JUICES, TEAS & SPORTS DRINKS
MILK, YOGHURT & MILK-BASED PRODUCTS

ASEPTIC

COMPLETE LINE SOLUTION

Performance through Understanding

Sidel

STAY ON TOP OF TODAY'S CONSUMER AND MARKET TRENDS

TOTAL FOOD SAFETY WHEN IT MATTERS MOST WITH PET

Consumption of sensitive drinks such as juices, nectars, still drinks, isotonics and teas is growing at an annual rate of 6 %. Liquid dairy products (LDP) already account for one fifth of worldwide beverage sales, and an annual growth rate of 5 % is expected. This demand presents significant business development opportunities.

Increasing consumption of sensitive beverages
The pursuit of healthier lifestyles is one of several trends driving consumer demand for sensitive drinks. This trend is increasing particularly in the developing world, due to an increase in disposable income and urbanisation, as well as improved retail infrastructure. These developments have, in turn, led to an increase in demand for refrigerated and ambient drinks, with an emphasis on natural alternatives.

A shift in consumer demands
Consumers increasingly prefer smaller, more functional "on-the-go" drinks, and they seek a greater variety of beverage flavours. Consumers and regulators both demand more transparency with regard to ingredients, and traceability across the supply chain. These changes require a shift in beverage industry practices.

PET – the material of choice
The beverage market is moving more and more toward PET. It is already the material of choice for 40 % of the JNSDIT segment, with an annual growth rate of 3 % expected by 2020. Within the same period, PET-packaged liquid dairy products are also expected to grow by 8 %, a rate higher than the projection for carton and HDPE, currently the two most widely used packaging formats.

Keep your product safe with PET
PET bottles offer great physical beverage- and food-barrier protection benefits that maintain your product's safety and integrity across the supply chain. They ensure juices, teas, sports drinks and milk-based beverages retain their fresh taste, vitamin content, texture and colour from production to storage, shipment and distribution. This is particularly important when beverage quality is easily compromised by microorganism growth and alterations caused by light, oxygen and temperature. For example, transparent PET is used for fresh and flavoured milk distributed via cold chain as well as UHT flavoured liquid dairy products, while opaque PET is used for white UHT milk at ambient temperatures.

+3%
ANNUAL GROWTH OF PET-PACKAGED JNSDIT*
(* juices, nectars, soft drinks, isotonics, teas)

+8%
ANNUAL GROWTH OF PET-PACKAGED LDP*
(* liquid dairy products)

PET benefits

- User-friendly and 100 % recyclable
- Shatterproof and resealable
- Excellent barrier-material properties
- Great brand recognition with bottle shape freedom
- Package lightweighting potential

INCREASE SAFETY AND PROFITABILITY

ENHANCE PERFORMANCE AND STAY COMPETITIVE

Beverage safety and integrity are prerequisites for responsible business in the beverage and dairy industry. You also need standout bottles that can set your brand apart with unique attractive designs and your production needs to be highly flexible without falling short of goals. Lastly, your production facilities and packaging solutions should reduce environmental impact and costs.

Product integrity and differentiation
The package itself protects the integrity of the product and displays its attributes. It must meet stringent global food safety standards, and it also offers a significant opportunity to stand out on the shelf. The challenge is to create innovative, functional packaging that ensures both product integrity and brand differentiation while remaining cost-efficient in production. PET has experienced significant growth as producers increasingly recognise its ability to meet these diverse needs.

Flexible and cost-efficient production
Consumers today expect more than ever before. Most beverage and dairy producers need to diversify their production with more value-added products in order to create and maintain sustainable business. This means that they generally want a versatile production line that can handle a broad category of beverages differentiated by a rich variety of recipes and consistencies. It also means that they must be able to package multiple bottle sizes, from "on-the-go" to "family" packaging formats, on the same line while improving time-to-market on new products. The other challenge producers face is balancing production flexibility with the need to lower operating costs and environmental impact of both small and large production volumes.

Taking advantage of safe ambient distribution
Packaging for ambient distribution is an attractive method of extending beverage shelf life. Hot filling and aseptic production methods both ensure health and safety, and Sidel can provide you with a complete, cost-efficient and sustainable packaging solution for either. This brochure focuses on aseptic filling, but if you are interested in our hot filling solutions, please contact us or visit sidel.com/hot-fill-lines.

Meet your specific needs with Sidel
At Sidel, we tackle the challenges presented by each beverage while maintaining safety and cost-efficiency. We enable producers to significantly differentiate their brand with the right PET packaging and filling solutions, while ensuring food safety and excellent product integrity. We can help you to produce a variety of products with increased flexibility and reliability, and we make sure your business remains sustainable while reducing your costs.

PRODUCT INTEGRITY

PRODUCTION FLEXIBILITY

DIFFERENTIATION

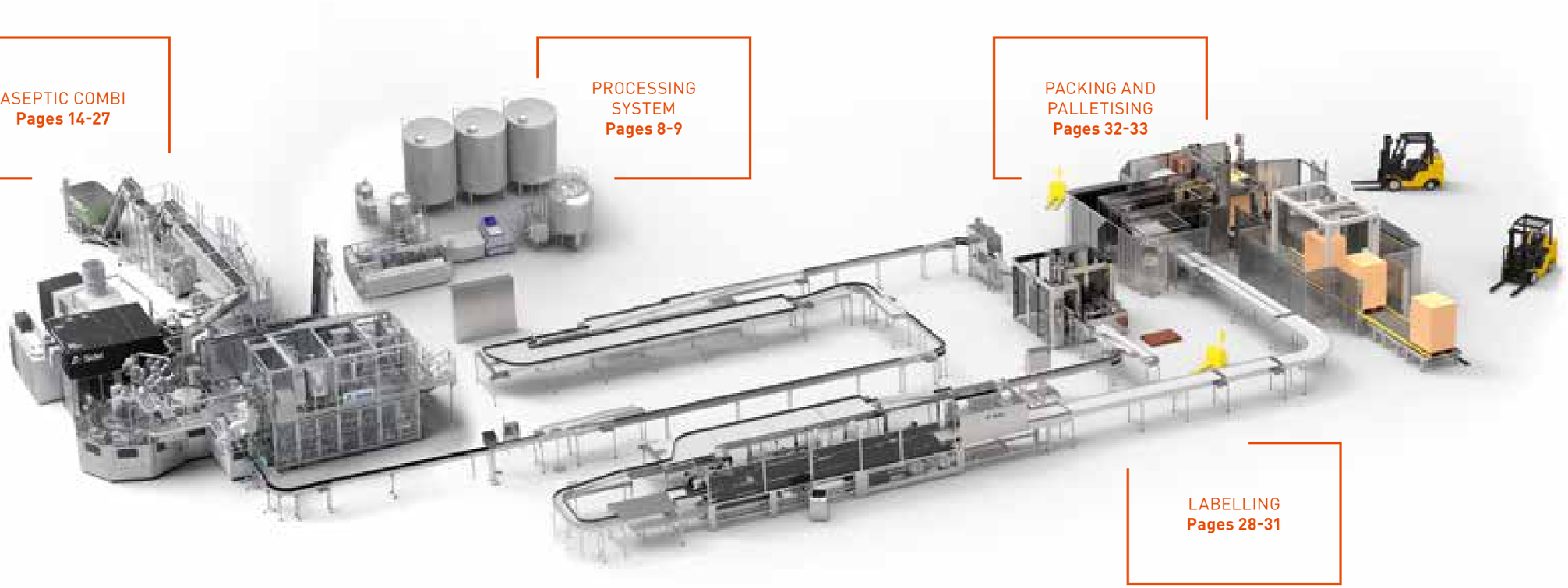
COST-EFFICIENCY

GAIN CONTROL – EVERY STEP OF THE WAY

ASEPTIC COMBI
Pages 14-27

PROCESSING SYSTEM
Pages 8-9

PACKING AND PALLETISING
Pages 32-33



PACKAGING EXPERTISE
Pages 10-13

LABELLING
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SIDEL SERVICES
Pages 34-35

ONE PARTNER FOR ALL YOUR NEEDS

A fully connected aseptic line lets you optimise performance and make more informed decisions across the lifetime of your line. Our holistic and flexible approach is dedicated to meeting all of your aseptic needs. Partnering with Sidel gives you the benefit of having everything centred around one supplier. Wide-ranging expertise, equipment and ongoing services help you throughout the entire process, from packaging to fast production ramp-up and beyond.

