

Container manufacturer Saint-Gobain Oberland wants to analyse its energy flows in a more differentiated manner with the help of a modern energy management system. Thomas Goetting\* and Dipl. Ing Rudolf Traxler\* explain.

# Oberland achieves energy reduction using analysis

Everyone working in glass production knows that the major cost driver today is energy. Saint-Gobain Oberland operates on the market under the brand name of Verallia. As a manufacturer of container glass, consumers encounter the company's products on an almost daily basis – be it baby food, coffee, vinegar and oil or beer and sparkling wine.

The respective bottles and glasses generally stem from the company's German plants in Bad Wurzach, Neuburg, Wirges or Essen.

With processing temperatures of approximately 1600°C, energy consumption accounts for roughly 30% of production costs.

"This is why we have been working on creating the required transparency for years in order to allow for the targeted implementation of energy-saving measures", reports Simone Spielmann, Energy Manager at Saint-Gobain Oberland. Since its introduction in spring 2013, the Simatic B.Data energy management system by Siemens has been considerably easing the previous situation.

Ms Spielmann confirms: "Due to uniform energy reporting standards, the decision-makers in the plants had to keep comprehensive energy consumption lists, which had become laborious and complex." Yet an important task: Systematic energy consumption detection and the implementation of a company-wide energy management system in accordance with DIN EN ISO 50001 provides the company with annual cost savings in the 2-digit millions range – in



▲ Container glass production is an energy-intensive process. Using an energy management system, valuable rationalisation potentials in terms of energy savings can be identified. Image: Saint-Gobain Oberland

terms of the German tax cap for energy-intensive users ("Spitzenausgleich") and the levy in accordance with the German law on renewable energies ("EEG-Umlage").

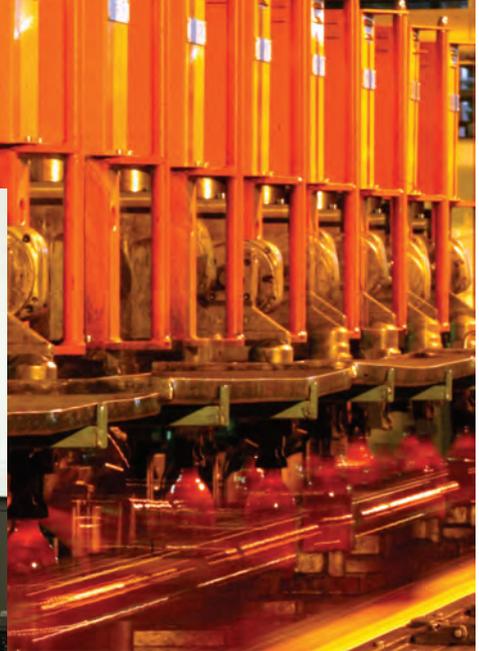
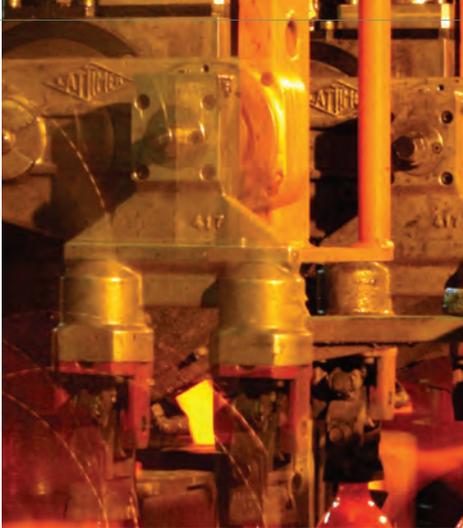
## Energy management

The installation of the B.Data energy management system now allows for the automation of most tasks while users are additionally provided with clearly structured evaluations at the push of a button. However, the decision in favour of this system was made in connection with two further important characteristics of the energy management system, which is

emphasised by Josef Harscher, who is responsible for electrical engineering in the packing glass manufacturer's technical centre: "The system is online-capable and scalable."

This, for example, does away with the laborious coordination of generated energy consumption lists internally in the plant itself and externally across all plants. In contrast to this problem of the past, every energy team now has direct access to the energy management's current data via the internet. With an annual energy demand of the four

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German plants ranging from 1.5 to 2 TWh, transparency and standardised workflows also represent important keys to future energy savings.

Ms Spielmann points out: “Up to now, we ourselves as well as many of our staff members thought that very little could be done about the general amount of energy consumption in an application as energy-intensive as glass production.

“Today, we know that the provision of differentiated detailed information on energy consumption represents the most important prerequisite for further increased production efficiency.”

This is demonstrated by an example: A tonne of molten glass requires an energy amount between 5 and 6 MJ. Based on the consumption curves, Energy Managers are able to accurately trace the glass melting tank’s wear.

### Easy integration

Three such tanks with a consistent runtime of roughly 12 years are operated in Bad Wurzach alone. Energy consumption intensifies once the wall made of refractory material shows wear. “Using energy management, we are now able to optimise the melting tanks’ efficiency by accurately weighing up energy consumption and investment costs”, explains Ms Spielmann.

The advantages of a comprehensive energy management system are obvious. The versatile functionality of such a system is explained by Kristin Rotta, member of the energy team at Bad Wurzach: “In the Bad Wurzach plant alone, we detect and evaluate the values of approximately 1,000 data points.” Depending on the license, this number can be expanded to up to 30,000. Electricity meters, gas meters, compressed air measuring points and many further measures were incorporated in Bad Wurzach and the

“The new energy management system not only facilitates a differentiated assessment of our energy consumption, but also enables us to increase our energy efficiency.”

