Complete system solutions
Cost-effective sheet and film extrusion of polyolefins and engineering thermoplastics

Engineering Value
Facts and figures regarding film and sheet extrusion of PO and engineering thermoplastics

Applications

Various kinds of PO sheet, mono-extruded
Various kinds of PO sheet, coextruded in multiple layers
PP-H equilibrium dialyzer
HDPE sheet for shipbuilding

Acid tank from PP sheet
Plastic sheet in daily use – Sanitary business area
Plastic sheet in daily use – White appliance business area
Thermoforming film for a variety of uses – Blister packaging business area

Thermoforming film for a variety of uses in the cup business area
Thermoforming film for a variety of uses in the packaging business area

Sheet outputs

<table>
<thead>
<tr>
<th>Extruder types</th>
<th>HDPE (kg/h)</th>
<th>PP (kg/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KME 45-36 B/PL</td>
<td>140</td>
<td>140</td>
</tr>
<tr>
<td>KME 60-36 B/PL</td>
<td>220</td>
<td>220</td>
</tr>
<tr>
<td>KME 75-36 B/PL</td>
<td>320</td>
<td>320</td>
</tr>
<tr>
<td>KME 90-36 B/PL</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>KME 105-36 B/PL</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>KME 125-36 B/PL</td>
<td>630</td>
<td>650</td>
</tr>
<tr>
<td>KME 150-36 B/PL</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>KME 200-36 B/PL</td>
<td>On request</td>
<td>On request</td>
</tr>
</tbody>
</table>

In addition to the extrusion of popular polyolefins, such as HDPE and PP, KraussMaffei Berstorff single-screw extruders are also ideal for processing the following materials: PMMA, ABS, PP, (HI)PS, APET.
Complete system solutions
Cost-effective sheet and film extrusion of polyolefins and engineering thermoplastics

The importance of polyolefin-based plastics has grown continuously for decades, and the trend is expected to continue. They are used ever more frequently, above all in the sheet extrusion area.

The 36D single-screw extruders from KraussMaffei Berstorff are optimally suited for extrusion of sheets from polyolefin, whether compact or foaming. We’ve got what it takes for successful production.

Firstly, we supply complete integrated system solutions for a huge range of PO sheet products. Secondly, we have the intensive process and application experience and the comprehensive engineering expertise you would expect from a system supplier. Take advantage of both of these factors to bring you success.

Your advantages at a glance:
- Conveying behavior independent of counter-pressure at all speeds
- Low melt temperature profile due to high specific throughputs
- Excellent plasticizing performance
Everything at a glance
Tour of a complete sheet extrusion line

- **Edge-trim chopper**
  With servo drive, pneumatic positioning of the cutting blade and the swarf extraction unit

- **Longitudinal parting saw**
  With servo drive, pneumatic positioning of the cutting blade and the swarf extraction unit

- **Stacking system**
  with roller table

- **Crosscut saw or router**
  With servo drive

- **Swarf extraction**

- **Haul-off**
  Single- or double-strand haul-off, pneumatic positioning of the rubber-covered rolls, adjustable speed differential to polishing stack
**Temperature control unit**
With water or oil as the medium

**Slit die**

**Single-screw extruder**
KME 150-36 B/PL
With gravimetric material feed (one to four components).

**On-board switching cabinet**
for the downstream equipment

**Polishing stack**
With high-gloss, chrome-hardened rolls, individual servomotor drives and planetary gears, nip monitoring via electronic sensors, constant temperature profile over the whole width of the roll

**Radiant heater**
Combination of area and point heaters, adjustable zone regulation

**Swiveling C6 display**
Fitted to the polishing stack

**Pressure roll**
For optimizing flatness (temperature control and drive optional)

**Screen changer**
Setting benchmarks for PO sheet production – with 36D single-screw extruders

Many market segments and application areas are turning increasingly to polyolefin sheet: Be one step ahead of the competition with KraussMaffei Berstorff.

Complete system solutions from the world’s leading system supplier.
KraussMaffei Berstorff has long been a world-leading system supplier of PVC sheet extrusion lines, and has consistently expanded its range of products. We offer complete system solutions for processing different PO sheet grades and custom PO special materials and engineering thermoplastics. Our machinery and process expertise can give you a decisive competitive advantage, because we configure and supply complete sheet extrusion lines using high-quality components and extensive automation. The single-screw extruders of the 36D series, with state-of-the-art screw geometries, guarantee the constant pressure required for this process and provide high output at a uniform temperature profile. The extruder can also be operated without a melt pump.

Perfectly tuned system components for a broad range of products
Chemically foamed PE and PP sheet is finding new markets, and is also contributing to cutting the cost of raw materials for products that are already on the market. To meet high quality specifications, the extruded foam must have a homogeneous internal structure and smooth outer surfaces. For the best foam quality, the melt must leave the extruder as a highly homogeneous compound with the blowing agent (added as microgranules) uniformly distributed. The pressurized melt expands upon exiting the die.

The foam formation process is started with chemical propellant under the influence of temperature. The interaction of formulations, melting processes, and the special geometry of the contours of the lips of the flat sheet die make it possible to produce sheets with significantly reduced density and, consequently, reduced use of raw materials. KraussMaffei Berstorff supplies a dedicated extrusion unit for this foaming process, consisting of the 36D single-screw extruder with grooved bush and barrier screw, a screen changer (optional) and a slit die specifically designed for foamed PO sheet.
Polishing stack with hard-chromed rolls, individually driven via servo motors and planetary gears.
First encounter
Take a tour of the 36D single-screw extruder

Off-center feed
Avoids turbulence and maximizes output

Robust gearbox
Long life, lowest maintenance costs and space savings (gearbox and motor form a U)
Optimal drive dimensions
With DC drive unit (standard) or AC drive unit (optional), air-cooled (standard) or water-cooled (optional)

Barrier screw
For thermal and materially homogeneous melts and low melt temperatures.

