

# ECONOMICAL EXTRUSION AND WIDE RANGE OF APPLICATIONS

DISCOVER OUR COMPLETE SHEET SYSTEM  
SOLUTIONS OF PVC

**KraussMaffei**  
*Pioneering Plastics*



## APPLICATIONS OF FILM AND SHEET PRODUCTION



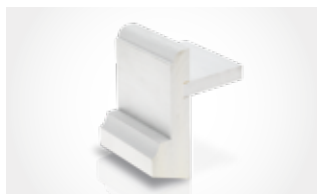
*Partitions*



*Billboards*



*Furniture*



*House construction*



*Covers*



*Thermoformed products*

### Technical data of KraussMaffei sheet extruders

### Coextruder

	KMD 90-32/PL	KMD 114-32/PL	KMD 133-32/PL	KMD 164-32/PL	KMD 184-32/PL	KMD 63 K/PL	KMD 75-26/PL	KMD 90-32/PL
Output range [kg/h]	210 - 520	300 - 700	450 - 1,100	600 - 1,400	800 - 2,000	80 - 220	80 - 240	180 - 390
Drive performance [kW]	64	100	155	230	320	38.4	32	64
Screw torque, max. [Nm]	18,000	35,700	56,000	90,000	140,000	12,000	9,400	18,000
Screw speed [min <sup>-1</sup> ]	32	25	25	23	20.5	28	30.5	32
Screw length [L/D]	32	32	32	32	32	17	26	32
Screw diameter [mm]	90	114	133	164	184	63 - 120	75	90
Screw heating/cooling	external*	external*	external*	external*	external	internal	internal	internal
Extrusion height [mm]	1,150	1,150	1,150	1,150	1,400	1,000	1,150	1,150

### Dimensions [mm]

Length incl. adapter	5,075	6,250	7,425	9,625	10,350	3,100	3,800	5,075
Width incl. control cabinet	1,400	1,650	1,850	1,540	3,270	1,330	1,280	1,400
Height incl. hopper	2,600	2,650	2,650	2,600	3,450	2,210	2,400	2,600

# COMPLETE SYSTEM SOLUTIONS FOR COST-EFFECTIVE EXTRUSION OF PVC SHEETS

PVC sheets – compact, foamed or coextruded – are a modern alternative to wood, fiberboards and other compact materials. They can be reprocessed in different ways, can be refined and are used in many areas of the construction and advertising industries.

As a competent system provider, KraussMaffei has been supplying proven integrated overall system concepts for a large number of film and sheet products made of PVC for years.

