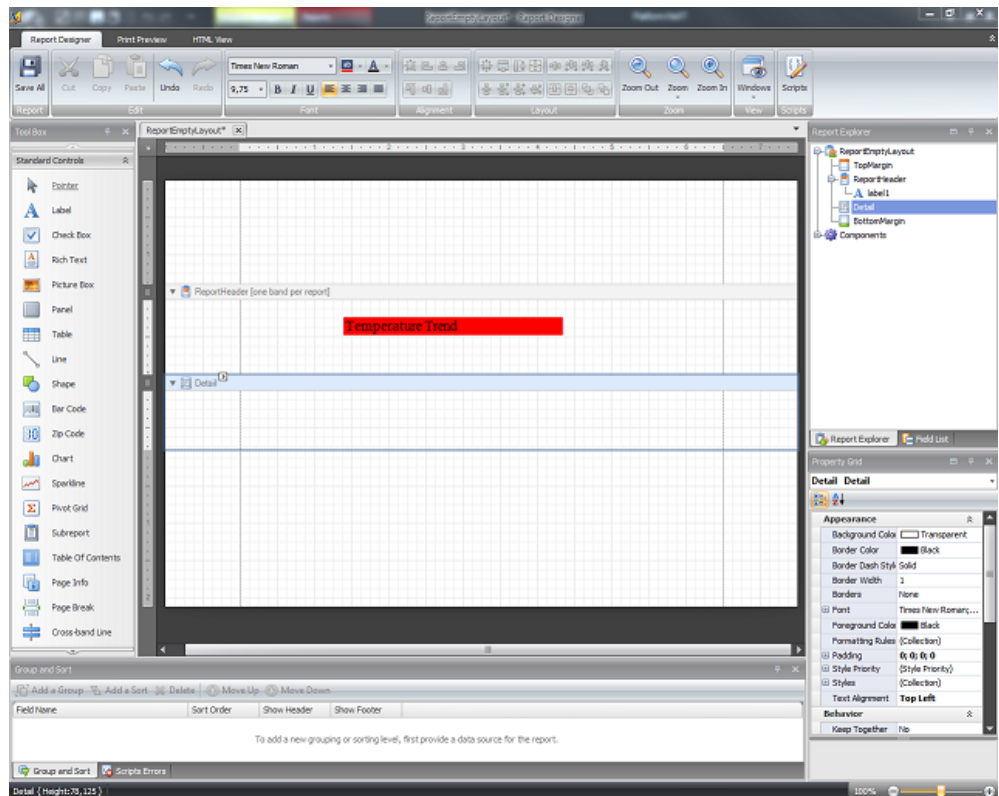
## 1.4. Report\_Example

In this section we will use the Report Designer to create a report for displaying data recorded by a Data Logger:

