



Get a better return on your
investment with a system partner
**Solutions for the construction
industry**

Engineering Value

Krauss Maffei
Berstorff

Applications and system solutions on the highest level

Plastic products are used for a variety of applications in the construction industry and offer specific advantages.

They are:

- lightweight
- heat insulating
- resistant to weathering
- UV-resistant
- impact- and scratch-resistant
- easy to assemble

Many construction plastics are extruded and customers operating in this sector can count on productive solutions from KraussMaffei Berstoft.

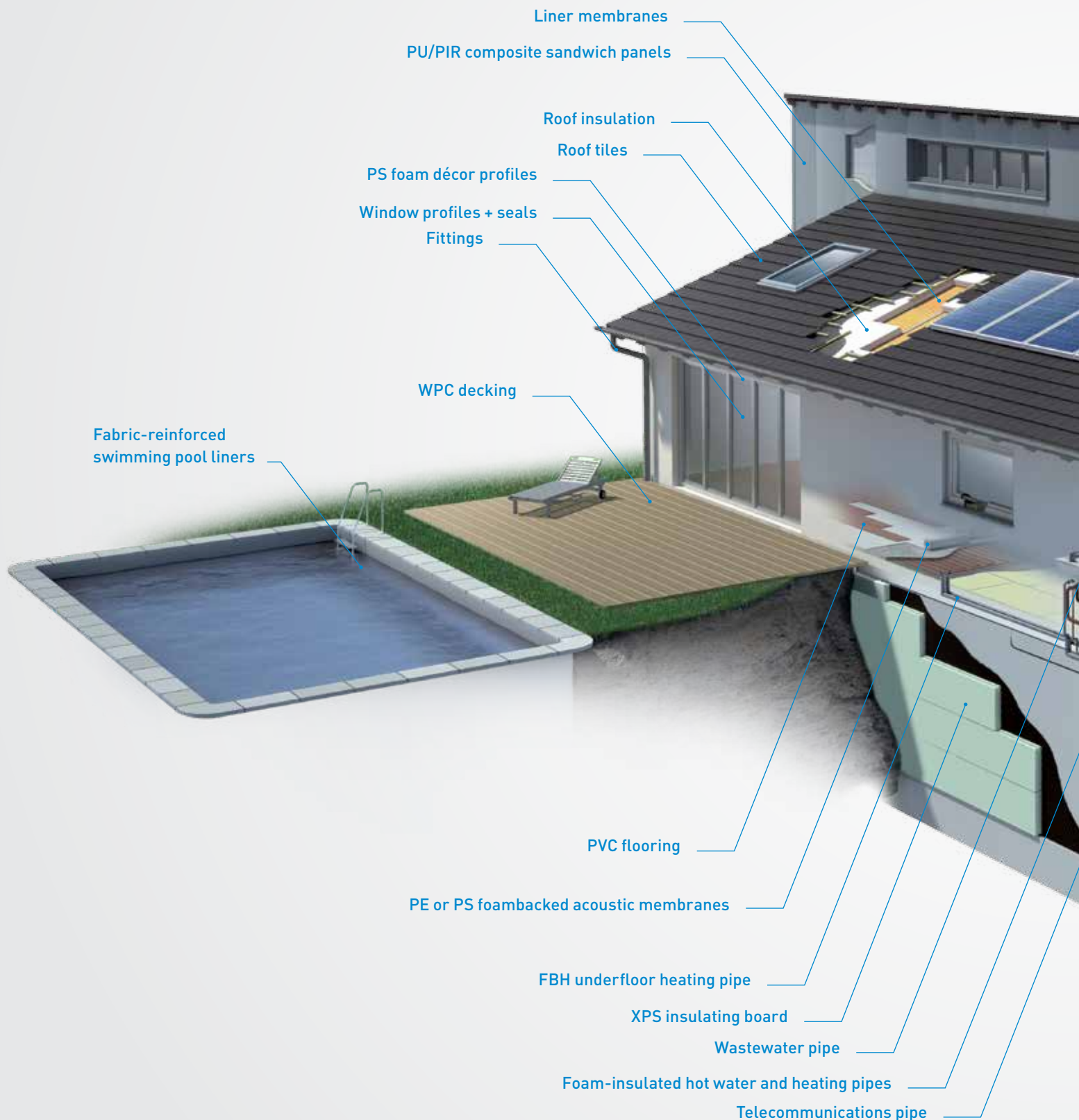


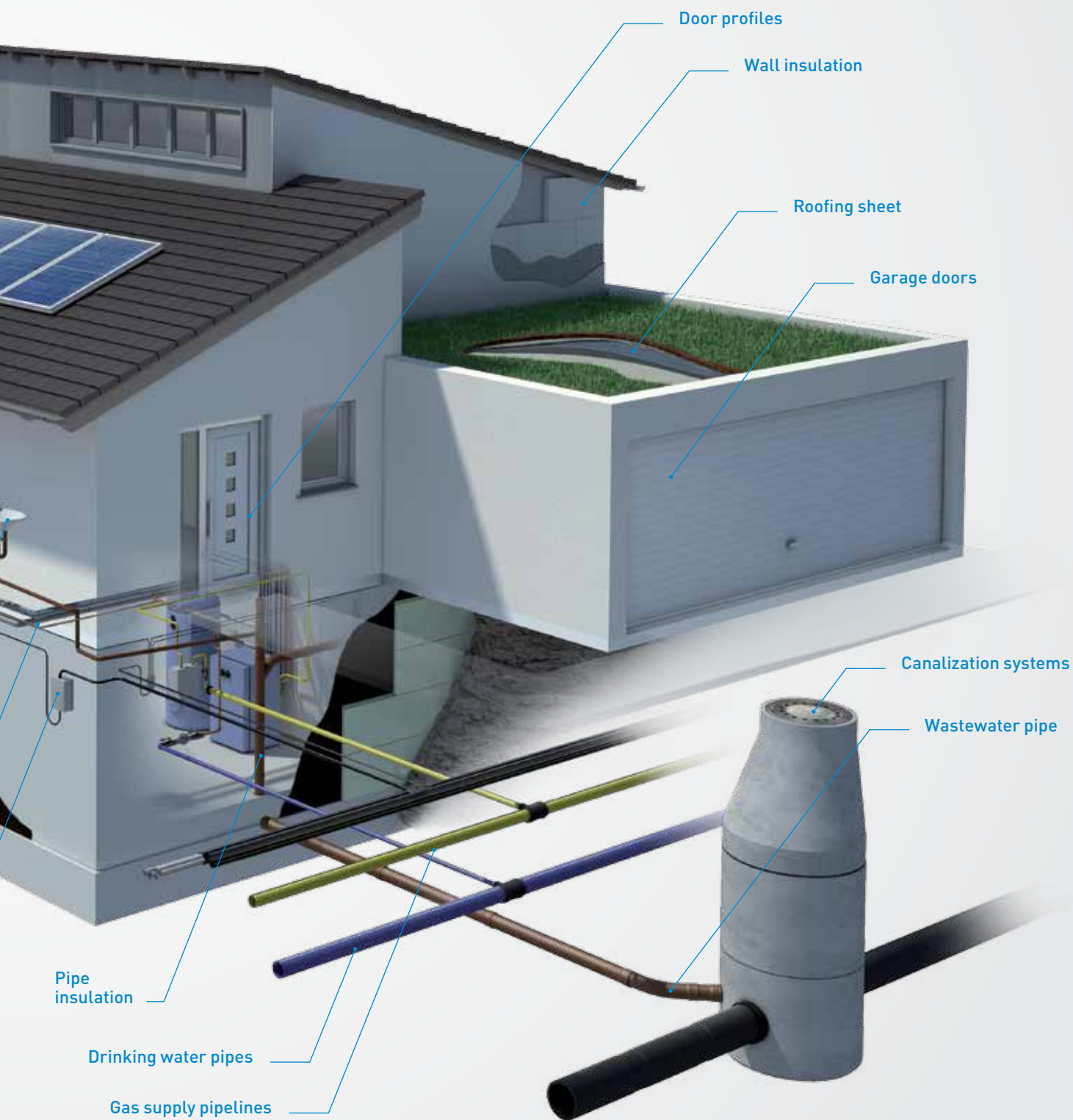
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Our construction solutions

