2022/2023

bekum*news*

Latest Information for Customers, Partners and Employees

Our widest range of innovation

Discover our new 8-Series with 20 new models from small to large

6 ALL-ELECTRIC SMALL BLOW MOULDING MACHINES

60 - 120 kN

10 ALL-ELECTRIC PACKAGING MACHINES

150 - 500 kN

4 LARGE BLOW MOULDING MACHINES

500 - 3.000 kN

BEKUM

Dear customers, friends and partners of Bekum,

I would like to welcome you to the new issue of bekum*news*.

A lot has happened at Bekum since the last issue. Over the last 3 years, we have been working at full speed on the largest innovation program in Bekum's history and we are proud to present the new all-electric 8-series with an incredible 20 new machine models at the K trade fair in 2022. Never before has Bekum had a more complete machine program, from very small 60 kN all-electric blow moulding machines to large industrial machines with clamping forces up to 3,000 kN. At the same time, the internal complexity is reduced enormously by the fact that this series consists of modular sub-assemblies, which enable shorter delivery times to our customers.

With the sizes EBLOW 208, 308 and 408 Bekum presents the re-entry into the small blow moulding machine market with 60 kN and 120 kN clamping force and a carriage stroke from 280 mm. The production focus of these exceptionally flexible and compact small blow moulding machines is on packaging for the pharmaceutical, cosmetics and consumer industries.

The new EBLOW 508 to EBLOW 1208 form their own modular system for high production volumes, handle bottles and canisters up to 20 L. Particularly noteworthy is the largest packaging machine, the EBLOW 1208D, with 500 kN clamping force thanks to its unique all-electric clamping system, the Bekum e-Twin-Toggle, mould widths up to 1,260 mm and up to 16 cavities per machine side.

In parallel, we will be presenting a newly developed extrusion blow moulding line for large canisters, drums and IBCs in the industrial large blow moulding sector with the XBLOW 50/100/200/300. Our patent-pending hybrid-electric closing system impresses with high speeds and low energy consumption. Especially for this line, our series of HiPEx 36D extruders, which save up to 20 % energy, has been extended by larger sizes, which allow i.e. 220 L L-ring barrel production with HMPE. For the first time, our large blow moulding industrial machine line has incorporated the multi-award-winning packaging machine design, the technology benchmark.

Bekum's company values are based on quality, technology and service. So, I was particularly keen to expand our service department and reorganize it in Austria to enable shorter response and delivery times, as well as offering retrofits and control upgrades. In addition, the digital service business was significantly expanded and further developed. Digital spare parts catalogues directly in the machine control, modern remote maintenance, software applications and the use of AR technologies (augmented reality) are intended to increase customer benefits and plant availability.

Furthermore, with our Bekum Control 8.0, we are the first blow moulding machine manufacturer to offer Health & Condition Monitoring for extrusion blow moulding machines. Using artificial intelligence, 1,500 measuring points are evaluated every second. In this way, deviations and wear can be made visible before a component fails or there is a loss of quality in the article. We will show you how this works at our stand.

Unfortunately, my father and founder of the Bekum Group, Gottfried Mehnert, cannot be at this year's K trade fair to see the many new products. He passed away peacefully on 01 August 2022 surrounded by his family and I would like to take this opportunity to thank you very much for the great sympathy from all over the world.

With warmest regards

Michael Mehnert
Managing Director Shareholder

CONTENT

Bekum at the K2022

An overview of the program and topics on-hand during our trade fair

Presentation of the new 8-series

- New machine concept
- All-electric small-stroke blow moulding machines with 60 - 120 kN
- All-electric long-stroke blow moulding machines with 1.280 mm stroke
- New all-electric clamping drive e-Twin-Toggle with 500 kN

Digital service

- Digital spare parts catalogue
- Remote maintenance
- AR Service

Industry 4.0 & AI

- Health & condition monitoring
- Predictive maintenance to prevent production losses
- Increase production, continuous article quality, reduce costs