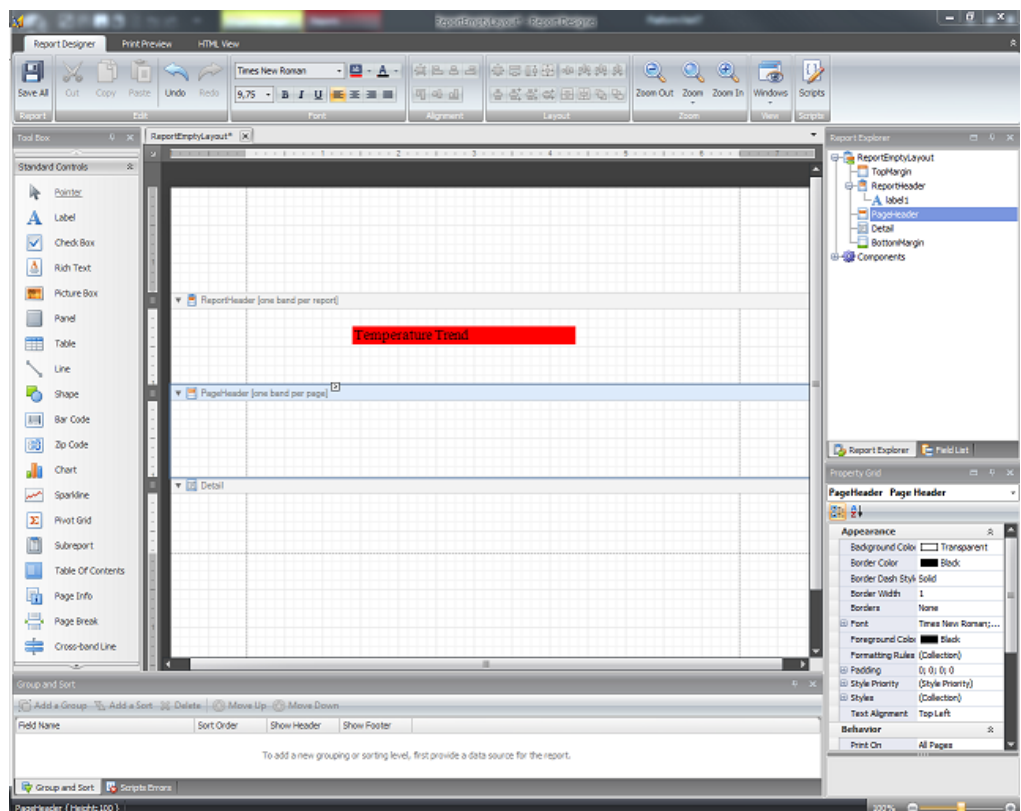
1. First create a new project and insert a Data Logger for recording three temperatures. Set three Float variables and call them "Temp\_A", "Temp\_B" and "Temp\_C". Then add three columns to the Data Logger, set a 1 minute recording time .
2. We are now ready to create the report by using the new report command from the "Reports" resource.
3. A window will display with an empty center pain which is used as a workspace for adding the different report bands one at a time.



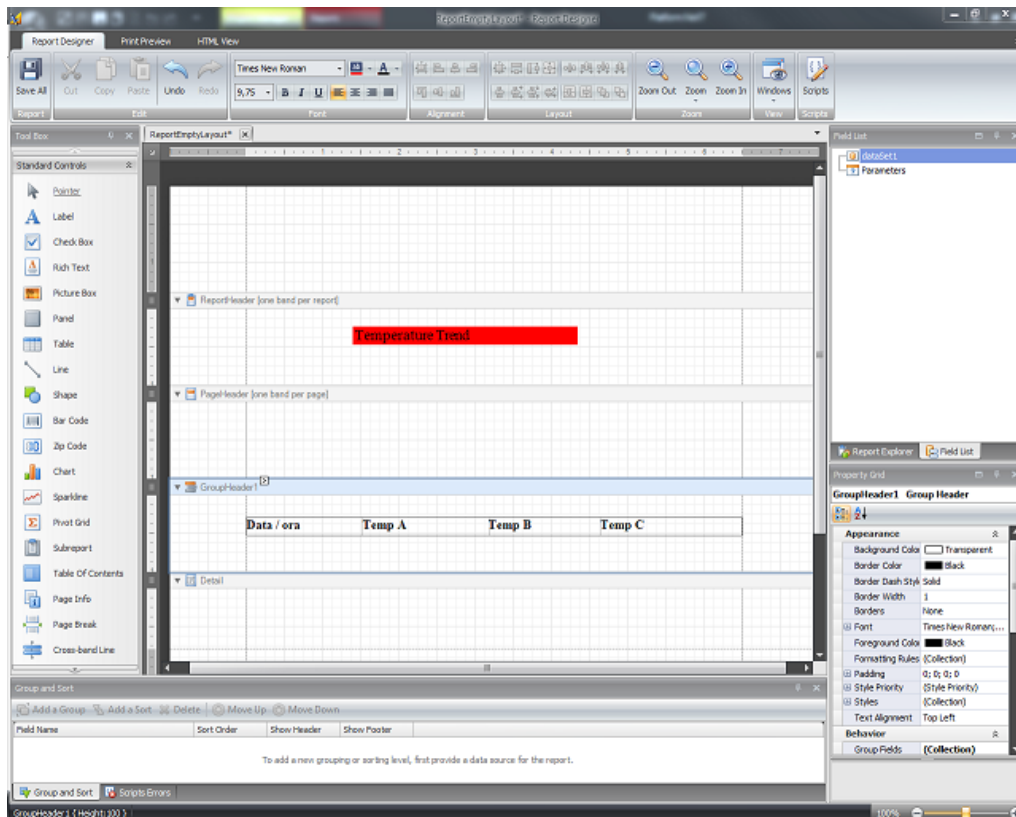
4. We shall now begin inserting the different bands to display in the report. Normally the 'Detail' band is the most important one to use because the data to be displayed is inserted here. To insert a Band right mouse click on the report's workspace and select the "Insert Band" item.
5. We will now insert the "ReportHeader" Band. This Band represents the report's title and will be printed at the beginning of the report in the first page only. This band is defined with the report's title. We will add another "Label" and customize its sizes, color and text.