Plastics and rubber products in any number of specific functions and shapes are used throughout the construction industry







System solutions at a glance

As a proven system partner, KraussMaffei and KraussMaffei Berstorff supply a uniquely wide spectrum of solutions for the construction industry

Civil engineering

Products used in civil engineering applications need to be capable of withstanding high stresses, non-corrosive, lightweight, very flexible and easy to install. Because plastics and rubber products meet these requirements, they are widely used across the industry. To produce them economically, KraussMaffei machines and systems are engineered for maximum savings in consumption of materials and energy. We supply complete extrusion lines for plastic pipes of 5 - 2500 mm diameter, which can be produced with specific technical properties as required. Also in our portfolio are complete sheet extrusion lines for many types of dampproofing liners for tunnels, foundations and cellars and heavy-duty XPS insulation for road and railway construction.

Construction

In buildings, plastic and rubber products save energy, increase safety and comfort and offer huge design scope. As window profile systems, they tick all these boxes. As composite wall and insulation panels, they protect people from climate extremes and help reduce energy consumption, while their fire resistance improves safety. As long-lasting piping, plastics contribute to people's health and well-being over many years. KraussMaffei Berstorff supplies complete, turnkey systems to produce top-quality products for this market, while at the same time giving you more production flexibility and dramatically increased output. Our portfolio includes application-specific downstream components and customer-specific solutions.



We at the KraussMaffei Group together with our KraussMaffei and KraussMaffei Berstorff brands are committed to supplying machinery and processes that will support your drive for higher product quality and lower manufacturing costs. We can advise on the best processes and supply the machinery, including tooling and cutting systems, exactly tailored to your application spectrum. Our comprehensive expertise is at your service – as the only company worldwide with intensive expertise in the three key technologies for plastics and rubber processing. We offer first-class training support and after-sales service – all from a single source.

Your benefits:

- Comprehensive construction industry systems expertise
 - Custom solutions
 - Cost-effective manufacturing with maximum material and energy savings
 - Outstanding product quality
 - Sustainable solutions with high energy efficiency
-

Interiors

The speed with which plastic and rubber products for building interiors can be installed is a major factor in keeping costs down. They also make an important contribution to minimizing a building's environmental impact. KraussMaffei supplies production systems for doors, interior walls, furniture panels, sandwich panels, décor profiles, ultra-elastic film and many other products. Our systems the brand name are engineered to maximize quality and productivity while minimizing costs. As a leading supplier of systems for sheet extrusion, we develop and supply complete concepts for a broad range of applications, such as for structural foam sheets up to 2 m wide. Our comprehensive expertise scores for you every time, and especially in turnkey projects.

Exteriors

Applications in building exteriors highlight the specific advantages of plastics and rubber. Plastic products are weatherproof, maintenance-free, hygienic and long-lasting – and they can be formed into almost any shape. KraussMaffei supplies systems for processing a wide range of materials and producing a huge range of products. One interesting example is composite materials that are proving successful substitutes for tropical woods, for example in decking. Our system solution for this application is comprehensive – from producing the raw materials through processing specific formulations, pelletizing, extrusion and downstream functions. We supply machinery and expertise for a multiplicity of processes, both PVC- and PO-based. Our focus is on high-volume output and on an outstanding price/performance ratio.

Complete solutions from a single source Higher economy and product quality

Plastic and rubber products have become indispensable in the construction industry. Even more than today, construction in the future will be impacted by growing environmental awareness and the challenge of limiting climate change. These constraints, combined with relentlessly increasing energy costs, are compelling reasons for making buildings more and more energy efficient. Architects and the construction industry are striving to deliver affordable buildings and simultaneously reduce CO₂ emissions. The growing use of plastic and rubber products is helping them to achieve both these goals.

Meeting tomorrow's standards today

Today plastics and rubber are increasingly being used alongside traditional building materials such as wood, steel, concrete and mortar. The reasons for this trend are to be found in the many positive and sometimes unique characteristics of individual plastics and rubbers. For example, plastics are exceptionally good at sealing and insulating, they can also offer outstanding mechanical stability and far greater design freedom. In many countries, government subsidies aimed at improving the energy efficiency of the housing stock are encouraging the construction industry to use more plastic elements and by doing so to meet tomorrow's energy efficiency standards today.

Building programs for the third world: PVC low-cost housing

Affordable housing is in scarce supply in many South American cities. A competence consortium with partner companies is offering an innovative, low-cost solution to this problem in the form of a combination of sheet and profile extrusion lines capable of producing complete houses. Both the basic structure and the interior walls and fittings of these PVC houses are made entirely of plastic formed in a variety of processes.

Fast time-to-market with multi-technology solutions

The KraussMaffei Group is unique worldwide in its ability to combine injection molding, extrusion and reaction technologies to deliver successful production solutions. This multi-technology competence enables KraussMaffei to identify synergy potential ahead of competitors and to exploit it quickly and effectively to deliver successful production solutions. Typical solutions include combining elastomers and thermoplastics with renewable raw materials or the reduction of CO₂ emissions with energy-saving products.