Taking care of your beverage
First, the beverage product itself must be stable, which depends on the liquid recipe and processing methods. It also needs to be protected all the way from production to consumption. This requires the right PET bottle and packaging equipment, which both depend on the selected distribution method.

Ensuring production compliance
Responsible business practices are another key concern for producers; compliance requires a high degree of flexibility, without impacting productivity, along with production packaging solutions that reduce environmental impact and operating cost.

Sidel's aseptic expertise
With Sidel, you can leverage our extensive experience with sensitive products to ensure product integrity along the supply chain while optimising uptime and costs. We have worked with the dairy and JNSDIT industries for over 50 and 60 years, respectively. 40 years of aseptic packaging expertise means we can offer proven solutions using either traditional wet bottle decontamination or unique dry preform decontamination. Decades of innovation have seen Sidel transform the beverage packaging industry and set standards followed to this day:

- World's first industrial PET rotating blow moulder in 1980
- World's first fully integrated blow-fill-cap solution, the Combi, in 1997
- World's first preform decontamination technology in 1998
- The fastest aseptic Combi with dry preform decontamination, based on Sidel Matrix equipment – the Aseptic Sidel Matrix Combi Predis, in 2015

40 YEARS
OF ASEPTIC PACKAGING EXPERTISE

6000+
PET BLOW MOULDERS WORLDWIDE

OPTIMISE YOUR COMPLETE LINE PERFORMANCE

FULLY INTEGRATED PROCESS SOLUTIONS

At Sidel, our fully integrated solutions employ the processing equipment and capabilities of Tetra Pak Processing Systems (TPPS), the inventor of aseptic technology, benefitting from proven and reliable technologies developed over many years. With a single expert partner across the entire line, our collaboration puts at your disposal the experience gained from nearly 100 joint complete line projects, with integrated high-quality supplies from all around the world.

A holistic view
You can benefit from our extensive expertise in matching beverage recipes to optimal treatments, filling and packaging solutions. We provide hygienic design solutions that ensure food safety and product integrity across the entire line. We help you optimise uptime, operating costs and environmental performance by taking a holistic view of the production cycle and a line's running performance. Our project management team always aims to deliver on time and on budget with a fast ramp-up. With our tailored services you can maintain, regain and even improve line performance throughout its lifetime.

Extended running times between cleaning
Defining the best solution for integrating both the process room and packaging line allows for optimised line performance and reduced downtime. Simpler, faster cleaning to start-up and shorter sterilisation times between different productions can be achieved. Only three hours are needed to clean and sterilise both the process and aseptic filler at the same time before production start-up. Since the product is heated in the pasteuriser and transferred to the aseptic buffer tank for filling, a continuous aseptic production run can be achieved without stopping to clean the product circuit or machines.

Fast changeovers with optimised cleaning cycles
Depending on product compatibility, various optimised changeover configurations are available to minimise time wasted:

- Product-to-product push: emptying of UHT and aseptic tank before loading new product. The filler finishes filling one product and immediately begins filling another
- Intermediate sterile rinsing: stoppage from bottle to bottle to rinse pasteuriser and filler with sterile water
- Full Clean-In-Place (CIP) and Sanitation-In-Place (SIP) cycles for processing and filling equipment

From raw material to product treatment
Whether you are producing juices, teas, sports drinks or milk-based products, the key is to capture the natural taste and ensure your end product is safe to drink. Different processing solution configurations are possible:

- Raw material handling: gentle sterilisers heat-treat products, concentrates, water/sugar tanks, and separators
- Product preparation: high-accuracy mixing and blending equipment for adding sugars and/or flavours
- Product treatment: efficient and reliable pasteurising systems (tubular or plate-based heat exchangers), deaerator, homogeniser for further reduction of oxygen, buffer tanks

3 HOURS
FOR CIP AND SIP FROM BOTTLE TO BOTTLE

PROCESSING

The TPPS process equipment, from raw material to product treatment, captures the natural taste of your product and ensures it is safe to drink.

PROTECT YOUR PRODUCT WITH THE BEST POSSIBLE PACKAGING SOLUTION

DEDICATED SCIENTIFIC BEVERAGE AND PACKAGING EXPERTISE

When packaging beverages, multiple variables influence their integrity, including microorganisms, light, oxygen and temperature, but there are also many opportunities to enhance the quality of your end product. By incorporating Sidel's scientific beverage, packaging and industrial expertise early in the process, you can optimise bottle performance and ensure product quality and safety, while achieving a faster time-to-market.

The science of the beverage and the package
Our experts apply knowledge of chemistry, microbiology, food science, filling processes and packaging materials in order to ensure your product integrity. They perform many laboratory tests including:

- Characterisation of beverages, with or without particles, to qualify their features (agitation, destruction rate, etc.)
- Assessment and definition of correct filling solution
- Verification of package decontamination performance, including preform, bottle and caps
- Maintenance of chemical residual compliance
- Assessment of cap and neck tightness
- Evaluation of beverage behaviour in a variety of barrier materials
- On-site microbiological analysis and specific validation protocols

A unique offer to evaluate your product
Sidel's experts help you to qualify specific packaging solutions for your beverage or dairy, producing and evaluating bottle samples without stopping your line. Their tests are performed under real-world supply chain conditions to determine optimal solutions for a defined shelf life and distribution method. They evaluate the right combination of various parameters, including PET barrier resin and thickness, caps, filling technology and volume:

1. Pilot plant reproduces industrial aseptic production for beverage packaging on a reduced scale, testing your beverage recipe under a variety of simulated conditions with different PET resins
2. Physical, chemical and sensory analyses qualify beverage behaviour in a given packaging, determining its main characteristics. Beverage sterility is also validated
3. Sidel makes ideal recommendations for bottle barrier material, weight, shape and caps, based on test results in order to ensure your product's predefined shelf life

SHELF-STABLE PRODUCTS WITH PET BARRIER SOLUTIONS

PET barrier solutions ensure product safety across the supply chain without aluminium foil. Required light protection is achieved through two different preform manufacturing technologies and light-blocking capabilities:

- Injection of monolayer preforms by a standard injection tool system, mixing PET material with master-batch from various suppliers
- Multi-layer preform, which can be produced using either over-moulding or co-injection technology

Product is tested under conditions similar to real-world storage conditions and distribution modes (room temperature or cold chain).

Physical, chemical and sensory analyses are used to determine how product behaves in package, and to study different indicators.

Sidel's experts help you to qualify specific packaging solutions for your beverage or dairy, producing and evaluating bottle samples without stopping your industrial production line.

Different indicators are studied, including package barrier properties, vitamins (A, B2, C, etc.), beverage colour, dissolved oxygen in the product, etc.

CREATE VALUE FROM CONCEPT TO CONSUMER

ONE STOP FOR ALL YOUR PACKAGING NEEDS

A consumer decides to choose one beverage over another in just 3-7 seconds. That's where our packaging services can help. We create value in every phase of your supply chain, and we can help you design a unique package with less PET and material waste. Reduced energy consumption, increased durability and a great look all lead to a better experience for the consumer and minimal environmental impact.

