Particle Foam Materials – Our World
KURTZ Particle Foam Machines
Our Vision

Our competitive lead in technology optimizes quality, costs and delivery service in our customers’ production process.

Our Mission

- We produce and deliver plants, machines, tools and components and render services for the particle foam processing industry.
- We aim to optimize our customers’ production processes.
- Our worldwide network enables a long-term local presence for our customers.
- Our core focus is to business areas where we can prove to be “Best in Class” as compared to third parties.
- As part of a corporate group with a tradition dating back to 1779, we feel especially committed to our guiding principles as long-term corporate goals.
- As a business area in a family business, we place as much emphasis on an appropriate increase of our own capital and its interest as on long-term development and the safeguarding of jobs.

It pays off:

Process Development by KURTZ

According to the Kurtz Group’s vision, Kurtz SERVICES optimizes the quality, costs and delivery time in your production process.

This means, we make our know-how available to you as our partner to achieve your production aims. As only the highest availability of plants and process mastering provide the most decisive advantage in a highly-competitive market.

It is not the investment costs that determine the profitability of a plant. Using our specific know-how, for example, we can analyse the influence of life cycle costs on the value of a plant.
Kurtz SERVICES is always focused on the complete plant. Use the opportunity and let our experts carry out a comprehensive valuation of your production facility. An analysis of relevant processes as well as the diagnosis of weak points considerably increases the efficiency and productivity of your plant. Our experts will be pleased to assist you in securing the best production conditions in your plant and in realising determined improvement potential.
The pre-expander forms the basis for the processing of expandable polystyrene (EPS). KURTZ pre-expanders are the result of the logical implementation of physical processes in machine technology, intensive exchange of the experiences of users and recommendations of raw material manufacturers.

The systems can be adapted to suit all requirements with maximum economic efficiency and reliable quality.

KURTZ pre-expanders guarantee a high degree of automation, reliable controls and reproducibility as well as an evenly expanded product. Ease of operation involves distinct economic advantages.

The demands of processors for shortest cycles and interim storage periods and compliance with the legal requirements in specific countries have led to the development of materials which cool more quickly and are low in pentanes, with a pentane content of just 3 - 4%. KURTZ recognised this trend very early on and developed the right machinery to satisfy these requirements.

KURTZ offers the processors of thermoplastic foams a full range of pre-expanders:

The expansion vessel volume ranges from 0.15 m³ to 7 m³. With a bead density of 15 g/l a throughput volume of approx. 85 – 3,500 kg/h is achieved.
**Pre-Expanding**
EPS is pre-expanded as expandable beads are fed into the pre-expander. Hot water vapour as a medium first softens the polystyrene beads, and the blowing agent thus released in them is activated. Pre-expansion involves vaporization and thus the swelling of the beads.

During intermediate storage the propellant gas is diffused from the expanded styrene granules and air penetrates. This "packed air" is further processed in a shape moulding machine or block mould.

EPS may also be subject to a second expansion process to achieve lower particle densities. Expandable polypropylene (EPP) is expanded to low densities using so-called HP pre-expanders.
Complete Tailor-Made Solutions

A comprehensive range of shape moulding machines provides the tailor-made solution for all applications. KURTZ offers the most economically-efficient machinery for every requirement – from large-scale series production to the flexible manufacture of a wide variety of small scale products.

The steam chamber dimensions of the KURTZ standard machines range from 600 x 800 mm to 1,100 x 2,100 mm, depending on application and cavities (number of shape mouldings in the moulds).

Special steam chamber dimensions are possible for special applications. Depending on the raw materials, the machines are set up for steam pressures from 1.5 to 7.5 bar. Where generally special machines are expected, KURTZ meets the requirements with its diversified and thought-out standard elements. High-tech production is not only based on material specification and the moulding’s design but above all also requires a high level of development in the machine design. This includes the reliability of function, flexibility in use, energy efficiency, short cycle times, minimization of down times and, not least, the possibility of including efficient handling and material flow systems.