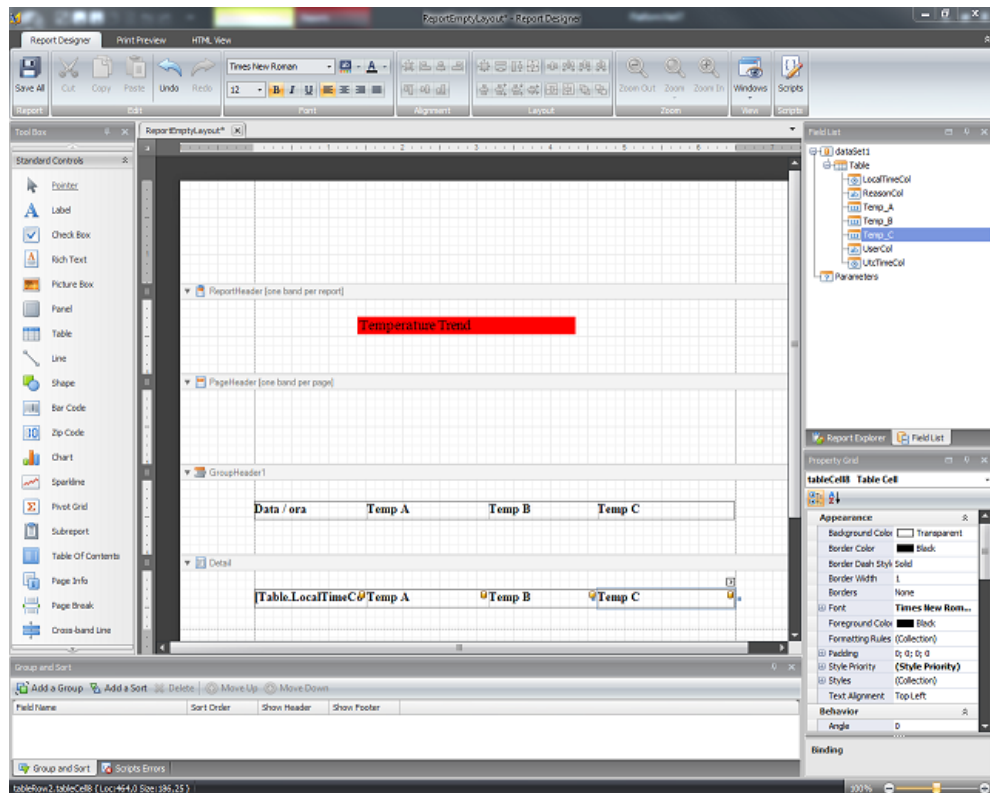
6. Next, we will insert the "PageHeader" Band. This Band represents the page heading and is printed at the top of every page. In our example we will insert the report's print date by inserting a "Label" field written with "Print Date" and a "PageInfo" field within which to display the date and time when selecting the "DateTime" item in the object's property. Also define the date and time format to use in this field.



7. We will now go ahead and insert the "GroupHeader" Band. This Band represents a data group heading. The report can have several data groups thus a heading at the beginning. In our example we will only insert one group. Our aim is to create a report displaying a table containing data extracted from the database. In the Band we shall insert a row with the table column headings. Therefore we will add a Table object from the "Standard Controls" window. Three columns are created for default when inserting this object. However we need four columns and therefore needed to right click on the Table object to added another column using the "Insert - Column To Left". Now we can define the column sizes and insert the text to be displayed using the usual properties of each cell. The texts to insert in each of the four columns are: "Date Time", "Temp\_A", "Temp\_B" and "Temp\_C".



8. "Detail" Band: Questo Band contains data to be displayed for each group. Here we need to create a table with the same sizes of the one we inserted in the "GroupHeader". To facilitate this task copy and paste the table from the "GroupHeader". Once copied we will associate each table cell a database field from which to extract data by dragging a selected field from the Field List.