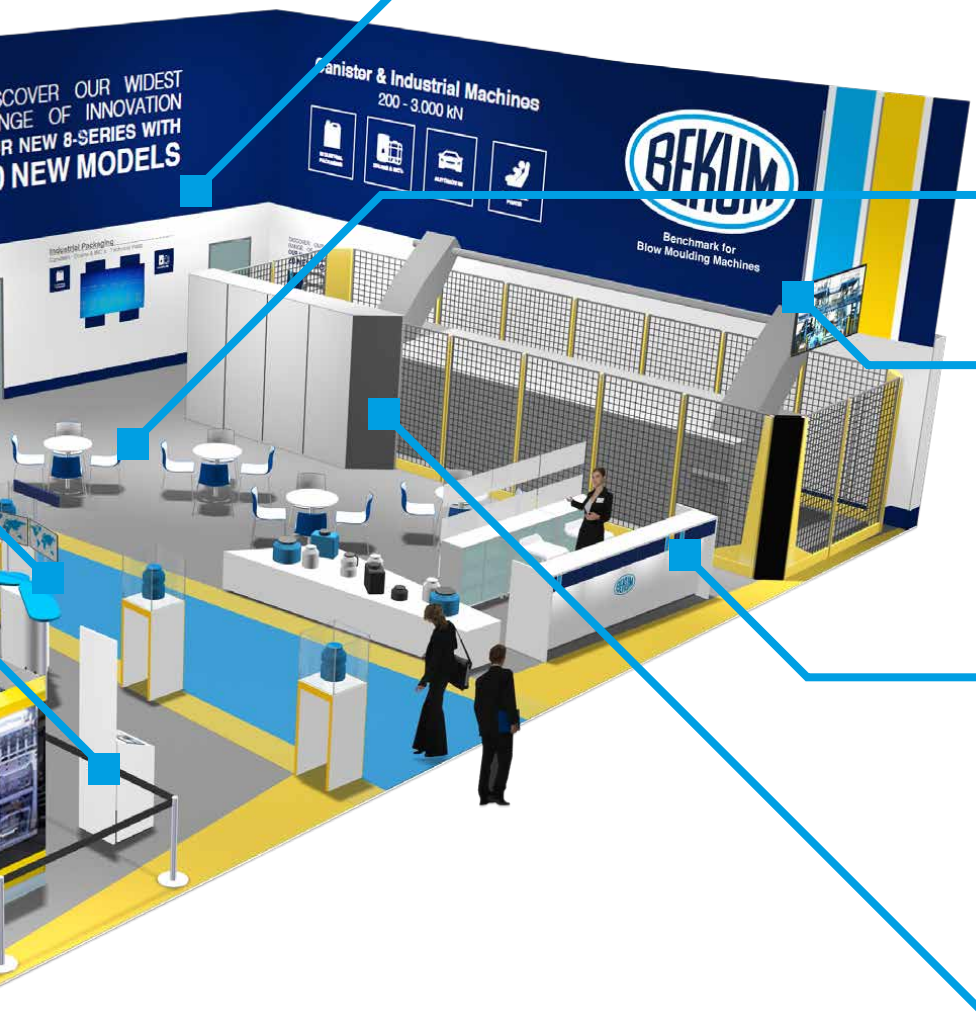
LIVE

Presentation EBLOW 408D

- Presentation 4 x daily
- 2 x 4-fold production
- 400 ml soap dispenser bottle
- HDPE with 50% PCR

8 SERIES

DISCOVER OUR WIDEST RANGE OF INNOVATION
OUR NEW 8-SERIES WITH
20 NEW MODELS



Book your appointment

Communication area

Presentation of the new Large Blow Moulder XBLOW-series

- New blow moulding machines with 500 - 3.000 kN
- New machine concept for canisters, drums & IBC's

Info point - Welcome to our stand

- In hall 14, booth C03
- You can reach us at +49 30 7490 2022
- or by mail at messe@bekum.com

LIVE

Presentation XBLOW 100 drum machine

- Demonstration several times a day
- New energy-optimized clamping concept with 1,000 kN
- Modular construction
- Modern design

EBLOW 208 - 408

For the first time Bekum will showcase the all-electric small blow moulding machine EBLOW 408D at K-2022

Black and yellow dominates the look of the brand new EBLOW 408D small blow moulding machines, symbolizing the performance and quality of the entire platform with its outstanding, award-winning design.

The EBLOW 208, 308 and 408 sizes form a self-contained modular system within the 8-series platform and are available as single-station (S) and double-station (D) machines. The small blow moulding machine series closes the gap in this segment, enabling Bekum to cover the complete range of applications for smaller packaging with its new 8-series.

The production focus of these exceptionally flexible and compact small blow moulding machines is directed at smaller packaging for the pharmaceutical, cosmetics and consumer industries.

The machine concept

The new all-electric machines are equipped with new high-performance components that have been tried and tested. With clamping forces of 60 to 120 kN and a calibration force of 15 kN for integrated top calibration, the most demanding requirements can be achieved.

In addition to the established C-frame for the clamping unit, which provides optimal clamping platen parallelism, these machines include high-efficiency electric drives, HiPEx 36D extruders and Bekum extrusion heads with spiral distribution technology.

Optional equipment such as:

- Spear or hot knife means that an optimum solution for parison separation can always be created.
- A punching device attached to the side of the clamping platen cleanly separates the flash from the container.
- Bottles are deposited onto a common article conveyor at the rear of the machine by means of a linear take-out device.
- or calibrating and neck cooling, blowpins with Bekum's proven recirculating air method are used; however, the flexible machine concept also allows the use of the customer's own blowpins.

New maintenance and disassembly concept

Opening the two front doors provides easy access to the head and mould for maintenance and disassembly purposes. Sufficient ground clearance has been provided underneath the lower connecting beam of the front gates to allow the forklift's wheel arms to retract.
The EBLOW 208 – 408 sizes are equipped with quick-release levers on the rear clamping platen as standard. To shorten changeover times even further, the machines can be operated with a double-sided mechanical quick-change system from a renowned supplier.

Pack and Go concept

Additionally, these small blow molding machines are designed to ensure that it is possible to lift and deliver the machine into a standard transport container as one complete unit. Installation and commissioning times are reduced to a minimum by this Pack and Go assembly concept.

Energy efficiency class 10

Bekum uses energy-saving drives that feed their braking energy back into a DC link, allowing it to be used in the extruder drive, a permanent consumer. This reduces the effective energy consumption for carriage and clamping plate movement to about 1 kWh per operating hour. In combination with the new energy-optimized HiPEx extruders, this makes a specific energy consumption of less than 0.29 kWh/kg possible – and this exceeds to the most efficient Class 10 according to EUROMAP 46.1.

Innovative control system BC 8.0

This intuitive control system is fully available for the small blow moulding machines. Among other features, it is Industry 4.0-capable, can visualise energy consumption on the HMI and has a 24“ full HD display.

K-Show demonstration with recycled plastics

This year, on the trade show machine, Bekum is processing an HDPE from SABIC, which is made from 50 % recycled plastics. Bekum produces packaging on the new 8-series machine design, which provides consumer packaging for detergents, cleaning products, shampoos and cosmetics.

