



ASIX ENERGY

MONITORING OF ENERGY CARRIERS

Effective Management of Energy in Production Plant

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No one needs to be convinced how important it is for a production plant to manage its energy resources in an economical way. Companies no longer consider energy consumed to be a fixed cost beyond their control. It has been understood that the energy required to make a product is one of the crucial price factors which, when minimised, significantly contributes to the company profitability while enhancing its image as an environment friendly enterprise. However, if you plan to optimise the consumption and reduce the energy utility generation costs, it is not enough to measure the amount of energy. You also need to have a proper data acquisition and processing system which will present the data in a clear way, aggregate them and develop indicators helpful when taking organisational decisions or planning upgrades intended to measurably reduce the production costs. Since the expenditures necessary to implement the monitoring system are relatively small when compared to the available savings, it is one of the best investments with one of the fastest returns on investment.

For almost a quarter of century, ASKOM has been implementing computer-aided control, monitoring and production management systems for the energy sector and other industries. Being aware of the customers' growing interests in the monitoring of energy carriers, the company has developed the Asix Energy software based on the original SCADA platform - Asix.Evo, including functions which are dedicated to this type of tasks.

The systems allows you to control any kind of energy carriers, including:

- Electric energy;
- Natural gas / coal gas;
- High and low pressure compressed air, vacuum;
- Technical gases – hydrogen, oxygen, nitrogen, argon...;
- Heat;
- Potable water, industrial water and sewage;
- Ventilation and air conditioning, chilled water.

The basic function of Asix Energy is to read current and historical data from measuring devices and to archive and visualise them. These data are presented in an easy way on synoptic screens or control and management panels. The available wide portfolio of graphic objects such as numbers, bars, rotational indicators and charts (including the Power Guard Chart) makes it possible to tailor the presentation to a specific kind of information and consumer. Since the system supports GIS map technologies, it can present the metering of wide power networks or plants on the background of map diagrams with all their advantages (zooming in and out, adjusting the data accuracy depending on the map scale etc.).



The historical data are presented as intuitively managed trends and reports created based on MS Reporting Services and MS Excel. The complex alarm system sends notifications about all kinds of events or when pre-set parameters are exceeded. This can be done not only on a computer screen but also by e-mails or SMS.

The Asix Energy software allows the Consumer to:

- Monitor the energy consumed by machines, process lines, departments, entire plant or a group of plants in terms of efficiency, including on-line Energy Performance Indicators (EnPI).
- Create "virtual" energy counters, that is, values calculated according to mathematical formulas, e.g. summing, averaging of physical counter indications or calculating their differences.
- Monitor pre-set targets and notify relevant persons through pre-established communication channels (SMS, e mail) when they are exceeded.
- Create reports both for the technical personnel (charts, tables and histograms) and for the management (managerial dashboards).
- Select the most beneficial tariff (or price plan) – based on the analysis of energy

consumption costs in the Industrial Plant or the entire Capital Group.

- Select the most beneficial contracted power while also analysing the profitability of exceedings.
- Guard the contracted power (electric energy, gas) to avoid unnecessary exceedings and penalties for excessive energy consumption (the Power Guard module). This can be done by notifying operators in advance about a predicted exceedance of the power threshold and leaving it for them to decide what steps should be taken or by automatic performance of pre-defined actions (e.g. disabling specific, less important energy receivers, temporary reduction of device operation parameters, locking of drive activation etc.).
- Analyse the reactive power compensation in the plant, which will also make it possible to avoid high penalties.
- Analyse the split of costs of the consumed energy into departments and process lines.
- Reorganise industrial processes by shifting loads to cheaper energy zones while avoiding unnecessary consumption.

