

POWERFUL AND COST-EFFECTIVE FOR ALL  
APPLICATION AREAS

# PROFILE EXTRUSION SOLUTIONS



**Krauss Maffei**  
*Pioneering Plastics*

# FACTS AND FIGURES FOR ALL PROFILE APPLICATIONS



*Coextruded window profile in core technology <sup>1</sup>*



*Main window profile/5-chamber system with steel reinforcement <sup>2</sup>*



*Cable duct*



*Foamed trim profile*



*PVC profile processed as fence system*



*Gutter - coextruded*



*Sealing profiles made of TPE or PP*



*Technical profile*



*Window profile <sup>3</sup>*



*Foamed profile for cowling*



*Decking profiles made of WPC compounds*



*Door module <sup>3</sup>*

*Image sources: 1) [www.greiner-extrusion.com](http://www.greiner-extrusion.com) 2) [www.schueco.com](http://www.schueco.com) 3) [www.aluplast.de](http://www.aluplast.de)*

## **Other applications:**

- Shutter systems
- Window sills
- Siding solutions
- Special customer-specific solutions

# PROFILE EXTRUSION SYSTEMS FOR YOUR SPECIAL REQUIREMENTS AND TASKS

KraussMaffei supplies individual machines and complete profile extrusion systems for all profile extrusion applications. Whether profiles made of PVC, PE or other materials – and irrespective of the profile type you want to produce – our systems open up every available possibility to you.

## **Your benefits at a glance:**

- Energy-efficient production thanks to innovative machine technology
- Flexible extruder technology for maximum cost-efficiency
- Exceptionally consistent product quality over a defined performance range
- Excellent price-performance ratio

# IMPRESSIVE ENCOUNTER TAKE A TOUR OF A COMPLETE EXTRUSION LINE

Tip table



Haul-off-saw combination with change bars  
Optionally equipped with a saw or a cutter





**Calibration table equipped with a vacuum pump and cyclones**

- Energy efficient
- Universal molds can be clamped

**KMD 90-32/P twin-screw extruder**  
For PVC material or PVC mixtures



*Sample extrusion line for producing PVC window profiles*

# 32D twin-screw extruders

## High-tech profile extrusion

With machine components that are engineered in perfect harmony, parallel twin-screw extruders in the 32D series provide you with a cost-effective solution for all your profile extrusion solutions.

### Optimized screw concept

The processing concept of the 32D series perfects material preparation, ensures optimum melt homogeneity and permits processing of many different PVC formulations in a very wide processing window.

### Maximum flexibility

In process engineering terms, the 32D series offers maximum flexibility both in the use of different formulations and a wide range of molds.

### Powerful gearbox

A very powerful gearbox is required to implement the high screw torques reliably. This gearbox has a compact, robust and low-vibration design, and is geared precisely and rigidly to the processing unit.

### Perfect wear resistance

The 32D processing units with molybdenum-protected screws and deep-nitrided barrels guarantee active wear resistance for a wide range of different formulations, thus ensuring a long service life of the machine.

### High-performance extrusion

The machine concept of KraussMaffei ensures maximum output rates – and produces constantly perfect product quality over a defined performance range. Compact machine combinations, for example, in twin-strand processing, with a throughput rate of more than 900 kg/h are a clear indication of KraussMaffei's solution expertise in high-performance extrusion.

### YOUR BENEFITS:

- Maximum flexibility and process reliability when processing various formulations
- Optimum melt homogeneity thanks to a long process unit
- Long service life with consistently high output rates
- Optimum design for high demands: High-performance extrusion for maximum cost-efficiency
- Low-maintenance machine technology



*KMD 90-32/P twin-screw extruder with molybdenum-protected screws*



*KMD 114-32/P twin-screw extruder: Front view*

# Conical twin-screw extruders

## Compact, flexible and robust

The conical twin-screw extruders from KraussMaffei are particularly suitable for production in the lower output range and can be used both as mono-extruders as well as coextruders.

### Space-saving and efficient machine concept

The simple conical series has a very compact design, thus saving valuable production space. The position of the screw axes provides enough space for a robust distribution gearbox and a strong thrust bearing. The robust gearbox and the ideally dimensioned drive concept with an AC motor ensure a long service life and low maintenance costs.

### Perfect wear resistance

Thanks to the special molybdenum welding technique of the processing unit, the extruders in the conical series are ideally suited for the use of recycling material or highly charged mixtures since they are extremely wear-resistant.