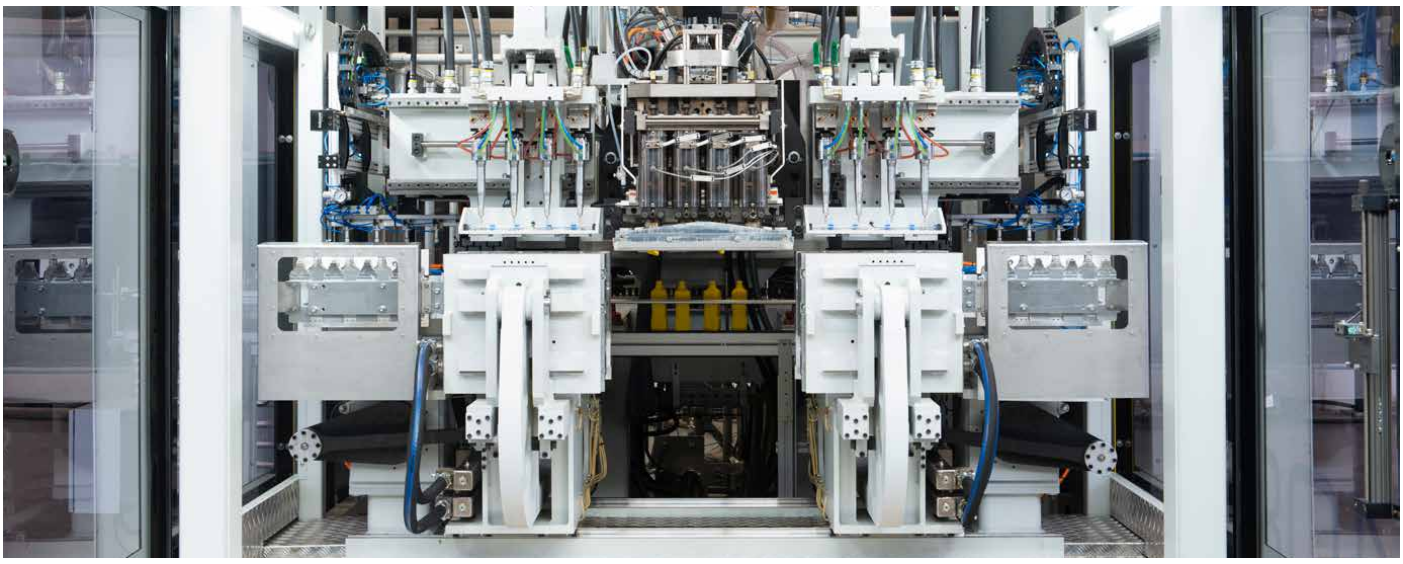
Technical specification

Single and double stations	EBLOW 208S EBLOW 208D	EBLOW 308S EBLOW 308D	EBLOW 408S EBLOW 408D
Mould width, max. (mm)	**270**	**370**	470 **510**
Mould length, max. (mm)	**350** 400	**350** 400	350 **400**
Mould thickness, max. (mm)	**2 x 100** 2 x 130	**2 x 100** 2 x 130	2 x 100 **2 x 130**
Carriage stroke (mm)	**280**	**380**	480 **520**
Mould opening distance (mm)	**180** 220	**180** 220	180 **220**
Closing force (kN)	**60** 120	**60** 120	**120**
Production examples	2 x 100 3 x 70	3 x 100 4 x 70	4 x 100 6 x 70

Technical modifications reserved S = single station D = double station **Bold** is Standard

Advantages at a glance:

- Compact, fully electric small blow moulding machines built with Bekum quality
- Economical production for consumer packaging, cosmetics and pharmaceuticals
- Proven C-frame clamping unit and quick mould change
- Low Small footprint and with good accessibility
- Highly efficient electric drives and highest precision from the 1st production shot
- High performance HiPEx 36D melt-homogenous extruder with -20% energy consumption
- Spiral mandrel extrusion heads in mono and 3-layer for PCR and fast colour changes
- Intuitive BC 8.0 control with AI monitoring for continuous article quality and highest machine availability
- Exceeds energy efficiency class 10 according to Europmap 46.1 (<0.26 kWh/kg) *depending on production configuration (demonstration value of fair production)



EBLOW 508 – 1208

New blow moulding machines up to 12 L

With the newly developed 8-series machines, Bekum is setting the benchmark for future extrusion blow moulding machines. The 8-series is characterized by numerous innovations and technologies.

The modular 8-series extrusion blow moulding machines for flexible configuration include the machine sizes 508, 608, 708, 808, 1008 and 1208, all of which are available as double-station machines. The 508, 608 and 708 sizes are also available as single-station models.

Award-winning machine design

Visually, the machines in the 8-series feature the functional machine design first presented by Bekum at K-Show 2019 with a modern appearance. The machine front has been designed to be very ergonomic, creating open access and a large viewing area.

Intuitive machine control

The Bekum Control 8.0, has a portrait-oriented 24“ full HD touch screen display and is ID 4.0-capable. In line with the established Bekum operating concept, the user interface can be used intuitively. A visualization of throughput values and information about energy consumption are provided on a dashboard for individual configuration as part of the standard equipment package.

Patented mould clamping system

At the heart of the clamping units in the new EBLOW 8-series is the mould clamping system developed and patented by Bekum. It guarantees outstanding closing platen parallelism, as well as uniform clamping force distribution. It is important to Bekum that the clamping units ensure a short clamping force build-up time in order to meet the process engineering requirements of all blow-moulded articles. To this end, a new and fully electromechanical clamping drive system called e-Twin-Toggle has been developed for the 8-series machines.

New e-Twin-Toggle clamping drive

The e-Twin-Toggle double crank drive system, offered exclusively by Bekum, is available with clamping forces from 150 - 500 kN. Due to the unique bearing of the joints, there is almost no wear-inducing friction and ensures an exceptionally long service life. Bekum has automatic mould thickness adjustment as standard. This adaptive adjustment ensures high process stability and therefore consistent article quality. Damage to the locking system and the mould is ruled out by constant monitoring.

This exclusive e-Twin-Toggle drive system ensures short opening and closing times, as well as very fast closing force build-up times of less than 100 ms. The fast-acting, precise application of force during the pinch-off process when closure of the blow mould is completed, can significantly improve the article quality of the blow moulded products. Even materials requiring an exact production process, such as PP, PC and PET, benefit from the perfect formation of pinch-off seams, which is an important prerequisite for clean trimming results.

Electromechanical drives for very short dry cycle times

The movement axes used for the clamping units and to open and close the mould, features an electromechanical drive as standard. The braking energy of the carriage movement is fed back into the system. Depending on the machine size, the drying cycle times are between 1.8 and 3.7 s.