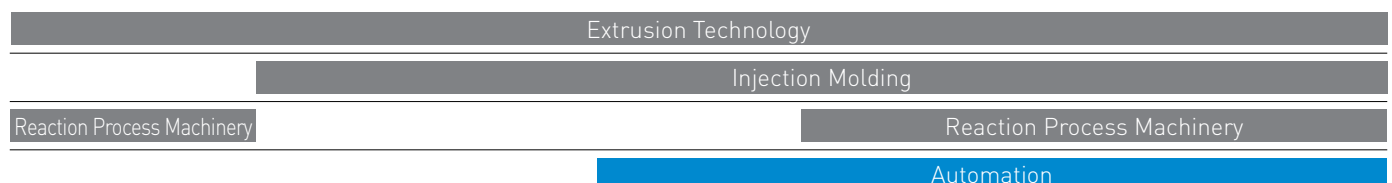


We deliver sustainable solutions by taking an integrated approach to the entire value chain

Technology



Machine technology

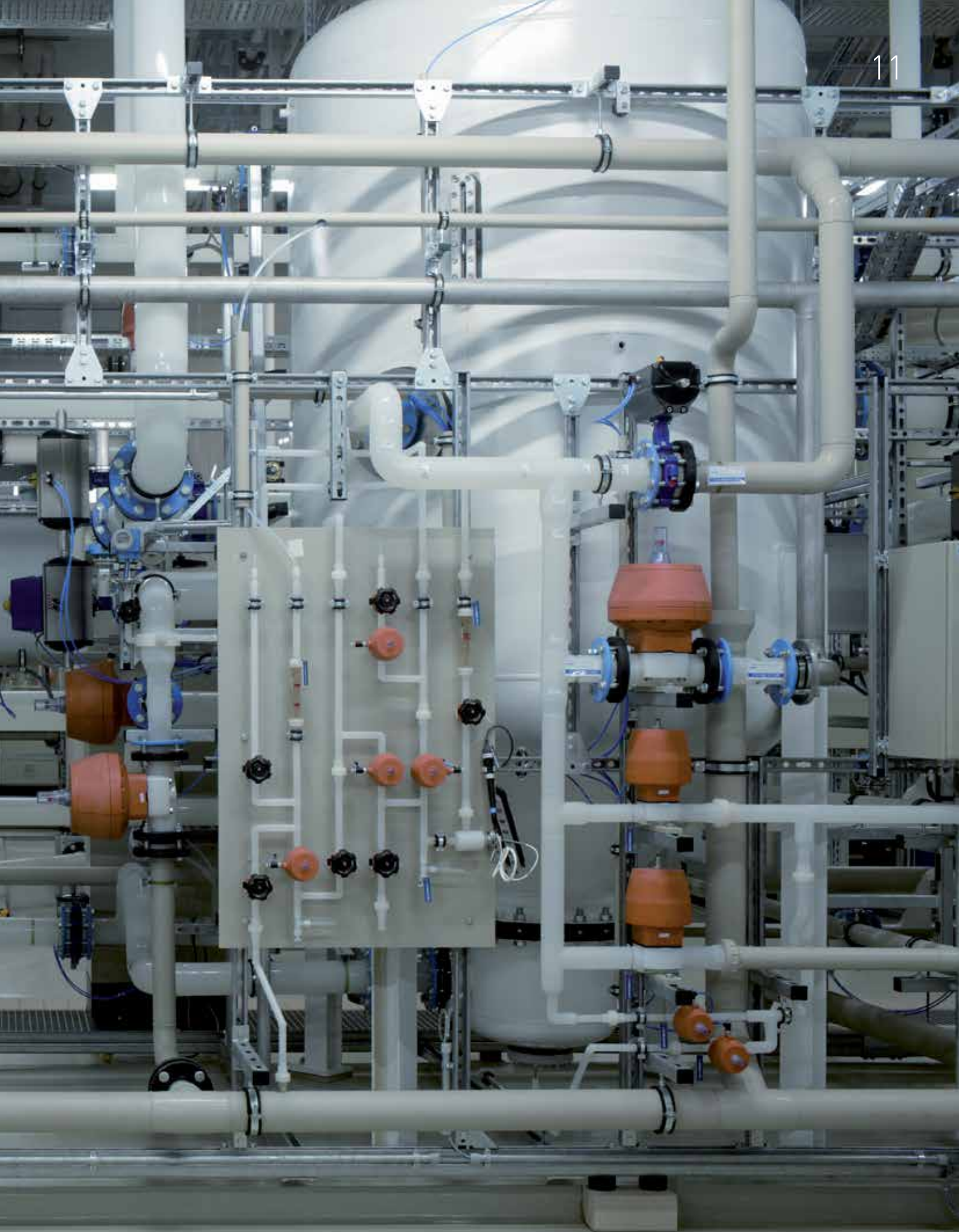


No weak points – plastics and rubbers with high resistance to temperature and chemicals

Industrial plant and laboratory equipment must often operate under extreme ambient conditions and be able to withstand very high temperatures and aggressive chemicals. KraussMaffei Berstorff supplies production systems to manufacture heat- and acid-resistant tubing, piping and sheet products made of PVDF, PP and C-PVC, for the chemicals industry.

KraussMaffei also supplies standard injection molding technology for fittings in all sizes and is the world's only manufacturer to offer innovative machine and process technology specially for the construction sector which integrates the IMC injection molding compounder.





Quality products and substantial cost savings

Plastic and rubber products deliver multiple benefits in surface and sub-surface applications. These benefits include excellent mechanical properties, no risk of corrosion, easy installation and flexibility. The KraussMaffei Group supplies complete system solutions to produce high-quality pipe with maximum cost efficiency.

Plastic and rubber products are more in demand today than ever before. The application bandwidth in civil engineering is vast and there are clear advantages to processing these materials on KraussMaffei machines.

Pipes for civil engineering applications

KraussMaffei Berstorff offers complete systems including automation components and peripheral equipment for the production of plastic pipes of 5 - 2500 mm diameter. All components are optimized to work perfectly together and engineered to maximize material, energy and cost savings while still delivering consistently high product quality. There are KraussMaffei systems available for smooth and corrugated pipe, for wound pipe, composite pipe, reinforced pipe, cross-linked PE-X pipe and for filled and foamed pipe, made from various PO materials, U-PVC and C-PVC. Our portfolio ranges from single-screw extruders, counter- and co-rotating twin-screw extruders, application-specific pipehead concepts and downstream to fully-automated pipe extrusion lines. For coextrusion, we offer cost-effective, customized piggyback and tandem solutions. KraussMaffei machines can be used to produce pipe with specific properties for many different civil engineering applications. One example is lightweight storm-drain pipe with very large diameters and high ring stiffness. Or pipe for district heating networks made of PE-X and PE with PE or PU insulation applied inline or offline. Or pressure-resistant pipe to transport natural gas made on lines engineered to minimize material consumption. Or telecommunication pipe produced on high-volume, high-performance systems. State-of-the-art systems for the production of fittings from various materials including WPC complete KraussMaffei's civil engineering portfolio.