Daring to be different
Based on your insight, specifications, supply chain conditions, and product goals, we can provide everything needed to turn your idea into an industrial reality:

- Conceptual design – drafts and digital mock-ups
- Technical design – bottle and preform
- Prototypes – 3D-printed models

Tested to perform
We evaluate pre-production bottle stability, rigidity and quality to ensure optimal real-world performance. We work with both your internal and external designers to improve bottle strength and performance across the supply chain, for a faster design cycle with reduced costs:

- Virtual bottle modelling, finite element analysis and supply chain simulations
- Full feasibility studies and performance tests with pilot moulds and Sidel equipment
- Primary, secondary and tertiary package testing
- ISO17025 certified for testing and calibration

The same but lighter
Raw materials can account for up to 80 % of a bottle's cost, so lightweighting can lead to substantial savings, but we prefer "rightweighting." A Sidel RightWeight™ bottle weighs and costs less, saves energy, maintains optimum line performance and protects beverage quality, all with a positive consumer experience.

Original moulds for optimal package performance
Whether for a new line or the conversion of an existing line, our original moulds are intelligently engineered for fast production, and carefully tested to uphold product safety and quality. They are made of high-quality aluminium or stainless steel, and can be adapted to all generations of Sidel blow moulders, offering great freedom of shape and quick, easy changeovers. Our moulds are:

- Thoroughly tested to perform to specification, using real-world mechanical analysis tools and virtual stress simulations
- Qualified for maximum uptime
- Warrantied to last

8,000
NEW BOTTLE DESIGNS AND DRAWINGS EVERY YEAR

300,000
MOULDS INSTALLED IN 191 COUNTRIES

PACKAGING

We can validate your design with a series of holistic tests to ensure that it is ergonomic, strong, efficient and aligned with consumer expectations.

ENSURE PRODUCT INTEGRITY ALONG THE SUPPLY CHAIN

UNIQUE DRY PREFORM AND CAP DECONTAMINATION

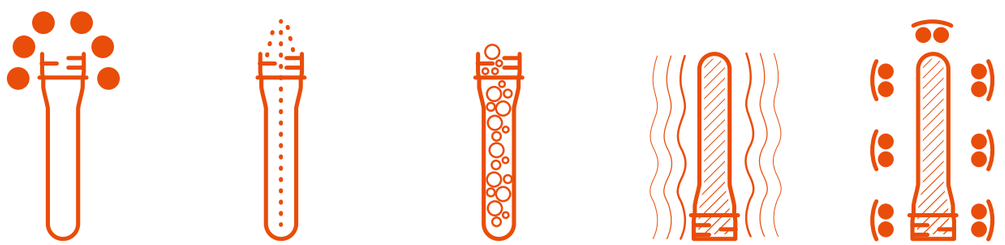
Serving a market in which product integrity can never be compromised, all Sidel R&D is driven by the importance of hygiene and food safety. We pioneered integrated blow-fill-cap solutions, introducing the 'Combi' concept to the industry as a value-adding competitive alternative to traditional lines. Shortly afterward, we introduced preform decontamination technology, completing the hygienic Combi solution. Integrating preform decontamination, blowing, filling and cap decontamination in one safe environment offers reliable aseptic packaging alternatives.

Setting standards in the industry
Sidel was the first to understand that it is always simpler and safer to decontaminate a preform rather than a bottle. Smaller in size and with a single straight surface, a sterile preform supports safe and easy production of sensitive products. By merging preform decontamination with blowing, filling and capping functions within a single production enclosure, juices, teas and liquid dairy products are produced to a higher, more hygienic standard.

Patented dry preform and cap decontamination
Sidel built its unique, proven dry preform decontamination solution, Predis™, with extensive knowledge of beverage sensitivity, aseptic filling and blowing expertise that remains unmatched in the liquid packaging industry.
The technology allows the injection of Hydrogen peroxide (H_2O_2) into the preform right before the oven. This results in activation of the H_2O_2 by the existing preform heating stage:

- High level of decontamination, up to Log 6
- Reduced risk of peroxide residue within preform (H_2O_2 residue ⩽ 0.5 ppm)
- Same dry decontamination technology deployed to caps with Capdis™, resulting in 100 % dry aseptic packaging solution
- Usually supplied in an integrated blow-fill-cap configuration, the aseptic Sidel Combi Predis, to ensure 100 %-sterile filled and capped PET bottle

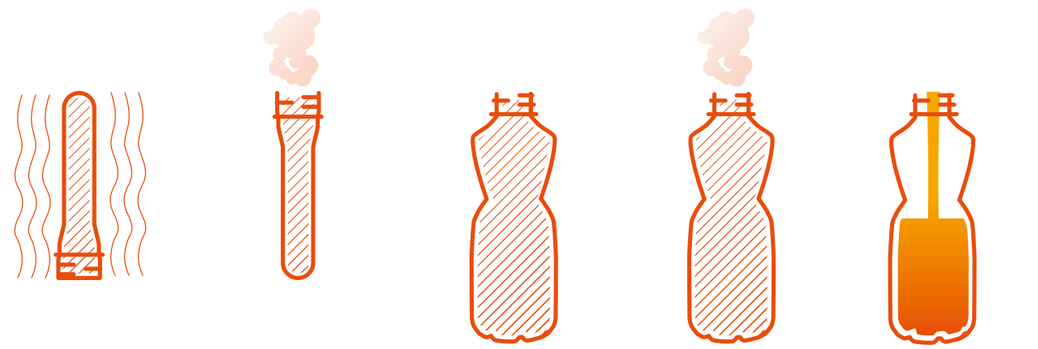
A SIMPLE AND SAFE INTEGRATED ASEPTIC PROCESS



NECK DECONTAMINATION BY UV LIGHT DURING PREFORM INFEED
PREFORM DEDUSTING
H_2O_2 INJECTION INSIDE PREFORM BEFORE OVEN
H_2O_2 ACTIVATION IN THE IR OVEN
EXTERNAL PREFORM DECONTAMINATION USING SYNERGY OF H_2O_2 AND UV LIGHT

CAP DECONTAMINATION

STAR WHEEL FOR CAP INFEED
H_2O_2 INJECTION
CONTACT TIME
ACTIVATION AND DRYING
STARWHEEL PICK AND PLACE



H_2O_2 ACTIVATION IN THE IR OVEN
TRANSFER UNDER CONTROLLED CONDITION
ASEPTIC BLOWING
TRANSFER UNDER CONTROLLED CONDITION
ASEPTIC FILLING

| ASEPTIC COMBI WITH DRY PREFORM DECONTAMINATION |

ACHIEVE COMPLETE HYGIENE IN PRODUCTION

SCIENTIFICALLY PROVEN DRY ASEPTIC SOLUTION

Scientifically tested and proven through multiple installations running in customer plants worldwide, the aseptic Sidel Combi Predis enables dry decontamination of all preform and cap types. The unique, patented process ensures a high level of decontamination up to Log 6 and minimises the sterile zone, controlling all risks of potential contamination. In this predictable process, critical parameters are continuously monitored to ensure full production sterility, beverage integrity and food safety.

Hygienic standard for your brand
The process helps to protect liquid packaging from microorganisms and preserves the integrity of sensitive drink products. As an ideal solution for ambient distribution products, the aseptic Sidel Combi Predis can help to lengthen shelf life and reformulate more sensitive beverages that would otherwise require added preservatives to maintain food safety.