9. Repeat this operation for the other three columns by associating the "Temp\_A", "Temp\_B" and "Temp\_C" fields. Go to the properties of each cell and define the data formats: use the "Data" format type for the "LocalCol" and the "Float" type for the other three columns.
10. Now we shall insert the "GroupFooter" Band. This Band closes the data group and corresponds to a "GroupHeader". This Band will display the average values extracted for the three temperature columns. As before insert a table with four fields. Insert the "Value Averages" text in the first field. Then select the second table field and to the property window and click on the "Summary" field. This will open another window for defining the formula to apply to the field. The window items should be compiled as follows:

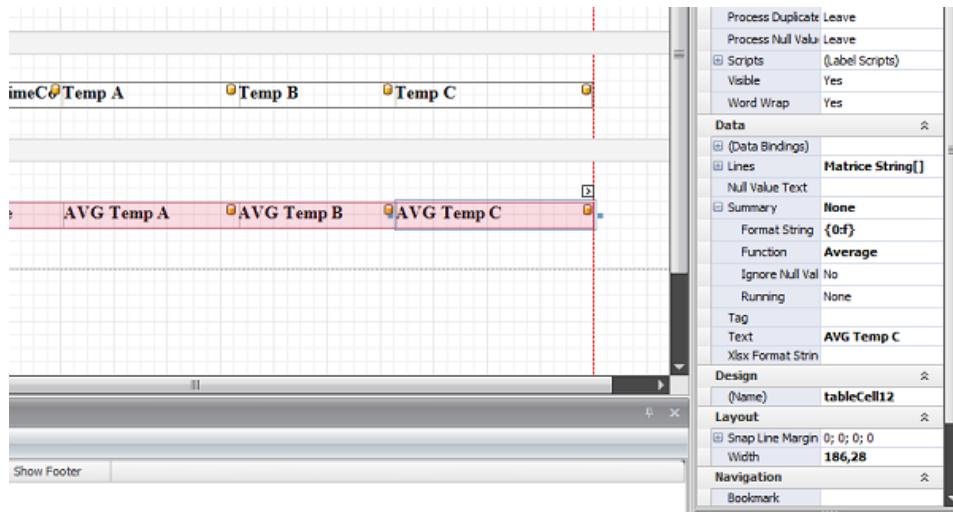
**Bound field:** select the table field in which to apply the formula, in our case select "Temp\_A"

**Summary function:** select the function type to be applied, in our case select "Avg"

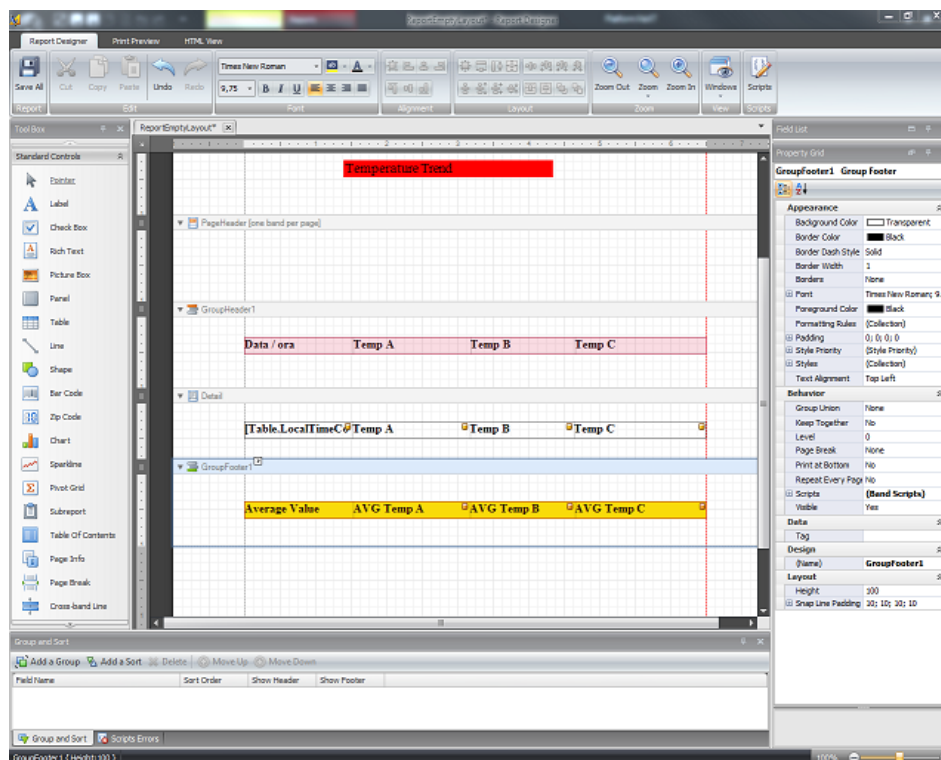
**Format string:** define the data format type, in our case select "Float"

