

Plastics News Europe



Blow moulding becomes smart and sustainable



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Blowing away the competition

Set up earlier this year in Bologna, Italy, and supported by a strong group of industry veterans, AlphaMAC is bringing fresh blood to the blow-moulding machinery industry. Its vision is clear: to future-proof packaging companies with its digitalisation and materials expertise. **Moreno Minghetti**, CEO AlphaMAC spoke to **Shahzad Pourriahi**

AlphaMAC is a brand-new kid on the block. What is the story behind its founding?

AlphaMAC was 'born' at the beginning of 2019 as the brainchild of a group of highly specialised experts in the packaging field who wanted to build an innovation-driven company, which would stand out for its ability to adapt to the various needs of users and would create added value through its solutions for existing and newly emerging problems.

Our team has decades of experience in the field of extrusion and blow-moulding and an in-depth knowledge of the latest technologies, raw materials and complete packaging lines. This combination has helped us to become, within a very short period of time, a reference point in the machinery industry for the production of plastic fluid containers.

AlphaMAC describes itself as an avant-garde in fluid packaging. Can you tell us what exactly is it that gives the edge to AlphaMAC?

When we say we are the "avant-garde in fluid packaging", what we mean is that we aim to be the first to propose innovative solutions on the market, solutions that are also able to anticipate the problems that arise as new technologies continue to evolve – and we do so by developing new concepts of mechatronic machines which do not need highly skilled operators in order to function properly.

The members of our team offer a wealth of experience gained at different firms and in various roles. Throughout their career, they have always been part of innovations in the extrusion and blow-moulding field.

Some of these concepts have now become established standards, such as the introduction in 1985 of in-mould labelling with completely recyclable plastic labels, which could be re-used to produce new containers.

In 1987, we developed a multi-layer technology that made it possible to use regrind material derived from the rejects produced after colour changes which, at that time, required many hours of production of non-saleable and non-reusable containers.

Our people developed the concept of sterile blowing for UHT products in 1992. This technology enabled the production of hermetically sealed bottles waiting for filling with no need for any rinsing of the inner part of the bottle with chemical products. The technology is still used today and has since been adopted by other manufacturers.

Another achievement was the design and manufacture of the first "Combi" machine for polyethylene bottles in 2001, which allowed in-line blowing and filling in an extremely compact layout, anticipating the co-packing concepts in HDPE blow-moulding applications.

This year, our team developed a number of new solutions related to fluid packaging, including our patented



"We put a lot of effort into considering all the most recent regulations concerning raw materials, continuously updating our technical solutions"

system to eliminate aluminium foil in various dairy-based product packaging, as well as others, which are currently patent pending.

Innovation is in our DNA and today, applied in this new industrial reality, it will keep AlphaMAC ahead of the other companies active in this field.

Can you tell us more about your "lean" production structure? What does it involve?

Our business model is in itself not new and it has long been used in other segments of the packaging machinery manufacturing industry. What's new is that it had never before been applied to companies building extrusion and blow-moulding machines.

Our approach involves a focus inside the company on the different high value activities – such as the management and supervision of design, research and development of innovation, in particular with regard to new raw materials, sales and customer support.

The remaining so-called "low value" activities are delegated to a consolidated network of companies specialised in the construction and testing of automatic packaging machinery.

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Specifically, this group is made up of 32 companies that work closely with each other, all located within a geographically defined area, which therefore enables a continuous and simple monitoring of operations.

The synergy generated through this interaction between industrial partners – all of whom are highly specialised in their own sector of activity – results in a process that is extremely flexible, but with significantly lower fixed costs and a high quality standard. Moreover, this cooperative approach ensures that all partner companies are continuously updated on the new technological solutions being developed and applied in automatic machines, which in turn enhances the quality and efficiency of our machinery.

What are the current latest / hottest trends in blow-moulding technology?

The use of fully electric machines is certainly one very important trend in the short and medium term.

This is a partially consolidated technology, having been introduced to the market a decade ago. However, the rapid developments in technology and electronics still offer room for significant improvements to be made, leading, for example, to a lower energy consumption of the machines and easier operation.

To date, many converters and end users still have a significant number of hydraulic machines that will need to be replaced by more modern machines.

Another current trend is the use of highly flexible machines for various types of raw materials, in particular PCRs (post-consumer resins), as these are materials that will have to be used in much higher percentages in the future.

Not all machines have extrusion screws suitable to maintain a stable process with these materials.

In addition, there are the new bio-materials that are currently under development or being experimented with that will not only certainly reach the market in the coming years but will become a mandatory choice for bottle producers.