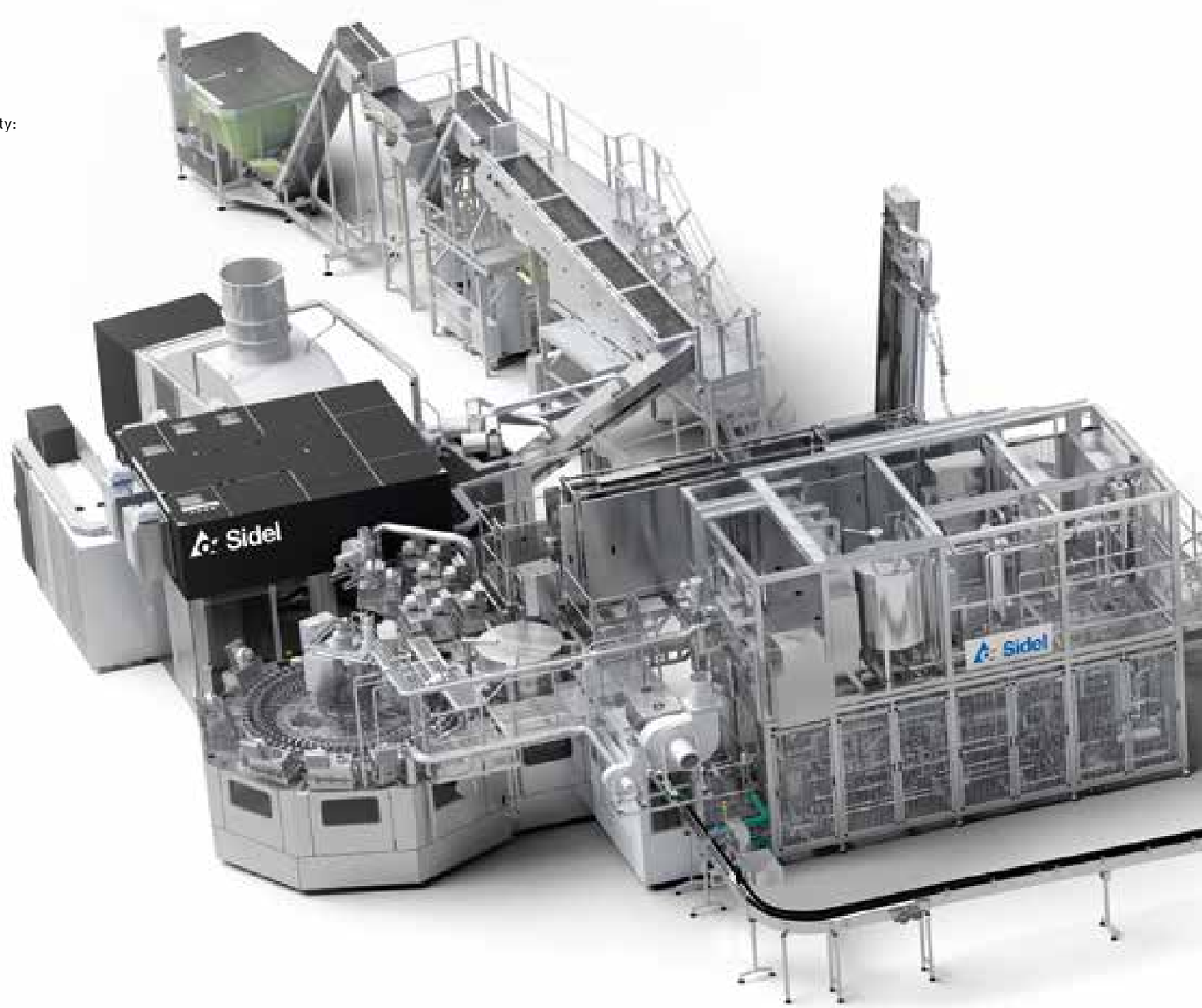
The competitive aseptic solution
This unique solution offers the market's simplest and fastest aseptic solution with dry preform decontamination. It also facilitates the lowest total cost of ownership (TCO) without compromising on food safety and simplicity, and it benefits from high process flexibility, reliability and sustainability.

Safe and accurate filling process
The aseptic Sidel Combi Predis is based on aseptic magnetic filling technology for ensured beverage integrity:

- Membrane-free magnetic filling valve for safe, hygienic filling
- Flow meter control for high filling accuracy
- Dual-speed filling – simple and streamlined filling circuit for recipe optimisation
- Beverage remains safe in case of extended or emergency stop
- Maximum flexibility – same valve for milk, juice and teas
- All beverages filled, including those with pulp – particle filling capability up to 6 x 6 x 6 mm
- Safe capping managed by mechanical or brushless capper

UP TO LOG 6
HIGH LEVEL OF DECONTAMINATION

100+
PREFORM DECONTAMINATION SYSTEMS AROUND THE WORLD



SAFETY AND SIMPLICITY YOU CAN COUNT ON

SAFE AND SIMPLE ASEPTIC PRODUCTION ACROSS THE LINE

Food safety is non-negotiable. At Sidel, it is more than just a practice: it is a part of our company culture, intrinsic to everything we do. Our best warranty for food safety is simplicity, because a line with very few critical factors is managed more easily and effectively. Customers who operate our equipment report complete product safety and quality, and repeated investments confirm their confidence in our safe, simple technology.

High level of food safety
Based on our unique beverage industry expertise and a focus on understanding the end product, Sidel equipment delivers a high level of safety and consistency across the complete line. Our solutions are designed to protect you and your customers, built according to hygienic design guidelines from the European Hygienic Engineering & Design Group (EHEDG). Sidel excels at producing reliable hygienic packaging and equipment that complies with beverage industry regulations while achieving high standards of food safety. Our complete solution is also available with 3A configuration compliance for liquid dairy applications.

A safe process to ensure product integrity
The aseptic Sidel Combi Predis is designed for optimal food safety, reducing contamination risks and avoiding deterioration of the end product:

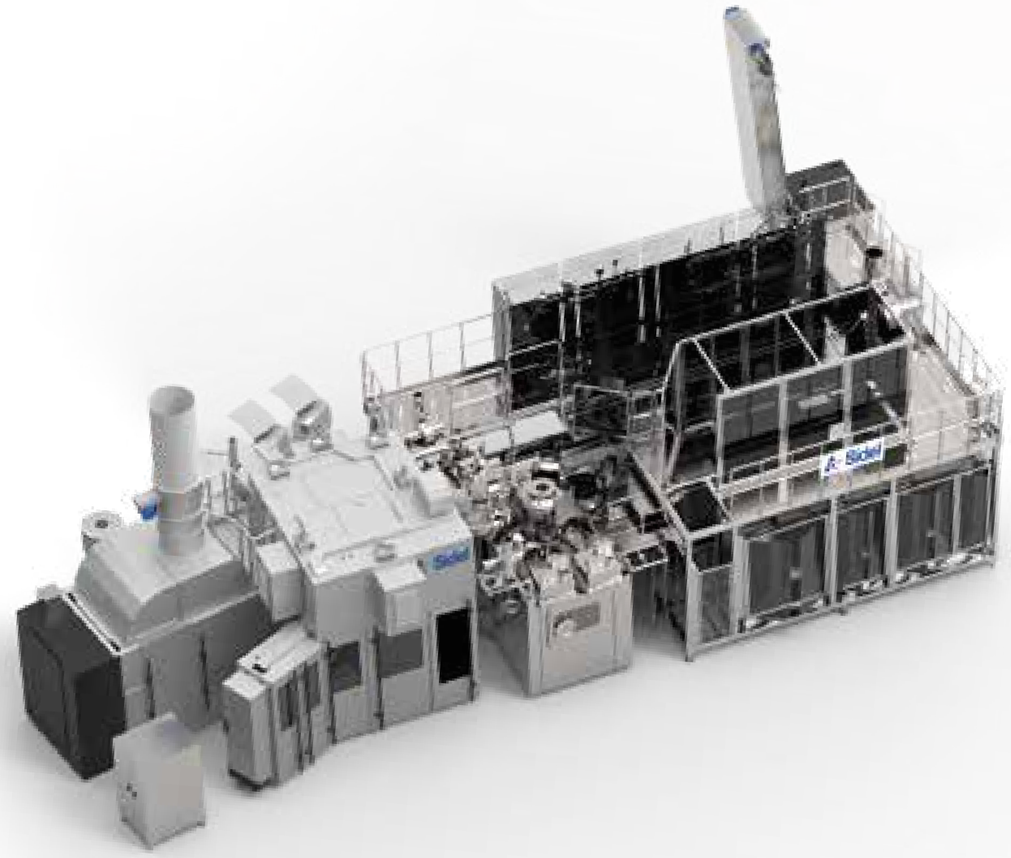
- Combi concept: low preform bio-burden level
- Easier to decontaminate preform than bottle (smaller surface, smooth shape)
- H_2O_2 preform decontamination initiated before oven
- Preform decontamination up to Log 6
- Dry technology – no water, no microorganic growth
- Small aseptic zone – reduced risk of contamination and very few critical parameters