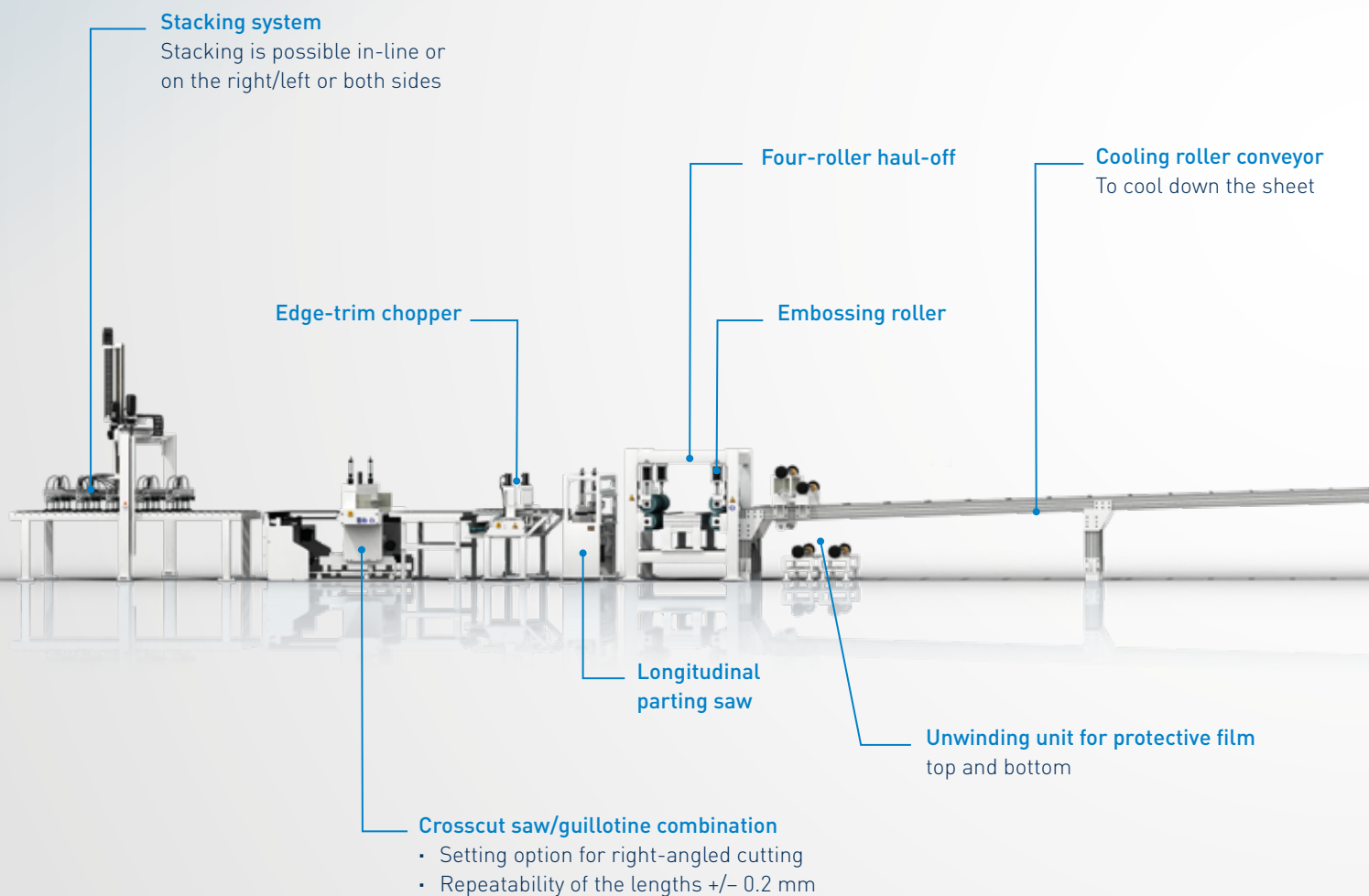
The perfected process and application know-how of our application engineers and all engineering work from a single source reduce your costs at the start of production and during further production steps.

