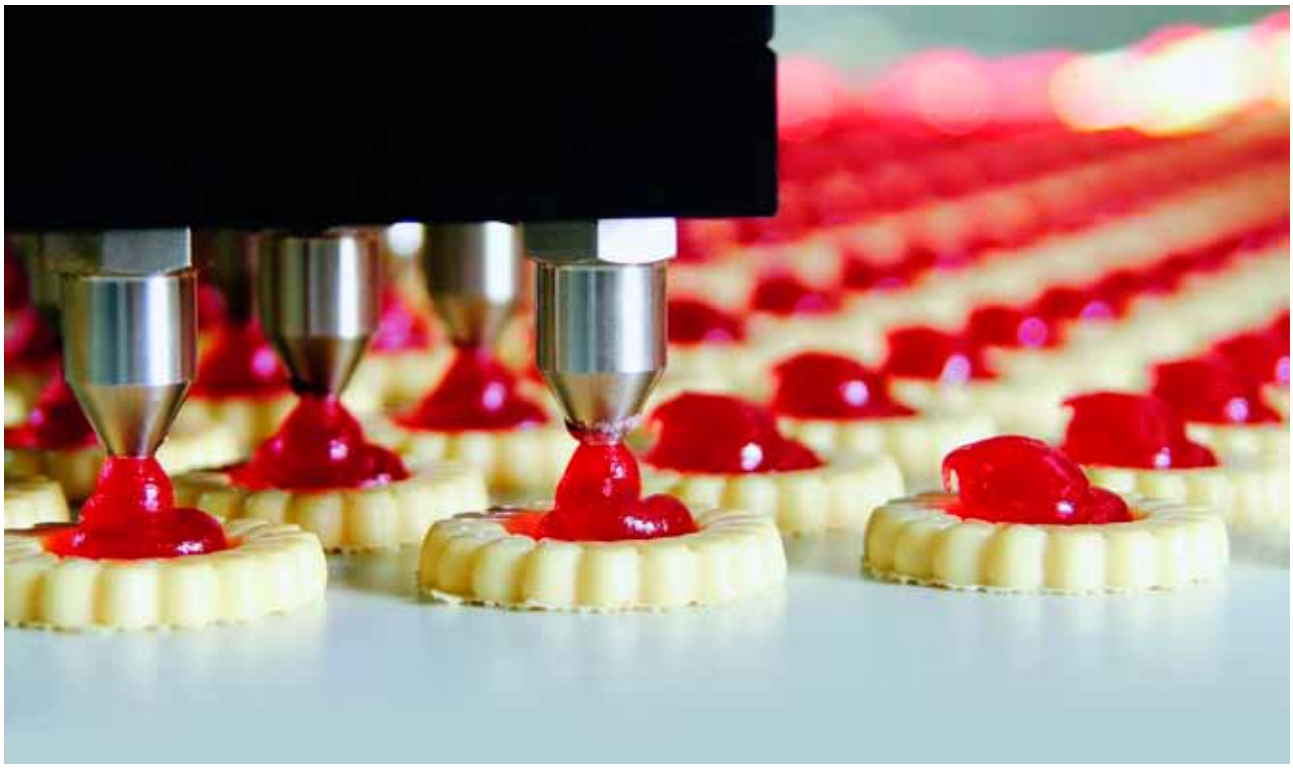
Ecology, economy and social responsibility: why not all three?

SEW EURODRIVE



Against a background of scarce resources and rising energy costs, it has become crucial for industry to invest in more efficient processes and machines. But why stop there? Efforts to achieve a more sustainable supply chain can also include the very development and supply of energy-saving technology itself.

The Australian Food and Grocery Council (AFGC), in its *Sustainability Commitment 2010-11 Report*, stated as one of its objectives to "increase energy efficiency within our operations, and seek to reduce emissions along our supply chain".

"While the industry's direct energy use is small and we contribute one per cent of Australia's scope 1 emissions, our impact stretches into the wider supply chain such as agriculture, retail and consumers, and industry will work to reduce our energy use and emissions."

Following up in its *Sustainability Commitment Update 2012-13,* 42 Australian manufacturers were surveyed, representing 50% of the AFGC's members. They found that the industry's total CO_2 emissions had reduced by 6.4%, energy consumption (GJ/t) had reduced by 3.8%, and 76% of the respondents now had a sustainable sourcing policy.

The Australian Research Institute in Education for Sustainability (ARIES) at Macquarie University released a report in 2009 titled *Guidelines for Sustainability in Supply Chains.* The report states that profit maximisation is reducing in importance as shareholders and customers become more interested in the sustainability values of companies and are suspicious of 'greenwash'.

"Concerns about being socially responsible and sustainable are changing the way consumers view companies and their products. A company's responsibility no longer stops at the factory door. Companies need to show leadership and manage their local and far-flung component factories to the same environmental and social standards. As sustainability best practices become better defined, they will increasingly become incorporated into assurances required by insurers for due diligence."

