Holistic thinking saves resources
TRENDSETTER

Win-win situation: energy-efficient operation across all areas.
As a company located in a region with a high recreational value, ARBURG adopts a far-sighted approach and takes its corporate responsibilities seriously. It’s all about working with and within a state-of-the-art technical infrastructure. We use the resources we need as efficiently as we can, while also protecting nature and the environment by applying the most energy-efficient production and management processes possible. In other words: ARBURG is a company that really does function in harmony with its environment.

WIR SIND DA.
We believe that thinking and acting holistically is crucial to improved energy efficiency and better cost effectiveness. For this reason, the strategies that we pursue in the areas of “energy efficiency in the company” and “energy-efficient products” are not different, but two sides of the same coin. Whether it is production or ARBURG technology; both are governed by the same principles and guidelines. Both must function as profitably and economically as possible. Ultimately, this thinking also drives our decision to centre our successful global production efforts at a single location.
Our philosophy

Expansion with visionary building technology and efficient production technology on the one hand. Corporate success with high-performance products and comprehensive consulting services on the other. Sustainable efficiency is only possible if both aspects of our corporate strategy work together. And all this, in turn, goes hand in hand with the responsible use of limited natural resources. This is precisely why we consistently take on a pioneering role in this field. ARBURG became one of the first companies to gain triple certification as early as 2012.

Our objective

The “Energy Efficiency Allround” initiative is a far-reaching strategic approach: in addition to implementing company- and production-related measures, we also consider our complete range of products and services from the perspective of energy efficiency. We rely on high-quality innovative technology across all aspects of our business. No compromises. In this way, we also contribute to our customers’ efforts towards energy efficiency. Our worldwide information campaign on technical energy-saving measures for injection moulding processes provides impressive proof of this.

ENERGY EFFICIENCY IS A TOPIC THAT HAS ALWAYS BEEN CLOSE TO OUR HEARTS.

TRIPLE CERTIFICATION

in accordance with ISO 9001, 14001 and 50001 – quality, environment and energy
“Made by ARBURG – Made in Germany”: Even now, in this age of globalisation, we manufacture at a single central location in Germany – and we do so economically and at competitive prices. However, this strategy requires us to continuously improve our production processes, ensuring close interaction between part design, production planning and production engineering. To achieve this, we consider the entire value chain. Our aim is to minimise material input, processing time, production steps, machine standstill times and rejects. And that also benefits all our customers.
Protecting resources – increasing quality

Refined production processes combined with state-of-the-art consumables: In surface engineering, this approach allows energy to be saved in several ways at once. As long ago as 1994, we were able to balance economical and ecological requirements in the long term by discontinuing salt bath nitriding and introducing plasma nitriding in our production processes. Not only is this hardening process more eco-friendly and energy efficient, but parts treated using this method also boast considerably improved corrosion protection. Moreover, this technique dispenses with cost-intensive grinding and other finishing work.

With our innovative ARBURG no-oxidation process (ARNOX), we were able to significantly improve key features of the tie bars in our ALLROUNDER injection moulding machines: for less distortion, increased fatigue strength and better corrosion protection. Yet another classic win-win situation. Our customers benefit from high-quality materials, while ARBURG benefits from the use of a cost-effective, energy-efficient and environmentally friendly production process.

Powder coating and plasma nitriding: customers and ARBURG benefit equally from innovative processes.
Saving on material and processing

Cast and forged parts, which are finished at ARBURG, are prefabricated in such a way that only minimal further processing is necessary to provide them with their final shape. This approach relies on close cooperation between design and production. Prefabricating raw materials with such precise contours yields double savings: on the one hand, it results in high efficiency in terms of material costs; on the other, eliminating unnecessary machining work shortens the processing times.

In addition, using special processes such as friction welding helps to reduce energy-intensive machining work. This innovative metal bonding process, which uses rotation and pressure, enables different geometries and materials to be combined in a positive material bond.

Special friction welding: greatly reducing energy-intensive machining work.

Structurally optimised moulded parts: highly resilient, with minimised material use.
Targeted minimisation of production steps

Another goal is to optimise the design of light sheet metal constructions. By constantly developing and updating our ALLROUNDER models, we are frequently able to replace solid materials while maintaining the same quality standard. Energy and cost efficiency are again achieved by means of a combined approach: using state-of-the-art machine and system technology that integrates several work steps. We consistently implement processes that save materials and energy, for instance by minimising waste. Complex bent or deep-drawn parts such as machine bases and control cabinet doors are produced in a single process step. This is made possible by combining sheet metal forming machines with automatic welding systems. Another energy-saving technique is concealed tack welding, used in place of seam welding.
Flexibility for small batch sizes: highly-automated production cells link processing steps.
Networking production

The efficient organisation and planning of production is primarily about maximising running time and minimising downtime, as well as avoiding reject parts. All of these factors result in energy wastage. To ensure optimal utilisation of our production capacities and a consistently high level of quality, we rely heavily on continuous digitalisation. Good examples include:

- Automatic detailed planning: priorities are determined on a daily basis and bottlenecks are visualised.
- Self-organising transport control system: routes are optimised and dry runs are avoided.
- Comprehensive maintenance management: regular and documented inspection of machines.
- Smart production materials: an integrated RFID chip identifies moulds and documents current mould life.
- Flexible production systems: interlinking warehouse, set-up stations and processing machines.