**Ignore NULL values:** enable this check box to ignore null values

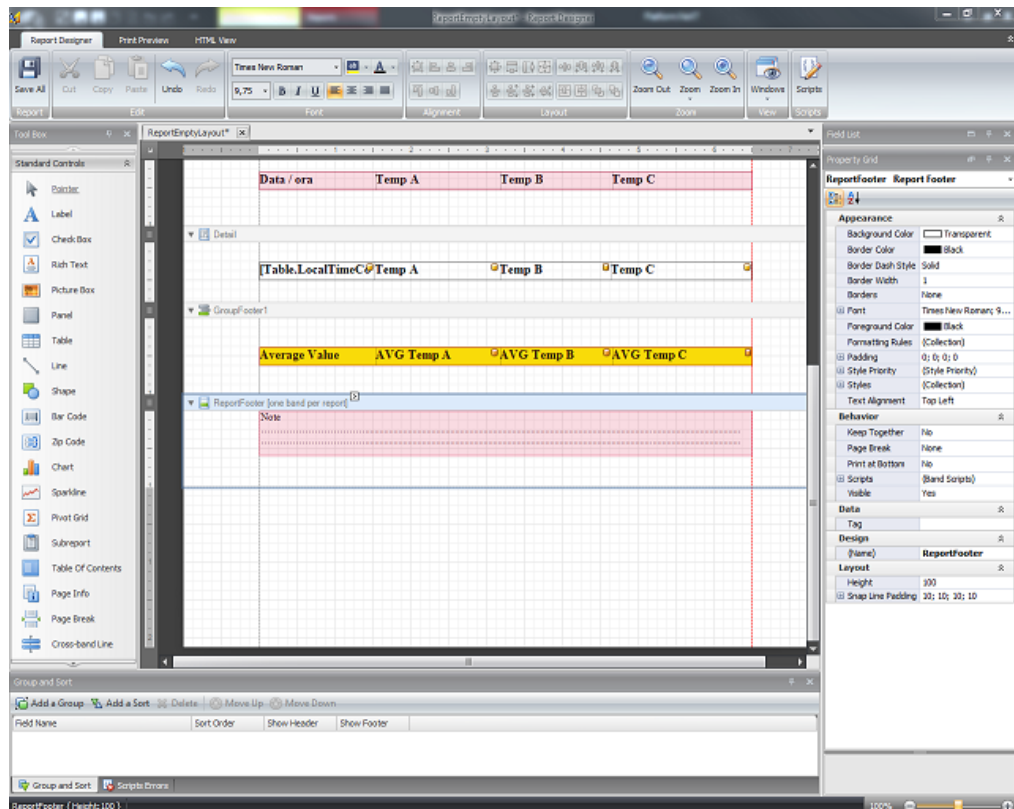
**Summary Running:** select the ambit in which to run operation, in our case select "Group"