The axes for bobbing the extruder platform, the take-out devices, and for the calibrating and punching

systems and their precise, powerful movements are also electromechanically driven.
The wall thickness control system can utilize either an electromechanical or hydraulic drive. Calibration, punching and mould-function systems can also be optionally equipped with hydraulic drives. Calibration systems are offered in versions for calibration force classes 20 and 40 kN.

Modular Design

In the machines, which are generally equipped with central lubrication systems, standardized and modularized assemblies are used as reproducible groups that can be kept in stock and be pre-assembled. The basic objectives are, on the one hand, to achieve short delivery times and, on the other hand, to be able to offer an individual, efficient machine configuration for every requirement. Even with faster delivery times, the breadth and individuality of Bekum's machine portfolio remain ensured.

Advantages at a glance:

- Modern and functional machine design with generously sized access and viewing area with reduced footprint
- Patented C-frame clamping unit for outstanding platen parallelism and low wear on moulds
- All-electric e-Twin-Toggle clamping drive up to 500 kN with an unmatched bearing design for maximum service life
- Highly efficient electric drives enable precision from the 1st shot and very short dry cycle times
- Intuitive Bekum Control 8.0 control with AI monitoring for continuous article quality and highest line availability
- High-performance HiPEx 36D extruder with homogeneous melting and process stability with -20% energy consumption
- Modern simulation-supported spiral mandrel extrusion heads in mono and 3-layer for high melt and temperature homogeneity and short colour changes
- Quick mould change in less than 15 minutes per side
- Optional three-station take-off enables special cooling and correction of canisters up to 20 L
- Energy efficiency class 10 according to Euromap 46.1
- Powerful, flexible and durable complete system from a single source for packaging, handle bottles and canisters
- Worldwide service – personal help-line, digital and on-site

GERMAN DESIGN AWARD WINNER 2022

EBLOW 508S/D

The machine size with the most compact clamping platen is the EBLOW 508S/D. Its platen dimensions of 500 × 500 mm, which allow maximum mould heights of 550 mm (with overhang of 50 mm) and maximum mould widths of 560 mm, make the 508S/D as the ideal machine for the production of canisters up to 10 L. The first EBLOW 508D was already sold in the spring of 2022 and is equipped for canister production with the Bekum 3-station removal system.

Straightforward mould assembly in < 15 minutes

Moulds are mounted on the respective closing platens by means of mechanical couplings. For mould changing, all machines offer excellent access from the front, and the safety gates can be fully opened. A mould for (dis)assembly can be removed in the extrusion position from the centre of the machine by means of a hoist. The supply and return flow of the cooling water is provided in the standard version from the bottom of the mould. A mould change can be carried out safely in less than 15 minutes per side.

Article Take-Out Systems

The machines are equipped with linear transport systems for article removal as standard providing a small footprint compared to those with other take-out systems. The articles are removed in the punching position before linear transport to the rear of the machine occurs, where they can optionally be cooled or checked for leaks. At the rear of machine, the articles are placed on a suitable conveyor belt for further transport.

As you would expect from Bekum, the machine types 508, 608, 708 and 38, which are particularly suitable for canister production, can also be optionally equipped with 3-station removal, as well as with a bottom calibration station. The Bekum 3-station removal allows special cooling and correction measures to be carried out, enabling the production of canisters of the highest geometric quality.

Extrusion die heads with spiral mandrel

Key components are designed, manufactured and assembled in-house at Bekum. This includes the extrusion system with head and extruder. The new spiral mandrel die heads developed by Bekum offer short, geometrically uniform flow paths with optimal melt and temperature homogeneity. These heads are characterized by the highest quality, reliability and ease of operation. The decisive advantage is the high uniformity of wall thickness distribution over the full circumference of the hollow container. Compared to heart-shaped mandrel heads, they result in an improved container quality while offering the potential for weight reduction at the same time.
Another advantage of the spiral mandrel extrusion heads are the shorter times needed for changing materials and colours. The start-up time for production is decreased by the reduced time and effort needed for set-up and adjustment, thereby reducing the material required.

HiPEx 36D high-performance extruder

The newly developed HiPEx 36D extruders are perfect for use on the 8-series machines. The extruders are mounted on standardized extruder platforms in a modular configuration. This means that optimized platforms are available for machines with mono-extruders, bi-ex and tri-ex equipment, and even co-ex equipment requiring special adaptations. All ensure good accessibility to the extruder drive technology, the electrotechnical hardware and the screen changer.
The new extruders in the HiPEx se-

Technical specifications

Single and double stations	EBLOW 508S EBLOW 508D	EBLOW 608S EBLOW 608D	EBLOW 708S* EBLOW 708D*	EBLOW 808D*	EBLOW 1008D	EBLOW 1208D
Mould width, max. (mm)	**500** 560	**600** 660	**700** 780	**800** 860	**1.060**	**1.260**
Mould length, max. (mm) with mould 50 mm higher than platen	**550**	**470**	**550**	**470**	**550**	**470**
Mould thickness, max. (mm)	2 x 130 2 x 150 2 x 180	2 x 130 2 x 150 2 x 180	2 x 130 2 x 150 2 x 180	2 x 130 2 x 150 2 x 180	2 x 150 2 x 180 2 x 200	2 x 150 2 x 180 2 x 200
Carriage stroke (mm)	**520** 580	620 **680**	720 / **780** 750 / 800	820 **880**	**1.080**	**1.280**
Mould opening distance (mm)	**320**	**320**	**320**	**320**	**320**	**320**
Closing force (kN)	**200** 300	**200** 300	200 **300**	200 **300**	300 **500**	300 **500**
Production examples	2 x 230, 1 x 10 L	6 x 100 2 x 5 L	3 x 230, 2 x 10 L	8 x 100 3 x 6 L	10 x 100 4 x 230 3 x 10 L	12 x 100 16 x 75 4 x 5 L

Technical modifications reserved S = single station D = double station **Bold** is Standard * available from 2023

ries are characterized by process stability, high maximum throughput rates and very good melt homogeneity. When designing extruders, Bekum places particular emphasis on a high degree of energy efficiency. Compared to conventional extruders, the HiPEx concept allows lower melt temperatures and results in an energy usage that is about 20% lower. The use of 36D extruder screws in conjunction with improved mixing zones results not only in high melt homogeneity, but also very good colour mixing.