Simple to operate and maintain
The aseptic Sidel Combi Predis is also simple to operate and maintain:

- Integrated configuration optimises production simplicity by requiring only one operator
- Oven synergy for process performance – chemical, heat and UV
- Patented process – aseptic blowing without need for blow-moulder sterilisation
- Simple, fast and safe changeover without loss of sterility – mould changeover down to 40 seconds each
- Easy to maintain, with compact and accessible design, and fewer components exposed to chemicals
- Only three-hour cleaning and sterilisation period required between bottle-to-bottle productions

3 HOURS
FOR CLEANING AND STERILISATION BETWEEN PRODUCTIONS

40 SECONDS
MOULD CHANGEOVER



A COMPACT AND LINEAR FOOTPRINT FOR A LOW-OUTPUT ASEPTIC COMBI

The aseptic low-output Sidel Combi Predis accommodates the need for an ultra-compact footprint, facilitating its implementation in new or existing plants:

- Up to 30 % reduction of footprint compared with existing linear solutions
- Possibility for parallel packaging machines layout with linear design, typical in milk industry
- Unique plug-and-play concept – simpler and faster on-site installation can be managed during 'hidden time' while installing rest of line
- Quick access to key components, allowing easy management and maintenance

| ASEPTIC COMBI WITH DRY PREFORM DECONTAMINATION |

TAKE ADVANTAGE OF TOTAL FLEXIBILITY AND EFFICIENCY

VERSATILE PRODUCTION WITH MAXIMUM UPTIME

In addition to developing industry-leading innovative aseptic technology, Sidel also focuses on ensuring that our aseptic equipment is reliable, efficient and flexible in daily use.

For any beverage, bottle or cap
Our aseptic output range spans from 10,000 to 60,000 bottles per hour, at 2,400 bottles per mould per hour, and is suitable for multiple end product possibilities:

- High and low-acid sensitive beverages (teas, juices, UHT white milk, soya milk, etc.)
- All PET preform types
- Many different bottle formats ranging from 200 ml to 2 litres
- Round or square bottles as a result of continuous by-the-neck transfer and absence of thermal stress
- Total freedom of design, as empty bottle does not experience thermal stress
- Unlimited lightweighting potential with preform decontamination
- Large range of flat and sports caps
- No aluminium foil needed – PET offers maximum tightness and safety using plastic caps, even for UHT milk

The highest aseptic bottling uptime available
Boosting the continuous production time of aseptic production equipment, the aseptic Sidel Combi Predis is designed to offer maximum productivity and efficiency:

- Continuous aseptic production run of 165 hours between cleaning and sterilisation cycles
- Simple, fast and safe changeovers with limited manual intervention – Bottle Switch™ tool-less system reduces mould changeover to 40 seconds each
- Reduced downtime for liquid changeovers – simple three-hour cleaning and sterilisation period between bottle-to-bottle productions

Bottle quality under control
The patented control and self-regulation of the blow-moulding process, Intelliblower™, ensures top bottle quality.

- Greater accuracy in distribution of PET material during bottles blowing, eliminating inconsistencies regardless of bottle weight
- High production uniformity and controlled bottle specifications for reduced scrap rate
- Less sampling and laboratory testing of bottles

UP TO 2,400
BOTTLES PER HOUR PER MOULD

165 HOURS
OF CONTINUOUS ASEPTIC PRODUCTION RUN

The aseptic Sidel Combi Predis is suitable for sensitive beverages of high and low acidity in PET like teas, juices, nectars and isotonics, as well as liquid dairy beverages such as UHT milk or soy milk.

The aseptic low-speed Sidel Combi Predis is extremely versatile, with low to medium output of up to 16,000 bottles per hour.

| ASEPTIC COMBI WITH DRY PREFORM DECONTAMINATION |

MAXIMISE COST-EFFICIENT AND SUSTAINABLE PRODUCTION

SAVING RESOURCES AND MONEY

Compared to traditional aseptic filling systems, the aseptic Sidel Combi Predis offers cost-efficiency and an optimal environmental footprint, addressing one of the most difficult challenges faced by beverage producers today.

The most competitive aseptic Combi with dry preform decontamination

- Very high productivity with output up to 2,400 bottles per hour per mould
- Combi mechanical efficiency of 95 %
- Optimised production reduces operating costs by up to 30 % compared to standalone equipment
- At least 10 times reduction in consumption compared with other dry preform decontamination systems
- Up to 30 % reduction in annual cost compared to dry bottle decontamination systems

Material and energy savings

- Unlimited lightweighting potential: no thermal stress on bottles and continuous by-the-neck transfer
- Up to 45 % reduction in electricity consumption: Sidel Matrix Ecoven is built with fewer heating modules and lamps, and reduces preform-heating time

No water and minimal chemicals

Reducing consumption of both water and chemicals is critical to achieving sustainable production, and the aseptic Sidel Combi Predis contributes to your effort while ensuring 100 % decontamination of bottles and caps:

- No water and almost no use of chemicals (H_2O_2 < 0.7 litre per hour) for preform decontamination, compared to traditional aseptic filling solutions using approximately 180 m^3 of water and 220 litres of chemicals per day

0 LITRE WATER
FOR PACKAGING DECONTAMINATION

< 0.7 LITRE
H_2O_2 CONSUMPTION PER HOUR

SAVING RESOURCES

No water and minimal chemicals for preform decontamination, compared to traditional aseptic filling solutions, offers cost-efficiency and an optimal environmental footprint.

ACHIEVE RELIABLE ASEPTIC PRODUCTION

EFFICIENT DECONTAMINATION PROCESS

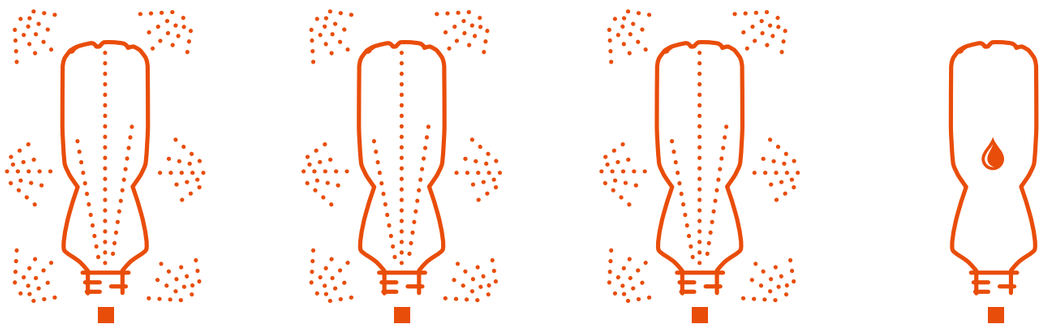
The aseptic Combi Sensofill™ is based on Sidel's proven blowing and aseptic filling technologies, all integrated into a single enclosure.