**Simone Spielmann,  
Energy Manager at  
Saint-Gobain Oberland**



▲ Saint-Gobain Oberland’s plants already had measuring points such as the 7KM PAC 3200 power monitoring device which could be easily incorporated in Simatic B.Data.

Image: Saint-Gobain Oberland

measuring and metering values are now largely detected fully automatically.

Only some consumption values still have to be read manually on site. Even here, B.Data offers a convenient solution: Equipped with corresponding hand-held devices, staff members detect the readings of approximately 30 natural

gas meters. The meters are allocated and identified via barcode scanners. Following manual value entry and a plausibility check, transfer to the central energy management system is ensured via a docking station or via WLAN.

### Automatic data

Apart from that, all information is detected automatically as mentioned above. Mr Harscher explains: “We have been consistently working on energy data acquisition for many years, as a result of which our plants are equipped with corresponding measuring technology.” For example, the 7KM PAC 3200 power monitoring devices by Siemens have been installed on decisive positions for years. Mr Harscher recalls: “At the time, we knew that comprehensive energy management was inevitable – for the fact alone that energy price developments are no longer predictable.” For the energy management system’s introduction, a further 5-digit Euro amount had to be invested in Bad Wurzach for measuring technology equipment, modernisation and about ten dozen additional power monitoring devices.

In this context, the control expert points out that an important aspect should not be forgotten: “Thanks to the technical equipment of our machines and systems with Siemens products, the measuring points’ integration was extremely easy.”

This resulted in cost savings and considerably minimised installation expenditure. The energy management system in Bad Wurzach was designed as a central system in terms of its architecture, which is now gradually expanded to the individual plants. A so-

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## Energy efficiency



“The Simatic B.Data energy management system by Siemens offers outstanding handling comfort and intuitive operation.”

Kristin Rotta, of Saint-Gobain Oberland's energy & environment department

▲ Pictured: Kristin Rotta, Energy and Environment, and Josef Harscher, Electrical Engineering at Saint-Gobain Oberland.

called data acquisition server is applied for each plant to take over all energy data from the local production processes. Besides the plant in Bad Wurzach, the integration of the plant in Neuburg an der Donau has also been completed.

### Three servers

The central application server with integrated web server receives all queries by the end user and provides reports, graphics and dashboards to the user via a standardised web interface. The third server hosts the powerful database in which all information is saved.

Ms Rotta is pleased: “The system's design as well as the programme structure facilitate clear and intuitive operation, which enables us to configure the system as required. This saves time and costs and ensures our know-how is kept in-house.”

Meanwhile, the monthly consumption values can be easily allocated to the respective cost centres. This represents an important prerequisite for the energy consumption's future allocation to the individual product. “This aspect is becoming ever more important as customers increasingly want to be informed of their end product's ecological framework conditions”, reports Ms Spielmann.

Already today, comprehensive information not only regarding the various foods' ingredients, but also their carbon footprint during production can be obtained via apps by means of food label scanning.

### Accepted by certifiers

Saint-Gobain Oberland has been certified in accordance with ISO 50001

and benefited from corresponding energy cost savings since 2012. Also for this reason, the decision-makers opted for the energy management system by Siemens, which is confirmed by Ms Spielmann: “Simatic B.Data is accepted by the certification companies.” Moreover, the energy team is convinced that this system is an important contribution to sustainability as it “offers full-range functionality and consistent advancement”.

Each plant is assigned to such an energy team which defines specific improvement measures for every department on an annual basis. The focus lies on compressed air consumption, heat recovery, illumination and many further factors. In the plant in Neuburg an der Donau for example, the energy management system was installed and rolled out within a period of four months, within the scope of which an additional 5-digit Euro amount was invested in measuring technology. The infeed of waste heat in a public local district heating network represents a further measure which correspondingly led to increased efficiency. Ms Spielmann comments: “This clearly demonstrates the use value of integrated energy management to all staff members.”

### Efficiency-increasing measures

It is a common assumption that nothing can be done about the high energy consumption particularly in energy-intensive sectors. However, the present example proves this wrong.

The initiation of efficiency-increasing measures represents the next step. With the help of B.Data, for example curve series can be recorded for comparison purposes. Corresponding action can be

taken in case of deviations. Josef Harscher sums it up: “Knowing the problem is half the battle.”

For example, the volume flow measuring of compressors immediately indicates any changes. This includes downtimes, which are immediately detected to allow for rectification of the respective cause.

Ms Rotta adds: “The comparison of product curve series which is supported by energy management also facilitates the targeted localisation of deficiencies – and the initiation of corresponding improvement measures.” As a result, initial targets could already be attained shortly after the energy management system's introduction: Lights are switched off more consciously and doors are closed more frequently.

### Simple solution

Approximately 3000 tonnes of glass are processed every day at Saint-Gobain Oberland, which corresponds to a production output of roughly ten million glass packings.

The energy consumption can be allocated to one third of electricity and two thirds of gas. Every energy-saving measure, however small it may be, results in a direct reduction of production costs.

This is why the decision-makers invested in Siemens Simatic B.Data energy management system to ensure a consistent and sustainable efficiency increase. This powerful, scalable and intuitively operable system can be used all around the globe thanks to its network capability. ■

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