Highest energy efficiency classification

Bekum installs high energy-efficient synchronous reluctance motors in its extruder drives, which achieve the highest energy efficiency class IE5 (Ultra Premium). Electrical losses are almost completely avoided in the slip-free rotor of the reluctance motor. Heat generation is kept at a very low level. In terms of sustainability and environmental protection, the ferrite magnets used in the rotor in place of rare-earth magnets also represent excellent equipment for extruder motors. For this reason, the 8-series machines are the new benchmark in energy efficiency in class 10 according to EUROMAP 46.1.

EBLOW 1208D

With the EBLOW 1208D, Bekum is, for the first time, offering an electric blow moulding machine for packaging applications with a maximum mould width of 1,260 mm. Together with the numerous equipment variations, this results in a wide-range of applications for up to 2 × 16 cavities. A large variety of different round bottles, bottles with handles and smaller canisters can be produced with outstanding quality on the EBLOW 1208D in multi-cavity production. The clamping force of the EBLOW 1208D is up to 500 kN. In addition, different design options are available for maximum mould thicknesses up to 2 x 200 mm with a maximum mould daylight of 320 mm.

COSMETIC

PHARMA

CONSUMER PACKAGING

FOOD & BEVERAGE

XBLOW-Series 50/100/200/300 – New large blow moulding machines for industrial applications

At this year's K-Show, Bekum will be showcasing the new, patent pending XBLOW 100 clamping concept.

The first time you see a system from Bekum's new Industrial Line, you will see real innovations. Instead of brute industrial force, you will see a uniquely constructed system whose design queues follow the same form as the award-winning engineering of the 8-series shuttle platform.

The centerpiece is the new clamping unit

The heart of this series is the central clamping unit with two diagonal tie bars and a two-stage hybrid-electric closing drive. It consists of a long rapid-stroke cylinder, which enables the platens to be opened and closed quickly, while the large diameter stroke cylinder is responsible for achieving high clamping forces. The closing position of the system can be set individually on the display of the Bekum 8.0 control system, as well as very large variable mould thicknesses, which are not possible with other electric clamping drives of large blow moulding systems. This ensures quick adaptation to their specific requirements. The moulds themselves can be easily and quickly exchanged from the side by means of quick-change plates, and centering devices immediately returning the mould to its original position. As the design of the clamping drive is unique in industrial blow moulding machine applications, it is a patent pending feature.

Modular design for flexible production concepts

The concept of the new Industrial Line is scalable and modular. Whereas the clamping unit is positioned centrally under the platform when accumulator heads are installed, continuous heads require a laterally offset position. A horizontal parison transfer unit supplies the clamping unit with the parison. For different mould sizes, vertical parison transfers can be used to set optimum parison lengths. The article is removed in a horizontal line using grippers that adapt variably to your product, or in a fully flexible manner using a standard industrial robot. The platform is designed for one extruder, but can be extended to three with outriggers bolted to both sides. For even more customized requirements, gantries are available that allow the extruders to be placed on opposite sides of the head allowing for more room for maintenance tasks.

The products that can be produced on the systems can be just as flexible as the machine concept. Whether canisters, IBCs, drums, water tanks or a wide variety of technical parts, there is always a suitable solution. Outstanding technology of the highest quality inside, with a unique and stylish design on the outside – this is the new Industrial Line from Bekum.

Versatile production solutions

The new XBLOW 100 is a flexible high-performance blow-moulding line for drums, L-ring drums and other large-volume containers up to 250 litres. In the Turn Key, Bekum offers everything from the mould, post-cooling and post-processing stations as well as quality assurance from a single source. Three machines in this series have already been sold.

Technical specifications

Single station	XBLOW 50	XBLOW 100	XBLOW 200	XBLOW 300*
Mould width, max. (mm)	800	1.200	1.500	2.200
Mould length, max. (mm)	800	1.500	1.800	2.200
Mould thickness, min/max (mm)	**2 x 250** 2 x 350	**2 x 300** 2 x 470	**2 x 400** 2 x 650	**2 x 500** 2 x 700
Mould opening travel at max. mould thickness (mm)	700	850	1.200	1.200
Closing force (kN)	500	1.000	2.000	3.000
Production examples	60 L	250 L	1.000 L	> 1.000 L

Technical modifications reserved **Bold** is Standard * available from 2023

Advantages at a glance:

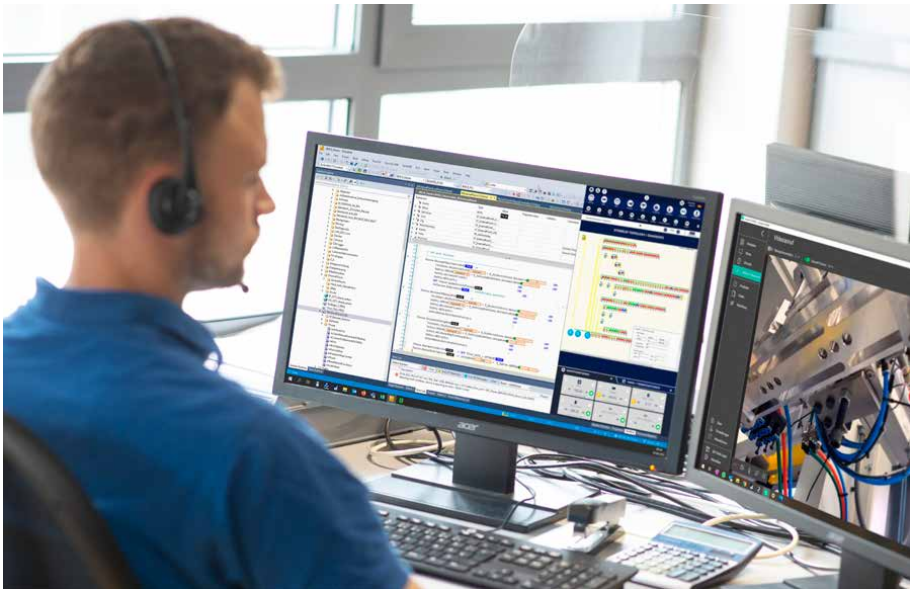
- Flexible and modular industrial blow moulding systems with high accessibility and flexible production solutions for large canisters, drums and IBCs
- Unique hybrid electric clamping concept up to 3,000 kN, fast, energy-saving and with unique mould thickness variance (patent pending)
- Rapid stroke movement electrically and hydraulically. Hydraulic mould functions and accumulator heads driven by variable-speed hydraulic power unit.
- Can be equipped with bottom calibration, blowing and spreading blow pins, as well as horizontal and vertical parison transfer devices.
- Complete production solutions including moulds, robots, post-processing or post-cooling stations and material handling from a single source, i.e. for 220L ring drums.
- Intuitive Bekum Control 8.0 control with AI monitoring for continuous article quality and highest line availability
- High-performance HiPEx 36D extruder with homogeneous melting and process stability with -20% energy consumption
- Modern simulation-supported spiral mandrel extrusion heads, as accumulator head and continuous for mono to co-extrusion. Melt and temperature homogeneous with short colour change times