- Ensures food safety and controlled hygiene by eliminating intermediate conveying
- First-class performance with high production efficiency
- Compact and ergonomic equipment requiring only single-operator to be managed
- Optimised lightweighting compared to other bottle decontamination technologies
- Optimised line layout with its small footprint compared to production line based on standalone equipment

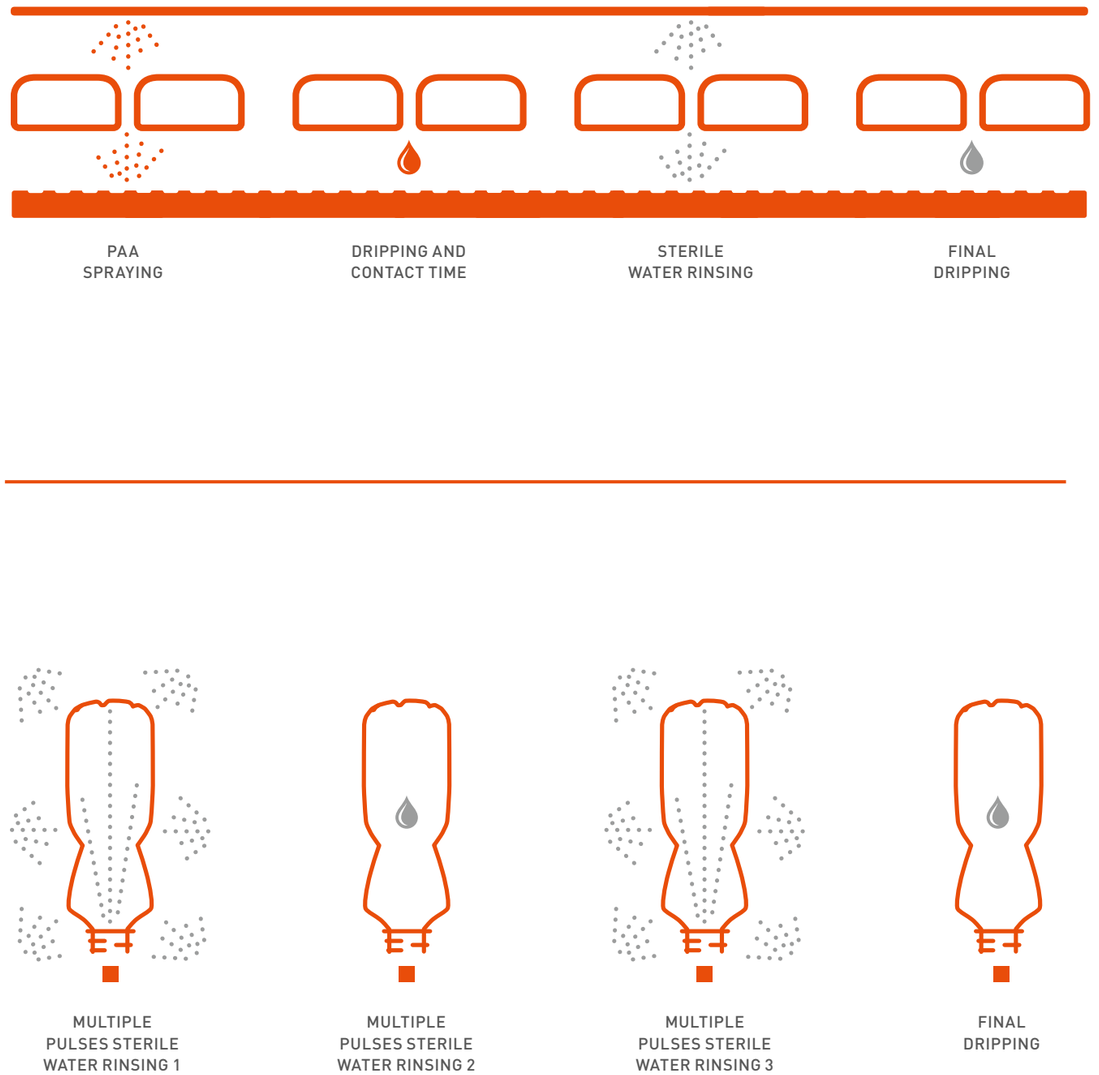
Reliable aseptic production
The aseptic Combi Sensofill relies on wet bottle decontamination technology with the smallest footprint possible. It achieves a high level of decontamination up to Log 6, ensuring total bottle sterility and maximum microbiological safety of your final product.

- Unique multi-wheel system to ensure internal and external bottle decontamination with combined mechanical, thermal and chemical action (Peracetic Acid, PAA)
- Treatment's high pressure, temperature and repetition to ensure perfect decontamination of all surfaces of the bottle
- Rinsing with multiple pulses of high-pressure sterile water to eliminate all chemical residue from bottle before filling
- Same decontamination method applied to cap