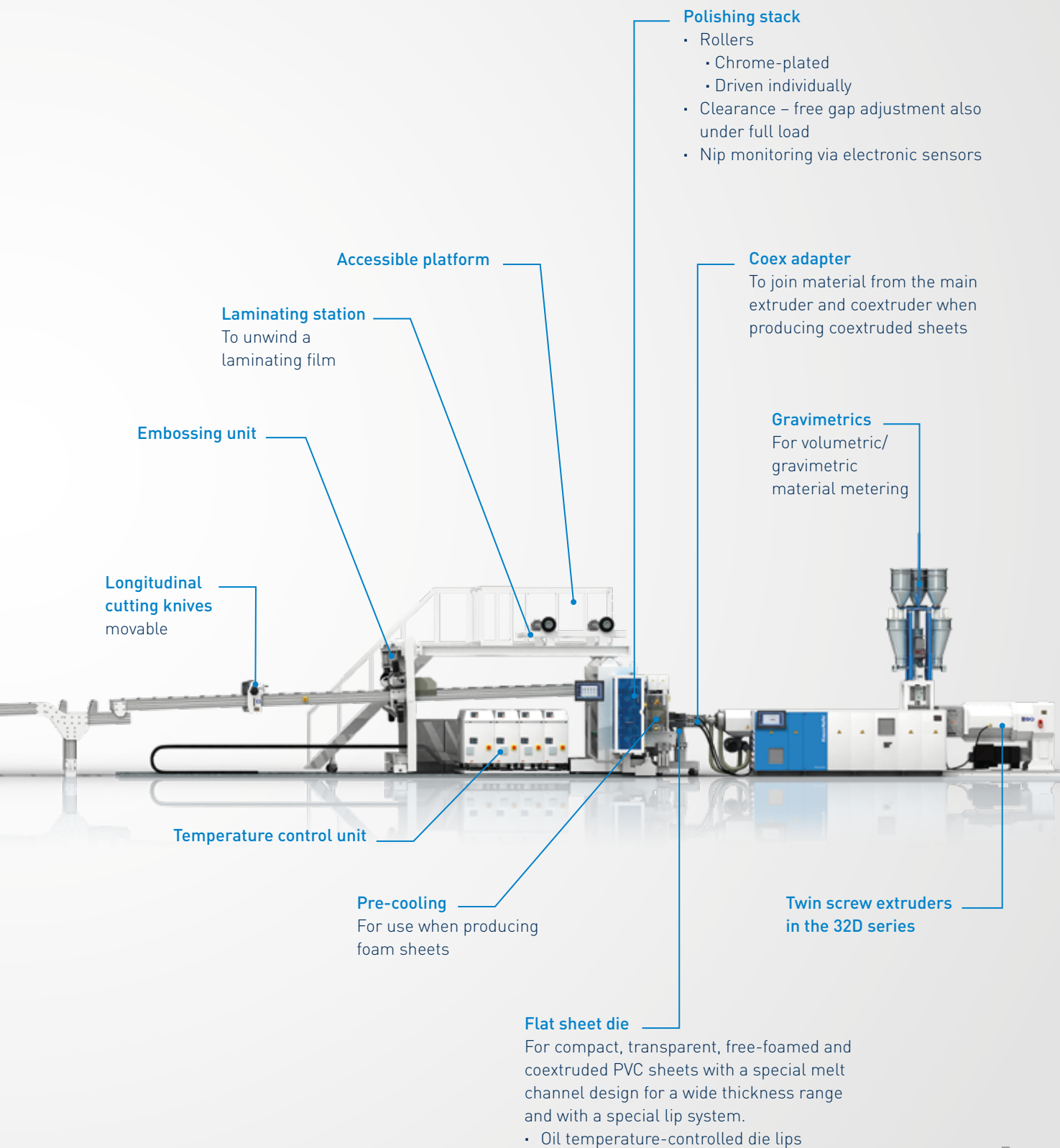
## **Your benefits:**

- Low production costs
- Short payback periods
- High-quality finished products

# EVERYTHING AT A GLANCE

## A TOUR OF THE COMPLETE PVC SHEET MACHINE







# SETTING STANDARDS IN PVC SHEET PRODUCTION

## 32D TWIN-SCREW TECHNOLOGY



Whether you want compact, coextruded or integral foam sheets, KraussMaffei provides you with technologically proven, highly cost-effective and, above all, complete system solutions.

#### **The best machine solution for every production requirement**

32D technology has long proved itself in profile extrusion and is also becoming established in PVC sheet production. While the KMD 164-32/PL guarantees a high output rate with foam sheets, the KMD 114-32/PL and KMD 133-32/PL models have proven successful for the production of deep-drawn, premium quality compact sheets and foam sheets. These two machine types are therefore ideally suited for the most common product applications.

#### **Extensive experience over and beyond extrusion technology**

In order to be able to produce premium quality foam sheets, it is first necessary to have enormous experience of extrusion technology. Secondly, in-depth know-how is required: The dies and downstream units also influence the extrusion process critically. Our many years of experience and continuous optimization of the flat sheet dies allow the use of perfected molds for our customers. The result: Different sheet types can only be produced by replacing a die lip on a sheet die.

#### **Coextrusion technology for new products and new markets**

Coextrusion technology is opening up many opportunities to develop new product characteristics and tap new markets: for example through exact, reproducible coloring, high mechanical properties by means of a sandwich structure, varied surface design and cost-saving use of materials. The KMD 63 K/PL, KMD 75-26/PL and KMD 90-32/PL models are available as coextruders in sheet production.

#### **Integral foam extrusion with a concept for sheets up to 2 meters wide**

With our concept for integral foam extrusion (Celuca), your production process benefits from a number of excellent advantages: High output rates, supply of the complete machine from a single source, all engineering work is performed by a team of experienced experts, and state-of-the-art simulation of the cooling process for optimum design of the product cooling zone.



*Efficient automatic sheet die*

# OPTIMIZED SCREW GEOMETRY AND PRECISE TEMPERATURE CONTROL ENSURE OUTSTANDING MELT HOMOGENEITY

Benefit from the enormous advantages of our sheet extrusion systems to ensure your competitive edge in business.