Today’s assistance systems optimize production and save costs.

Bekum will demonstrate how this works at its booth at the K-Show 2022.

Whether Industry 4.0, artificial intelligence (AI) or predictive maintenance: Digital support systems provide effective and sustainable assistance for the productivity of machines and can optimize production processes. With their help, it is possible to increase the efficiency of production while simultaneously reducing costs.

At our K-Show 2022 booth, Bekum will present its digital support systems that effectively assist the machine operator in the new EBLOW 8-series machines.



Industry 4.0

In the new 8-series, Bekum has increased the standardized interfaces and sensor technology of the machines. This makes it optionally possible to measure the energy requirements, the flows of cooling water and blowing air and their temperatures, as well as the hall temperature and humidity. These continuous supply media measurements are clearly displayed on the dashboard of the ID 4.0-capable BC 8.0 machine control system, with the user being able to customize its layout. The operator has an overview of all consumption media “that my machine currently needs.” Access to historic data is also configured.

AI: Health and condition monitoring

Every operator is familiar with this experience: during daily plant operation, unforeseen disturbances and fluctuations occur, for example in raw materials or process parameters. Often these changes are noticed when it’s too late. Every second of production that elapses in this situation can lead to higher scrap and expensive follow-up costs.

With our new AI platform, this problem can be easily circumvented. By fully automatically compiling all sensor data, evaluating and comparing with past data, changes in drives or heating elements, for example, can be identified in real time. At various levels of the data collection process, these machine health conditions are summarized and displayed as graphs by Industrial Health Scoring. The operator simply sets the required thresholds for key operating parameters; with an alarm being immediately triggered if the values exceed or fall below the thresholds. Displays of individual data streams can be shown in dashboards to suit customer requirements, and comparisons can be made between time periods, batches, the same machines or components. Automatically calculated

Advantages of artificial intelligence:

- 1,500 measurement data are evaluated per second and analysed for deviations
- Early detection of deviations and production failures
- Increases plant availability and production safety
- Monitoring of all production parameters ensures article quality

KPIs are used to determine the most important key figures. The export of user-defined data sets is guaranteed.

Predictive maintenance
In addition to ensuring that maintenance cycles can be planned, health and condition monitoring ensures additional production reliability by providing early warnings about performance deviations. This allows a period of unplanned production downtime to be avoided through predictive maintenance. Experienced service teams from Bekum ensure smooth, time-saving support including troubleshooting and maintenance. This can be offered with a specialist in person on-site, or virtually in real time without travel by using AR glasses, a smartphone or tablet – individually and adapted to cater to the operational performance of the blow moulding machine and its needs. Predictive machine inspections and maintenance lead to operational reliability by minimizing downtime.

Bekum Control 8.0 – the common control platform

Bekum Austria and Bekum America standardize the control system

The Bekum Electrical Engineering departments in Austria and the United States have teamed together to further enhance the features and performance of the Bekum Control 8.0 using Beckhoff control platform in US-build blow moulding machines.

The newly developed 3 HMI software is a Web based solution which allows our programmers limitless opportunities. These include, for example, better integrability of third-party components.

For the customer the new software combines the latest versions of hydraulic motion and electric axis control libraries into one, while using the most advanced algorithm.

This improves the overall motion control of the machine – with faster speeds, smoother movements with less dynamic forces and torque which reduces energy consumption.

Additional features are finger touch control for parison programming, 3D viewing of the extrusion head / extruders for temperature adjustments and a topology view of the entire bus structure for improved diagnostic capabilities.

This successful partnership within the global Bekum organization improves the control and precision of our blow molding machine technology, therefore enhancing the customer's product quality, productivity and overall efficiency.

