SOLUTION OF THE ENERGY CONSUMPTION MONITORING TASK

SIDAT - SIDAS IEM Platform

The SIDAS IEM product is part of the SIDAS modular system developed for MIS/MES by SIDAT, spol. s r.o., Prague.

The solution based on the SIDAS IEM product covers the tasks of monitoring and reporting of consumption of several energy types (electrical energy, process water, waste water, steam and gas etc.) with the possibility of monitoring and reporting of individual consumption levels not only on the basis of standard time conditions (hourly, daily and weekly reports etc.) but also on the basis of conditions defined by process operation (process signals).

The product is based on the MS SQL server platform and client access to the server by means of a WWW interface using a standard web browser both for data entry and reporting and for online display.
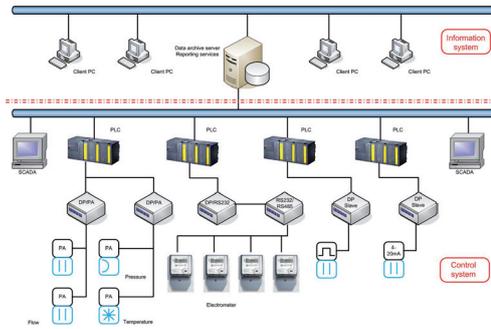

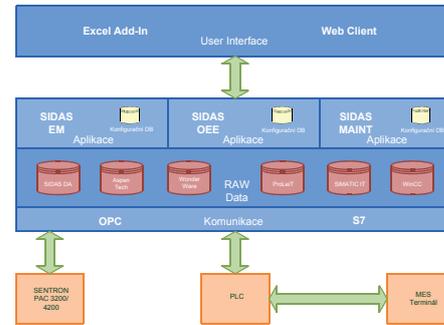Fig. 1. – Architecture of data collection for IEM

Fig. 2. – Architecture of data storage for SIDAS

The archive of measured values is delivered as standard on an MS SQL platform. If a server for storage of real-time values exists, it is possible to use already existing platforms. SIDAS currently supports Siemens WinCC, Wonderware InSQL, Siemens SIMATIC IT, AspenTech IP21 and ProLeiT platforms.

There are two methods of data input from the individual measuring devices. The pages of the web browser are used for manual data entry or the data may be imported from a pre-defined file. Automatic data collection is resolved by means of an OPC interface. This interface allows connection of all possible outputs of measuring devices ranging from simple binary signals right through to complete integration of very complex intelligent consumption measuring devices. Thanks to the open OPC interface, it is of course possible to gain data from any PLC system. A new feature is the possibility of entering offline data by means of mobile devices working on the Android platform.

Customised HW modules for connection of measuring devices by means of binary or analogue inputs on the basis of small PLCs and proven communication solutions for electric meters and current meters by various manufacturers are part of the solution.

The know-how of SIDAT, a leading supplier of control and monitoring systems, is used in the maximum possible scope when implementing data collection from measuring devices. Data collection can either be resolved individually or in cooperation with suppliers of existing energy and production infrastructure. In this case, SIDAT acts as designer and/or technical supervisor of the solution.

There are two types of data output from the SIDAS system:

In the first one, it is possible to monitor consumption in real time on the screen of the web browser (see figure) including animations. When necessary, this type of display may also be used for presentation on large screens or special panels.
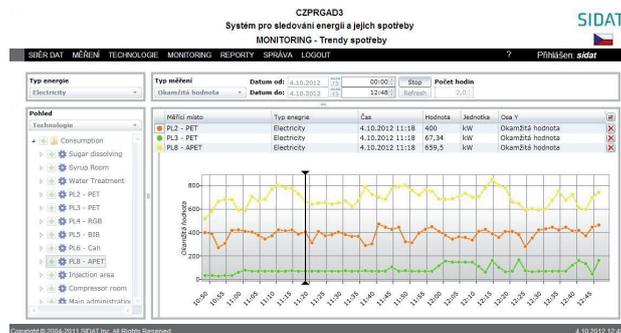

