The TopKapi Newsletter

N°13 – October 2004

Contents

See this newsletter in our website : www.areal.fr

Events

December 6-10, 2004,
Paris - Nord Villepinte – Hall 6
www.eleclive.com
Stand : 13D1

November 30 - December 3, 2004,
Lyon Eurexpo
www.pollutec.com
Stand : 68112

Developments

Version 3.7

Presented for the first time at the ELEC and POLLUTEC exhibitions, **TOPKAPI** version 3.7 now provides the management of structured variables and integrates data with **Unity-Pro**, the new software workshop by **SCHNEIDER ELECTRIC** for programming controllers (see next page).
The other important functional evolutions are described below.

☐ Internet Explorer window

Supervision can now display an Internet Explorer window, either as a standalone window (e.g. in the same manner as a synoptic or alarm view), or as a fixed display zone within a graphics view. This function improves particularly the management of **video overlays** within supervision, access to detailed screens on **html servers**, and helps managing **documentation** built into the application (help, operator instructions, displaying EXCEL reports, etc.)

☐ **The variables' profile interface has been modernised,** with in particular multilingual help pop-ups for direct user support. A new **GRAFCET** profile is provided for sequencing operations within supervision (**RECIPES**, **BATCH**, …).

☐ X-Y graphs

Simultaneous display of X-Y graphs showing evolution over time.

☐ Animated GIFS

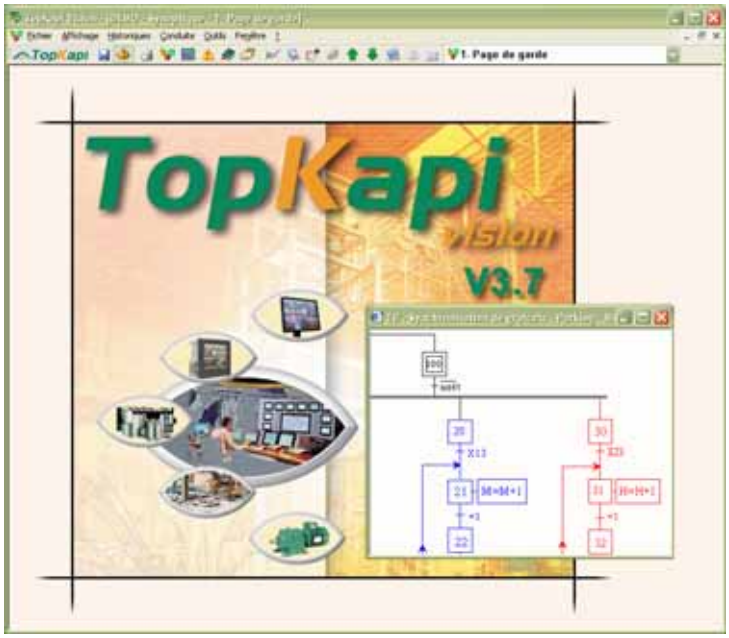
This graphic format is supported inside **TOPKAPI** synoptics (and also of course by the WEBSERV module).

☐ Schedules for S50 and S550 Thermix by SOFREL

Although the TOPKAPI "SCHEDULER" hardly has any limits when used with permanent connection stations (delivering orders scheduled in real time), it must adapt to remote management controllers when connections are temporary (PSTN, cellular network, etc.).This is usually achieved by configuring variables in the application; for Thermix S50 and S550, you can now use the SCHEDULER interface in TOPKAPI directly for programming schedules.

☐ New Protocols (available in V3.7 and V3.6)

- **W@DE** (new water RTU by **SCHNEIDER ELECTRIC**).
- Support of data acquisition by **SMS messages** (Sofrel Cellbox and Perax P16XT).
- **Exemys** (dataloggers).
- **MACTEC Flygt** (support of self-configuration since June 2004; the protocol itself was already available).



