



# BEKUM news

2016 /1

## BEKUM Group Reorganization in Europe Prepared for the Future

The restructuring process began in the fall of 2014 with the aim of reorganizing the BEKUM Group in Germany and Austria and was completed successfully as planned in spring 2016. The Production Division, which includes machine assembly, warehouse, procurement, work preparation and shipping, has moved to Traismauer in Lower Austria, about 60 km from Vienna.

Considerable synergies have been achieved by integrating these processes into the existing production of large blow moulding machines at BEKUM Traismauer. Key employees and experts from Berlin relocated to Traismauer, ensuring both continuity and the transfer of knowledge.

**In Berlin, the Sales and Marketing, Development and Design, Service, and Spare Parts Sales divisions have relocated to modern new offices from which they will continue to provide excellent customer service and ensure the technical development of individual customer solutions, supported by employees with many years of experience.**

An investment of over 5.0 million € and the hiring of more than 40 new employees at the Traismauer site have established the conditions required for the successful construction of blow moulding machines of all sizes. New contracts in the field of packaging have been acquired in the Middle East and Eastern Europe, and the first packaging machines produced at the Traismauer plant are now being delivered.

**BEKUM has also had an eventful and exceptionally successful year in the automotive sector. The group com-**



New headquarters Berlin

Plant Traismauer (more than 16.000 m<sup>2</sup>)

**pleted successfully to secure orders for VW in Wolfsburg, Germany, for FIAT in Italy and Brazil, and for fuel tank system subcontractors, emphasising its extensive expertise in the automotive segment.**

Changes have also been made to the group's management. Michael Mehnert, the founder's youngest son, joined the company in 2014 after successfully completing a mechanical engineering degree in Aachen. In spring 2016, he will join the management of BEKUM Traismauer and assist Johannes Schwarz, who has been managing director for many years, in the management and expansion of the business.

The setting up of the BEKUM Asia sales office in Kunshan near Shanghai com-

pletes the reorganization. Andreas Mehnert, who has worked for BEKUM in Berlin for 27 years, has been tasked with managing the sales office and with his experience will ensure the growth of the BEKUM Group in Asia. These are the essential milestones for strategic reorganization, defined by a dedicated BEKUM team in Berlin and Traismauer, for achieving the equally important aims of stability, continuity, progress, and innovation.

**The successful relocation of the production site and consolidation of production departments have prepared BEKUM for the future in the area of packaging machines. At the same time, major commercial success in the automotive field completes the profile of this technology leader and „all-around“ blow molding source.**

# The Most Demanding Application in Blow Moulding

## Production of a Plastic Fuel Tank

The importance of plastic fuel tanks has been growing in the automotive sector for 50 years. About 2/3 of tanks produced worldwide every year are made of plastic, and this proportion is set to increase.

BEKUM has played an important role in the development of plastic fuel tanks since the 1980s and is now regarded as a technology leader with an impressive list of references from which no major car manufacturer is absent. Key advancements in the development of plastic fuel tanks originated with BEKUM. These include:

- Switching from intermittent accumulator head extrusion to continuous extrusion
- Introducing co-extrusion in order to reduce permeation of fuel through the plastic walls
- Integrating fully automatic post-cooling of the blow-moulded tank into the production process to increase production output.

Over the past few years, BEKUM has responded to the increasingly stringent requirements for plastic fuel tanks and the production process with intelligent and customer-oriented solutions:



Clamping unit with ring insert robot



Fuel Tank Blow Moulding Machine BA 220 M Coex

- The flash is separated from the tank in the mould and transported out of the machine by robots along with the tank (IMD - in mould deflashing).
- Automated handling technology conveys all internal tank components (pumps, valves, lines, safety elements etc.) into the open parison on pre-fabricated fixtures; various parison sealing devices ensure that the internal tank components are fixed in the tank in the correct positions so that little re-work is needed. (SIB - ship in the bottle).
- As a rule, robots handle the exact placement of components in the blow mould.
- Automated downstream production and testing steps have become standard in the production of plastic fuel tanks; they include weighing, leak testing, post-cooling, and separation, as well as logging and documenting

Two production concepts for the continuous extrusion of plastic fuel tanks have been developed and put

into practice for single- and twin-station machines:

- The mobile moving closing unit that "collects" the extruded parison from the extrusion head position and, alternatively,
- The stationary closing unit in which the freely suspended, extruded parison is transported.

**BEKUM looks back on extremely successful years in the plastic fuel tank business;** it was able to acquire, deliver and commission major equipment contracts for tank producers, such as FIAT in Italy and Brazil, and Volkswagen in Wolfsburg, Germany.

Due to its innovative strength, continuity and flexibility, BEKUM has attained an outstanding market position in this segment. BEKUM offers excellent service and expertise in process engineering and technical consultation, making BEKUM a recognized partner for the automotive and subcontractor industry.

# New Blow Moulding Machines for Milk Containers

Expansion of HYBLOW 407 DL and HYBLOW 607 DL Series



HYBLOW 607 DL for the 9-fold production of 1000 ml milk containers with production samples

The current BEKUM packaging machine series, with its patented and proven C-frame closing unit available with electrical or hydraulic closing actuators, has been expanded by two additional models. "Multi-cavity" twin-station machines of the hydraulic HYBLOW series were manufactured for the high-output production of milk containers for a Peruvian customer.

