



VALUE ADDED BOTTLING
CORPOPLAST | PLASMAX | ASBOFILL

GB_03/09

 **KHS**
Filling and Packaging – Worldwide

KHS Corpoplast

KHS Plasmax

KHS Asbofill

Bottles & Shapes™

Stretch blow molding technology

Barrier coating

Aseptic filling

Value added Bottling

Everything for the perfect bottle

From design consultancy to preform and bottle design, through to the construction and supply of blow molds: Bottles & Shapes™ encompasses all relevant aspects of PET bottle development and production, and includes the core competence of light-weighting – the substantial material savings.

We develop, test and optimize your bottle: from products to be filled to process adjustment. Our entire expert knowledge for the perfect bottle.

Modular value added portfolio

As a pioneer and technology market leader we develop and produce standardized InnoPET Blomax high-speed stretch blow molding machines in modular design with high uptime and low energy consumption – resulting in optimum Total Cost of Ownership.

Crystal clear protection for your product

Plasmax technology provides optimal barrier protection with crystal clear transparency.

The 100% recyclable PET bottle with its internal coating is an economical and efficient packaging solution for sensitive products.

Aseptic, linear, efficient

Innovative filling technology for plastic bottles.

Companies in the juice, dairy and pharmaceutical (Nutrifood) sectors benefit from our comprehensive experience, state-of-the-art engineering know-how and industry expertise.

There is no better way.

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Within the KHS Group, comprehensive plastic packaging know-how is consolidated in the KHS Beverages division.

This competence carries the name “Value added bottling” – a globally-unique performance portfolio and value claim for the development, production, barrier coating and aseptic filling of PET bottles.

„Value added Bottling“: complete packaging solutions and leading equipment technology from a single source and across-the-board – for more production safety, highest efficiency and perfect plastic bottles with lowest Total Cost of Ownership.

For example: Orange juice.

A product that puts the highest filling demands on bottle design, barrier properties and filling technology.



“What do you want to fill?”

It all begins with the crucial question: which product is to be filled? Tell us what you want to have filled, and what your ideal bottle should look like.

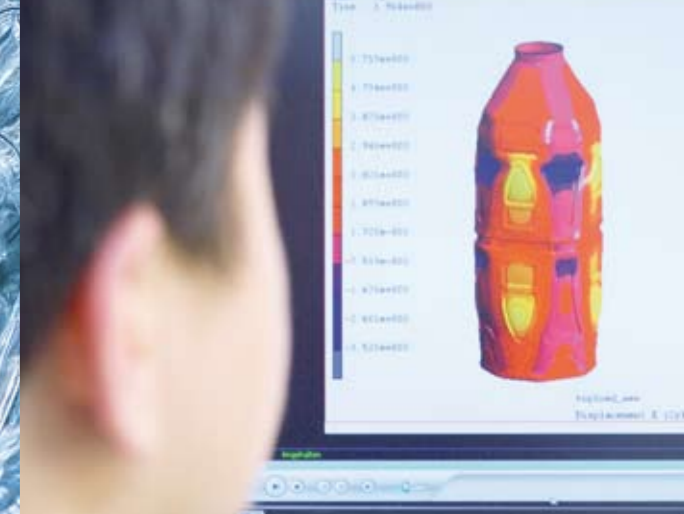
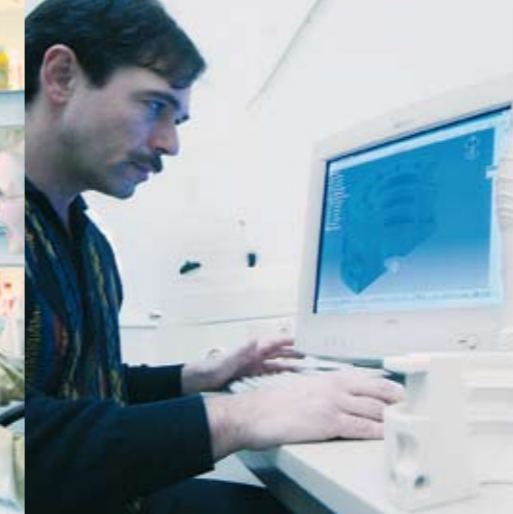
Decades of experience enable us to conceptualize and design your bottle already from the initial basic information – precisely customized to the product to be filled and to your individual requirements.