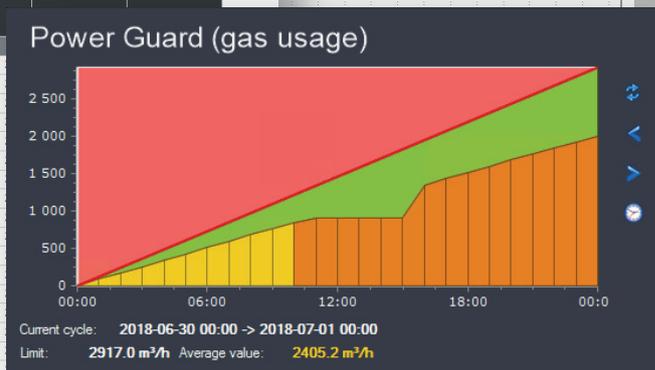


BALANCE REPORT

For period: 2016-01-02 - 2016-01-03

From	To	301EQM02_LPS Section 3 control - energy P+ counter [kWh]	301EQM04_LPS Section 2 control - energy P+ counter [kWh]	301EQM06_LP3 Section 1 control - energy P+ counter (T3 zone) [kWh]	301EQM04_LP3 Section 2 control - energy P+ (T3 zone) [kWh]	INPUT SUM	OUTPUT SUM	DIFFERENCE
2016-01-02 00:00:00	2016-01-02 01:00:00	910	1820	1880	1820			
2016-01-02 01:00:00	2016-01-02 02:00:00	910	1800	1880	1800			
2016-01-02 02:00:00	2016-01-02 03:00:00	900	1820	1880	1820			
2016-01-02 03:00:00	2016-01-02 04:00:00	900	1820	1880	1820			
2016-01-02 04:00:00	2016-01-02 05:00:00	900	1820	1900	1820			
2016-01-02 05:00:00	2016-01-02 06:00:00	940	1820	1900	1820			
2016-01-02 06:00:00	2016-01-02 07:00:00	940	1820	1890	1830			
2016-01-02 07:00:00	2016-01-02 08:00:00	1000	1880	1950	1870			
2016-01-02 08:00:00	2016-01-02 09:00:00	1040	1860	1940	1860			
2016-01-02 09:00:00	2016-01-02 10:00:00	1000	1900	1970	1900			
2016-01-02 10:00:00	2016-01-02 11:00:00	910	1860	1930	1870			
2016-01-02 11:00:00	2016-01-02 12:00:00	930	1840	1920	1830			
2016-01-02 12:00:00	2016-01-02 13:00:00	960	1860	1930	1860			
2016-01-02 13:00:00	2016-01-02 14:00:00	900	1830	1910	1840			
2016-01-02 14:00:00	2016-01-02 15:00:00	840	1830	1900	1820			
2016-01-02 15:00:00	2016-01-02 16:00:00	900	1830	1910	1830			
2016-01-02 16:00:00	2016-01-02 17:00:00	880	1830	1900	1830			
2016-01-02 17:00:00	2016-01-02 18:00:00	950	1830	1900	1840	2780	3740	-960
2016-01-02 18:00:00	2016-01-02 19:00:00	950	1840	1920	1840	2790	3760	-970
2016-01-02 19:00:00	2016-01-02 20:00:00	1000	1840	1910	1830	2840	3740	-900
2016-01-02 20:00:00	2016-01-02 21:00:00	1000	1850	1920	1850	2850	3770	-920
2016-01-02 21:00:00	2016-01-02 22:00:00	910	1840	1910	1840	2750	3750	-1000
2016-01-02 22:00:00	2016-01-02 23:00:00	810	1840	1930	1840	2650	3770	-1120
2016-01-02 23:00:00	2016-01-02 00:00:00	870	1850	1920	1860	2720	3780	-1060
		22250	44130	45880	44140	66380	90020	-23640

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” ” *The Asix Energy supports the implementation and maintenance of the energy management system according to ISO 50 001. It enables to achieve objectives and tasks of the policy of efficient energy use and also to measure the policy actual effects. These advantages make Asix Energy an indispensable tool used to optimise production costs in every modern plant.*

The Asix Energy system fully shows its capabilities when fed with up-to-date information about the on-going production and production orders. The summary of information coming from 2 different worlds – of production and of energy carriers - provides a lot of interesting information – Key Performance Indicators (KPI) facilitating strategic decisions to optimise production process. The primary ones include:

- Amount of energy consumed by the machine during operation and idle state.
- Amount of energy used by the machine to produce a unit of the product.
- Amount of energy lost when retooling the machine and line.
- Amount of energy used by the machine over an entire single production cycle or order.
- Amount of energy used during a specific shift.
- Amount of energy used by the entire plant during idle state (including the indication of places where the energy is lost);
- Energy consumption indicator during production time versus non-production time.

All these indicators can be compared:

- With historical values, which allows you to follow the process of machine wear and makes it easier to take a decision about the planned renovation.
- Among machines, production lines or even entire plants and properly allocate production orders to minimise costs.
- Among shifts or individual operators to assess their work.

Thanks to the solution in which Asix Energy is based on the proven Asix.Evo platform and the Microsoft SQL Server software, the following benefits were provided:

- **System openness** – it is possible to communicate with most available measuring devices through more than 100 communication protocols. Easy integration with ERP, MES etc. class systems.
- **Scalability** – the system can be expanded to an unlimited size and additional modules and functionalities can be added to it.
- **Accessibility** – it is possible to access from both standard computers and mobile devices through Ethernet, Internet and Intranet networks, through the VPN remote access system and mobile networks.
- **Reliability** – it is possible to create redundant configurations of the system.
- **Security** – thanks to the virtualisation technology supported, IT services fully control the access to the software, the uploading of updates and the testing of changes.
- **User-friendly and flexible interface** – the interface and the type of the information displayed is adjusted to the level on which the data are presented (different data for operators, different data for managers). The system can be customised to meet specific requirements of the Customer.

Asix Energy supports the implementation and maintenance of the energy management system according to ISO 50 001. It enables to achieve objectives and tasks of the policy of efficient energy use and also to measure the policy actual effects. These advantages make Asix Energy an indispensable tool used to optimise production costs in every modern plant.