For the production expansion, BEKUM delivered a HYBLOW 407 DL for 12-fold/24-cavity production of 200 ml containers with a 860 mm mould width and a HYBLOW 607 DL for 9-fold/18-cavity production of 1000 ml containers with a 1000 mm mould width.

**New feedscrew geometry enabled the optimized processing of viscous HDPE with TiO<sub>2</sub>. The new design of grooved bushing, feeding zone and barrier ge-**

**ometry allows a 20% increase in the output with improved service life and lower wear due to the uniform load distribution over the entire length of the feedscrew. This improves the homogeneity of the compound without an additional, costly mixing component.**

About 70 to 80% of the energy used in a blow moulding machine is consumed in melting and cooling the plastic required for processing. **The optimized extrusion screw lowers the energy consumption required to melt the HDPE to a mere 200 Wh/kg.** At the same time, the drive train of the extruder is also optimized so that the motor runs with the highest efficiency at a nearly optimal operating point. In addition to the energy benefits, the machines also provide exceptional handling with trouble-free produc-

tion start-up, uniform extrusion of the 9-fold and 12-fold parisons, as well as reproducible article quality in terms of wall thickness distribution and weight.

The aluminium moulds used by BEKUM are designed for the shortest cooling times and high output. Using modern, high-speed and precision article measurement technology, immediate feedback can be given to the processing engineers and the mould maker. The efficient organization of the interfaces between customer, mould maker, and BEKUM made a decisive contribution to the success of the project.

# Fully-electric COEX Machines for the Pharmaceutical Industry

## Efficient Cleanroom Production of Sterile Bottles

BEKUM installed and commissioned two BM 304 D machines for the pharmaceutical manufacturer, Boehringer in Ingelheim, Germany, a few years ago as part of an initial „Respimat“ project. This was followed up by two additional machine deliveries from the fully-electric EBLow 307 D Series. This sophisticated pharmaceutical project, in which dual-layer, co-extruded 5 ml vials are produced in a cleanroom environment, afforded the BEKUM project team the



EBLOW 307 D in pharmaceutical stainless steel execution

chance to put their blow moulding machine expertise to the test.

It was not just a question of the producing the containers, but **the interior COEX layers had to collapse while the contents were being emptied to prevent oxygen from entering the container and coming into contact with the contents.** The specific need for appropriate pharmaceutical documentation of the manufacturing process, various test procedures integrated in the production process, and the trimming, opening and preparation of the bottles for subsequent processing made this development a special project. **In close collaboration with the Boehringer Respimat team, we developed a technology which represents a world's first in blow moulding machine design.**

The special design of the mechanics in line with GMP guidelines and the adaptation to specific validation processes, in advance of the green light for the



Blow Moulding Station of the Coex Container

production launch, posed a varied challenge for BEKUM and one that further honed our expertise in the pharmaceutical field.

BEKUM takes pride in the fact that it has already successfully completed the second project of this kind with a global leader in pharmaceutical manufacturing. BEKUM alone holds this undisputed, unique position in the market, which has paved the way for the third project of this type.

## BEKUM America

### Bekum Tri-Extrusion Technology Yields Cost Reduction

For a major household chemical producer, BEKUM technology delivered cost reduction, not only through machine efficiency, but also through material cost savings.

**Utilizing BEKUM's proven Tri-Extrusion approach, we were able to exceed the customer's challenge of an extremely thin overall bottle wall of 0.5 mm (0.02"), while still ensuring maximum PCR (Post-Consumer Recycled) loading.** The ultimate goal for this project was to significantly reduce the bottle's cost with PCR and CaCO<sub>3</sub> material usage in the middle layer, as well as a color concentrate reduction by using pigment only in the outer layer.

BEKUM's Tri-Ex technology also brings the benefit of increased production efficiency, since the inconsistencies that PCR might have are buried between



Spiral distribution system for thin wall Coex bottles

virgin layers. The BEKUM Tri-Ex head with spiral distribution system yielded high bottle quality with precise layer

uniformity and outstanding circumferential bottle thickness distribution.

At the recent Society of Plastics Engineer's Annual Blow Moulding Conference in Pittsburgh, PA., BEKUM presented a detailed case study including both the commercial and technical aspects of this project. **Please contact Bekum for more details regarding our Tri-Ex technology and your potential cost savings.**

# BEKUM America

## The Success of US Manufactured HYBLOW Machines

With the latest 07 Series of fully automatic extrusion blow moulding machines, two models in particular have already proven very successful for BEKUM America - the HYBLOW 407 D and the HYBLOW 607 D.

The 07 machine series from Bekum features the patented C-Frame mould clamping system where the mould clamping forces are isolated independently from the mould guidance system. **This rigid C-Frame design with linear guidance provides precision mould closing characteristics with rigidity, excellent clamp force distribution, increased clamp system / blow mould longevity and speed.**

Several of the HYBLOW 407 D / 607 D installations have been complicated, high tonnage applications including heavy-walled handled PP, PET and multi-layer HDPE containers, in both continuous extrusion and accumulator head versions. These machines, especially the new clamping mechanisms, performed flawlessly during factory testing and continue to do so in round-the-clock production.