High-quality liners

Heavy-duty plastic liners play an important role in dampproofing tunnels, foundations and cellars. They prevent the ingress of moisture into the structure. KraussMaffei Berstorff supplies complete extrusion lines for the many and varied plastic film and sheet products used in the construction industry.

Sheet for civil engineering applications

In regions where extreme sub-zero temperatures can cause soil pressure to lift road surfaces, buckle rail tracks and damage paving, the ground can be insulated using expanded polystyrene (XPS) sheet. This prevents both subsoil melting and frost heave. Because XPS is highly resistant to moisture and to high, dynamically changing loads, it is also the material of choice for insulating oil and natural gas pipelines.

Your benefits:

- High product quality
 - Cost-effective manufacturing
 - Easy assembly
 - Highly flexible customer solutions
-

KraussMaffei Berstoff plastic pipes are long-lasting and very easy to use.





Product	PVC foamcore pipe, 3-layer, for wastewater, solid inner and outer skin, chemically-foamed middle layer
Material	U-PVC
Technology	Multilayer coextrusion with twin-screw extruders from the 36D series and conical series
Advantages	Manufacturing PVC foamcore pipe, using the correct pipeheads and production line concept can reduce material costs compared with solid U-PVC pipe by as much as 30%.



Product	Multilayer PE drinking water pipe
Material	PE 80, PE 100 or PE 100-RC for the inner and outer layers, colored outer layer
Technology	Multilayer coextrusion with 36D single-screw extruders and pipeheads or QuickSwitch processes which involve no production stoppages.
Advantages	Our 36D extruder series combines high output with highest product quality. The QuickSwitch process cuts manufacturing costs by reducing the unproductive stoppages, waste and labor costs associated with conventional dimension changes.



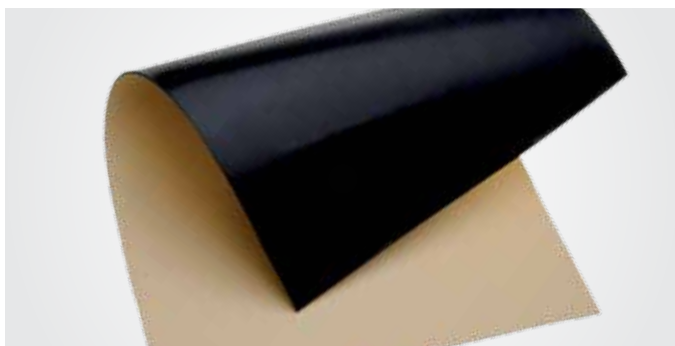
Product	PE pressure pipe for gas supply lines
Material	PE 80, PE 100
Technology	Monoextrusion with single-screw extruders from our 36D series and spiral distributor pipeheads
Advantages	Our 36D series combines high output with highest product quality, extremely low tolerances, speed linearity and reliable feeding under backpressure across the full speed range. Our processing concept guarantees thermal and material homogeneity.



Product	Multilayer cable sheathing
Material	HDPE/HDPE silicone rubber compound
Technology	Multilayer coextrusion with 36D single-screw extruders combined with an application-specific pipehead concept
Advantages	The inner layer of silicone compound reduces friction and allows smooth insertion of long sections of fiber-optic light guides. 36D machines are known for their high output and product quality, the process ensures homogenous material processing.



Product	Fitting made of WPC
Material	PP and wood
Technology	Manufactured on our CX or MX series IMC injection molding compounder
Advantages	In addition to standard injection molding technology for fittings in all sizes KraussMaffei is the world's only manufacturer to offer innovative machine and process technology specially for the construction sector which integrates the IMC injection molding compounder. The IMC injection molding compounder shifts value-adding factors in-house. By combining compounding and injection molding in a one-step process, its innovative engineering opens the way to a high return on your investment.



Product	Fabric reinforced sheet
Material	LDPE, HDPE, PP, W-PVC, TPO, TPU
Technology	In-line sheet extrusion on a co-rotating ZE series twin-screw extruder
Advantages	This technology requires less energy, resources and maintenance allowing high throughput and reduced operating costs. Instead of buying in ready-made compounds, processors can save money by formulating their own compounds.



Product	XPS insulation
Material	Polystyrene
Technology	Physical foam extrusion on tandem systems comprising two single-screw extruders or a twin-screw extruder and single-screw extruder combination
Advantages	The technology allows flexible processing of PS, PE and PP – without changing the screw or barrel configuration – and using environmentally compatible blowing agents. Significant cost savings through unproblematic reuse of start-up waste, edge strips, etc.



Product	Steel or plastic inner pipe layer insulated with PUR foam for use in district heating systems and chiller circuits
Material	Steel or PE-X inner pipe, PUR middle layer, PE outer layer
Technology	Offline process: discontinuous production of 12 m pipe sections. Inline process: continuous application of foam insulation and PE sheathing to the inner pipe
Advantages	Complete system solution for the production of PU insulated pipe in a continuous flow or batch process.

How to achieve very high levels of production flexibility, product quality and output

The advantages of plastics and rubbers are as impressive above ground as they are below the surface. KraussMaffei's ability to supply complete system solutions and to take a multi-technology approach deliver substantial benefits for our customers. We're quick to identify synergies and to implement innovations.

Plastic and rubber components are used in a range of specific applications in the construction sector: as piping for drinking water, hot water, wastewater, gas, telecommunications and cable ducting or as profiles for windows and doors. Air conditioning and ventilation ducts for roller shutter systems and facade cladding are also made from plastic. The spectrum of applications extends from prefabricated housing and partition wall construction to thermal insulation, solar panels, PVC housings, roof and facade panels, sealing tape and beads for EPS construction elements, roofing sheet and liner membranes. The KraussMaffei Group together with its KraussMaffei and KraussMaffei Berstorff brands supplies lines optimized for cost-effective production of these components: all from a single source, customized to your specifications and manufactured to KraussMaffei's exacting quality standards.

Perfect profiles for the most diverse requirements

Rubber seals of PU sealing profiles are applied to doors and windows to improve thermal and acoustic insulation, to stop drafts and condensation. These seals are produced by various methods. One is a C.A.S.E. (coatings, adhesives, sealants and elastomers) process which produces perfect insulation by applying rigid PU foam. Insulation can save as much as 20% of the heating energy and reduce noise levels by up to 40%. The industry has developed window profiles with a thermal coefficient comparable to that of glass. Seals between fixed and moving window elements are essential to make the windows airtight. KraussMaffei Berstorff profile extrusion lines are used to make seals that exactly match the application – from simple to complex.