KURTZ shape moulding machines are the international technological yardstick for the processing of expandable thermoplastic foams. They allow processors to keep their options open for all important aspects of the process in the future.
Our customers include well-known processors from the packaging, construction and automotive industries in all the major markets of the world.

A major advantage of KURTZ is the wide-ranging know-how throughout the complete manufacturing process. Our engineering departments can design complete factory layouts, which include both simple expansion machines and also the full range of associated supply systems and logistics and handling concepts.

This service does not end with the installation of the machine – KURTZ service engineers are very highly regarded for their high level of specialist expertise and detailed knowledge of the processes involved.

Mouldings Production
Particle foam materials offer a wide range of possibilities with a broad spectrum of applications. The pre-expanded beads can then be further processed either into EPS blocks on so called block moulds or into mouldings made of EPS, EPP, EPE or co-polymers on shape moulding machines.

As a supplier of complete systems, KURTZ is, of course, pleased to be able to offer both kinds of plants.

The shape moulding machine gives the product its final shape. The pre-expanded and intermediately stored material is transported into the mould. Hot water vapour - as medium - plastifies the beads and forces them to expand. Then the individual beads get in direct contact and fuse together to form a moulding.
Unconventionality is Our Strength

KURTZ Technology also for Individual Solutions

KURTZ shape moulding machines are extremely flexible and ideal for individual configuration. However, there are certain applications which demand special solutions. KURTZ offers a wide range of special machines which are especially designed to meet the customers’ requirements.

Thus, when manufacturing sun visors or bicycle helmets, certain insert parts have to be placed into the mould by hand. In order to ensure that operatives can do this quickly, easily and safely, the technology known as shuttle technology has been developed. This makes it possible to 1. insert, 2. weld and 3. laminate the parts in question in a single automated process. New developments in the area of headrests or side impact cushions in car manufacture open up further areas of application for EPP.

The trend here is also in the direction of foaming and laminating in a single cycle. KURTZ offers a special machinery concept for this with a thermo-forming unit integrated into the shape moulding machine.
Manufacturers of ICF parts (Insulating Concrete Forms, elements used in housing construction) have particular requirements of these machines. Maximum throughput of shape mouldings with plastic or metal inserts are achieved on shuttle machines with, e.g. 3 cavities.

Instead of a shuttle, the rotation technology uses a rotating steam chamber with option for positioning inserts. This saves space and gives shorter cycle times.

The bed and roller version is used by KURTZ for mounting surfaces larger than 2.5 m and very heavy moulds. The moving steam chamber moves along a machine bed; guide rails are not used.

For demanding and complex mouldings with inserts, the Rotax technology was developed. Two identical and horizontally rotatable mould halves are mounted on the fixed side. The counter part is fixed on a conventional and horizontally movable press frame. While a moulding is foamed inside, the operator or a robot can remove finished mouldings from the outside and can equip the mould with inserts for the next cycle. Compared to traditional processes, this technology considerably reduces the cycle times in all fields of application.

The transfer technology uses several moulds for the manufacture of a shape moulding. The beads are fed into a hot mould and sintered together with the assistance of steam. After a brief period in which the pressure of the foam is reduced, they are “transferred” to the cold mould. Contact of the moulding with the relatively cold mould walls cools the foam further and stabilises it to such an extent that the moulding can be removed. This enables high productivity in combination with low energy consumption. The possibilities for inserts and lamination open up further areas of application.

KURTZ also offers solutions for the manufacture of floor heating panels with sound insulation and two densities, also based on the transfer technology.
As a competent partner in the supply of complete plants for the processing of particle foam materials, we have built up quite a lot of process knowledge in the course of 30 years. This is why our machines do not look like ordinary production tools, but optimisation of the processing is at the centre of attention. Many procedures have been developed by KURTZ in the course of the years and patents applied for or legal protection of utility patents provided.

An example of a milestone here is the LTH process patented by KURTZ. It has established itself as a particularly economical process for the production of large quantities of mouldings.