**The generous mould width and available clamping force of both machines allows for the production of up to 10 liter (2.5 gallon) canisters in 2 and 4 cavities respectively, in PE and PP. The extended mould length of both ma-**

**chines allows for the production of smaller bottles in tandem blow configurations – up to 40 cavities.**

A further advantage of BEKUM's 07 series is the availability of these machines in an all-electric version, the EBLow 407 D and EBLow 607 D. The all-electric versions maintain the direct mould closing system with the patented C-Frame system (no toggles or cantilevers). This allows for high tonnage, variable mould opening control and the performance advantages of a direct clamping system in an all-electric version.

Numerous BEKUM EBLow 07 Series machines are in full production worldwide in very demanding applications. The blow moulding industry's first US-manufactured all-electric EBLow 607 D debuted to great market interest at NPE 2015 in Orlando, Florida.

Key Machine Specifications		
	HYBLOW 407 D	HYBLOW 607 D
Mould width	500 mm	700mm
Mould length	470 mm	550 mm
Mould depth	2 x 130 mm	2 x 150 mm
Mould daylight	250 mm	380 mm
Clamping force	150 kN (~17 US tons)	240 kN (~27 US tons)

## EPET Handleware bottle production on HYBLOW 407D

**BEKUM is the Industry's leader in the extrusion blow moulding of PET & copolyester resins, with an installed machine base in excess of 40 machines.** BEKUM is in the unique position to draw upon our extensive library of experience in the blow moulding of PET materials especially for handleware applications.

As the packaging market continues to search out more recycle stream friendly materials, the latest development in extrusion blow moulding PET is the introduction of high IV grades of EPET resins, which have sufficient hang strength for extrusion blow moulding and IV's above 1.0 actually enhance the established PET recycle stream.

High IV EPET resins pose numerous processing challenges; in particular, the extrusion system must completely

melt the material without excessive shear. From the machine stand-point, increased clamping tonnage must be provided and specialized trimming methods are employed to achieve reliable, fully automated production.

BEKUM America is currently building a HYBLOW 407 D specifically for the production of EPET bottles with in machine deflashing and oriented bottle discharge. The HYBLOW 407 D with BEKUM's patented "C-Frame" clamping system is



HYBLOW 407 D with EPET handleware

ideally suited for EPET processing due to high per cavity clamp force, uniform force distribution and extremely fast tonnage build up speeds.

# Control System Retrofit for Long-lasting Machines

Blow moulding machines from BEKUM are robust and designed with a long service life in mind. „The dynamic developments currently being seen in the field of control electronics has resulted in the trend towards shorter and shorter production and technology cycles, something which often compromises the life span of BEKUM machines.“ „Many of our customers work with machines of ours which are already more than 20 or 30 years old,“ says Claus Schlensker, Head of Service and responsible for the After Sales and Service Division.

To ensure that even older models can benefit from the improved performance capability of modern control systems, BEKUM offers future-proof control solutions. Modern control systems have a considerable effect on the productivity, quality, safety, and handling of machines and offer tried and tested production sequences and associated competitive advantages.

## Economic Advantages of a Control System Retrofit

The integration of mechanics, electronics and IT exerts considerable influence over developments and the pace of innovation in machine and plant construction. It is essential to configure successor models with downward compatibility in mind and to work out a sustainable concept for the simple retrofitting of old machines when developing the new control system. On one hand, this relates to compatibility in terms of connection technology and dimensions and, on the other, must allow existing machine programs to be adapted.

Customer-oriented developments promise decisive advantages, since retrofitting/modernisation concepts, with the addition of new control and drive technology, make it possible to improve the performance and preci-



Control system C'07

sion of even older BEKUM machines considerably.

The advantages are clear:

- Less investment required for retrofit than for replacement.
- Increased productivity due to reduction in downtime and breakdown times.
- Increased quality due to a higher degree of reproducibility and precision.
- Modern BUS control with existing tried and tested user prompting.
- Future-proof availability of components for which spare parts are no longer deliverable.

## Trend-assured

Of course, one control technology partner cannot predict all developments in electronics. By using on-trend technologies such as the CAN bus, which has emerged as the new standard, and using an open design, it may develop control systems which are flexible enough to anticipate the requirements and technological possibilities of the future. However, in addition to up-to-date control technology know-how, this requires ample application experi-

ence to provide a reliable basis for assessing technological trends. Proactive life-cycle management considerations are factored in even during the control system development stage. This also includes subsequent stocking of standard components and critical parts.

**It is for that reason that BEKUM has spent the last few years developing electronic control systems for the automation of tried and tested BEKUM blow moulding machines with sustainability in mind, with a view to offering long-term security as a control system partner.**

## BEKUM factory retrofit - an attractive option.

Would you like a quote? Then please use our "RETROFIT Hotline" on +49 30 7490 2000 or online at <http://www.bekum.de/de/service/retrofit.html>

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