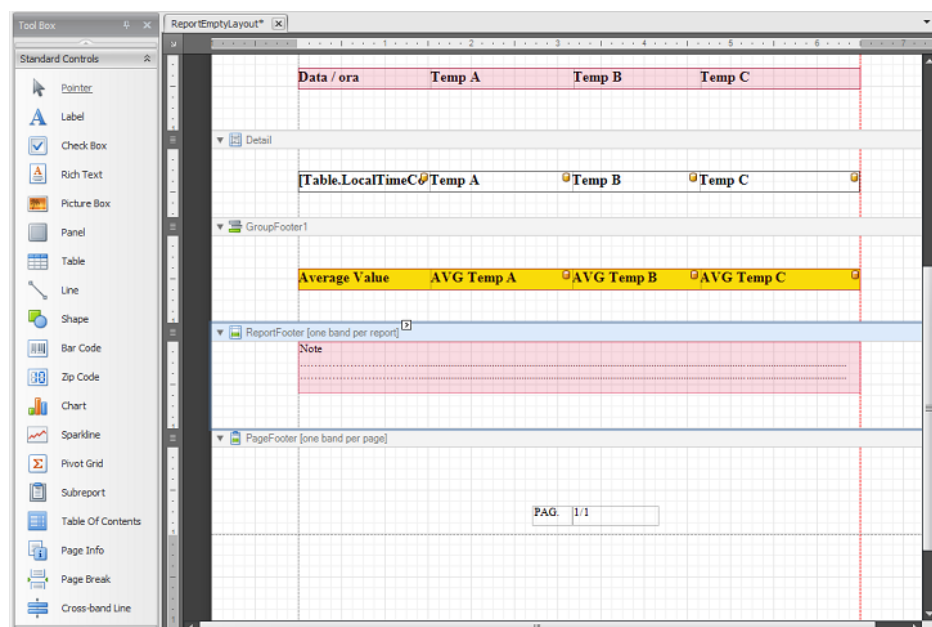
11. Repeat this operation for the other two remaining "Temp\_B" and "Temp\_C" table fields. Apply a background colour to the average table.



12. We will now insert the "ReportFooter" Band. This Band is printed at the end of the report on the last page. In this Band we will insert a field to be used by the operator for entering notes. Then simply insert a "Label" and three lines and modify them with the dashed effect.



13. Now we will insert the "PageFooter". This Band closed each report page. We will insert a field within this band for display the page number. Therefore add a "Label" with the "Pag." text in which will select the data type to be displayed, for example "NumberOfTotal" (displays the current page number and total page number).



14. We have now finished our report and to review our result we can run a test using data already stored in the database by clicking the "Preview" tab located on the Report Designer's window's bottom bar.
15. The report can be previewed at any time while it is being created to immediately check the results of the different Bands and controls inserted edited.

16. Save the report and close the Report Designer to return back to the Movicon project. At this point insert a new screen in the project and insert the following objects into it:

- a "Data Logger-Recipe" window, to which the previously created Data Logger will be associated, for displaying recorded data. By using the window's "Print" button you can get a direct printout without previewing the report first (the printer preset in the OS will be used)
- three meters or Displays for modifying the three "Temp\_A", "Temp\_B" and "Temp\_C" temperature variables.
- A Button to which the "Report-Recipe" command shall be associated to. Select the previously created Data Logger in this command and in the "Action" field select the "View" item. This button will be used for opening the report in preview mode.

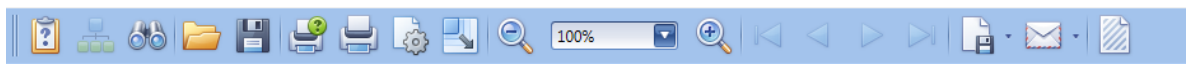
Now you can run the project and after having recorded data, test the report out.

Not all the Bands provided have been used in this example, but as mentioned at the beginning this is just an example and there are no set rules as to which ones to use and therefore it is the programmer's discretion to choose those most suited.

## 1.5. Report activation

In runtime the report can be activated using a command assigned to a button for example (for further info see section on "Using Commands" in Movicon NExT) or by using a "ReportViewer" object (see "Toolbox objects", "Report Viewer" in Movicon NExT).

After having activated the report in runtime (on in Preview mode from the design environment) you will be able to access the below described toolbox which is located at the top of the report:



Displays/hides the panel for managing the report's parameters to be values when called.



Displays page list.



Searches for text within the document.

Opens previously saved report document.





Saves report in proprietary format which can be opened with the "Open" command.



Used for selecting a printer to print document.



Prints document with preselected printer.



Scales report contents to spill over display boundaries or to occupy on a portion of it (different to the zoom which is applied to all the contents within display frame).



used for setting print page with borders, orientation etc..



The zoom has two buttons, one is used for **zooming out** or zooming in and a drop down menu for selecting a preset zoom numerical level



The zoom has two buttons, one is used for zooming out or **zooming in** and a drop down menu for selecting a preset zoom numerical level



Command for exporting document to another format: pdf,HTML, csv, xls, xlsx...