This technology works without great volumes which have to be filled with steam and air or evacuated. Steam chamber configurations known up to now are no longer needed. The cooling water no longer comes into contact with the particle foam material.

The LTH method leads the energy directly into the foam. The savings in consumption which can be achieved with this innovative modular process are up to 35 % in water, even up to 70 % in air and steam.

The skin moulding system used by KURTZ is one of the leading refining processes for EPS and EPP mouldings. Shape mouldings can be foamed and coated with film in one working step inside the same machine.
The KURTZ dual density technology gives mouldings a higher density at certain points and thus higher strength. This is necessary, for example, for mouldings for specific transportation tasks.

With the in-mould skinning technology of KURTZ the surface of the EPS moulding is refined. The advantage is that a smooth, welded surface is produced in one working step. This technology opens up a variety of new markets. Ornamental battens for ceilings, seedling trays, ice-cream packaging are only a few of the examples.

The so-called lost-foam methods or casting with lost foam models in sand free of binder is being used to an increasing degree all over the world. The particular know-how in this method is in the design of the moulds. They are equipped with a number of integrated steam chambers, with each individual steam chamber having a separate regulation for steam, air and water.

This technology is mainly used in the automotive industry, e.g. for the production of cylinder heads, brake disks, crankshaft housings, oil pump housings and intake manifolds.
EPS mouldings are used as packaging for food and drinks or technical products. They protect and insulate. Seedling trays made of this versatile material offer advantages. In the building industry, sound insulation and floor heating panels but also decoration elements are used. Complete houses are built of so-called ICF elements or are insulated with EPS sheets - a positive contribution to climate protection. In the leisure-time industry, for example, bicycle helmets or fun-boards are made of the all-rounder EPS.

Similar kinds of particle foam materials of polyethylene (EPE), polypropylene (EPP) or co-polymers open extensive possibilities of application with regard to increased heat resistance, form resilience and insulation characteristics - for example in use in the automotive area as SIP’s for side impact protection or as bumper cores.

Technical mouldings are used, among others, as returnable packaging for all impact-sensitive components or also as insulation material, for example for boilers.
EcoLine vertical block mould with innovative steaming technology
The ever increasing prices of raw materials and energy caused KURTZ to create a new trend-setting block mould generation besides the well-known processing machines Ecomat, Monoflex and Vario. With a new venting and steaming technology, adopted from the shape moulding technology, we succeeded in setting a benchmark in block processing. The processing window in terms of weight gain, required steam quantity and stabilisation phase is becoming smaller and smaller. Nevertheless, the Ecomat will maintain its ground as an inexpensive vertical block mould with fixed dimensions designed for processors starting in this business.

The Monoflex is the solution for flexible block production. Also in a vertical finish, with a movable side wall, it provides the solution for variable block dimensions. Thanks to the generous design of the side wall drive, 100% recycling material can be used.

The Vario series is used in production locations with limited room height. Available either with fixed dimensions or an adjustable base or adjustable rear wall, it can also be adapted flexibly to the customer’s requirements.

Blocks produced on KURTZ block moulds excel thanks to a homogeneous distribution of weight, good welding and low residual moisture. In combination with the short cycle times, KURTZ blocks are guarantors for the fact that the processors can secure an important competitive advantage on their markets thanks to the outstanding quality of their products and also their economical production.
Cutting Lines

- Fully automatic cutting line with long stroke device
- Contour cutter
- Edge processing with ProRob
- 3-D contour cutting with ProRob
In the field of sheet and contour cutting, KURTZ provides all the cutting systems the world markets demand: cutting machines, cutting lines, contour cutters, systems for production of roof panels as well as transport and handling devices for an efficient production.

KURTZ manages to give block processors decisive competitive advantages with innovative technologies. The reliable KURTZ automatic wire adjustments are used for sheet cutting, trimming and cross cutting.