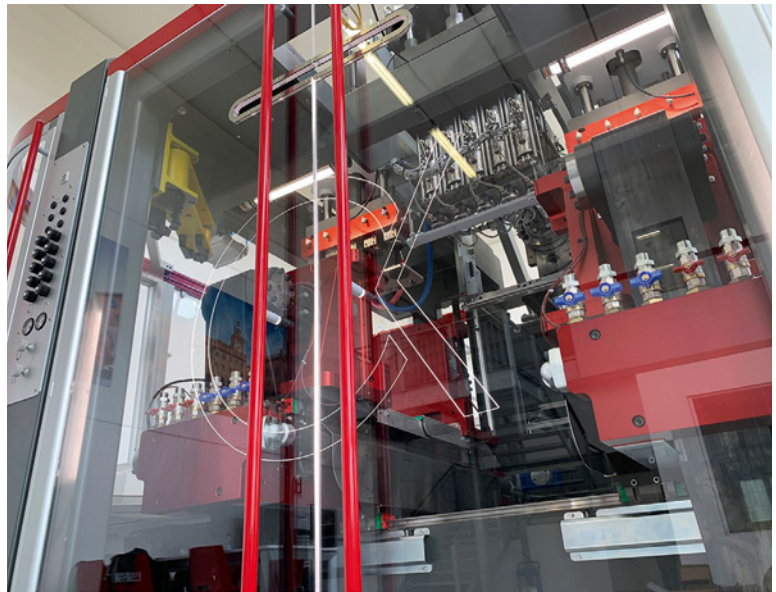
Machines today must offer the users the ability to change formats quickly so that production efficiency and reconfiguration flexibility for different applications are not impacted.

They must be simple to use, with the latest generation of intuitive HMIs that allow dialogue and the monitoring of production data, offering reliable technical solutions that guarantee perfect operation for years at the lowest possible energy level and with maximum efficiency.

What game-changing technologies is AlphaMAC working on or presenting to the market?

At our company, excellence and innovation will continue to be driven by the continuous introduction of new people from different sectors of activity.

This will reinforce the “contamination of ideas” concept that we have embraced – and that enables us to propose solutions to the market that are always different, setting us apart from the rest.



AlphaMAC technology incorporates the latest-generation components and features smart functions

We are currently working on various new concepts for application in future machines, which, for confidentiality reasons or in light of the patent validation processes in progress, we can obviously not talk about in detail.

However, some of the interesting points currently being developed by AlphaMAC are:

- Advanced software solutions that facilitate the operator dialogue with the machine thanks to self-learning solutions, tutorial guides for set-up and a simpler and faster start-up of production;
- New mechatronic systems used for the movement of the shuttles. The system aims to eliminate maintenance and enables the length of the movement of the shuttle to be varied according to the user's needs;
- Innovative programming for the parison profile. The HMI allows for the 3D modelling of the container, enabling more precise thicknesses in a much faster time. We also have introduced a function that allows dialogue with the parison cutting system to further facilitate its programming;
- Predictive maintenance technology to ward off potential disruptions and to eliminate untimely machinery downtime events. This will keep the overall production efficiency at the highest level possible;
- New construction materials to reduce the weight of the closing units and to reduce energy consumption during the cooling of the moulds.

The industry is hard pressed to supply recycled-content products. How has AlphaMAC responded to this new but fast-growing trend? Can you give us examples of technologies developed for this purpose?

We put a lot of effort into considering all the most recent regulations concerning raw materials, continuously updat-

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ing our technical solutions to better respond to the needs of our customers;

We use, for example, specific and tested extrusion screws to process the highest possible percentage of PCR.

All our machines come standardly equipped with a dual extruder configuration so that they can be transformed as desired into two or three-layer machines with a simple head change.

We also offer our customers the possibility of using a filtration system, with an electric filter-change between the extruder and the head. This guarantees minimum contamination inside the extrusion head when using raw material batches with impurities. This important aspect drastically reduces the occurrence of micro holes inside the produced containers.

And last but not the least, our software constantly monitors the temperature and pressure of the melt inside the head to ensure process stability even in the case of melt index variations in the material used.

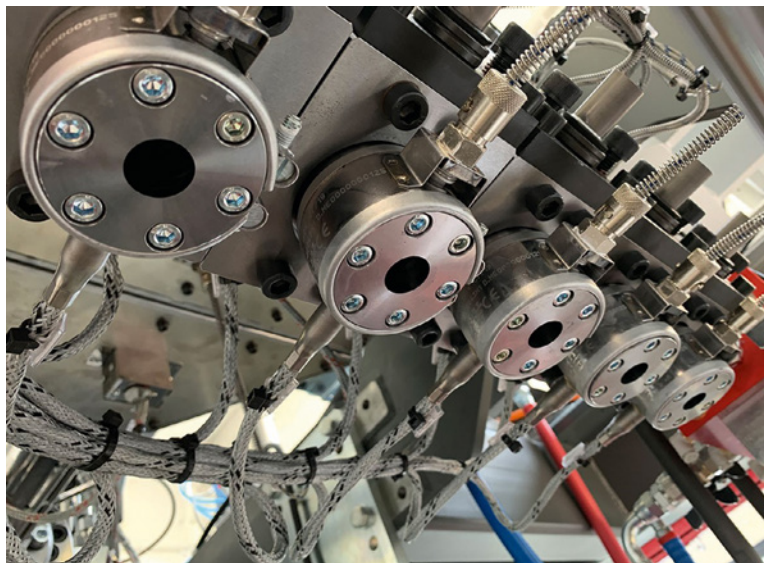
Are you in any way affected by the tethered cap legislation coming into force in 2024?