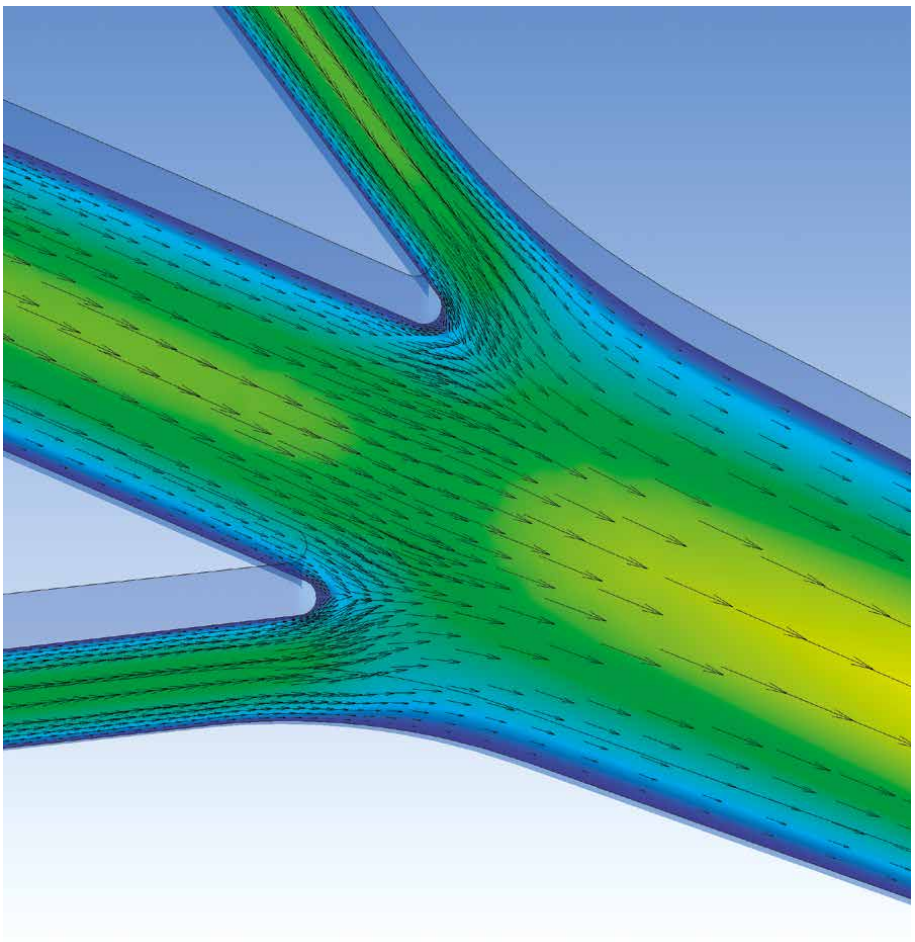
Special features:
- 24“ full-HD display in portrait format
- Create your own dashboard
- Intuitive user interface
- Industry 4.0 capabilities
- Graphical overhaul of the user interface
- Improved menu navigation
- New, practical functions
- Display of throughput and energy consumption

Tri-Ex development in extrusion technology

Numerical design methods for new applications

With the launch of its new machine series, Bekum is adapting its portfolio of extrusion heads. The demand for 3-layer heads for processing PCR and regrind for the production of drums and as a compact retrofit package for mono machines including small thin-film extruders is increasing. Bekum is developing a suitable solution specifically for these needs.

Customer requirements are being implemented with the help of the latest numerical development methods in plastic simulation. Using melting curves for the suitable raw materials (MFI range), the perfect screw length and flight geometry can be calculated. In addition, particle simulations are used to optimize the mixing behaviour.
This homogeneous melt and the optimally designed helix geometries make thin outer and inner layers possible for uniform coverage of regrind and PCR. The flow channels are also analyzed and optimized using 3D-CFD simulations. For example, the convergence of the 3-layers is designed to suit the layer distribution.



3D simulation for analyzing the material flow in the extrusion head

UPGRADING & CONVERSIONS

3-layer tri-extrusion heads with vertical extruders

- Latest multilayer head development
- Especially for retrofits of existing mono machines
- Tri-Ex heads with vertically arranged extruders are space-saving
- Spiral mandrel produces optimum wall thickness distribution

DRUMS & IBC´s

3-layer Tri-Ex extrusion head for the production of 220 L L-ring drums

- New development for XBLOW 100 machine for drums
- For the production of 3-layer 220 L L-ring drums
- Tri-extrusion with high output rates

Tri-Ex Benefits:

- Cost savings with reduced usage of colour concentrate, as only the outside layer needs to be coloured
- With 3-layers, PCR can be sandwiched between virgin layers and assures no contact between PCR and container content
- PCR imperfections and inconsistencies are embedded between virgin layers and avoid production loses

Tri-Ex-Technology: Bekum's Spiral Flow Technology Meets Customer's Demanding Sustainability Goal!

MarCon Inc. www.marConSolutions.com Kansas City, MO. approached Bekum with an opportunity to build a 3-layer HDPE All-Electric double station blow molding machine for the 12-cavity production of thin-walled HDPE wide mouth wipes containers. In addition, the produced 3-layer wipes canisters needed to match the appearance of an existing mono-layer canister while burying mixed color PCR (grey) at a 25% or higher effective loading in the middle layer.

Technical Challenges:
With a nominal bottle wall thickness of only 765µm (.030") and an estimated 35% process regrind (including blow dome) to be reused in the middle layer, how do we achieve the desired color coverage in the outer layer and still accomplish the 25% effective PCR loading in the middle layer?

Solution:
Bekum accepted the challenge based on the "State of the Art" All-Electric EBLOW 407DL and our proven Tri-Ex (3 layer) Spiral Flow Head Technology.

Spiral Flow Head Design Criteria:
- Outside layer thickness to provide adequate color coverage = nominal target 25% of total wall
- Middle layer thickness = nominal target 60% of total wall
- Inner layer thickness = nominal target 15% of total wall

Optimized Effective PCR Loading

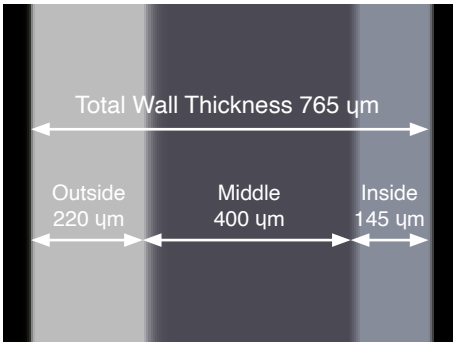
$$PCR\ \% = \left\{1 - \left(\frac{G}{N}\right)\left(\frac{I+O}{T}\right)\right\} x\ 100 = 27\%$$

T = Total wall thickness = 765 µm
I = Inner layer thickness = 145 µm
O = Outside layer thickn. = 220 µm
G = Gross bottle weight = 102 gr
N = Net bottle weight = 67 gr

Results:
After layer structure optimization and masterbatch performance evaluations, the color coverage over the grey PCR middle layer matched that of the mono-layer version without PCR.