Effective and cost-effective insulation

Insulating a building with extruded rigid foam panels can reduce its heating requirements by as much as 70%. Because of their excellent insulating properties, XPS and PU panels have been used in the construction industry for many years. They make it possible to insulate large areas rapidly and efficiently. The high energy input to produce expanded polystyrene (XPS) is balanced by energy savings within the first two to three months after installation, so that the material's overall energy balance as insulation is good. The blowing agent used is unproblematic – KraussMaffei's modern production systems use CO₂. An additional benefit is the high compressive strength. Flame retardants can be added to make XPS insulation flame-resistant.

Your benefits:

- Cost-effective manufacturing
 - Positive energy balance
 - Reduced noise level
-



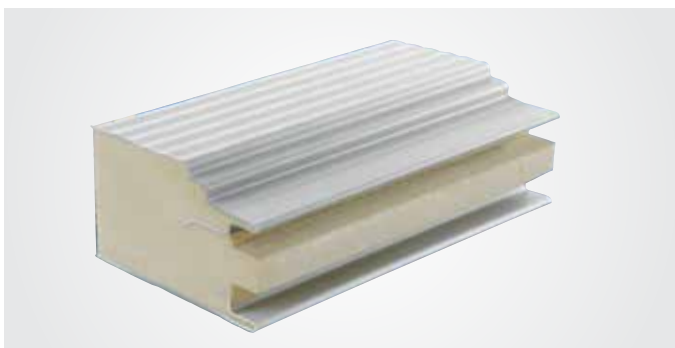
You profit from our vast know-how across the whole spectrum of plastics processing technologies. Our experience and expertise make us the number one choice as system partners for turnkey projects, however large or small. One of our areas of special expertise is insulation.



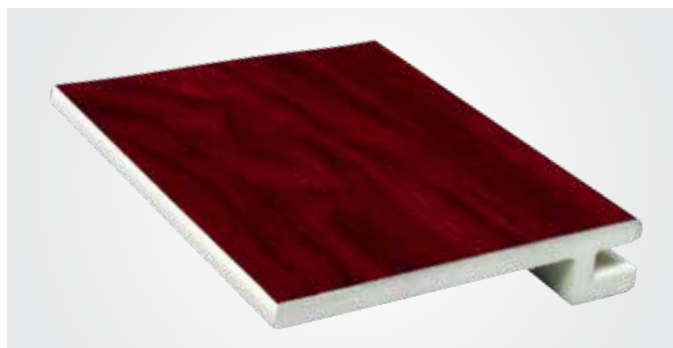
Product	Hot and cold water pipe
Material	PE-Xa, PE-Xb, PE-Xc, PE-RT, PB, PB-R, PP-R, with glassfiber or sheathed in aluminum as required
Technology	Processing single materials or ready-to-use compound on single- or twin-screw extruders – to suit the material type, multilayer pipe with EVOH oxygen barrier layer
Advantages	Hot water pipe made of plastic offers major advantages over metal pipe: light weight, very flexible, easy to install, high corrosion and temperature stability as well as long life.



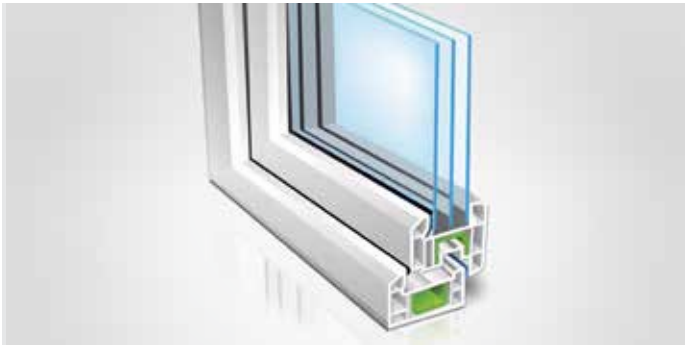
Product	Multilayer highly filled PP pipe for wastewater transportation (silent pipes)
Material	PP with mineral filling of calcium carbonate or barium sulfate
Technology	Direct extrusion on co-rotating twin-screw extruders, or ready-made compound processed on single-screw extruders
Advantages	In direct extrusion ready-to-use semifinished products are extruded from raw material components. This process combination saves material costs and decreases unit manufacturing costs.



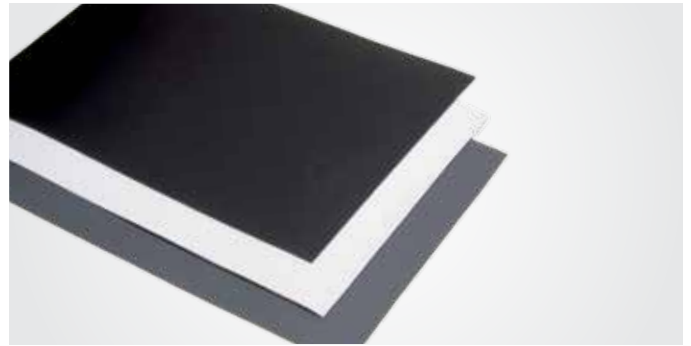
Product	Sandwich panel
Material	Outer layers: steel or PVC. Core: PUR/PIR rigid foam or mineral wool
Technology	Lamination
Advantages	These elements allow for resource-efficient construction because they not only provide excellent insulation but also make for creative building designs, high productivity and short construction times.



Product	Foam-backed profile as cladding
Material	PVC foam
Technology	Coextrusion with 32D twin-screw extruders
Advantages	The foamed profile replaces conventional, high-maintenance products such as wood. The end product is highly resistant to weathering and requires little maintenance. Product quality has been improved and manufacturing costs reduced. Foaming on 32D twin-screw extruders sharply reduces material costs.



Product	Window frame profile
Material	PVC
Technology	Mono- or co-extrusion with parallel or tapered twin-screw extruders
Advantages	Our flexible high-performance extrusion lines allow for the production of profile systems which are highly resistant to weathering and require little maintenance.



Product	Roofing sheet and liner membranes
Material	LDPE, HDPE, PP, W-PVC, TPO, TPU, EPDM
Technology	In-line sheet extrusion on a co-rotating ZE series twin-screw extruder
Advantages	This technology requires less energy, resources and maintenance allowing high throughput and reduced operating costs. Using cheaper raw materials instead of off-the-shelf compounds also reduces manufacturing costs.



Product	Pipe cladding for heating and sanitary installations
Material	PE, PP or EVA
Technology	Physical foam extrusion on tandem systems comprising two single-screw extruders or a twin-screw extruder and single-screw extruder combination
Advantages	The technology allows flexible processing of PS, PE and PP – without changing the screw or barrel configuration – and using environmentally compatible blowing agents. Start-up waste, edge strips, etc., can be reused to further reduce production costs.