Bottles & Shapes™

Our expert knowledge for rapid, ideal and cost-effective bottle development and production.

Our Bottles & Shapes™ portfolio covers the entire chain of expertise from the development of the initial design and marketing idea for the new packaging through to material selection, barrier and filling requirements, preform design, CAD and FEM-assisted construction via blow molds, laboratory tests and process control to the industrial production of the PET bottle. This also includes our core competence: light-weighting – substantial material savings in bottle production.



Concept

After determining the product to be filled, specifications and bottle requirements, we present you with design proposals and subsequently develop the optimal bottle with performance criteria and with minimal production costs.

Idea and design

Nowadays, for most producers, a PET bottle is not only a beverage container but a marketing instrument. Long before product launch it must be established which bottle design will yield the greatest market potential.

Through our know-how and creativity, we provide you with the necessary support as early as the design phase to find the perfect bottle solution. This later saves time during production – since even the most complex bottle design must be converted into a practicable bottle.

Material and preform

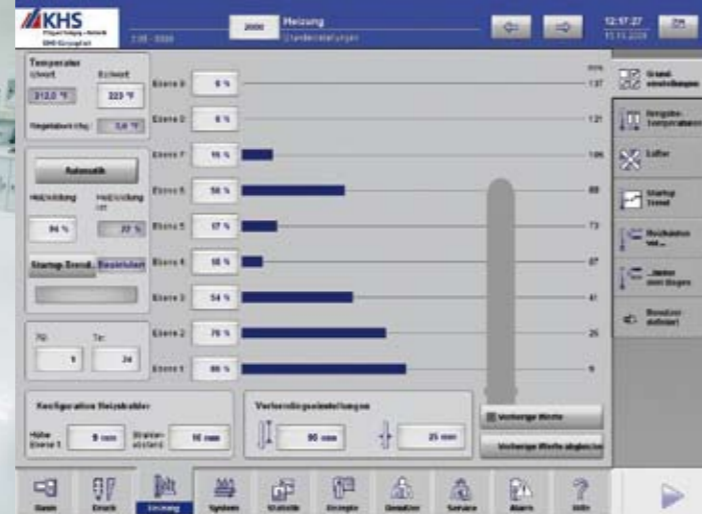
The calculation of a suitable preform depends on the product to be filled and the bottle design. Stretching factors (PET orientation) and material distribution (wall thickness) are decisive for the preform design.

Furthermore we determine how an evaluated preform can be extruded. Here, the cooling-down times of the injection molding must be complied with. Last but not least, PET process experience plays a decisive role here.

Bottle design

Optimal bottle design is a significant prerequisite for cost-effective bottle production.

Through our many years of experience, and deployment of Finite Element Analysis (FEA) and state-of-the-art CAD systems, we are able to optimize the bottle for industrial production.



*InnoPET Blomax Stretch Blow Molding:
highest uptime and precision
with lowest energy consumption.*

Molds

Blow molds are an important component of the Bottles & Shapes™ competence chain – therefore we produce them ourselves at KHS Moldtec in Essen.

KHS Moldtec's blow molds enable us to achieve the highest quality in premium PET bottles as well as optimized weight (light-weighting) and impressive brilliance. This applies especially for bottles with highly-complicated molding profiles and individual textures. KHS Moldtec's blow molding competence as part of the comprehensive Bottles & Shapes™ portfolio carries a decisive advantage: immediate and flexible response to market shifts with perfect PET packaging.

Tests

After the manufacture phase, the first pilot blow molds are subject to all relevant laboratory tests.

Our state-of-the-art measuring techniques include

- Stress cracking
- Top load
- Thermal stability, base stiffness
- Shrinkage
- Pressure
- Distribution of wall thickness
- Barrier

Process design

Findings resulting from the bottle/cost optimization are directly incorporated into the InnoPET Blomax Series III process design.

Adjustment of process parameters for

- lowest heating energy,
- optimum process times,
- optimum material distribution,
- minimum air consumption,
- lowest blow pressure,
- high production output

requires comprehensive PET know-how for the perfect, customized bottle production – with lowest Total Cost of Ownership.



30 years of PET know-how, process engineering and technological leadership facilitate state-of-the-art machine technology: InnoPET Blomax Series III stretch blow molding machines.