Bekum's spiral flow technology achieved extremely thin layers with precise circumferential wall thickness uniformity and the resultant round bottle concentricity was remarkable.

Most importantly, this thin-walled canister achieved its sustainability goal with a final PCR effective loading of 27%!



Contours & Containers

With “Contours and Containers”, Bekum is pursuing a complete approach to customer consultations for extrusion-blown containers.

We start with your concept and offer a feasibility study over the development and design phase of a container with our partners. Using FEM, extrusion simulation and 3D prototyping, we can identify weak points or challenges at an early stage. This allows us to shorten the implementation phase for the new product and expedite your time to market.

Together, we design your product optimally for your requirements and needs, also factoring in the requirements of sustainable and efficient production. As a result, you can produce your products with reduced material input and lowest energy demand.

Taking ideas and turning them into actual production processes as a team – that’s the goal of “Contours and Containers”!

Focus on the Circular Economy with Biopolymers

If you have read industry publications or attended tradeshows recently, there is almost certainly a mention of recycling, the circular economy, and sustainability of plastics. One of the solutions that is gaining attention is the use of biopolymers to replace synthetic polymer materials especially for single use containers that if not recycled, end up being discarded.

Bekum’s first exposure to blow moulding biopolymers happened 10 years ago. At that time, we were processing HDPE made from sugarcane rather than fossil fuels on our machines. Although not reliant on fossil fuels to manufacture, the material chemically is identical to HDPE and needs to be mechanically recycled with traditional materials.

Currently, there has been a more focused effort on creating materials that are biodegradable and once decomposed, leave no harmful remains or byproducts in the environment. The ecological goals being either materials that can be composted at home or do less harm to the environment either in a landfill or if not properly disposed of. Both options offer a sustainable solution to reduce the amount of plastic waste in our world.

Although some processual challenges remain, Bekum has been actively working on implementing these materials into the blow moulding process. Many of Bekum’s extrusion blow moulding technologies helped to facilitate favorable testing. To date, Bekum has successfully sampled several different material types with good results.

Bekum sees itself as part of the solution in developing new biopolymers, enabling their future processability and suitability for production.

Handle bottles from the laboratory made with biopolymer

Obituary
Gottfried Mehnert passed away peacefully surrounded by his family on August 01, 2022 at the age of 87.

The Bekum Group mourns the loss of its company founder and the plastics industry loses an outstanding personality who, with his inventiveness, decisively changed extrusion blow moulding over decades and left a lasting mark on it.

Gottfried Mehnert was a pioneer in plastics technology. At the age of 21, he developed his first blow moulding machine and, with his innovations and vision, has since made a significant contribution to the history of blow moulding technology. As founder of Bekum Maschinenfabriken GmbH (1959 in Berlin), he built up a globally successful group of companies. This is evidenced by more than 18,000 machines delivered in over 100 countries around the world, as well as groundbreaking innovations that have resulted in over 40 patents.

At the time of Bekum‘s foundation, it was common practice to inflate and shape the extruded parison from the bottom. One of the most remarkable inventions of Gottfried Mehnert, which represents today‘s industry standard, is the development of a method to blow the bottle from the top and the world‘s first neck finish calibration, which, for the first time, made the tight closure for bottle caps possible.

His inventiveness paved the way for further pioneering developments in the extrusion blow moulding machine sector. These included PVC blow moulding for edible oil and water bottles in the 1960s and the invention of the world‘s first double-sided shuttle machine, which was first presented at the ”K“ plastics trade show in Düsseldorf in 1963.

In the 1970s, the well-known co-extrusion process, consisting of 3-layers, became a 6-layer co-extrusion through further development by Mehnert. It was the 6-layer co-extrusion that opened up new markets for oxygen-sensitive products and diffusion-tight fuel tanks. Further inventions, such as tie-bar-free clamping systems at the end of the 1980s, made Bekum a world leader in blow moulding technology. Thanks to his unparalleled contributions to the plastics industry, in 2006, he was honored to be inducted into the Plastics Hall of Fame.

Six years ago, Gottfried Mehnert placed the management and shares of the Bekum group of companies in the hands of his youngest son Michael, who has since given the company new energy, such as the new machines of the fully electric 8-series, the award-winning machine design, energy-saving extruders and a modern Industry 4.0-capable control system.

Gottfried Mehnert has stood by and supported his son with his decades of experience in an advisory capacity. Mehnert was a dynamic and tireless pioneer in the service of the plastics industry to the end, to which he dedicated more than 60 years of his life. It was difficult for him to withdraw from active day-to-day business, as he recently remarked again, “Bekum was one of his children.” He was a hands-on managing director who encouraged progress with his competence and broad knowledge and took time for the concerns of his employees.

We are deeply saddened by his death. Our sympathy goes in particular to his wife Heidemarie Mehnert, his sons Matthias, Andreas and Michael, as well as his entire family and friends, who have lost a loving and extraordinary person.

We will honor his memory.

Management and employees of

Bekum Machine Works Ltd.

Bekum Maschinenfabrik
Traismauer GesmbH

Bekum America Corporation

bekum*news*

Latest Information for Customers, Partners and Employees

Bekum Maschinenfabriken GmbH
Kitzingstr. 15-19
12277 Berlin
Deutschland

Phone: +49 30 7490-0
Fax: +49 30 7490-2441

sales@bekum.com
www.bekum.com

Bekum Maschinenfabrik Traismauer GesmbH
Venusbergerstr. 40
3133 Traismauer
Österreich

Phone: +43 2783 4111-0
Fax: +43 2783 4111-109

info@bekum.com
www.bekum.com

Bekum America Corporation
1140 West Grand River Avenue
P.O. Box 567
Williamston, Michigan 48895
USA

Phone: +1 517 655-4331
Fax: +1 517 655-4121

sales@bekumamerica.com
www.bekumamerica.com

NEWS/EN/AS/09.22