Initial situation
In tomorrow’s production world, the sustainable treatment of natural resources will become increasingly important – energy efficiency is a key topic of Industrie 4.0. At the production plants of Festo, however, there has as yet been no energy transparency at machine level: the consumption data of buildings and production have largely been considered separately.

Solution
At the new Technology Plant of Festo, an energy transparency system enables the holistic analysis of energy flows and consumption by locally recording data down to machine level where appropriate, and systemically analysing their interaction. It makes use of a flexible architecture with standardised, non-proprietary interfaces on the basis of OPC-UA. Software applications allow the consumption data to be visualised on mobile devices, thereby enabling direct access on the shop floor. The configuration has now been completed in a pilot unit. It is scheduled to be introduced throughout the plant by mid-2017. The data is acquired by type SFAM flow sensors, among others. These are integrated as standard into all new systems; together with type CPX-CEC decentralised control blocks, they create the basis for Industrie 4.0 capable data monitoring. Modern automation components such as the energy efficiency module MSE6-E2M also enhance energy-efficient operations. This module has autonomous leakage detection and process monitoring capabilities; remote servicing and adjustment of the parameters can be carried out via fieldbus. When the compressed air supply is shut off, the module checks the system for leaks. If the pressure drops too rapidly, a leakage is reported.

Benefits at a glance
- Transparent energy consumption in production
- Automated process monitoring and energy management
- Recognition of savings potential
Free energy efficiency check

Initial situation
Flexible, transparent and reconfigurable production layouts need smart components that offer a host of functions, services and information in a networked environment in addition to meeting application-specific technical requirements. At KSB, target-oriented examples that have already been implemented underscore the way in which the digital pump will be integrated in future production settings.

Solution
The free KSB Sonolyzer® smartphone app, for example, is a quick and easy way to analyse potential energy savings in pump systems. The app is intuitive to use: Simply select your pump type, enter the name plate data of the pump and the asynchronous motor, start the measurement, and hold the smartphone next to the fan hood of the motor for 20 seconds.

The fan noise is recorded and the noise spectrum is transferred to the KSB Cloud for analysis via a secure connection. The measurement result indicates whether the operating point is inside or outside the part-load range and whether savings in operating costs can therefore be made. After the potential has been analysed, an application-specific detailed analysis is necessary, which – thanks to KSB Sonolyzer® – can be performed only on machines that show potential, making it cost-efficient. App users also have the option to contact KSB experts directly for support.

Benefits at a glance
KSB Sonolyzer® hears whether energy can be saved in the pump system:
- Easy to measure – directly at the motor.
- Measures fast – in 20 seconds.
- Analysis result shows whether energy can be saved.
- If necessary, KSB experts can be contacted directly.
Smart solutions for resource-efficient intralogistics

**Initial situation**
As the retail market becomes more globalised, with sales mainly taking place in internet shops, the flow of goods is changing dramatically. As a result the need for efficient logistic processes in the shape of highly productive and fully automated distribution centres has never been greater. In the light of the new climate targets of Paris, this trend poses new challenges, especially because of the energy-hungry electric drives used in intralogistics. As a result, there is a high potential for saving energy, precisely because a very large number of the same drives are deployed in running logistic centres.

**Solution**
For this reason, the innovative project entitled “Smart drive and control technology for energy-efficient intralogistics”, which was initiated by Lenze and has now reached completion, focused on developing an intelligent, mechanically compatible modular set of efficient drive solutions. The project, which was carried out within the “it’s OWL” technology cluster, used Industrie 4.0 mechanisms to combine energy-efficient motors, inverters and gearboxes with an energy-optimised motion control.

At the heart of everything are technical systems with inherent partial intelligence that can react to changes in conditions, automatically adapting their behaviour accordingly while communicating and cooperating with other systems.

**Benefits at a glance**
- Self-optimising motion sequences adapt to the current level of capacity utilisation and yield energy savings of 15 to 40 per cent
- Easy replacement of existing solutions
- Reduce the systems energy consumption where a lot of energy is used
- No perceptible impact on investment costs or loss of productivity

Source: Lenze
Initial situation
Papierfabrik Albert Friedrich AG (Fripa for short) in the Lower Franconian town of Miltenberg manufactures hygiene tissues such as kitchen rolls, toilet paper, and tissue handkerchiefs. For the production of this kind of tissues a cellulose roll is dissolved and the paper suspension produced in this way is passed through a strainer. The solids content is less than one percent. Through dehydration, pressing and drying, this content is increased to 95 percent – within less than one second.

However, the long machine running times and the energy-intensive drying process consume a considerable amount of energy. Energy consumption during production is therefore a major factor for Fripa in order to be able to maintain its competitive position despite increasing cost pressure.

Solution
To cope with this situation, Fripa is relying on energy-efficient Siemens technology. The paper mill is using the plant-wide SIPAPER industry concept on its new PM7 hygiene paper line. This cutting edge solution has been customized to meet the requirements of the pulp and paper industries: high efficiency drive systems, specifically developed automation and process control systems, intelligent power distribution and industry-specific services. As a product and solution provider Siemens supports its customer along the entire industrial value added chain on its way towards the new era of digitalization in line with Industrie 4.0.

Benefits at a glance
- Solution tailored to meet the specific requirements of the pulp and paper industries
- Reduced energy consumption despite increased production
- Higher throughput rates
- Secure investment in future-proof technology
- All-in-one solution from one single provider
- Very short project implementation thanks to long standing partnership