## Process engineering concept of the 32D sheet extruder

One thing is required, in particular, to produce premium quality PVC sheets: Excellent melt homogeneity. With the 32D twin-screw sheet series extruder, this is achieved and permanently maintained by means of two measures: Firstly through optimized screw geometry and secondly through precise temperature control of the processing unit. The screws are molybdenum-welded as a standard feature, and are chrome-plated and externally temperature-controlled along their entire length. This ensures optimum process control and melt flow control. A constant vacuum is created by an optimized vacuum unit with a double solids separator. The system is easy to clean and has a very user-friendly design.

The barrels of nearly every twin screw extruder are air-cooled by aluminum half shells, only the barrel of the KMD 164-32/PL is also partly cooled with water. In the 32D sheet extruders the screw flights extend into the adapter in order to prevent material stagnations. In addition to the twist adapter, whose functional principle ensures perfect quality of the sheet surface, an open adapter and a spider-channel adapter are also available.

## YOUR BENEFITS:

- Optimum melt homogeneity
- Very wide processing window
- Very high output
- Extremely constant product quality
- Longest possible service life
- Fast payback of your investments



*Screw outlet to adapter*



*Vacuum pump with screw outlet to adapter  
of double separator*



# 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)*

# FIRST ENCOUNTER

## A TOUR OF THE 32D TWIN-SCREW SHEET SERIES EXTRUDER

### Gearbox

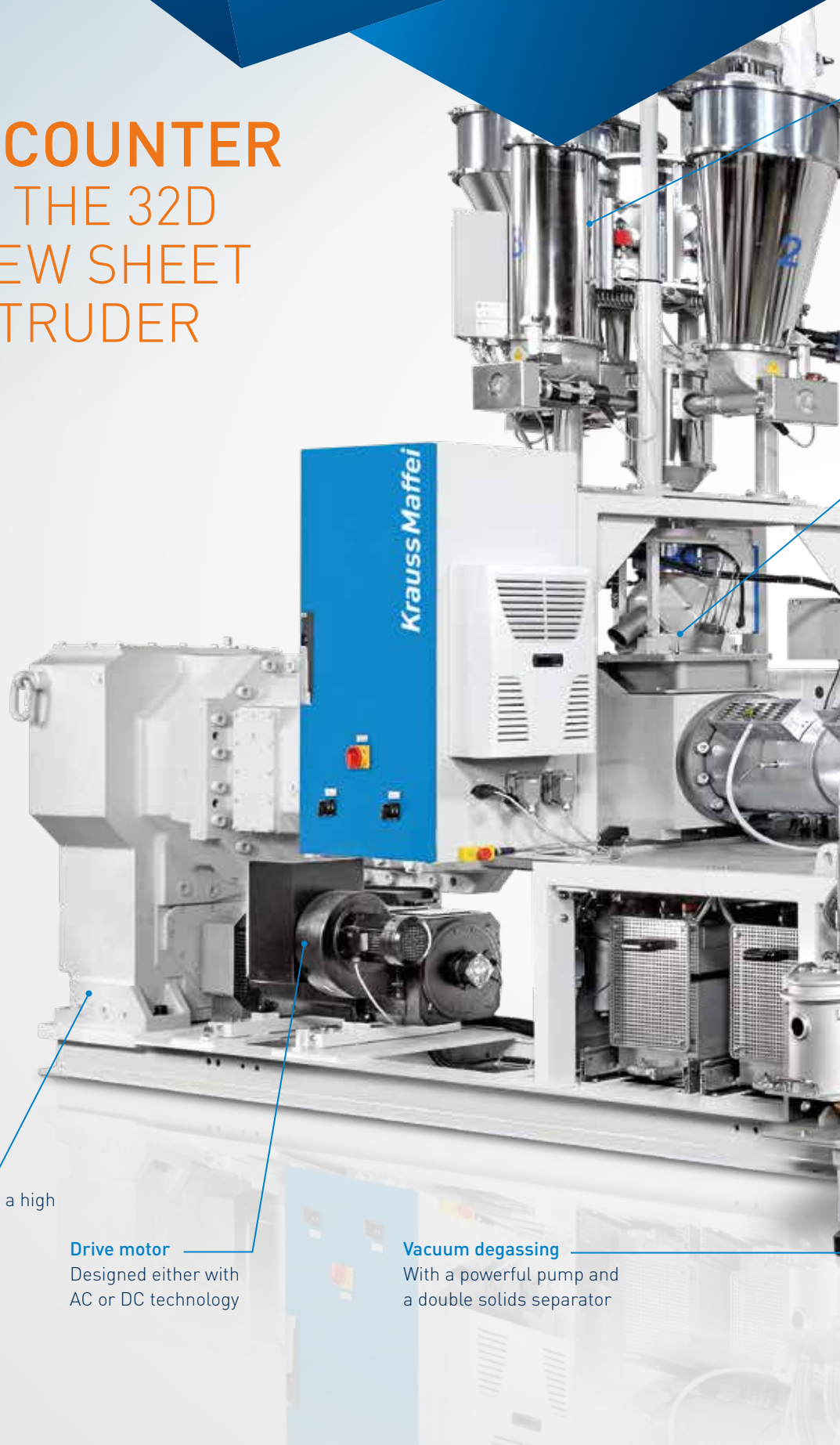
Robust and with a high torque

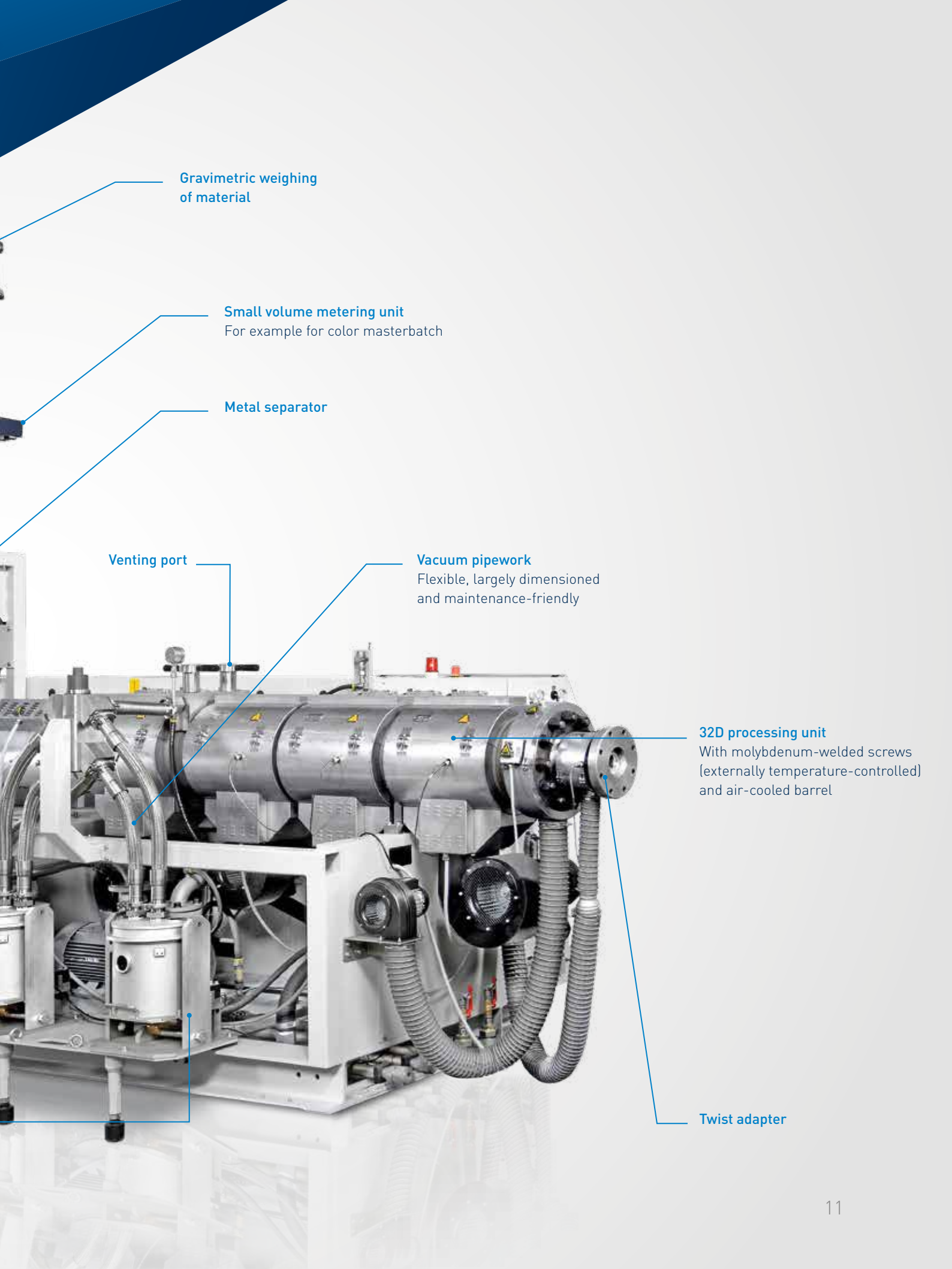