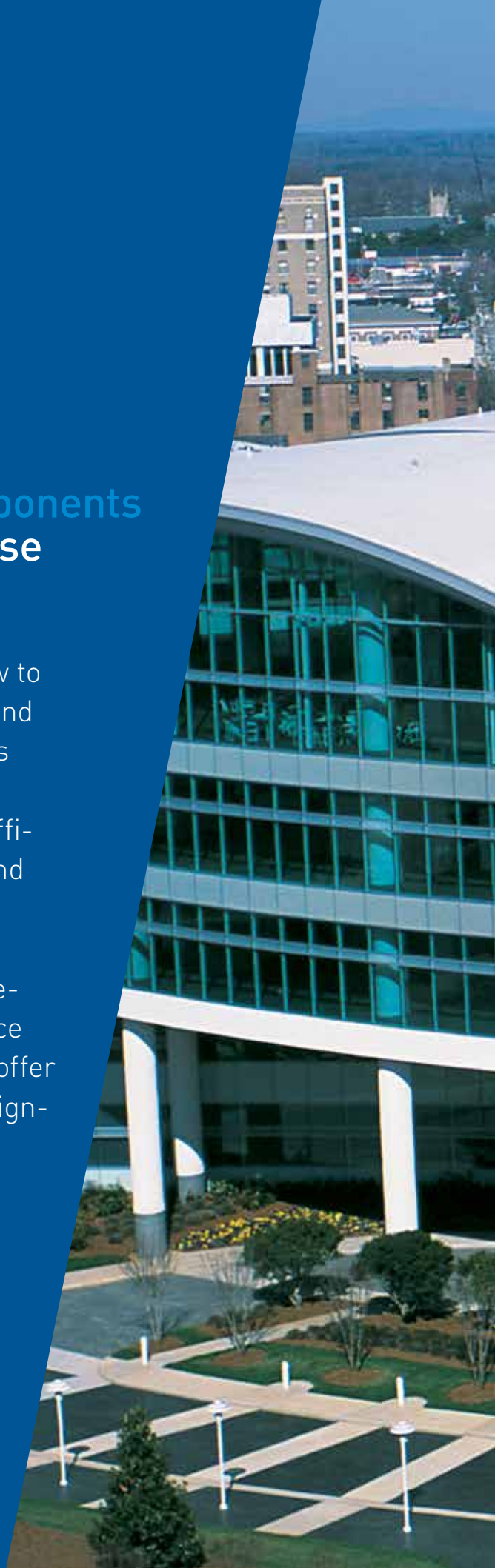


Product	Sealing profile
Material	EPDM, TPE, PP foamed or solid
Technology	Production lines for profile extrusion perfectly adapted for a wide range of products
Advantages	Combining extrusion and vulcanization opens up almost unlimited scope for products in precisely reproducible quality.

Plastic and rubber building components keep the heat in and shut out noise

Growing environmental awareness and rising energy costs add urgency to the question of how to achieve efficient insulation of rooms, windows and doors. KraussMaffei Berstorff supplies answers that meet the requirements of the construction industry. We engineer and supply systems for efficient production of roof sheeting, polystyrene and PUR insulating panels and rubber seals.

State-of-the-art technology by KraussMaffei creates new possibilities for designing large-surface LFI components. Multidimensional geometries offer a high degree of flexibility when it comes to designing interiors and exteriors.





Clear cost benefits for your production line

Plastics and rubber are indispensable materials for buildings with low environmental impact. These products can be manufactured cost-effectively and installed quickly and easily.

The range of plastics and rubber products for building interiors is extremely diverse. It includes lightweight furniture, shop fitting components, shelving systems, interior and exterior doors, furniture panels, furniture and décor profiles, edge bands for chipboard, beading for furniture components, PVC houses, PVC sheets and much more. In general, they need little or no maintenance, they're mechanically rugged and have impeccable surfaces. The KraussMaffei Group supplies complete production systems, including molds, mold carriers and cutting and trimming systems. This means you have the complete value-adding chain in your control – whatever your end products and your markets. KraussMaffei's expertise and experience as a system partner for our customers in this strong and diverse market delivers substantial benefits, especially in turnkey projects.

Exterior doors, interior doors and furniture panels made using the LFI process

Plastics reinforced with glassfiber offer a range of solutions for producing large parts such as exterior and interior doors and furniture panels. LFI-PU technology (Long Fiber Injection) makes it possible to specify local glassfiber concentrations in a product to match specific loads. The result is high strength and low weight. Our roadmap for the future is clear: Class A surfaces achieved by using décor film or in-mold painting – together with color changes from shot to shot. These solutions eliminate the need for separate paint lines and all the associated logistics, reducing emissions and CO2 emissions.

Multilayer extrusion for high-temperature applications

KraussMaffei Berstorff extruders deliver excellent productivity and quality in the production of multilayer pipe from PE-HD, PE-LD, PE-X and PE-RT for high-temperature applications such as underfloor heating and installation. They meet the market demand for more layers with functional properties.

Broad portfolio of processes and machinery for PVC flooring

PVC flooring is a popular, low-cost alternative to other types of flooring. PVC flooring sheets can be compact, foamed or coextruded and it can be enhanced and finished in many ways. KraussMaffei Berstorff is a leading system supplier of systems for PVC sheet extrusion; we offer complete turnkey systems for a wide range of manufacturing processes – for example, structural-foam extrusion for sheet up to 2 m wide. Uses for PVC sheet are many and varied. Apart from flooring, these include interior walls, elements for lightweight building, composite (sandwich) panels, insulation for heating systems and air-conditioning and ventilation shafts. PVC flooring is used in production halls, workshops, offices, living areas, fitness rooms, garages and many other areas. It can be laid quickly and easily and walked on immediately. It's also low maintenance and resistant to most chemicals, impervious to liquids and fireproof. KraussMaffei acts as general contractor to supply machinery and process know-how for every stage of flooring production – from raw materials input to stacking of the finished product.

High-tech films for special applications

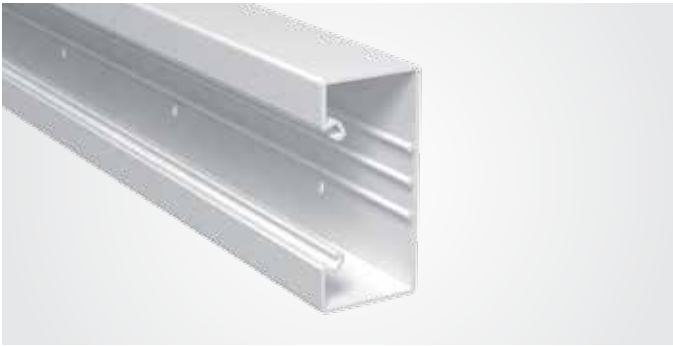
KraussMaffei Berstorff supplies complete lines for extruding high-tech films for many different applications. Ultra-elastic film protects against injury from shattering glass. This is achieved by using a special film with good glass adhesion properties. An intermediate layer of elastic film in the safety glass ensures that the glass does not shatter when it breaks.