### Optimum screw design ensures highly flexible processing

Thanks to the screw layout in the feed and precompression zone, the KraussMaffei design guarantees optimum heat transfer via barrel heating.

In addition to temperature control, processing companies profit from maximum melt homogeneity, thus producing a premium quality end product.

During the design of the screw concept, special attention was paid to high pressure stability up to 500 bar mold back pressure. The processing company can carry out production in an extremely flexible way – even with high mold pressures.

Different types of material, for example, dry blend granulate and regrind, can also be very easily processed. The excellent price/performance ratio makes an absolutely vital contribution towards cost-effective production.

### YOUR BENEFITS:

- Powerful gearbox; robust and compact design
- Optimum melt homogeneity thanks to a long process unit
- Exceptionally consistent product quality over a defined performance range
- Low-maintenance thanks to internally heat-balanced screws and air-cooled barrels
- Active wear resistance



*KMD 43 K/P conical twin-screw extruder with swivel-mounted display*



*KMD 63 K/P conical twin-screw extruder in a mono design with the operator panel integrated into the control cabinet*



*KMD 63 K/P conical twin-screw extruder mounted as a stand-alone model on a column (pictured without switching cabinet and operating panel)*

# COEXTRUSION MODELS

## INNOVATIVE MODELS FOR A WIDE VARIETY OF APPLICATIONS

Coextrusion is the current trend in profile extrusion. For example, window main profiles made of recyclates or cost-effective formulations are produced in the core or in the invisible area of the profile; the visible surfaces are made from colorfast virgin material.

### Coextrusion with parallel basic extruders

Frequent use is made of combinations comprising basic extruders featuring parallel twin screws with one or two piggyback extruders from the conical series. The basic extruder prepares the recycling material while the coextruder processes the new material. Conical extruders can be easily mounted above the main extruder – movable on two axes.

### Coextrusion with the conical series

The extruders in the conical series are also used, for example, as stand-alone models. These models can be quickly moved and permit flexible injection into the coextrusion mold from many different positions. Coextruders can also be quickly added to different coextrusion lines without any modification and can be moved in all directions. The coextruders can be supplied with their own C7 control system and with a control unit integrated in the main extruder. In this case both extruders can be controlled from a central operating panel.

The C7 control system is extremely efficient, especially when integrating several extruders in a coextrusion system. Several extruders can be regulated here using a single control system. On the other hand, several a-tarchic extruders can also be synchronously regulated in a network using the C7 control system.



*KMD 43 K/P conical twin-screw extruder as a column version on a KMD 63 K/P conical twin-screw extruder with a lifting and swivel mechanism*



*KMD 63 K/P twin-screw extruder as a piggyback version on a parallel KMD 114-32/P twin-screw extruder*



*KMD 63 K/P conical twin-screw extruder on a column as a stand-alone model fixed on a base plate (displayed without switching cabinet or operating panel)*



*KMD 63 K/P conical twin-screw extruder as a column version on a parallel KMD 90-32/P twin-screw extruder mounted with complete electric integration*

# Efficient extrusion systems

## Natural fiber composite processing

Active wear resistance in extrusion of natural fiber-reinforced plastics. Innovative and energy efficient machine technology for a wide range of applications.

Thanks to their durability, natural fiber composites are increasingly replacing pure natural products in many application areas, for example, decking products, fence components or screening walls. KraussMaffei supplies complete system solutions for all kinds of special applications.

### Counter-rotating twin-screw extruders for processing compounds

Counter-rotating twin-screw extruders are used throughout the world to process natural fiber-reinforced plastics, for example, wood plastic composites (WPCs). KraussMaffei extruders feature a number of other benefits, for example, steady material feed, gentle, non-destructive processing and highly stable screw pressure for the production of semifinished products. They are also ideally suited for processing of a prepared compound. High screw torque – coupled with a long processing unit – produces the highest possible output rates. In addition to careful material preparation, the special screw geometry produces a homogeneous melt with an optimum melt temperature even with high melt pressures.



*Counter-rotating parallel twin-screw extruder for processing natural fiber-reinforced plastics*

### Active wear resistance for a long service life

KraussMaffei ensures maximum wear resistance through a special process concept, tungsten carbide protection of the screws, and bi-metallic lining of the barrel bores. The machines thus have long service lives and minimum maintenance expenses.

### Corotating twin-screw extruders for cost-effective compounding

Thanks to the concept of the corotating twin-screw extruder, the components can be directly metered on the extruder in an energy efficient and economical way through direct extrusion. The use of patented multi-processor screw elements ensures careful material preparation and homogeneous mixing of the natural fibers. Other advantages include the long service life of the inductively hardened housing and extremely flexible adaptation to different processing requirements due to the modular configuration of the processing element.