In the drive to achieve more sustainable production, companies not only have to look at managing their own internal energy efficiency, emissions and waste minimisation, but must work with, or select, supply chain partners and suppliers to ensure the sustainability of all aspects of their business and its interaction with the outside world.

Energy Optimisation

It is often difficult to recognise the potential for energy saving during ongoing operation. The obvious energy consumers, such as production machines and systems, are monitored and optimised as a

matter of course, but finding hidden energy wastage, calculating the potential saving, and developing alternative solutions is much more complex and always involves a great deal of time and effort. The energy costs of systems that have not been optimised can sometimes constitute over 90% of the lifecycle costs.

Finding energy wastage and opting for energy-saving solutions when making new investments or when retrofitting machines and systems can help organisations to be well prepared for future requirements. Doing so will:

- Find hidden energy consumers and reduce energy costs in the long term
- Achieve more cost transparency
- Increase process efficiency
- Contribute sustainably to reducing CO_2 emissions

For example, production cycles in the beverage industry are characterised by a wide range of varied tasks, such as palletising, cask or bottle conveying, operating in dry, wet or hygienic areas. The drive technology components for these tasks are exposed to special ambient conditions, such as heat, moisture, cleaning agents etc., and contribute in a significant way to energy costs. While the investment costs for electrical drives are minor when compared to the amount of the overall investment in a system or plant, they have a decisive influence on the follow-up and lifecycle costs.

There are also regulatory requirements to take into account. On 16 June 2011, minimum efficiency levels for 2-, 4- and 6-pole synchronous AC motors in the power range from 0.75 to 375 kW came into effect in the European Economic Area (EEA). As of this date, the initial distribution of Standard Efficiency motors (IE1) for use in the EEA has been prohibited. As of 1 January 2015, motors in the power range from 7.5 to 375 kW must either meet IE3 requirements as in International Standard 60034-30-1, or they can be operated as IE2 motors on a frequency inverter. As of 1 January 2017, this provision will apply to all motors with a power rating of 0.75 kW or above.

In Australia the responsible regulatory body is working on aligning to international efficiency test standards and efficiency classes. This is expected to occur in the near future (no announcement has yet been made).

SEW-EURODRIVE manufactures a broad range of products that meet all EEA requirements and IE2, IE3 and IE4 efficiency classes defined in IEC 60034-30-1, and therefore already compliant with what would be expected to be future Australian MEPS requirements.

A good example is the MOVIGEAR® range that is well suited to conveyor applications in the food and beverage industry. MOVIGEAR® combines a motor, gear unit and electronics in a single mechatronic drive unit that provides an overall system efficiency that is 10-25% higher than conventional solutions. A permanent-field synchronous motor that meets IE4 requirements (Super Premium Efficiency) is coupled with a parallel-shaft helical gear unit in a smooth surface design that prevents the accumulation of dirt and simplifies cleaning.

The DR motor modular system includes energy-efficient motors compliant with all energy-saving standards and regulations worldwide. The DRU series, also known as a line start-up permanent magnet motor (LSPM), fulfils the requirements of IE4 (Super Premium Efficiency). It combines the benefits of both the robust asynchronous motor and the low-loss synchronous motor. The motor displays its full energy-saving properties during continuous duty, for instance as a drive for pumps.

The gear unit range, particularly the K19–K49 series, has been designed to provide excellent performance whilst offering a high degree of efficiency. The K Series offers an efficiency of over 90% over the entire ratio range, which saves a significant amount of energy and allows for the use of smaller motors — resulting in a very compact and lightweight overall drive. This series can be used in all industries and applications, such as materials handling tasks or hoists for small loads.

It should also be remembered that the optimum energy-efficient solution is not only achieved by the components alone but also depends to a large degree on prior analysis and consulting. This is why SEW-EURODRIVE offers energy consulting as part of its effiDRIVE® energy-saving concept.

A detailed analysis of the application is performed by SEW-EURODRIVE energy-saving experts. They clarify the specific requirements of the industry and the application to make sure that all relevant factors for energy saving are recognised and systematically implemented.

Sustainable Solutions

In its *Guidelines for Sustainability in Supply Chains*, ARIES stated that organisations frequently fail to assess supply chain sustainability risks. "Sometimes this happens because they have no direct control over these companies or it is considered too expensive and time consuming, or because they have no confidence in their ability to gain compliance in off-shore manufacturing companies," the report stated.

"How a business achieves increasing confidence about its ability to manage sustainability is the subject of much discussion. Once initial baseline data has been developed on water, energy, waste and so forth, the journey usually turns to the supply chain and to the broader stakeholder relationships with suppliers and customers."

In the food and beverage industry, managing the sustainability of the supply chain, both at the raw produce supply end and also in the area of finished product logistics, is a huge challenge in which all partners need to be engaged. This should also apply to those organisations that supply the industry with the technology and services they use to produce their product. Not only should the equipment be energy efficient, but it should also be sustainably produced and supported over its lifecycle.