From the point of view of the design of the machine that produces the container, the advent of the tethered cap will not bring any changes. Instead, there will certainly be new laws in the next two or three years that will relate to the materials used to produce the containers and which will influence the way we design the machines.

With the rising prices of raw materials, it will be more important than ever for us to offer our customers a technology that reduces production costs and that allows a wide range of materials to be used with different process characteristics and with multiple layer structures. Such technology will enable our customers to use recycled post-consumer plastics without having to compromise on the aesthetic quality of the product.

Another key trend within the industry is digitalisation and industry 4.0. Did this affect the way the plant was set up and equipped? What kind of systems are used?

Having been founded only at the beginning of this year, AlphaMAC had a big advantage: we could design a line of



More proprietary technology to come in 2020

machines starting from a blank sheet without having to modify and adapt existing series.

Industry 4.0 and a high level of digitalisation are therefore an integral part of our machines. Our software is developed in collaboration with Austrian automation specialist B&R.

Our technology incorporates the latest-generation components and logics, and features smart functions to help auto-parameterise the process. The user can collect all the production data necessary for the calculation of the operation efficiency and accurate monitoring of machines, providing crucial insight into his actual production costs.

These systems also extend beyond just the control systems of our blow-moulding machines. Using this software, we can now integrate some of the peripheral systems that are usually controlled separately.

Such systems include the mixing and transport of raw material to the extruder hopper, the granulation of flash and bottles, quality control systems such as leak testers, etc.

This further simplifies the control of the production lines and the management of the systems by the operators.

A large number of the developed solutions are proprietary technology and patent protected, and more will come in 2020. Moreover, all our machines are scalable in terms of software and related applications.

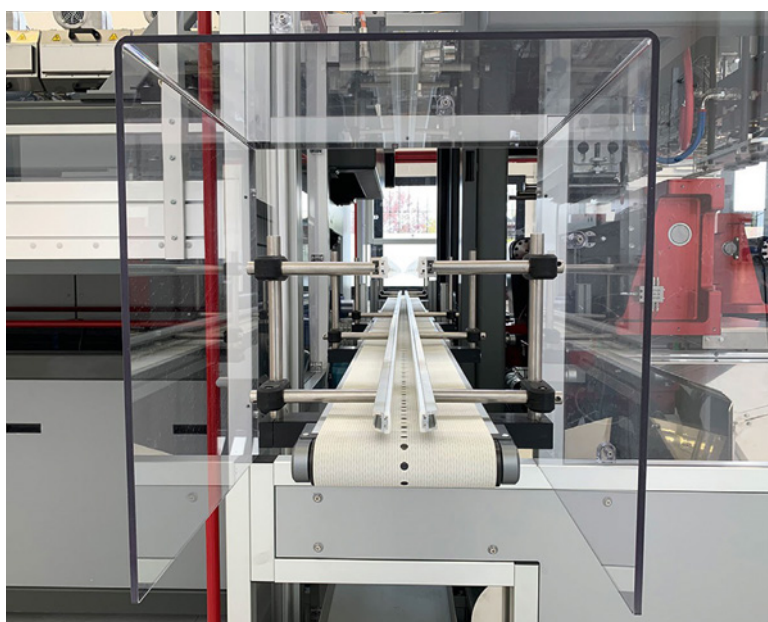
What will be the main issue facing the blow-moulding and packaging industry in the mid-term?

The use of plastic to pack liquids is the most cost-effective and sustainable solution available and this will continue to be the case in the near future; however, manufacturers will have to adapt to the new recycled-content quotas or even to the use of new bio-degradable materials for single-use plastics.

They will have to incur expenses to renovate or to upgrade their machines and this will lead to an increase in the cost of containers and end products.

The most critical part will surely be to communicate the correct information about these changes. There is so much "fake news" around, and these are sensitive topics that are directly linked to economic return.

We, as manufacturers, will also have to try to interpret all these changes in the best way possible, to be able to always provide our customers with machines that can help them to be cost-competitive.



AlphaMAC 900, last generation components and optimised technical solutions