*ZE 65 Blue Power corotating twin-screw extruder for direct extrusion*

# C7 CONTROL SYSTEM – SUCCESS MOVING TO THE NEXT ROUND

The functions of both of the proven KraussMaffei “BPC Touch” (compounders) and “C6” (PO and PVC lines) control systems are now combined in the new C7 extruder control system. As part of this fusion, the user-friendly interface has additionally been upgraded and updated to a more modern appearance.

## One Extrusion – One Control

The blending of the two control systems creates tremendous potential in terms of new flexible system configurations and groundbreaking plastics applications. Using the C7 control system, the machine operator keeps complete control over the entire extrusion line with direct and fast access to the individual units in the higher-level systems network. The numerous monitoring, control and automation functions create the basis for optimum product quality and high process reliability.

## One look at the essentials

With the redesign of the user interface, we have succeeded in enhancing the focus on the essentials with the same clear information content. The familiar clear screen layout paired with a pleasing and intuitive color scheme provides a comprehensive process overview for the user at all times, as well as the foundation for fast intervention options.

With the C7 control system, KraussMaffei is also placing particular focus on continuing the ongoing, proven and trusted operating principle and functionality.

## Connection to the digital future

With its many interfaces, the C7 control system is ideally equipped for the data world of tomorrow. Alongside the proven conventional paths (USB, PDF export), there are various network-based data interfaces (e.g. OPC-UA, Euromap84) available for accessing machine and operating data. Internal and external data recorders provide support in analyzing and optimizing processes.

The possibility to carry out remote diagnostics via the Internet, as well as to gain secure access to the machine control system through non-contact identification by use of a RFID reader, rounds off the digital portfolio.

## YOUR BENEFITS:

- One control system – diverse applications
- State-of-the-art, attractive design
- Proven, intuitive operating philosophy
- Versatile data handling for the digital factory
- Flexible solution for total system concepts and individual machines

## Various operating versions



Swivel-mounted on switching cabinet (standard)



Boom-mounted version (option)



Mounted on switching cabinet door (option)



Mobile version (option)

# PRODUCTION OF TECHNICAL PROFILES POWERFUL MACHINES AND SYSTEMS

Technical products also come with high technical requirements. KraussMaffei combines its expertise in materials with excellent machine quality and thus meets the wants and needs of customers regarding product quality, process and cost-efficiency. As a supplier of systems, we offer complete solutions with a wide variety of follow-up equipment. We serve the entire value chain from the preparation of raw materials through processing, quality control, process monitoring and materials handling of the finished product.

KraussMaffei provides systems and machines for producing all kinds of technical profiles such as profile strips, lamp covers, lamellae and tile termination strips. The finished products are used in the automotive, furniture, electrical and construction industries.

KraussMaffei extruders are used in a wide range of different applications and tasks. The single-screw extruder has been specially designed for processing all commonly used materials such as PE 80, PE100 and PP. Furthermore, it is of course also suitable for processing many other materials used in the technical sector, for example LDPE, LLDPE, MDPE, TPE, TPU, S-PVC, PMMA, ABS, PS, PC.