Our machine concept meets all requirements thanks to the modular and standardized design: from 4 to 24 blowing stations, from 7,200 up to 43,200 bph, hotfill or preferential heating application. Highest uptime, precise production and reduced spare parts and energy consumption lead to clear benefits for lowest Total Cost of Ownership.



*Barrier coating:
crystal clear, perfect protection
for your product.*

InnoPET Blomax Series III Highlights

The **transport mandrel principle** is standard on all machines and ensures precise, safe and clean preform guidance throughout the entire process. **Minimal mandrel pitch** reduces process times and allows optimum use of heating energy.

Mechanical, cam-controlled stretching enables high precision and repeatability: a decisive factor for material savings in **lightweighting** and for reducing air consumption costs. **Compact blow molding stations** provide increased stability and consistent bottle quality in high speed productions. The components of the **speed-loc system** enable faster changeover times.

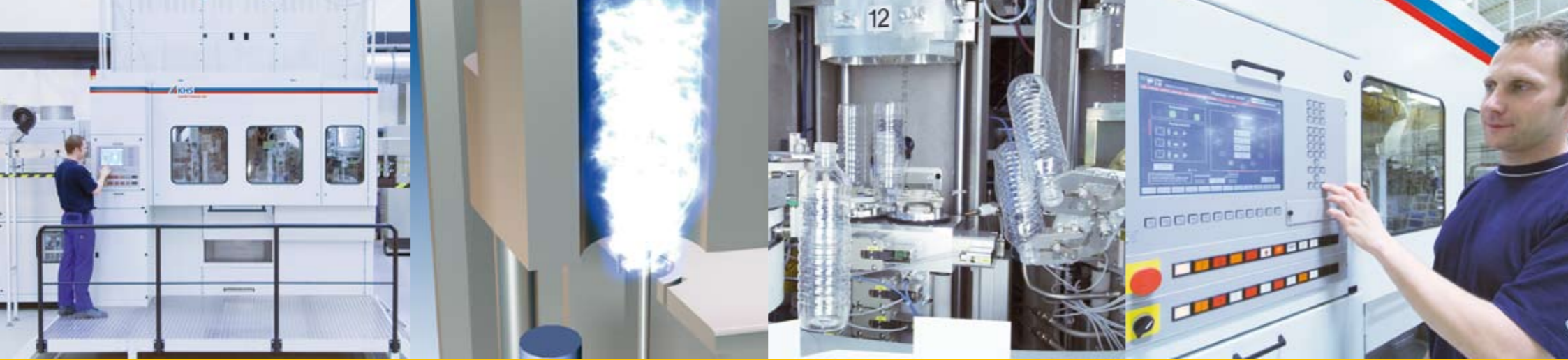
The InnoPET Blomax **linear oven** is available in four sizes based on the number of blow molding stations. The length of the oven can be altered within certain limits by shifting the reversal point. In order to meet various heating performance requirements, all ovens can be combined with any transport or blowing mechanism. An upgrade is easy thanks to **modular construction**. The maintenance-friendly heating modules enable rapid exchange of heater boxes in only approx. 1 minute.

Total Cost of Ownership

The overall analysis of all costs in bottle production reveals the considerable potential savings: first and foremost material and preform production costs, followed by energy consumption optimization. Thanks to our many years of experience in the PET business and constant further development, we are the top of the class with respect to Total Cost of Ownership.



With a touch of glass Plasmax technology provides optimal barrier protection with crystal clear transparency. The 100% recyclable, internally coated PET bottle is an economical and efficient packaging solution for sensitive products.



*Innovative filling technology
for PET bottles – Aseptic, linear, efficient.*

Barrier protection

The nanometre Plasmax coating prevents oxygen permeation and CO₂ loss thereby preserving vitamin C content, appearance and taste of high quality juices. Even the shelf life and product quality of beer and other carbonated beverages can be extended.

Wine filled in Plasmax coated bottles also meets highest quality expectations: Plasmax barrier coating, with the properties of glass, prevents premature aging through oxygen permeation and flavour scalping.

Optimal requirements

Plasmax coated PET bottles are also an attractive proposition in terms of marketing: the crystal clear appearance and individual options for a promotional bottle design ensure that the requirements of different markets are met. They offer decisive benefits in comparison to glass packaging: the coatings are extremely flexible and not susceptible to shock, plus their much lower weight significantly reduces transport costs.