Not only are high cutting speeds achieved with the long-stroke technology developed and patented by KURTZ, but also the surface qualities and the thickness tolerances of the cut sheets are improved. In addition, the picture-frame effects on the surface of the cut sheet are considerably reduced.

Completely automatic waste disposal systems for the disposal of the trimmings produced in the cutting process not only increase the quality of the products but also ensure that the production systems present themselves in a flawless condition.

Plant controls based on Windows guarantee a simple and clearly arranged operation - even of complex plants. In case of a malfunction, the problem can be located and solved very quickly. As high-performance stand-alone solutions or integrated in superior PPS systems, they provide maximum operating comfort with recipe administration, fault recording as well as the possibility of remote assistance via telephone modem.
Handling systems are used to rationalise work processes in the production of mouldings in such a way that production and removal of the mouldings from the machine is done semi or completely automatically as far as possible.

The profitability of the use of handling systems is primarily dependent on the location or the wage level in the region in question. Reduction of personnel costs is in the foreground.

The design of the mouldings, e.g. contour, surface quality, weight, integration of inserts or room height, has a great influence on the possibility of use of handling devices. Stackability and plug-in capacity of the mouldings, venting of the stacks and the stack heights must be taken into account in the run-up.

In block processing companies, very personnel-intensive manual work is frequently done. KURTZ machine concepts with intelligent handling systems help the processors to recognise rationalisation potentials in their company and to set them free.

KURTZ provides processors with a wide range of highly specialised handling components for a material flow concept tailor-made to match the requirements on the latest technical level.
With the KURTZ ProRob EPS handling systems, completely new dimensions for the handling and for further processing of the products to be manufactured open up for processors.

The ProRob product line can not only be adapted flexibly to practically each handling application, but can also be used as a processing machine for further processes such as edge processing, contour processing, element production etc.

The system solutions developed by KURTZ are outstandingly suited, in particular for safe lifting and moving of large-surfaced elements for lamination or for furniture and house construction such as solid wood panels, OSB, gypsum board panels, door elements etc.

The robot and gripper technology from KURTZ is flexible, favourably priced and reliable and can additionally also provide a dynamism unknown up to now. All gripper systems developed by KURTZ are extremely lightweight, but withstand extremely high dynamic loads and also grip heavy loads securely.

Complex systems are simulated on a computer before construction, with not only the spatial situation, but also the dynamic behaviour being shown. In this way, the customers have the certainty that the systems supplied to them function according to their specifications. Short commissioning times are the result.
## Engineering

### Total Competence in the Foaming Process

Processing of EPS, EPE and EPP provides attractive possibilities of diversification even for “material outsiders”. KURTZ Engineering realises complete production solutions for professionals and starters for maximum productivity, flexibility and profitability at any location in the world they desire.

KURTZ Engineering includes project analysis, consultancy, planning, cost calculation, system construction, installation and commissioning, training of personnel, application technique support and service on site.

KURTZ complete solutions provide all the professional benefits which make processing of thermoplastic foams competitive: minimisation of investment costs, technology saving energy and personnel, tailor-made and universal

### Components

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<td>Fluid bed dryer</td>
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<td>3</td>
<td>Storage silo</td>
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<td>4</td>
<td>Shape moulding machine</td>
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<td>6</td>
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<td>Stacking table</td>
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<td>Glueing station</td>
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<td>11</td>
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<td>Block storage</td>
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<td>13</td>
<td>Cutting line</td>
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<tr>
<td>14</td>
<td>Pre-breaker with mill</td>
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processing of raw materials, and flexibility due to mould receivers independent of the system.

Just-in-time production, profitability even in small series, forward-looking recycling etc. Tell us the products you would like to manufacture and we will draw up the professional complete solution for you.

Quality assurance is indispensable for the documentation of constant product quality. It demands a regular check of the steam, water, air and vacuum media and of the production materials being used.

This includes an incoming check of the raw materials and an optimal monitoring of the production data during production. The real-time recording of the process parameters during the production process documents the quality of the products. By connecting the individual control units to a host computer, these measures are considerably facilitated, automated and freed from input errors.