For the technical industries, more and more countries are making their efficiency regulations tighter — the International Electrotechnical Commission (IEC) is working on 'Environmental Product Declarations' for the ecological evaluation of electro-technical component parts. Until now, the main focus for drive technology components was their mere technical functionality and primary customer value. Sustainability was often limited to saving energy at the workplace and the associated reduction in emissions, but now it is time for a new strategy.

For these reasons, SEW-EURODRIVE has added a 'Life Cycle Thinking' approach to its sustainability strategy. This approach comprises the four 're' concepts — **Re**Fit, **Re**Turn, **Re**Use and **Re**Cycle — from which customers can benefit directly. For SEW-EURODRIVE, this means approaching product design with four sustainability factors: treating products as raw materials for new products after recycling; using simplified design concepts; using sustainable production processes; and using energy-efficient components.

The products are also raw materials

The SEW approach centres around viewing products as suppliers of raw materials. In the future, customers will be able to return products to SEW-EURODRIVE at the end of the product lifecycle, where they will be fed back into the material and raw material cycle. The products are processed either entirely or in part, and are re-used. Anything that can no longer be used is disposed of in an environmentally compatible way, and valuable raw materials are retained. In the future, SEW-EURODRIVE will consistently orient the lifecycle of its components so that they can be re-used in terms of function and materials. In addition to feeding the materials back into the cycle, the new strategy also gives rise to new approaches to product development.

Less complex design

The principle of less complex design is that as few component parts as possible are to be used. Components can therefore be disassembled more easily and it is easier to re-use the individual parts. SEW-EURODRIVE uses environmentally friendly materials and ensures that a minimal number of different materials are used, increasing the ability to recycle its products.

Ecology-friendly production

Even when manufacturing components, SEW-EURODRIVE systematically strives to save resources and minimise emissions. Production processes are continuously improved to optimise efficiencies and reduce energy usage. The production

itself takes place locally and uses only re-usable or recyclable materials from close-to-site suppliers.

Energy-efficient components

The components used in the production of effiDRIVE® products consume very little energy, are long-lasting and can be repaired. Within the framework of its effiDRIVE® energy-saving concept, SEW-EURODRIVE also offers comprehensive services for achieving maximum energy efficiency in the relevant application.

A good example is MOVI4R-U®, a product completely developed and implemented in Germany according to sustainability criteria. Issues such as sustainable production, sustainable operation and sustainable raw material recycling at the end of the product lifecycle were already taken into consideration during the planning phase of this frequency inverter. The result is an innovative drive component with an optimally reduced number of individual parts, and which reduces energy consumption during production. Currently available in Germany, the MOVI4R-U® frequency inverter optimises drive energy usage while providing very good performance.

Sustainability as corporate philosophy

Sustainability is a common thread that runs through SEW-EURODRIVE's corporate philosophy, of which one key element is procurement through a sustainable supply chain. SEW-EURODRIVE works almost exclusively with suppliers and partners who have similar high demands with regard to sustainability and environmental management.

In addition to relevant certifications — such as the environmental management standard ISO 14001 and the energy management standard ISO 50001 — the main focus is on the sensible implementation of material cycles. In this way it is possible to avoid large amounts of waste and re-use valuable raw materials in a targeted manner.

Internationally, all SEW-EURODRIVE offices follow sustainable business practices. In its Australian locations:

- Paper-based packaging material no longer required is shredded directly on-site and sent for recycling.
- Plastic, glass and metal are recycled.
- Rainwater is collected for use as process water and irrigation.
- All buildings have been equipped with energy-efficient lighting.
- Air-conditioning systems' temperature controls have been centralised and controlled to reduce energy usage and optimise environmental comfort.
- Employees are strongly encouraged to switch off lamps, computers and electrical equipment when leaving the work area.
- Used printer cartridges are sent for recycling.
- Compressed air handling systems have been optimised.
- Factory plant and equipment and logistics processes are continually optimised to improve efficiencies.

Summary

In the interest of more sustainable production, manufacturers in the food and beverage industry not only have to look at managing their own internal energy efficiency, emissions and waste minimisation, but must work with, or select, supply chain partners and suppliers to ensure the sustainability of all aspects of their business and its interaction with the outside world.

Choosing energy-saving technologies for production systems will have a significant impact on an organisation's overall sustainability, reducing costs and emissions. Choosing a partner that not only supplies these technologies — and can provide expert advice on production energy saving — but itself also follows the best possible sustainability practices, takes the development of a sustainable supply chain to a new level: working together for a more ecologically compatible, sustainable world.

Through its effiDRIVE® concept, SEW-EURODRIVE is striving to provide products and services that assist food and beverage manufacturers to improve energy efficiency, reduce carbon emissions, and lower overall production costs. Through its corporate sustainability philosophy SEW-EURODRIVE can also supply, support and recycle its products in an ecologically sound and sustainable way, reducing its overall impact on the planet and assisting its customers to do the same.

www.sew-eurodrive.com.au

1300 SEW AUS (1300 739 287) to be directed to your nearest office

Melbourne (Head Office) I Sydney I Brisbane I Townsville I Perth I Adelaide

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