### Drive motor

Designed either with AC or DC technology

### Vacuum degassing

With a powerful pump and a double solids separator





**Gravimetric weighing  
of material**

**Small volume metering unit**  
For example for color masterbatch

**Metal separator**

**Venting port**

**Vacuum pipework**  
Flexible, largely dimensioned  
and maintenance-friendly

**32D processing unit**  
With molybdenum-welded screws  
(externally temperature-controlled)  
and air-cooled barrel

**Twist adapter**





# A WIDE VARIETY OF PRODUCTS FOR DIFFERENT APPLICATIONS – PRODUCED ON 32D TWIN SCREWS

## You can manufacture many different products on KraussMaffei systems

- Compact opaque U-PVC sheets: 0.8–30 mm; transparent: 0.8–20 mm
- Foam PVC sheets: 1–25 mm; (32 mm on request) density range 0.55– 0.75 g/cm<sup>3</sup>, depends on sheet thickness
- Light foam PVC sheets: 3–12 mm density 0.45–0.5 g/cm<sup>3</sup>, depends on sheet thickness
- Coextruded foam core sheets: 2–12 mm (> 12 mm on request), either with 1 or 2 compact external layers; 0.2–0.6 mm
- Coextruded deep-drawable compact sheets; 1–4 mm
- C-PVC compact sheets 1–13 mm; (> 13 mm on request)
- Integral foam sheets 8–20 mm; (> 20 mm on request)
- PVC-P films: 30–500 µm with one and multiple layers

## Optimum product characteristics

Compact PVC sheets, foam PVC sheets and coextruded foam sheets are primarily characterized by:

- High surface hardness
- Very high stiffness
- Good deep-drawing capability
- Corrosion resistance
- Low production costs
- Low water absorption < 0.5%
- Low heat conductivity
- Vibration dampening
- Can be equipped to prevent static

Integral foam sheets are characterized, in particular, by:

- Light weight despite a hard surface
- Smooth surface