And: Plasmax coated bottles are 100 % recyclable: a significant advantage over other barrier solutions, such as multilayer or blends.

Technology and Process

In a InnoPET Plasmax machine, PET bottles are internally coated with a nanometre glass layer, which prevents migration of gases and flavours.

The InnoPET Plasmax machine completes the patented coating process in several steps in double chambers with two bottles each. After the bottles have been loaded and a vacuum has been generated, a reaction gas mixture is pumped in, which is subsequently transferred into an energy-rich plasma state using microwaves.

The silicon oxide generated is deposited evenly on the entire inner bottle surface to form an invisible and impermeable protection layer. Therefore, regular sterilisation of the Plasmax coated bottles is sufficient prior to product filling. Additional rinsing and cleaning is not required.

The InnoPET Plasmax control system enables precise adjustment of the individual process parameters ensuring optimal coordination of the entire coating process in order to meet different application requirements.



KHS Asbofill manufactures linear aseptic filling machines for the PET and HDPE sector. Companies in the juice, dairy and pharmaceutical (Nutrfood) sectors benefit from our comprehensive experience, state-of-the-art engineering know-how and industry expertise.



Service
Your success is our top priority.

Range of machines

Flexibility, highest aseptic safety and efficiency are the cornerstones of this machine generation. The range was designed for aseptic filling of milk and mixed milk drinks, liquid foods and fruit juices in PET and HDPE bottles in the non-carbonated products sector. Innosept Asbofill ABF 610 and Innosept Asbofill ABF 710 machines have specific properties for efficient and economical filling technology:

- compact linear design
- extremely small aseptic zone
- non-contact filling
- flexible neck handling
- rapid product changes

Customized product solutions

The Innosept Asbofill ABF machine range enables maximum freedom in the selection of established or customized packaging solutions. This means flexible portioning of products according to market requirements and the selection of bottle shapes.

With the highly flexible Innosept Asbofill ABF technology virtually any bottle design can be used; therefore, it is the ideal production facility for any products in the non-carbonated beverage segment, including sophisticated functional drinks and liquid food. The equipment meets all of the fundamental requirements of the juice, dairy and nutraceutical industries.

Consequent aseptic

The Innosept Asbofill ABF filling machine generation meets all requirements for optimum aseptic PET bottle filling. This innovative concept combines long-standing experience in aseptic packaging with reliable and effective machine technology.

The result is a linear filler with integrated aseptic zone and linear bottle guidance.

The machine range is geared to bottle neck diameter, irrespective of the filling volume ranging between 100 and 2000 ml, and whether different bottle shapes are used.

The aseptic zone

Here, in the heart of the machine, the bottles are effectively sterilized in the protective environment of the sterile air flow, filled and, until sealed, reliably protected against recontamination by micro-organisms.

Only 0.9 m³ protective atmosphere is required for type 610 and for ABF 710 1.5 m³ for highest aseptic safety.

Our top priority is to always guarantee the optimal productivity of all machines at all times. Our aim is that you, as a satisfied customer, can outperform your competitors, and promise: We are **EASY TO WORK WITH!**



*Value added Bottling:
higher product quality
safety with each individual processing step.*

Customized services

We realize that we can only provide comprehensive service if we are acquainted with our customers' requirements. Our search for on-going dialogue enables us to pursue new concepts and ideas.

Comprehensive services are an integral part of all machine concepts.

Ease of maintenance also ensures high efficiency and profitability.

Technology without ifs, ands or buts

In line with our corporate philosophy, our machines are only delivered when they have achieved excellent test-run results – absolutely consistent with our stipulated specifications and agreed performance criteria.

These comprehensive tests enable rapid installation and commissioning immediately after delivery. Additionally, intensive training programs for operating staff are provided as an integral part of our services.

Carefree full service

Global presence and proximity ensures full service – including machine up-dates, maintenance contracts and spare-part supply, as well as training and development in cooperation with our customers.