Your benefits:

- Cost-efficient production
 - Rugged products requiring little maintenance
 - Top quality
-

PE-Xa underfloor heating pipe is the perfect solution thanks to its high flexibility





Product	Cable ducting
Material	PVC, Cycoloy
Technology	Extrusion with 32D twin-screw extruders (PVC) and 36D single-screw extruder, Cycoloy
Advantages	High-performance extrusion with extreme flexibility in the materials processed and output gives processors a competitive edge. They can also rely on constant high product quality with homogenous profile surfaces, smooth inner surfaces and high mechanical strength.



Product	Door
Material	PVC compact, thermoformed
Technology	Extrusion with 32D twin-screw extruders
Advantages	Compared with other commonly used materials, doors made of PVC have a better price/performance ratio, look good and last longer.



Product	Door handle
Material	PP
Technology	Water injection technology (WIT)
Advantages	Handles, knobs and fittings manufactured using water injection can be demolded faster, increasing the productivity of the system. Material consumption is also reduced so that unit manufacturing costs sink.



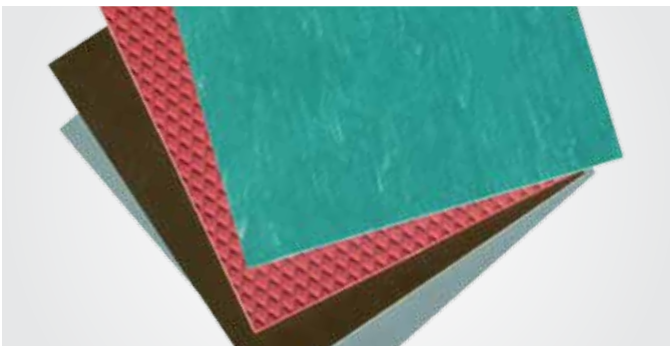
Product	Furniture panel
Material	PU + GF, paper honeycomb
Technology	LFI, lamination
Advantages	KraussMaffei offers application-specific production concepts for lightweight board, which are optimized to reduce weight, increase stability and cut manufacturing costs.



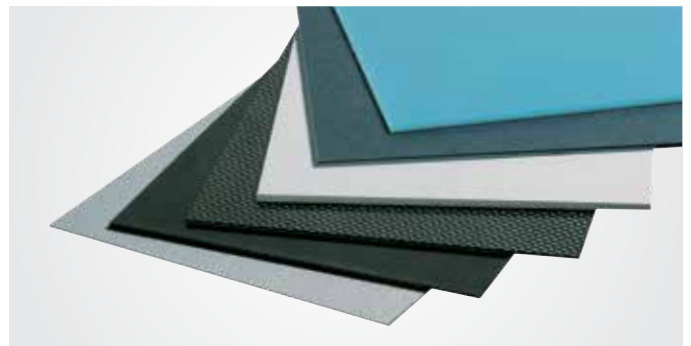
Product	Impact sound insulation
Material	PS, PE, PP
Technology	Physical foam extrusion on tandem systems comprising two single-screw extruders or a twin-screw extruder and single-screw extruder combination
Advantages	PS, PE, PP or PET can be processed without changing the screw or barrel configuration. Environmentally compatible blowing agents can be used. Start-up waste, edge strips, web scrap, etc., can be recycled to reduce manufacturing costs.



Product	Door
Material	PU + GF, paper honeycomb
Technology	LFI
Advantages	Technology by KraussMaffei gives added scope and creates new possibilities for designing large-surface LFI components. Complex, multidimensional geometries, such as undercuts, can be produced as required. The result is wide design freedom.



Product	Flooring
Material	PVC
Technology	Extrusion and calendering lines, rotational molding (AUMA)
Advantages	Processors benefit from quick and easy color changes and cleaning. Even small batches can be produced cost-effectively and without problems. Our production systems for flooring combine the advantages of our plastics and rubber processing technologies.



Product	Plastic board, chemically or physically foamed, multilayer
Material	PP, HDPE, ABS, PS
Technology	Sheet extrusion lines with single-screw extruder
Advantages	The lines have a high capacity and produce extruded plastic boards of the highest dimensional accuracy and surface quality.

Doing a great job around the house: resistant to weathering, easy to maintain and long-lasting

It's no longer necessary to choose either ruggedness or good looks for materials used on building exteriors. Choose the right plastics and you can have both. Exterior applications is another area where plastics demonstrate their huge advantages – they can be easily formed and shaped, they're resistant to weathering, easy to maintain and long-lasting.

Plastics protect your customers' investments

Construction materials used for building exteriors are exposed to extreme weather conditions and therefore need special properties including extreme durability. Plastics offer this surety, whether they're used for decking, facades, window sills or fencing. Plastic products comply with all construction industry standards for exterior materials – they'll stand up to any weather, they're almost indestructible, they're hygienic and almost maintenance-free. One of KraussMaffei Berstorff's areas of special expertise is machinery and process solutions to produce composite elements for building exteriors.

The KraussMaffei Group delivers cost-effective system solutions

KraussMaffei Berstorff offers solutions for the whole supply chain and plastic composites – from processing raw materials to compounding special formulations and from pelletizing to extrusion and downstream processing. Our engineering expertise covers a wide range of processes and technologies. In extrusion, we offer PVC- or PO-based co-rotating and counter-rotating twin-screw extruders – each suited to specific applications. Counter-rotating twin-screw extruders are used to process agglomerates and granulates, while co-rotating twin-screw extruders, with their outstanding mixing performance, are used in many applications,

including direct extrusion. In direct extrusion, individual material components are metered directly into the extruder. In injection molding too, KraussMaffei offers standard, application-specific or highly customized machines for a wide application spectrum. Our IMC (Injection Molding Compounding) systems give processors the advantages of single-stage manufacture. The IMC successfully links the continuous extrusion process with the discontinuous injection molding process. A key characteristic of all these processes is gentle, non-destructive processing which ultimately ensures that products meet all quality specifications.

Composites have the edge

Plastic-based composites consist of a polymer matrix embedding a reinforcing material – increasingly a renewable raw material. Typical examples are hemp, flax, rice husks and cellulose. The polymers used for the matrix include HDPE, PP or PVC. The general name for these composites is Wood Plastic Composites (WPC). Compared with 100% polymer materials, WPCs are stiffer and have a much lower coefficient of thermal expansion. They are durable, weatherproof and need no maintenance, making them an ideal substitute for tropical wood. Today, these types of composites are already being used in many applications.