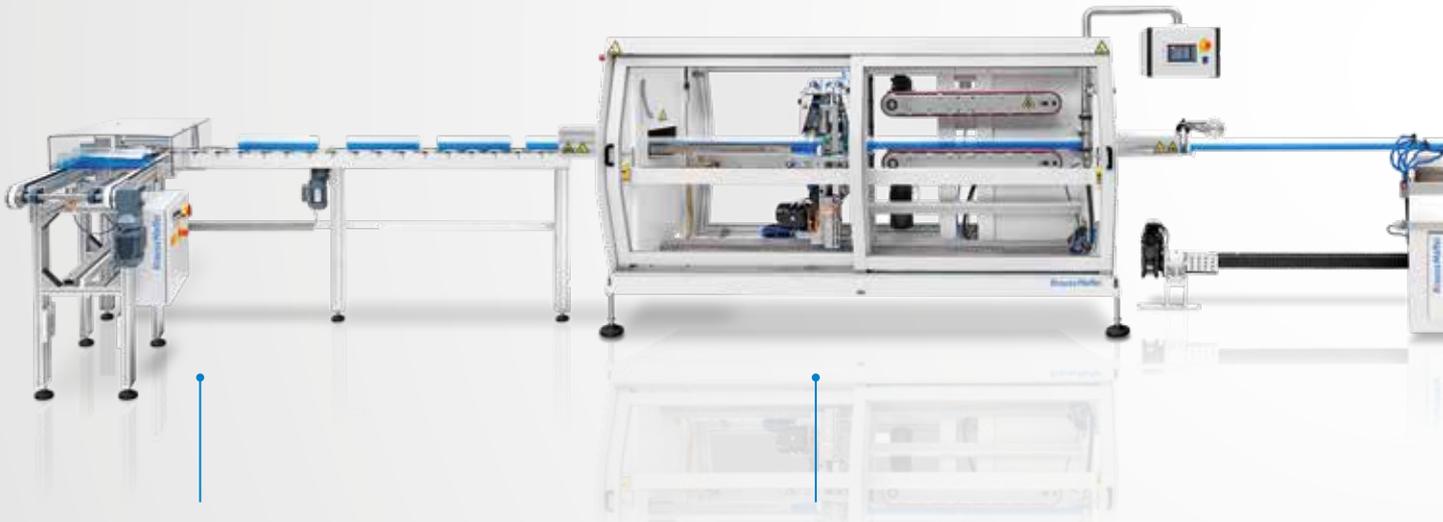


*Production line of light strip profiles made of polycarbonate in the coextrusion process*



*Coextruded light strips made of polycarbonate*

# IMPRESSIVE ENCOUNTER TAKE A TOUR OF A COMPLETE EXTRUSION LINE FOR THE PRODUCTION OF TECHNICAL PROFILES



## Roller conveyor/tip table

- Transverse conveyor preparation for robot
- Holder and final quality control
- Coiler for flexible applications

## Haul-off saw combination

- Optionally equipped either with a saw or a cutter
- Separate model possible
- Belt or caterpillar haul-off
- Installation of ionization systems



**Calibration table equipped with a vacuum pump and cyclones**

- Energy efficient
- Universal molds can be clamped
- Flowmeters for calibration
- Integration of tempering units

**Single- or twin-screw extruders**

- With standard C7 control system
- Coextrusion solution



# OUR WORLDWIDE EXPERTISE IS YOUR ADVANTAGE DIGITAL & SERVICE SOLUTIONS

With your KraussMaffei machine, you have chosen a product that delivers the highest levels of productivity and reliability. In addition to our range of machinery, KraussMaffei focuses on comprehensive and future-oriented solutions, innovative business models and an innovative portfolio of digital products.

## Customer service at the touch of a button

The process of digital transformation is becoming faster and easier than ever for the customer. Our Digital & Service Solutions unit makes your production chain even more flexible and efficient with future-oriented solutions. KraussMaffei thus globally provides an all-inclusive customer service package and networks machines and processes with each other. Our global support offers a sound basis for your local long-term success.

## Individual challenges in mechanical engineering call for intelligent solutions

With our services portfolio, we support you throughout your machine's lifecycle with a strong focus on your specific needs. In order to satisfy your wishes, we offer you a wide range of solutions in order to ensure maximum availability and optimum productivity of your machines.

## Technology<sup>3</sup> as a unique selling proposition

KraussMaffei is the only supplier in the world with a product range comprising the most important machine technologies for plastic and rubber processing: injection molding machinery, automation, reaction process machinery and extrusion technology. KraussMaffei is represented worldwide with more than 30 subsidiaries and over 10 production plants as well as about 570 commercial and service partners. Working together with our customers and partners, we are thus in a position to offer vast and unique expertise in the industry.

You can find further information at:  
[www.kraussmaffei.com](http://www.kraussmaffei.com)

# KRAUSSMAFFEI – PIONEERING PLASTICS



## Extensive expertise from a single supplier

KraussMaffei is one of the world's leading manufacturers of machinery and systems for producing and processing plastics and rubber. Our brand has been synonymous with cutting-edge technology for over 180 years. Our product range includes all technologies in injection molding, extrusion and reaction process machinery. KraussMaffei has a unique selling proposition in the industry as a result. By drawing on our proven innovative capacity, we can guarantee our customers sustained additional value over their entire value-adding chain through our standardized and individual product, process, digital and service solutions. The range of our products and services allows us to serve customers in

many sectors including the automotive, packaging, medical and construction industries. We also supply manufacturers of electrical and electronic products and household appliances.

## At your service all over the world

KraussMaffei is represented all over the world. Subsidiaries provide you with support in the countries shown in light blue. Our sales and service partners take care of you in the regions shown in white.

You can find all contact information at  
[www.kraussmaffei.com](http://www.kraussmaffei.com)

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