WET BOTTLE DECONTAMINATION



WET CAP DECONTAMINATION



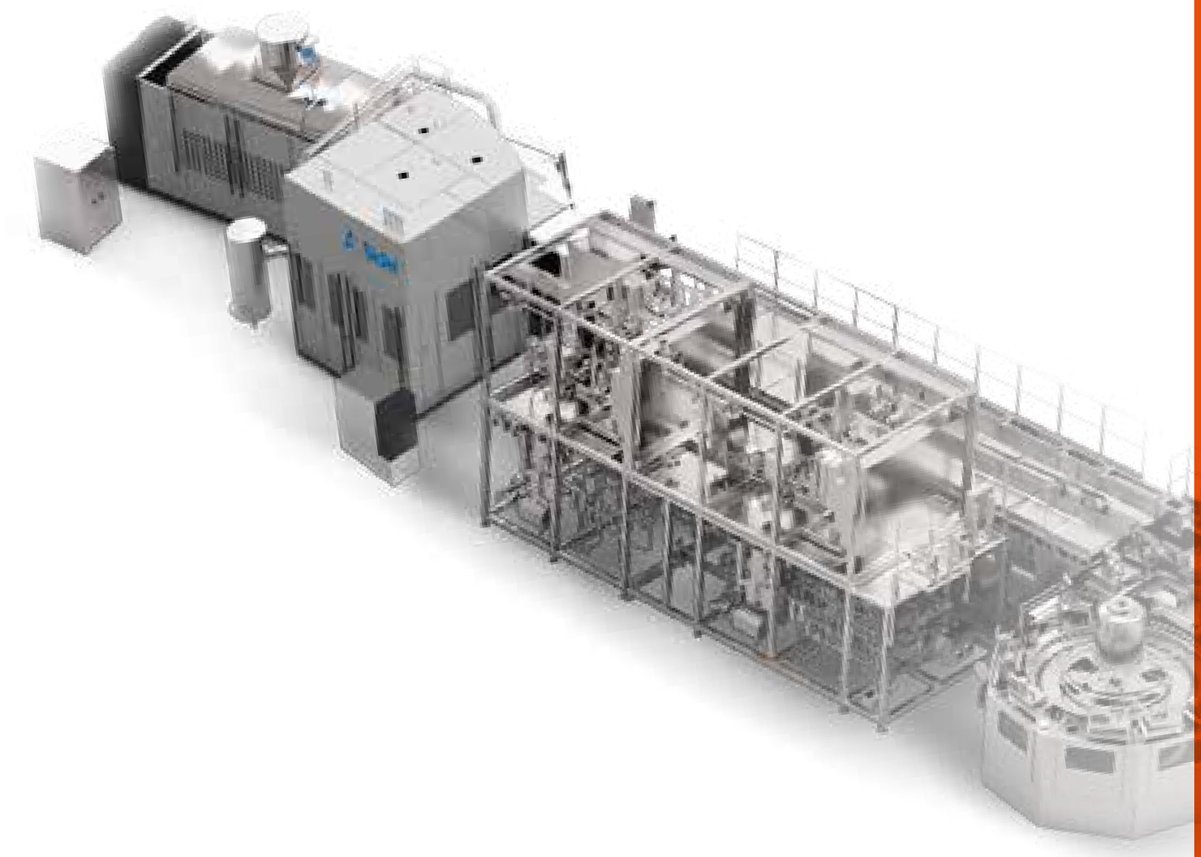
MAXIMISE EFFICIENCY IN MINIMUM SPACE

SAFE PRODUCTION SETUP

Product integrity across the supply chain
The high level of efficiency of the aseptic Combi Sensofill ensures the beverage integrity and safety in its PET bottle across the supply chain:

- Controlled packaging hygiene and ensured food safety with one unique closed production environment
- Safe production with magnetic filling valve
- Total package and beverage protection in transfer zone
- Bottle and cap decontamination up to Log 6
- Chemical residue in filled and capped bottle ⩽ 0.5 ppm

High performing production
- Reduced footprint without air conveyor between blowing and filling functions
- 95 % efficiency without intermediate bottle transportation
- Up to 2,400 bottles per hour per mould
- Production time extended to max. 165 hours
- Operator safety – closed Combi equipment protects operator working area
- Energy savings – up to 45 % reduction in oven's electrical consumption with fewer heating modules and lamps
- Bottle shape flexibility (round or square) and positive neck handling between blowing and filling
- Quick bottle and cap changeover
- 3 hours cycle between bottle-to-bottle production – less downtime for cleaning and sterilisation



⩽ 0.5 PPM
CHEMICAL RESIDUE IN FILLED AND CAPPED BOTTLE

Continuous PAA spraying on internal and external bottle surface ensures high sterilisation performance.

The magnetic filling valves ensure safe production and beverage integrity.

Each capping head is individually adjusted and constant torque is ensured.

LABEL ANY WAY YOU WANT

FAST AND FLEXIBLE ROLL-FED LABELLING

Once a packaging solution is blown, filled and capped, it moves onto one of its most defining features – the label. At Sidel, we make sure you stay on top of labelling trends. Whether you require roll-fed or sleeve labels for your aseptic beverages, our labellers can handle any label format and will make sure your product stands out from the crowd.

The flexibility to match your needs
The efficient Sidel Matrix roll-fed labeller, SL70, is a highly versatile system that with a unique ability to manage positive and negative spins and any bottle shape and speed. It can be installed in a variety of layouts and is easily reconfigurable.

Reliable high-speed performance
With production speeds reaching up to 60,000 roll-fed labels per hour, the Sidel Matrix roll-fed labeller maintains perfect stability for precise positioning:

- 100 % direct-drive transmission means fewer moving parts and less planned maintenance
- Controls differing label types and keeps consistent quality at high speeds
- No web stressing during aggressive accelerations
- Precise and level control of the label web feed
- Precise labelling with controlled web speed, positioning and excellent bottle stability
- Fast and controlled start-and-stop ability, outstanding uptime and 98 % efficiency rate

Precise and controlled label handling
The SL70 labeller delivers precise handling and application for all types of containers. It provides optimal label tension and delivers continually uniform and controllable glue application without the requirement of brushes, sponges or other applicator tools.

Quick format changeovers
Changeover times are 30 % faster for containers of different shapes and dimensions. Changeovers are completed in 25 minutes by only one operator in an in-line configuration.

Easy access to the main modules reduces risk of injury. The Human Machine Interface (HMI) allows easy adjustments to the bottle and label handling process.

Reduced maintenance
Operator safety, uptime and productivity are optimised by drastically reducing maintenance time:

- 40 % less downtime needed for maintenance
- Open structure ensures easy cleaning and maintenance
- No need for lubrication points
- No below-the-table maintenance
- Easily replaceable main modules

Sustainable and cost-efficient operations
The Sidel Matrix SL70 labeller cuts operating costs by processing thinner labels and handling extremely lightweight bottles. It also uses less glue, with an average of 5 grams per thousand bottles. It also significantly minimises energy consumption by using up to 40 % less power.

RANGE OVERVIEW

Bottle format	Bottle diameter	Label height	Maximum speed*
Up to 5 L	40-140 mm	30-170 mm	60,000 bph

* Subject to bottle format

The infeed screw creates the right distance between each bottle to fit with the labelling carousel pitch.

The bottle jack system maintains perfect bottle stability for precise positioning.

High torque servo-driven reel stands eliminate web stressing.

MAKE A STRONG LABEL WITH LESS

FAST FLEXIBILITY WITH NO GLUE

Today, heat-shrink sleeves are one of the fastest growing labelling solutions for the production of aseptic beverages in PET, due to their customisability and eye-catching appearance. The unique Rollsleeve labeller combines the simplicity of Sidel's consolidated roll-fed technology with an innovative high-speed shrink sleeve process in one single machine.

Unique sleeve labelling process
Compared to traditional Transversal Direction Orientation (TDO), where sleeve labels are formed in tubes on the reel, Sidel Rollsleeve applies labels with a Machine Direction Orientation (MDO). This means that the final tube creation and welding is performed directly in the labelling machine. Labels are wrapped and maintained with a vacuum and are closed edge to edge and sealed with innovative impulse sealing welding bars, without using any glue. It is one of the fastest sleevers on the market, running at speeds up to 54,000 bottles per hour.

Efficient and high quality labelling
Coupled with the benefits of increased flexibility and labelling quality, Sidel Rollsleeve incorporates many technological advances. Precise sleeve cut, and long-lasting single rotating cutting blades increase stability and control. In addition, the accurate and resistant welding is suitable for a wide range of films, materials and thicknesses.

Quick payback
Using MDO film, the Sidel Rollsleeve can reduce environmental impact and generate cost savings of up to 30 %:

- Eliminates need for sleeve forming costs
- Handles labels up to 50 % thinner than TDO or other MDO roll-fed machines
- Reduces material costs with thinner labels
- Lowers logistics costs
- Labels lightweight bottles
- No glue or solvents

High container, films and layout flexibility
The Rollsleeve labeller can easily switch from sleeved to roll-fed modes and offers excellent flexibility for different containers and labelling materials:

- Labels all types of containers, including round or irregularly shaped
- Suitable for bottle sizes up to 2 litres with diameters ranging from 50 to 100 mm
- Sealing system is suitable for recycling and is compatible with a wide range of label types, such as PET, PVC, PE, R-PET, PLA, OPS, and PP, and with thicknesses ranging from 15 to 130 µm
- Equipped with a module to selectively position labels on bottles at predetermined heights and can apply full- or partial-body sleeves
- Can be installed in various configurations

RANGE OVERVIEW

Bottle format	Bottle diameter	Sleeve height	Sleeve thickness	Maximum speed*
Up to 2 L	50-100 mm	50-230 mm	15-130 µm	54,000 bph

* bottles per hour

Once precisely cut with the rotating knife, the labels are transferred from the vacuum drum to the cylindrical drums.