Deep-nitrided grooved bush
Outstanding cooling performance, lowest cooling water consumption, steady material feed – independent of counterpressure – and self-cleaning

Bimetallic barrel
Lowest wear rates

Gravimetric weighing of material
C6 control system – flexible system for open-and closed-loop control and monitoring of an extrusion line

With its new, innovative C6 control system, KraussMaffei Berstorff offers fast, direct access at all times to the individual units of an extrusion line, the extruders which work conjointly to produce the product, and to integrated downstream equipment.

With its numerous monitoring and control functions, the C6 control system ensures optimal production preparation and transparency throughout the production process, thereby satisfying the most stringent requirements for excellent product quality and a high level of process reliability.

**Multi-touch technology for intuitive operation**
The C6 control system is equipped with the latest multi-touch technology and state-of-the-art hardware components. A high-resolution 24-inch full HD screen provides an optimal overview. The intuitive operation and clear screen layout facilitate fast intervention and provide a comprehensive process overview. Units and functions can easily be operated and activated via the touchscreen display. With the C6 control system, KraussMaffei Berstorff has placed a particular emphasis on maintaining continuity in the design in terms of both its operation and its functionality, which have proven successful over a great many years.

**Maximum flexibility**
The C6 control system offers the user an incredibly high level of flexibility. The composition of parameter pages can be chosen freely, and display and parameter texts can be tailored to individual requirements. In addition, the system components can be connected and disconnected as required.

**Fast, secure access management using RFID technology**
The C6 control system allows fast, secure access by means of non-contact identification using RFID readers. Remote diagnostics via the Internet and data interfaces to connect to the company network tip the balance to make the C6 control system the perfect solution for all your extrusion line’s control tasks.

**Your benefits:**
- Modern, innovative operating philosophy
- Fast, intuitive operation
- Highly flexible
- Maximum process reliability
- Optimal monitoring of integrated system concepts and standalone machines
- A variety of user-friendly models

Various operating configurations are available

- Swivel-mounted on switching cabinet (standard version)
- Mounted on switching cabinet door, tilting (option)
- Boom-mounted version (option)
- Mobile version (option)
Polishing stack with temperature control unit and swiveling control display
Best equipped for the markets of the future – exploit lucrative potential with new applications

Various types of PO sheet, mono-extruded or coextruded in multiple layers
No matter how varied and specialized your PO sheet production needs may be, KraussMaffei Berstorff’s 36D single-screw extruders are more than equal to the job.

**Processing materials for a broad range of products**
The screws in our 36D single-screw extruder series provide decisive advantages for excellent product quality and high economic viability. With KraussMaffei Berstorff sheet systems, you can process materials for a wide range of products, which above all are used in building containers for water and acid cisterns.

**HDPE sheet – unbeatable advantages in countless applications**
HDPE sheet resists stress cracking, has low-temperature impact resistance, very good energy absorption, high stress resistance, outstanding corrosion and abrasion resistance, low water absorption and very good electrical insulation properties. With a property profile like this, it is the material of choice for a broad range of applications. Here are some of the products that can be made of HDPE:
- Rotor blades
- Roller bearing bodies
- Storage containers
- Shuttering
- Wash basins
- Machine parts
- Seating
- Medical prostheses
- Chopping boards for the food processing industry
- Shipbuilding

**PP sheet – attractive advantages for many applications**
PP sheet is light, offers optimum abrasion resistance, has excellent electrical properties, withstands long-term exposure to temperatures up to 90 °C, has a high surface hardness, can be nailed and welded, and is thermoformable. It can be used in a broad range of applications. Here are some typical products:
- Battery housings
- Acid tanks
- Liners
- Laboratory dishes
- Mechanical components
- Shuttering
- Transport pallets
- Kitchen equipment
- Sterilizable components

**Your advantages:**
- Gentle melt processing and optimal melt homogeneity
- Long service life thanks to optimized pressure profiles and low wear rates
- Clear reduction in cooling water consumption for the grooved bush
- Low-maintenance drive in proven U-arrangement
- Compact machines with a small footprint
- Outstanding price/performance ratio
High overall equipment efficiency (OEE) is a fundamental prerequisite for your company’s success. KraussMaffei Berstorff’s product portfolio comprises tailored machines and lines along with perfectly matched services that increase the economic efficiency and the sustainability of your production. Benefit from our proven know-how of extrusion technology in any application.

For more information about OEE Plus, visit:
www.kraussmaffeiberstorff.com/oeeplus
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.kraussmaffeigroup.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.
Cost-effective sheet and film extrusion of polyolefins and engineering thermoplastics

The 36D single-screw extruder series

The 36D single-screw extruders from KraussMaffei Berstorff are ideal for extruding polyolefin sheet, whether compact or foamed, and other engineering thermoplastics. We provide you with everything you need for successful production: Firstly, we supply complete integrated system solutions for a huge range of PO sheet products. Secondly, we have the intensive process and application experience and the comprehensive engineering expertise you would expect from a system supplier. Take advantage of both of these factors to bring you success.

www.kraussmaffeiberstorff.com