New pump systems reduce energy consumption in beer production

Germany brews about 100,000 hectolitres of beer each year.

Hot water (at temperatures above 60°C Celsius) is essential in this process, but it also uses large quantities of energy. This problem can be solved by modern hot water pumping systems.

It is possible to regulate supply streams to meet fluctuating requirements by using high-efficiency motors and frequency converters with variable speed drivers.

The result: during at least four months each year, half the circulation capacity is sufficient to meet requirements. That leads to electricity savings of 47%, about 140,000 kW per year.

This is in addition to heat savings: a hydraulic balancing of the hot water network, as well as a temperature-dependent regulation of overfill sections to maintain the temperature of the pipes at the required minimum leads to savings of 105,500 kW per year. In total, a brewery is able to reduce costs by €35,600 per year.

Regardless of the industry affiliation improved pumping systems clearly save energy, reduce costs and emit lower quantities of CO₂.

Since pump systems are a widely distributed cross-sectoral technology, a wide variety of companies can benefit from these potential savings.

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With a low carbon economy identified as the long-term climate and energy policy objective, the topic of energy efficiency has become a key issue: without progress in the energy efficiency of buildings, industry and service providers, as well as with private consumers and in transport, a change in energy policy will not be achieved. Energy efficiency is not only important for environmental and climate policy reasons. It also makes a decisive contribution to greater independence from energy imports, and it strengthens the energy system. Measures for energy efficiency have been identified by the European Commission as an important pillar of the European Energy Security Strategy.

Due to rising energy prices, efficient use of energy is becoming an increasingly strategic factor for business, trade and service companies. They can achieve long-term cost advantages through investments in energy-efficient machinery and plants. In this way, energy efficiency becomes a competitive advantage for individual companies, while at the same time increasing the competitiveness of the entire economy. Because efficiency potential in terms of electricity and heat are very different for every industrial sector, decisions on how this potential should be harnessed must be taken by the companies themselves.

The building sector, too, offers great potential for energy savings. It is currently responsible for about 40% of the entire energy consumption in Germany and Europe. Depending on the building type and its intended use, the topic of energy efficiency has become a key issue: without progress in the energy efficiency of buildings, industry and service providers, as well as with private consumers and in transport, a change in energy policy will not be achieved. Energy efficiency is not only important for environmental and climate policy reasons. It also makes a decisive contribution to greater independence from energy imports, and it strengthens the energy system. Measures for energy efficiency have been identified by the European Commission as an important pillar of the European Energy Security Strategy.

By consistently optimising its pumping systems, a brewery saves more than 400 MW of electricity and approximately €16,250,000 per year.

This is in addition to heat savings: a hydraulic balancing of the hot water network, as well as a temperature-dependent regulation of overfill sections to maintain the temperature of the pipes at the required minimum leads to savings of 365,400 kW per year. In total, a brewery is able to reduce costs by €26,500 per year.

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More energy efficiency in mechanical engineering

How does the mechanical engineering industry contribute to increasing energy efficiency?

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Combined heat and power: efficiently meeting electricity and heating demands

In one project, a factory’s energy supply was to be converted, if possible, in a sustainable and environmentally friendly way. In addition, strict hygienic requirements applied to the production environment. The complex structure of the heat generators posed a particular challenge in implementing this project. Instead of installing an entirely new energy plant, as had been originally planned, the existing space was used in an alternative manner: The combined heat and power plant was not located in one of the production sheds; instead, it was installed in a container in the yard.

The heat supply was converted from steam to hot water, and the existing heating infrastructure was partially renewed. The heat recovery.

High-tech furnaces reduce energy consumption

Old-style melting furnaces have developed into high-tech facilities, saving energy and protecting the environment. Shaft melting furnaces are characterised throughout the world by their highly efficient systems.

By impressing users, an “integrated process technology”, the performance of the entire melting furnace is clearly improved. Individual processes are continuously monitored and fine-tuned, depending on current requirements:

- The temperature, and the correspondingly automated charging, namely the heating of the furnace with suitable heating material;
- The pressure inside the furnace;
- The filling level of liquid metal;
- The flow which regulates the air in the furnace.

By improving these processes, users can save up to 15% of the required energy compared to conventional systems. Depending on the performance of the furnace, annual costs can be reduced by several tens of thousands of euros. And the waste gas energy from these temperature levels is possible, for the heating networks and the implementation of heat recovery.

Significant savings through building automation: energy management in hospitals

One of the most important steps in recovering paper is the highly energy-intensive part of the recycling process. Thanks to an innovative technology called “low-energy flotation” (LEF), it is now possible to reduce energy demands during flotation by up to 50%. Completely modified inks and pumps make these dramatic energy savings possible.

This new technology has already been installed in 10 plants for fibre processing, and it convinced the “European Recovered Paper Council (ERPC)”. On 2 October 2013, the council selected LEF technology as winner of the “European Paper Recycling Award” in the “Technology Improvement and R&D” category.
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It is possible to regulate supply streams to meet fluctuating requirements by using high-efficiency motors and frequency converters with variable speed drives.

The result: during at least four months each year, half the circulation capacity is sufficient to meet requirements. That leads to electricity savings of 47%, about 124,000 kW per year.

This is in addition to heat savings: a hydraulic balancing of the hot water network, as well as a temperature-dependent regulation of overflow sections to maintain the temperature of the pipes at the required minimum leads to savings of 365,400 kW per year. In total, a brewery is able to reduce costs by EUR 26,500 per year.

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The facts
By consistently optimising its pumping systems, a brewery saves more than 489 MW of electricity and approximately EUR 26,500 per year.
VDMA
European Office

Diamant Building
Boulevard A. Reyers 80
B-1030 Brussels
Hanna Blankemeyer
Phone +32 270682-17
E-Mail hanna.blankemeyer@vdma.org

VDMA
Energy Forum

Friedrichstraße 95
D-10117 Berlin
Dr. Carola Kantz
Phone +49 30 306946-11
E-Mail carola.kantz@vdma.org

VDMA
Forum Technical Building Equipment

Lyoner Str. 18
D-60528 Frankfurt am Main
Miriam Braun
Phone +49 69 6603-1933
E-Mail miriam.braun@vdma.org