Recycling material can be fed to the production circulation via the internal operational circulation through crushing, dedusting and feeding devices, resulting in savings of raw material.

Raw materials that can no longer be used can be processed further either mechanically or thermally.
The appropriate filling of the mould is an important step when producing mouldings of particle foams. Through this, the quality of the moulding is substantially determined. The density distribution and an even filling are of particular importance.

The efficiency of the filling systems used has a significant influence on the energy consumption resulting from this, at this, the total air consumption and the cooling of the mould walls are decisive. For a long time KURTZ has been providing cost-saving solutions to achieve the optimum filling process.

B-Jet, the fill injector with turnable upper part provides easy maintenance and reduces the times for the mould change. Furthermore the new design is pressurized and vacuum-sealed.

When pressure filling with certified pressure tanks, counter pressure filling to reduce the volume of the beads or low pressure filling – the maximum admissible loading of material in the airflow is always the focal point.
In the production of particle foam products, processing plants are always subject to fluctuations in process energies. Monitoring physical values and supply media as well as recording measured data are great advantages for the processor. When the individual operation windows required for each processing plant are fixed, a safe operation as well as correct and constant process parameters can be proved.

At the same time, D-Log helps to cut wastes in production by displaying operation anomalies. Steam, air and water can be monitored regarding pressure and temperature. Vacuum and material transport should also be checked for pressure. The results of this monitoring can be used to simply determine measures to improve the plant availability.

Besides a visual display, D-Log can be used to switch off a plant in case the measured data are outside the defined range of tolerance.

D-Log makes your operation transparent.
The area of service and after-sales is a strategic factor with KURTZ. Our long-term objective in after-sales is ensuring the production properties of KURTZ machines for a long service life. Alongside repairs, assembly and maintenance, we are also at your side with tailor-made training programmes for your personnel as well as individual consultancy on system engineering for maintenance, conservation of value and stock-keeping right down to assessment of the production systems.

As even very short machine down-times can mean high losses of turnover in our customers’ high-performance production systems, we do not only offer reliable and competent service, but also quick availability: 24 hours a day right round the world!

For KURTZ, quality and service have been part of the successful business activity in the construction of particle foam machines for some time now. The basis of these outstanding service offers has been up to now and will be in future the world-wide quality of our products and services. They aim to guarantee the confidence and business success of our customers as the users of our products and to secure them in the long term.
Spare Parts

Broad Availability

The KURTZ spare parts service enables correct selection of the spare part needed from the catalogue without having detailed knowledge. The selection of articles contains the most frequent spare parts.

For parts comprising further sub-groups, a group hierarchy has been introduced. This classification of various spare parts makes it possible to localise the individual part of a larger construction group being looked for in the catalogue.

As further facilitation of finding spare parts, pictures, sketches and information on features of the articles have been included in the catalogue.

The spare part catalogue is available online on the Internet under www.kurtz.de and can be looked at with the help of the free Acrobat Reader software.

During use, the navigation bar is a great help, as links to the corresponding pages of the catalogue have been deposited here behind the titles.
The Kurtz Group

Worldwide more than 1,100 people

The Kurtz Group is comprised of several companies from different business sectors. The strategic management is positioned in Kurtz Holding GmbH & Co., while the operational responsibility lies with the individual segments.

Our integrated management system directs all the processes and assures that the demanding quality requirements of our customers are satisfied. We regard the protection and preservation of nature as a great responsibility. We continually investigate possibilities for making our own contribution to environmental protection.

A matrix organisation with the business segments PLASTICS, METALS, ELECTRONICS and SERVICES ensures the greatest possible degree of flexibility and customer proximity.

Business segments and products

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Founded as iron hammer works in 1779 in Hasloch in Spessart, the Kurtz Group has developed into an internationally operating conglomerate. Today, we are technological or world market leaders in many fields.

The corporate group is in the ownership of the sixth generation of the family.

The management can fall back on an advisory board consisting of excellent industry personalities.
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