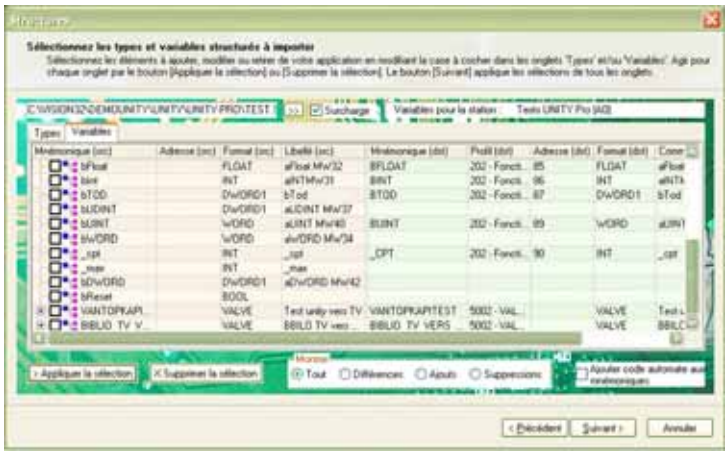
The TopKapi Newsletter
N°13 – October 2004

Unity-Pro and structured data

UNITY-PRO is the new software workshop from SCHNEIDER ELECTRIC for programming its controllers.

With its openness and structured data, it enables you to fully benefit from developments undertaken by **AREAL** these last few years through the **SOFTLINK** concept.

Although this type of software was used until now only to export part of its data to files (used in **TOPKAPI** by import functions, and more recently dynamically by SOFTLINK), UNITY-Pro offers **bidirectional access** to virtually all information, both read and written by third party software. It can also manage user-defined **structured variables** ; indeed defining this type of variables makes it possible to establish links between processing performed in the controller and supervision for generic objects.



Within the framework of a **partnership agreement between AREAL and SCHNEIDER ELECTRIC** (CAPP program), developments were made to ensure high level integration and unicity of data shared by Unity-Pro and TOPKAPI.

Using the **SOFLINKT configuration wizard**, you can now **read and write** in Unity-Pro the information related with the variables, and more particularly:

- Designation and contents for the structured data types (DDT).
- Tags, designation, type, and (if applicable) address of all basic and structured variables

In concrete terms, this means that after defining variables in controller programming, you can easily integrate them to the supervision application or, reciprocally, after placing objects in the graphic synoptics, you can ask the appropriate instances to be integrated to the controller program.

Structured data

With structured data, the user can define and share with the controller information which is no longer limited to basic information (bits and words) but also integrates broader **sets** such as equipment (motors, valves, conveyors, …) or full parts of processes.

This is like being finally able to define and handle meal trays rather than serving knives, forks, bread, starters, beverage, etc. With UNITY-Pro and **TOPKAPI**, this information is defined in one or the other tool, and can be used by the other without a new entry.

All types of data (charts, mixed variables) can be defined with a tree over several levels. In **TOPKAPI**, basic customized operator dialogue are used to define supervision processes (formatting, alarms, archiving, etc.) linked to each of the subassemblies; in UNITY-Pro, processes are run by the DFBs and the automaton program.

Once again, with these developments, **TOPKAPI** demonstrates its **technological lead,** by being the only supervision software package to offer this bidirectional link on **structured data managed as autonomous entities.**

Developments

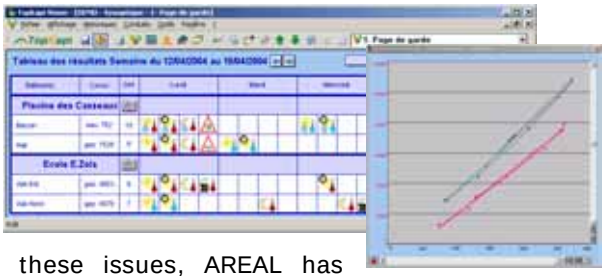
GTB: Mastering energy

There is one field of application in which supervision can generate quantifiable **savings** and **fast ROI**, energy control.

In terms of building technical management, supervision offers many benefits: comfort and quality of service, flexible and effective time programming, easy remote intervention, data collection and recording.
But beyond instant technical alarms and subsequent analysis of results unsatisfactory in terms of energy balance, some aspects remained to be explored to achieve perfect supervision:

- **Facilitate the use of applications** in a field where people are more accustomed to operate integrated systems rather than configuring supervisors and programming controllers

- Find, half-way between alarms and reports, appropriate **indicators** for alarms on energy consumption to ensure just in time intervention.



To meet these issues, AREAL has engaged an R&D program together with the **CSTB** (National Building Technical Center), with the financial backing of the **ADEME** (Energy Agency). Based on the works performed by the CSTB for schools and pools (EMMA software), the following functions were developed for **TOPKAPI**:

- creation of standard templates dedicated to heating system monitoring, ensuring easy implementation of applications by non specialists
- creation of comfort and over consumption fault indicators with sensitivity setting (focusing priority on the most severe anomalies)
- automatic generation of energy balances
- comparison tools used to evaluate absolute performance per m2 in each building, compared with other buildings or the previous year, while taking the DJU (Degré Jour Unifiés, Unified Degree per Day) into account.

