TopKapi vision

www.topkapi-scada.com

REPORTS

Summary Reports, KPI, SPC

More than a basic report generator, Topkapi's Report module extends the data processing possibilities to the field of Data Intelligence: based on a powerful calculation engine built into Topkapi, it allows converting raw data into key performance, monitoring and diagnosis indicators useful for effective and responsive real-time operation of industrial processes.

" Thanks to TOPKAPI's built-in and ready-to-use calculation functions, it becomes very simple to:

- *Display the graph resulting from an advanced mono- or multi-variable calculation performed on the fly (by entering a simple formula)*
- *Create and archive internal variables issued from complex calculations (multi-variables and possibly on data time-stamped at source, acquired on different devices asynchronously) and use them to perform monitoring tasks (alarm, on-call duty, etc.)*
- *Generate, view and distribute summary reports in different formats "*

KEY POINTS

Built-in functions (without complex programming) to:

- Format and analyze data
- Display the relevant information
- Detect operating drifts
- Anticipate operating problems
- Optimize processes
- Broadcast the information

For access to:

- Operating statistics
- Key performance indicators (KPI)
- Operating reports

AREAL

PRINCIPLES

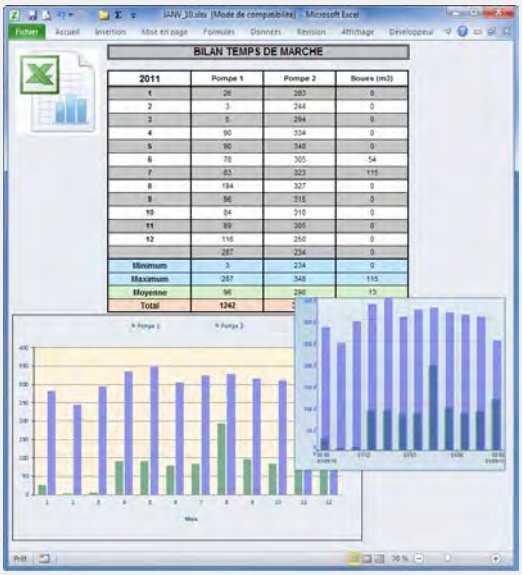
Where most SCADA software publishers offer a third party reporting tool and require complex and costly additional developments for summary calculation functions, AREAL offers a built-in and easy to configure solution for data processing and analysis.

With the Reports module, the user benefits from a powerful calculation engine allowing real-time on-the-fly calculations to be produced (even with data time-stamped at source), usable either through Topkapi's graphic interface or to generate freely customizable summary reports.

For example, this module allows:

- Calculating an average hourly consumption of a meter,
- Displaying it as a graph,
- Extracting the minimum value of this consumption over a given time range, and triggering an alarm if this minimum value is not less than a reference value.

In parallel, a report comprising all this data can be generated in Excel® format.



APPLICATIONS

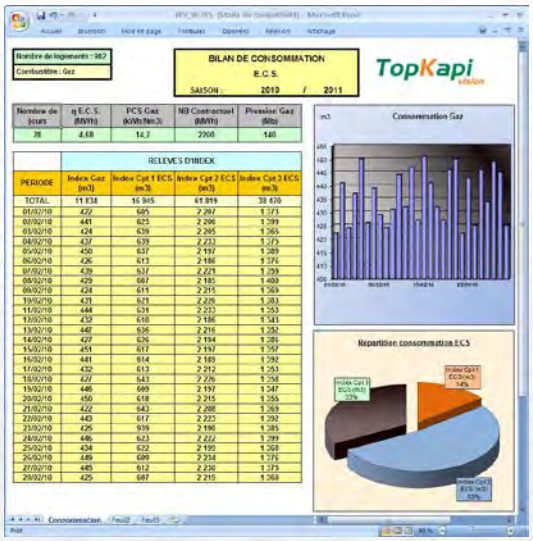
Target applications:

- Operating reports
- Production monitoring
- Energy effectiveness
- Drinking water network leak detection (DMA)
- Waste water network self-monitoring
- ...

In any domain of use you may be interested in calculating for example:

- Running or fault accumulated times
- Number of starts or faults
- Average duration of a fault or running sequence
- Availability rate
- ...