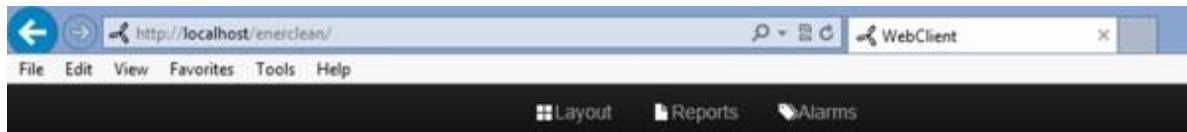
Used for exporting and e-mailing document if set with an e-mail program (Outlook or other) with an account.



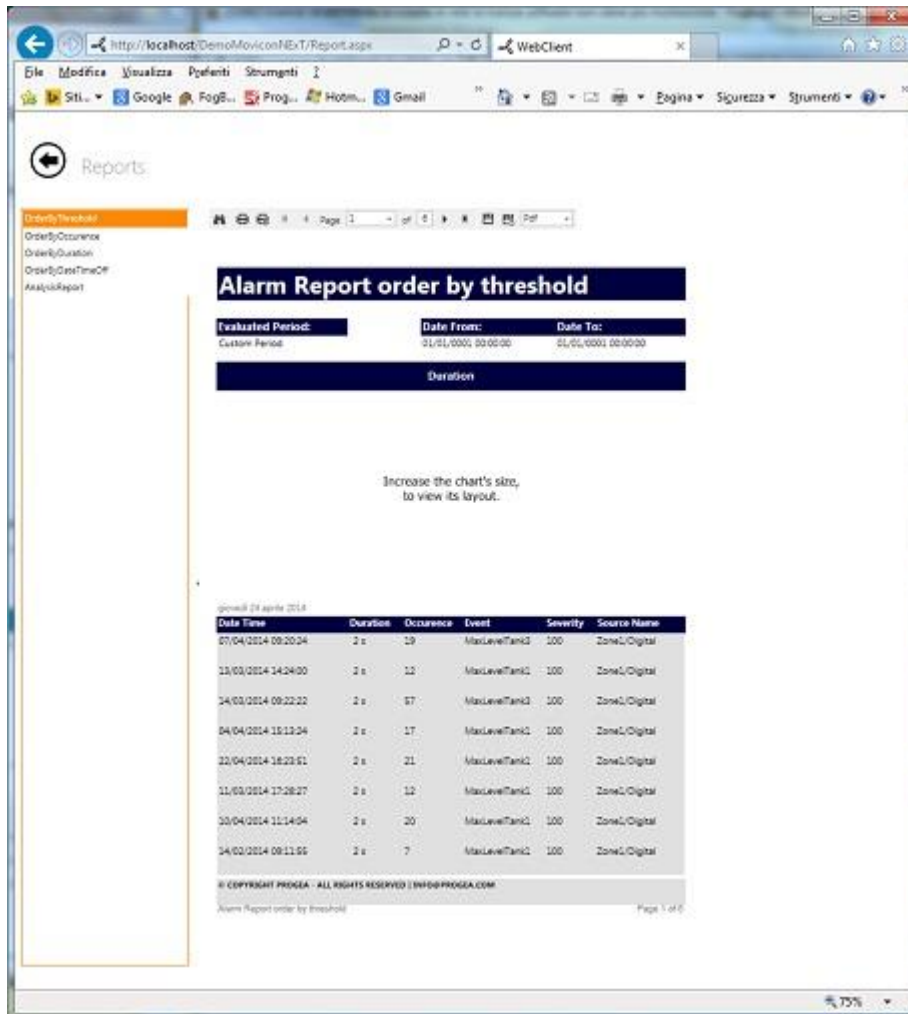
Used for setting text or image to be inserted in one or more report pages. Text settings include text type, orientation and transparency. the same settings can be applied to images.

## 1.6. Reports Web

Report visualization supports WEB Client html5 and therefore please refer to the section on "Web Client" for further details.



By using the "tile" page (after having published your project) you can access the reports menu to display the following page:



There is no particular difference in displaying the report web page compared to the one managed in runtime.

On this page you will find a menu on the left which is used for navigating the project's reports. When selecting any one of these reports, it will be displayed as shown above.