A first pilot project was led in collaboration with the **Communauté Urbaine de Strasbourg**. The latter has extensive expertise in field requirement, with a background in remote management of its buildings going back to 1985. Using the **TOPKAPI** software since 1996, it has a long history of accumulated data ensuring it can assess the benefits provided by the new developments.

We already know that beyond **consumption savings** achieved, mastering energy balances ensures **better sizing of new equipment**: indeed, lacking precise data in the past, most of the time the power chosen for heating devices exceeded requirements by far.

In addition, **TOPKAPI** was chosen by **the town of Les Mureaux** for the monitoring of its new administration building. First prize at the call for projects by the ADEME on experimenting with **HQE certification** (High Environmental Quality), this construction was designed within compliance of the main requirements of the HQE procedure. In February 2005, it will be the first delivered among the 22 candidates in the list of projects retained for this experiment.

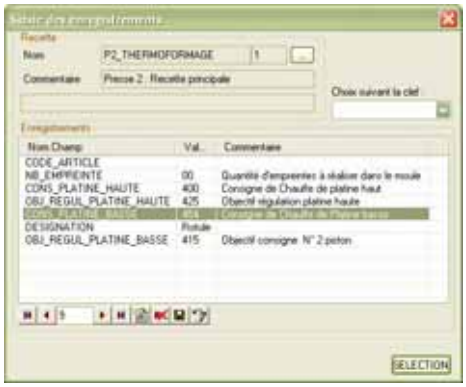
Achievements

Recipes and traceability

In this application, **TOPKAPI** must control 16 presses thermoforming high precision parts. To manufacture a first determined part, we have a mold with several imprints. A manufacture cycle is composed of the following sequences:

- mold placing and locking
- preheating
- temperature adjustment and regulation
- injection
- cooling
- ejection and mold parting

For each part, the manufacturing parameters are mainly the number of imprints per mold, material composition, cycle times, set point temperatures, tolerance thresholds.



These parameters are entered in a recipe file with a code and a designation in plain text for each item.

The cooling cycle has about twenty specific parameters, grouped within **subrecipes**; these can be used in common by the basic recipes. Indeed, it is easier to enter the manufacturing sheet for an item, to select a particular cooling mode, than entering all 20 associated parameters again.

When launching a manufacturing batch, the operator is identified automatically by his log-on password. On the control screen of the press ready for manufacturing, he selects, in a sequencing file generated by an external application, the batch number to be processed, with its item code and quantities. The manufacturing recipe is then displayed and/or created/modified, then loaded into the controller, and the cycle is started. As flawless **traceability** is required, **TOPKAPI** generates two types of **reports**. The first is the full list of all production batches, with date and time, quantities, press number, operator: after each manufacturing run, the operator enters the manufacturing parameters saved by **TOPKAPI**, and adds his own comments. Here, it is the **RECIPES module** which is used, as it is well suited well to reporting all BATCH processes.
The second type of report is a detailed report per batch, mentioning more particularly the temperature and pressure curves during manufacturing: if a part is faulty, it must be possible to analyze subsequently to determine whether the manufacturing conditions are the origin of this fault.

The TopKapi Newsletter
N°13 – October 2004

Here, TOPKAPI's **report generator** (LISTE function) is used, in the HTML format, with incorporated temperature curves. One of the determining criteria of use of TOPKAPI for this type of application is the ability to run the **application without scripts** nor specific external

developments: using a programming language is generally not a problem as such at the start, but it does become one when, later, each change requires reusing and controlling all programs.

The User's Corner

- **Using several screens:** a lesser known function. With a basic multiple channel video card, you can use several screens, even in the same **TOPKAPI** station, to display simultaneously one or several views of synoptics, alarms, trend curves, etc. Set the windows where you wish to have a video space made of several screens, and use the command "save environment" (this also works with a single screen). Most often, use 2 to 4 screens, but you can also have for example 16 curve screens managed by a single **TOPKAPI** station in the control room.

- **Rolling averages, sample charts, min values, max, sum, etc.:** a new wizard, available from version 3.6 (SUMMARY option) can be used to run calculations in series of sampled values and use them as "real-time summaries", which was not easy beforehand because of the "rolling" nature of the samples used. For example, this wizard comes in handy to handle rejection indicators or rainwater totals.
- **30,000 controllers**: with version 3.6, up to 34,632 controllers can be declared per application (936 previously).

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