Holistic, as always. For the benefit of our environment – and our customers. For this reason, the ARBURG product range includes all the elements required for comprehensive digitalisation. A perfect example is our Manufacturing Execution System (MES) specially designed for injection moulding plants – the ARBURG host computer system (ALS).
We continuously record, monitor and evaluate the energy requirements of production facilities and buildings in order to obtain meaningful key figures and energy flow streams. Our first concern is to save energy, for example through the comprehensive use of frequency-regulated ventilation motors. In addition, we include naturally available resources, such as solar radiation, in our considerations. We look for methods to increase the efficiency of energy use, for example by improving thermal insulation.
Heat and electricity from gas: highly efficient consumption of primary energy through the use of block-type thermal power plants.
Energy-optimised planning

Long-term strategic focus on all measures: using the most energy-optimised construction methods possible is an important goal in the planning and renovation of building extensions. This includes high-quality insulation or natural climate control via solar radiation, shading and outside air. With this aim in mind, we deploy advanced wall constructions and glazing. Low-temperature heating systems provide the required heat to large parts of ARBURG buildings. Only the base load of heat is still supplied by energy-efficient block-type thermal power plants. Compressed air is processed in decentralised stations to reduce line losses. We use motion detectors and twilight switches to save energy on lighting.

Networked building technology

Block-type thermal power plants, chillers and ventilation systems: the entire ARBURG infrastructure is networked via building control technology. This “control and management instrument” has been used to organise energy use and air conditioning in the company since 1983. Highly automated, intelligent – simply smart. Examples include skylights in saw-toothed roofs and blinds that move automatically depending on data from the company’s own weather station. If the windows are opened, the ventilation automatically switches itself off. Cool night air is used to ventilate the buildings. By switching off ventilation units or reducing their speeds, energy loads can also be distributed in a way that prevents undesirable peaks. This intelligent peak-load optimisation reduces energy costs proactively.

The goal of our “energy-saving drive”, which we started in 1996: improve on the previous year by using 1 % LESS ENERGY
Demand-based indoor climate control

An integral and also extremely efficient part of our energy supply concept is the low-temperature cascade connection. To save energy, this system ensures that the required heating media are heated only as much as is necessary for their use in the various areas of the company. So not only are heating, ventilation and cooling continuously monitored, they are also constantly adapted in line with the prevailing conditions.
Using renewable energy

Our buildings are designed to enable the use of renewable energy wherever feasible. For example, we use the orientation of our production halls and the angle of inclination of the shed roofs to ensure that solar power systems are positioned for optimum performance. A geothermal system under the ARBURG Customer Center contributes to the optimum harvesting of available heat potential. Recovered waste heat can be stored in the ground and “retrieved” from there if required. The resulting cooling capacity enables temperatures of between 14 and 16 °C to be achieved, cooling the building particularly efficiently.

Around 1,800,000 kWh of solar power is produced by ARBURG for its own requirements using photovoltaic systems.
On the one hand, large buildings require a great deal of heat. On the other hand, large amounts of waste heat are generated by energy-intensive production processes. However, exploiting this very situation – which can only be changed with great difficulty – via our solution-oriented approach brings great opportunities. Through comprehensive process management, waste heat generated at ARBURG by production processes is effectively utilised, recovered and conveyed to the various heating circuits.
Cooling with water

Waste heat from exhaust air from the production halls is put to use in air/air heat exchangers and “heat recovery wheels”, or “Econovent” systems. The waste heat in the cooling water conveyed out of production systems is also reused and stored in the ground using geothermal technology. This is why ARBURG always fits water-cooling technology in units such as compressors, chillers and hydraulic systems. Heat exchangers and heat pumps are used for this purpose.

This way of thinking is reflected in our product portfolio, too: in our ALLROUNDERs and freeformers, the control cabinets, hydraulic units and servo motors are also water-cooled. Consequently, all ARBURG customers get the opportunity to put waste heat to effective use and work with greater energy efficiency. Our ARBURG specialists provide individual advice to help customers boost energy efficiency in their operations.

Further information: products and services
Waste heat is used twice:

Econovent system in production.

Capitalising on waste heat

ARBURG makes use of state-of-the-art recovery technology in order to use energy several times over. This is complemented by a process heat management system practised in all areas of the company. Thanks to this target-oriented approach, we have already been able to save considerable amounts of primary energy and to pre-empt rising energy costs. For many years now, ARBURG has been continuously improving and promoting the use of waste heat, which is produced not only during test runs of ALLROUNDERS, but also during the generation of compressed air and electricity by block-type thermal power plants. The heat energy collected throughout the company is used in the low-temperature heating of buildings and for preheating and drying in production systems.

Efficient compressed air generation:

OF WASTE HEAT GENERATED IS REUSED UP TO 94%