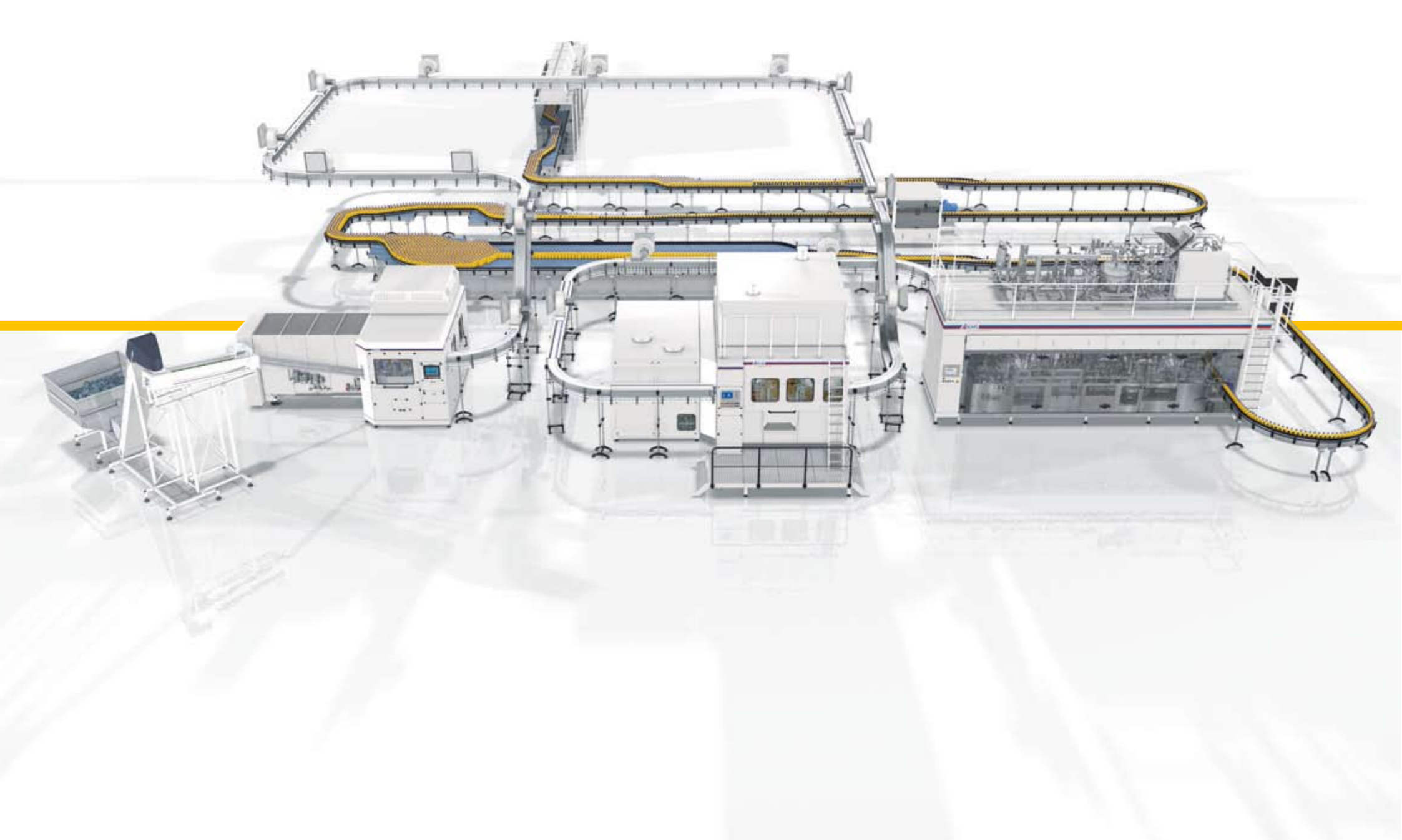
The global network of KHS Group of companies guarantees reliable service for products at any time.

The combination of all services offered by Corpoplast, Plasmax and Asbofill ensures a unique value added chain for the filling of high-quality and sensitive products.

“Value added bottling” stands for our ability and willingness to cooperate with our customers as a reliable partner, offering longstanding know-how, optimal performance and profitability.

The focus of all activities is the perfect packaging and filling of your high-quality products with the lowest Total Cost of Ownership.

Further information is available at:
www.ValueaddedBottling.com
www.khs.com



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Value added Bottling

**“YOU CARE FOR THE CONTENT
WE CARE FOR THE FILLING AND PACKAGING”**

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