Fig. 3. – On-line display of data for IEM

The second type of data output are reports. Default report layouts for display of basic indices of energy consumption in selected time periods (day, week, month or year) are available. This data may be filtered according to further required parameters, however, SIDAS IEM – unlike regular energy monitoring systems - offers the possibility of enhancing the regular reporting "by period" by the so called "reporting by contextual variable". These variables enable definition

of specific operating conditions (line operation or batch number etc.), under which the given energy was consumed and thereby to specify the results gained. The module includes the possibility of printing reports or possibly exporting reports into various formats (xml, csv, pdf, tiff).
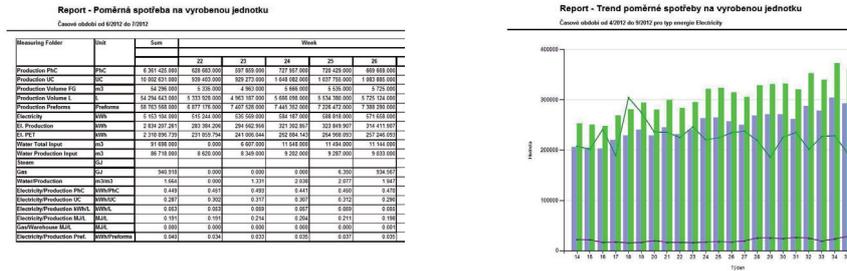

Fig. 4. – Examples of reports

Individual measuring points may be assigned to various views in IEM configuration. These views are resolved by means of a definition tree. This is for example a view of the individual energy types (electricity, water or gas), or a view of the individual technological units. If several technological units have a common measuring point, it is possible to set the ratio by which a measuring point will be registered in the individual technological units. Thanks to this method, it is possible to monitor consumption recalculated to the individual technological units in the reports, or to monitor the consumption of a physical measuring point. Contextual information may be assigned to the individual parts of the definition tree in the configuration (machine operation, order number, material number or shift etc.).
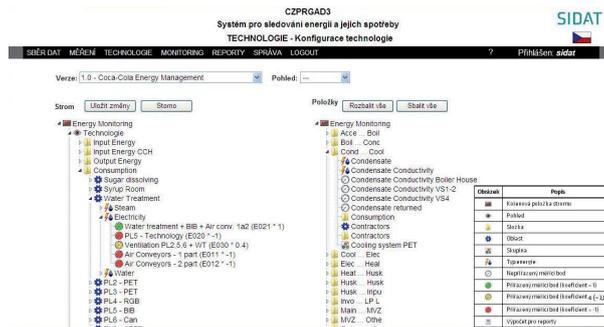

Fig. 5. – Configuration tree

If it is too difficult to connect a measuring device to individual machines, it is possible to monitor energy consumption on the basis of contextual data. First of all, the energy consumption in the individual machine modes is measured. Information about machine status (OEE) is then added to IEM. The consumption levels of the individual energy types are calculated in IEM by combining the standard consumption levels and the status information.

In addition to this, planned energy consumption relating to the production plan for the individual production devices can be calculated in the SIDAS application. This method enables you to determine anticipated energy consumption for the period specified by the production plan.

A module for user administration is also included in the SIDAS application. The user login and logout as well as assignment of access rights to the individual features of the application to the users are performed using this module. In addition to this, the option of validation of users against the Active Directory has been implemented, i.e. use of the same name and password for login to both the application and the PC.

A module for the administration of language versions makes multi-lingual operation of the SIDAS IEM application possible. The module contains an interface for adding new language versions. Translation of menu items, translation of code lists and table headers are supported.

Subject to customer request, operation of IEM in an external data centre without the need for purchase and administration of the customer's own hardware can be arranged.

Selected installations of the SIDAS IEM and SIDAS OEE products:

Heineken Krušovice, Heineken Starobrno Brno, DANONE Benešov, COCA COLA Praha, INTERSNACK Choustník

Please use the company's contact address to request more information about the products and applications of the modular SIDAS set.