These calculations can be made on different time ranges: 5 mn, 10 mn, 15 mn, 20 mn, 30 mn, 1h, 2h, 4h, 6h, 8h, 12h, daily, weekly, monthly and annually. These periods can be interleaved (e.g. daily report with monthly total or monthly report with annual total).



DATA LAYOUT

The results of the calculations made by Topkapi are formatted into layout templates custom-designed by the user to meet specific needs, whether directly in the application's mimic diagrams or freely broadcastable external files. In this latter case, the formats supported are:

- Microsoft® Excel®
- HTML
- TXT
- PDF

DATA LAYOUT (continued)

Topkapi's graph module offers many possibilities for data layout in mimic diagrams: for example instant display in the form of bar graphs of summary results for devices selected on-the-fly. The data is calculated over summary periods (hour, day, week, etc.) chosen by the operator.

The values can be very easily compared with those of another period, for example the current month versus the same month in the previous year.

For examples of layout (statistics window, energy Pack, layout file templates, etc.), please call our teams.

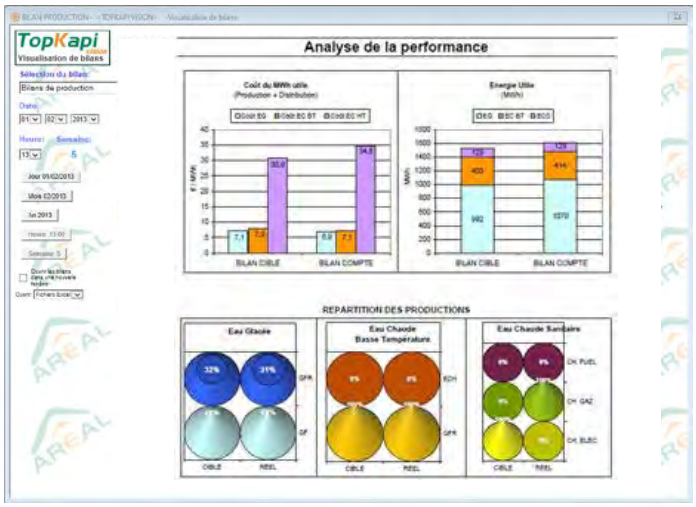
ACCESS TO RESULTS

Aggregated data, such as the KPIs, is accessible as any other data in graphic screens (mimic diagrams) designed for the needs of the application, and this for any type of client: heavy, shared, Web or RDP.

The data displayed in graphs is easily exportable into a file in the text format for use with third-party tools.

For external files (Excel®, HTML, TXT, PDF) issued by Topkapi, a Report viewing interface is supplied: an HTML sheet called using any Web browser shows the list of Report results available for viewing. Therefore, this consultation does not require specific development.

These same files can be distributed automatically by email or printed during the generation process.



CALCULATION FUNCTIONS AVAILABLE

The functions offered allow making summary and statistic calculations, within reports or in the real-time database, whether logged by TOPKAPI or time-stamped by a remote device. They are able to readjust the results of a processing period following the reception of missing samples.

LOGICAL VARIABLES

- Total time at 0 (stop)
- Percentage time at 0 (total time at 0 / total time)
- Average time at 0 (sum of time at 0 / number of passages at 0)
- Total time at 1 (on)
- Percentage time at 1
- Average duration at 1
- Number of shifts to 0
- Number of shifts to 1
- Number of faults
- Total fault time
- Percentage fault time
- Average fault time
- Average gap between two faults

ANALOG VARIABLES

- Integral value (e.g. volume based on flow)
- Average value
- Minimum value/Minimum date
- Maximum value/ Maximum date
- Standard deviation

QUALITY OBJECTIVES CONTROL

- Time In/Out quality objective thresholds
- Number of measurement samples In/Out thresholds
- Percentage time In/Out thresholds
- Number of passages in/out range

METER TYPE VARIABLES(1)

- Meter value (at end of period)
- Consumption (end-start difference)
- Sum of values

(1) Integrated management of meter replacement /reset available from V6

SETTING

The Reports module, a tool built into Topkapi (supplied as an option), allows dual use of data processing:

- Classical report generator used to consolidate data aggregated in Excel®, HTML, TXT, PDF files. The module uses the data archived in history files (*.HIS), sample files (*.DT) or database data (version 6 required) to generate reports in differed time.

- Calculation functions of sampled data allowing real-time calculation, i.e. according to the user's instant request, without having to use a pre-set report. The calculation can be performed on source data time-stamped by Topkapi or by remote devices (controller, data logger, etc.).