The sleeve drums holding the bottles are lowered into the preformed sleeve labels.

Rollsleeve has a continuous throughput and automatically controls the flow of containers entering and exiting the machine.

PROTECT YOUR FINAL PACKAGE

FLEXIBLE AND FAST PACKING AND PALLETISING

Once your aseptic beverage product has been blown, filled and labelled, the primary package is transferred using Sidel conveyors to its secondary packaging process. The final result is the package the customer sees at the point of sale, so it needs to grab their attention. Whether you choose shrink-printed film, nested packs or wrap-around cartons, it is important to keep this layer appealing, strong and functional.

Appealing and durable
To ensure beverage safety, the pack's design should be both appealing and durable. Our packers ensure protection from elements such as weather, pressure and temperature changes, and should be easy for the consumer to transport after purchase. Our packing equipment gently feeds the bottles to ensure consistency and quality. We also optimise the use of heat, glue, carton and film to reduce overall costs.

- Gentle and precise infeed configuration increases efficiency
- Quick changeovers for flexible handling of multiple SKUs
- Maintains pack quality while reducing costs, materials and consumption

Smart pallet patterns
It is important to organise the right number of single bottles onto trays or dollies, or packs onto each pallet or half pallet to save space and optimise efficiency during storage and transport. As bottles and packs vary in format and size, Sidel palletisers allow easy changeovers in layer formation.

Conventional or robotic palletisers
A palletisation isle needs to efficiently manage different elements, from empty to full pallets, product layers and interlayer dividers all at the same time. For all palletising needs, a conventional palletiser from Sidel can offer easy troubleshooting, support and operation, all without specialised training. It can manage up to three SKUs (stock keeping units) simultaneously and convey 15 to more than 150 cases per minute. A compact robotic palletiser can easily adapt to different patterns for even greater line flexibility. A single articulated arm and multiple infeed can quickly handle up to four different SKUs at the same time.

- Flexible systems handle a variety of beverages, packs and layer patterns
- Compact systems fits into any production plant
- Ergonomic equipment is easily accessible for operation, troubleshooting and maintenance
- Robotic solutions for high production speeds

OPTIMISE PERFORMANCE TODAY AND TOMORROW

TAILORED SUPPORT AND GLOBAL EXPERTISE

Once your aseptic line's productivity, efficiency and performance targets are met, the goal is to maintain and improve these levels for years to come.

However, the reality is that performance can decrease over time without proper intervention, whether on account of normal wear and tear, changes in staff, or cleaning and changeovers losing their efficiency or efficacy. At the same time, new technologies and solutions can boost your line's performance to new levels.

Sidel Services™
Since we designed and built your line, we have a comprehensive understanding of your aseptic equipment and its individual parts. As aseptic beverage production is an industrial field with stringent hygienic protocols, our dedicated Sidel Services team offers you a tailored portfolio that can increase the safety and value of your beverage production for long-term success.

Maintaining production
Sidel's global team of experts are available to monitor your line equipment, plan for downtime and reduce unexpected costs.

You can benefit from the extensive knowledge and expertise of our experts, who perform over 1,400 diagnostic visits annually. Our yearly optimised maintenance plans focus on hygiene and line performance, while preventive maintenance allows us to validate part reliability through evaluation of critical component endurance. Our specialists also provide microbiological assistance, fast corrective maintenance and 24/7 support, both remotely and on-site. Offline maintenance operations are possible with spare modules, and we can also refurbish critical components.

Improving production
As Sidel develops new aseptic technologies and solutions, we ensure that your equipment is never left behind. We currently offer over 500 options and upgrades for every step of the production process.

These improvements can reduce the need for energy, water and raw materials, lowering total cost and improving your environmental footprint. Training in new methodologies and procedures can also improve production, and is available on-site, online or at any global Sidel Training Centre. Sidel offers specific training programs for:

- Managing best-production practises (BPP)
- Defining a control plan for aseptic cycles (HACCP)
- Managing quality control for laboratory technicians

Lowering total costs over time
New technologies and training can help lower your total cost over time. A proactive approach to aseptic spare parts management can also optimise costs, and is supported by Sidel's three delivery service levels and a world-class 24/7 supply chain.

Combined with fast and easy ordering of spare parts through Sidel Services Online, our recommended spare parts lists and intelligent replacement schedules allow you to proactively manage your inventory and optimise costs with maximum uptime.

Adapting production to new demands
As consumer demands change, you need the flexibility to adjust your existing aseptic line for a new product, recipe or package. With line conversions and original Sidel moulds, these conversions can result in increased uptime, reduced costs and greater overall production flexibility.

A GLOBAL ASEPTIC PET LEADER IN WORLDWIDE SENSITIVE PRODUCTION

Laiterie de Saint-Denis-de-l'Hôtel France

Centrale del Latte di Brescia Italy

Sangaria Japan

Jussara Brazil

Calidad Pascual S.A.U. Spain

Yotvata Israel

Sidel has the global presence it takes to meet our customers' local needs as they change over time. We understand your milk, yoghurt and milk-based product, and how to ensure thorough protection across the entire supply chain right up to consumption.

Our flexible technology has a proven safety record, and enables dairy brands of any scale to deliver ideal taste and optimal quality while differentiating their products in PET.

We work with local production leaders as well as some of the world's largest sensitive-product brands, and our complete PET beverage packaging solutions make packaged dairy production simpler, safer and more sustainable.

No matter where you are, or which liquid dairy products you want to package, our sensitive-product experts are always striving to ensure the safety and quality of your end product.

| JUICES, TEAS AND SPORTS DRINKS STANDING OUT |

LOCAL ASEPTIC PET EXPERTISE FOR GLOBAL SENSITIVE PRODUCTION

Refresco Gerber
United Kingdom

Hauser
Germany

Sokpol
Poland

Ampawa
Coconut Product
Thailand

General
Beverage
Thailand

Aurantiaca
Investimentos e
Patrimonial Ltda
Brazil

Laiterie de
Saint-Denis-
de-l'Hôtel
France

Volvic
(Danone Group)
France

L'Européenne
d'Embouteillage
(Suntory Group)
France

Spumador
Italy

Hana Water
Saudi Arabia

PT Asahi
Indofood
Indonesia

As a local partner with global reach, we aim to deliver more to your sensitive beverage production, optimising your performance wherever you are. Your end product is the primary consideration in everything we do at Sidel.

With our long history of providing aseptic PET production lines and our comprehensive portfolio of packaging, equipment and services, we allow our customers to constantly achieving beverage integrity and production efficiency while lowering their costs.

Our aseptic solutions have been successfully implemented and proven by collaboration with major names in the worldwide beverage industry. They achieve a high level of customer satisfaction and experience numerous repeat orders, which serves as the best indicator of our technology's reliability.

GET A COMPLETE ASEPTIC SOLUTION AT
SIDEL.COM/ASEPTIC-LINES

The Sidel Group is formed by the union of two strong brands, Sidel and Gebo Cermex. Together, we are a leading provider of equipment and services for packaging liquids, foods and personal care products in PET, can, glass and other materials.

With over 37,000 machines installed in more than 190 countries, we have nearly 170 years of proven experience, with a strong focus on advanced systems, line engineering and innovation. Our 5,000+ employees worldwide are passionate about providing complete solutions that fulfil customer needs and boost the performance of their lines, products and businesses.

Delivering this level of performance requires that we continuously understand our customers' challenges and commit to meeting their unique goals. We do this through dialogue, and by understanding the needs of their markets, production and value chains. We complement this by applying our strong technical knowledge and smart data analytics to support maximum lifetime productivity to its full potential.

We call it *Performance through Understanding.*

sidel.com

Performance *through* ***Understanding***

Sidel