- Low thickness tolerance
- Maximum flatness

C-PVC sheets are primarily characterized by:

- Extremely high chemical resistance
- Extremely scratchproof
- High flame resistance
- Very good mechanical properties even at higher temperatures

## PVC sheets are used in many industries

- Automotive industry: Manufacture of motor homes, trailers and commercial vehicles
- Architecture and furniture: Balconies, architectural cladding elements, shopfitting, panels, shelves, cupboards, door panels
- Construction industry: Formwork, air-conditioning and ventilation ducts, insulating walls, intermediate walls, sidings, corrugated sheets
- Industrial applications: Apparatus construction, machine housings, containers, cold store cladding, thermoforming parts
- Shipbuilding: Interior fitting out, lightweight furniture
- Electrical engineering: Switching cabinets, cable ducts

## Soft PVC sheets and films are used for special purposes

- Medical technology: Blood bags, urine bags, hygiene films
- Offices: Carpet mats, desk pads
- Industry: Flexible gates, strip curtains, covers

## Sheets made of renewable raw materials (WPC and NFC sheets)

The production of premium quality WPC-NFC sheets requires sound knowledge of the extrusion and smoothing processes and customer-specific system planning. Sophisticated application and process knowledge and all engineering operations from a single supplier make KraussMaffei a reliable partner. These products are used in particular in the furniture industry and in facade construction and shipbuilding.



# 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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SYSTEM SOLUTIONS OF PVC



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