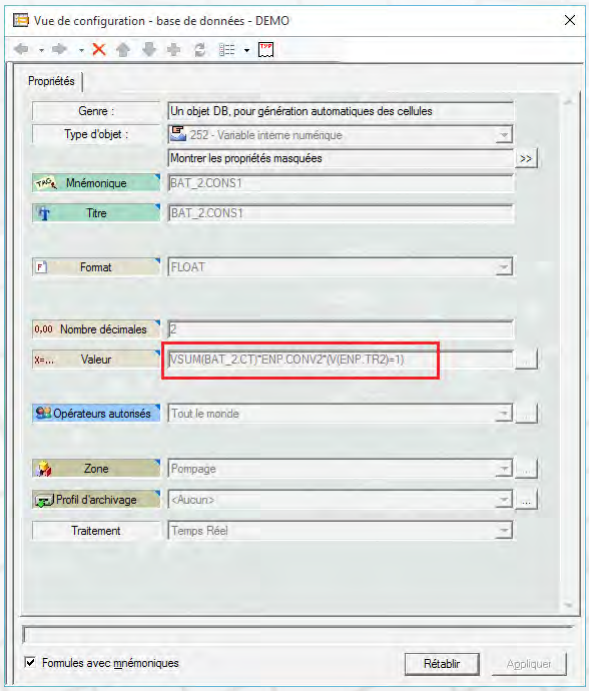
Differed time report generator

- Create one or several report templates (Excel, HML, and TXT). Aggregated data will be incorporated automatically.
- Select the templates to feed.
- Define in the Reports configurator the calculation to make (variables selection by browsing the database)
- Define periodical file generation (data consolidation). Generation upon request can be set in the mimic diagrams.

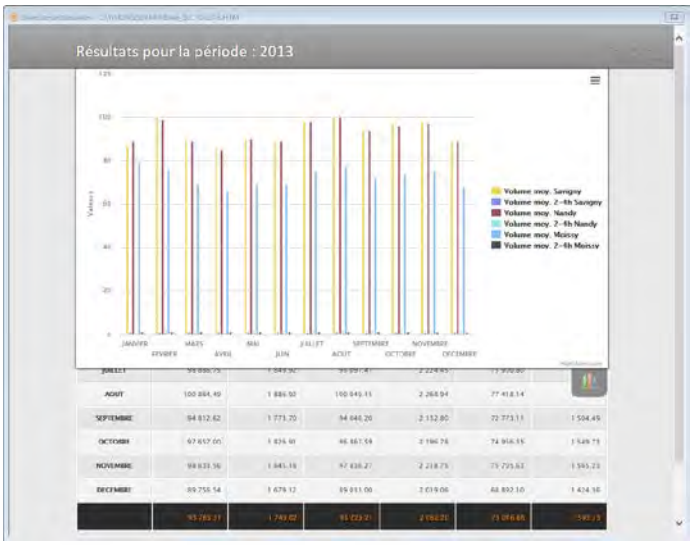
Calculation functions on sampled data

Calculation functions on sampled data can be used in the formula of a variable and in the Graph objects.

They allow producing report and statistic calculations (running time metering, number of starts, average, etc.), but also make basic mathematical calculations on variables time-stamped at source, e.g. as the sum of several energy meters whose measurements are ensured directly by telemetry units.



AREAL offers many calculation functions (see calculation functions available): these functions are used via an 'EXCEL-type' formula entry mode.



Example: daily consumption calculated from meter readings

- Source data made available: a meter reading per hour (at full hour: 00:00, 01:00, 02:00, etc.) saved into a sample file or into a database.
- Calculation requested: calculate daily consumption from 08:00 to 08:00 (difference between reading on day D+1 at 08:00 and reading on day D at 08:00 to obtain the consumption for day D).
- The formula is simply VCONS(CNT1) where CNT1 is the tagname for the meter variable.

The calculation functions proposed are able to readjust the results of a processing period following reception of missing samples (samples filling 'data holes').

Particular case of hot-standby

When using calculation functions on sampled data, the Report option is required on each of the redundant servers.

If only the differed time Reports generator is used, then the option is only required on one of the two servers.

In all processing cases, it is possible to discard from the calculation any values not matching the validity criteria chosen (values declared faulty via the validity flag archived with the sample).

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