Your benefits:

- High flexibility in production
 - Long-lasting, rugged and low-maintenance products
 - Sustainability through the use of composite materials
-



Exterior products, such as decking, are exposed to sun, storms and extreme temperatures. Composites based on renewable raw materials are used in high-quality products that are functional and attractive, and also help to reduce the building's carbon footprint. KraussMaffei Berstorff supplies the innovative technology and expertise to process them successfully.



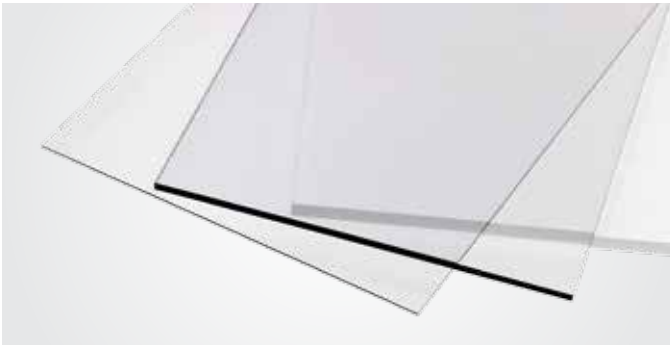
Product	Composite made of a polymer and a renewable raw material
Material	PVC, PP and HDPE with various filler and reinforcing materials such as wood, hemp, rice husks, flax, cellulose, kenaf, bamboo, etc.
Technology	Extrusion with counter- and co-rotating WPC twin-screw extruder
Advantages	High-quality end products with high stiffness, easy to clean, low maintenance and long-lasting. The production process is engineered for lower material costs and high flexibility to process different formulations.



Product	Fencing system
Material	PVC
Technology	Mono- or coextrusion with 32D counter-rotating twin-screw extruders
Advantages	High-performance extrusion with extreme flexibility in the materials processed and output. The end product is weatherproof and virtually maintenance-free. The coextrusion process makes it possible to design with color as well as shape.



Product	Garage door
Material	Steel outer layers, PUR/PIR or rock wool core
Technology	Lamination
Advantages	KraussMaffei supplies complete, turnkey production systems with all components optimized to operate perfectly together – from metal bending, to feed systems, stacking and wrapping.



Product	Transparent sheet
Material	PC, PMMA, PETG, APET, PS, SAN, ABS
Technology	In-line sheet extrusion systems with single-screw extruder and flexible PlanetCalander
Advantages	The variable positioning of rolls 1 and 3 on our patented PlanetCalander® makes it possible to process widely differing materials on the same system.



Product	Liner for garden ponds or swimming pools
Material	LDPE, HDPE, PP, W-PVC, TPO, TPU
Technology	In-line sheet extrusion on a co-rotating ZE series twin-screw extruder
Advantages	This technology requires less energy, resources and maintenance allowing high throughput and reduced operating costs. Compounding customer formulations instead of buying in proprietary compounds saves money.



Product	Guttering
Material	U-PVC, ASA, PMMA
Technology	Coextrusion with 32D twin-screw extruders
Advantages	Plastic guttering is largely maintenance-free and highly weather-resistant. Coextrusion makes it possible to offer customers a choice of colors.



Product	Delivery pipe for irrigation systems
Material	PE
Technology	High-performance extrusion with 36D single-screw extruders, spiral distributor pipehead and downstream; conventional extrusion process or flexible dimension change with QuickSwitch
Advantages	The 36D single-screw extruders are engineered for constant throughput regardless of back pressure. This minimizes material consumption, especially with thin-walled pipe grades.

Additional information

This might also be of interest to you



Ask us for information about the following, such as:

- Complete pipe extrusion lines
- Profile extrusion solutions
- Sheets and films made of PO and technical thermoplastics
- Cost-effective extrusion of PVC sheets and films

You can find our brochures and flyers on other topics online at:

www.kraussmaffeiberstorff.com.

For construction solutions using injection molding and reaction technology, please visit: www.kraussmaffeiberstorff.com.



On request, we will also be pleased to send you the information and technical data for our products free of charge.

KraussMaffei Berstorff

A strong brand in a unique global group

Value-proven Extrusion Technology solutions

Around the world, KraussMaffei Berstorff stands for reliable and value-proven solutions in Extrusion Technology. These range from using individual extruders for degassing in polymerization, compounding, pipe, profile, film and sheet extrusion, physical foaming and the manufacture of technical rubber articles and intermediates for tire production up to complete extrusion lines. All machines and systems from KraussMaffei Berstorff are custom-configured, for example for the chemical, automotive, construction, packaging or pharmaceutical industry.

There for you around the world

KraussMaffei Berstorff is your partner – from the first planning meeting through development of the best possible technical and business solution up through commissioning, servicing and production of your system. We guarantee high-quality advice, solution expertise, reliable spare parts logistics and fast-reacting service during each phase. Our goal is increasing your success.

Individualized service

Benefit from KraussMaffei Berstorff's reliable service. Our customer service team and experienced fitters, technicians and engineers are there for you as quickly as possible and even help on location to optimize your systems and processes and to minimize downtime as much as possible. Rely on our highly skilled repair and spare parts service

You can find additional information about KraussMaffei Berstorff at:
www.kraussmaffeiberstorff.com

KraussMaffei Group

Comprehensive expertise

Unique selling proposition Technology³

The KraussMaffei Group is the only provider in the world to possess the essential machine technologies for plastics and rubber processing with its KraussMaffei, KraussMaffei Berstorff and Netstal brands: Injection Molding Machinery, Automation, Reaction Process Machinery and Extrusion Technology.

The group is represented internationally with more than 30 subsidiaries and over ten production plants as well as about 570 commercial and service partners. This is what makes us your highly skilled and integrated partner. Use our comprehensive and unique expertise in the industry.

You can find additional information at:
www.kraussmaffei.com



The KraussMaffei Group has a global presence. Countries with subsidiaries are marked in light blue. In the white-colored regions, the Group is represented by over 570 sales and service partners.

Get a better return on your investment with a system partner **Solutions for the construction industry**

Plastics and rubber are widely used in the construction industry, because of the striking benefits they offer. They are lightweight, weather- and UV-resistant, scratchproof and easy to install. They also provide good thermal insulation and impact resistance. Due to this, they are used in many areas for special tasks and in various forms such as pipes, profiles or sheeting.

KraussMaffei can supply the optimal machine solution for any production challenge, from extrusion to injection molding and reaction processing. As your partner for application-specific system solutions, our engineering expertise, combined with our clear understanding of the challenges and potential in the industry, can sharpen your competitive edge.