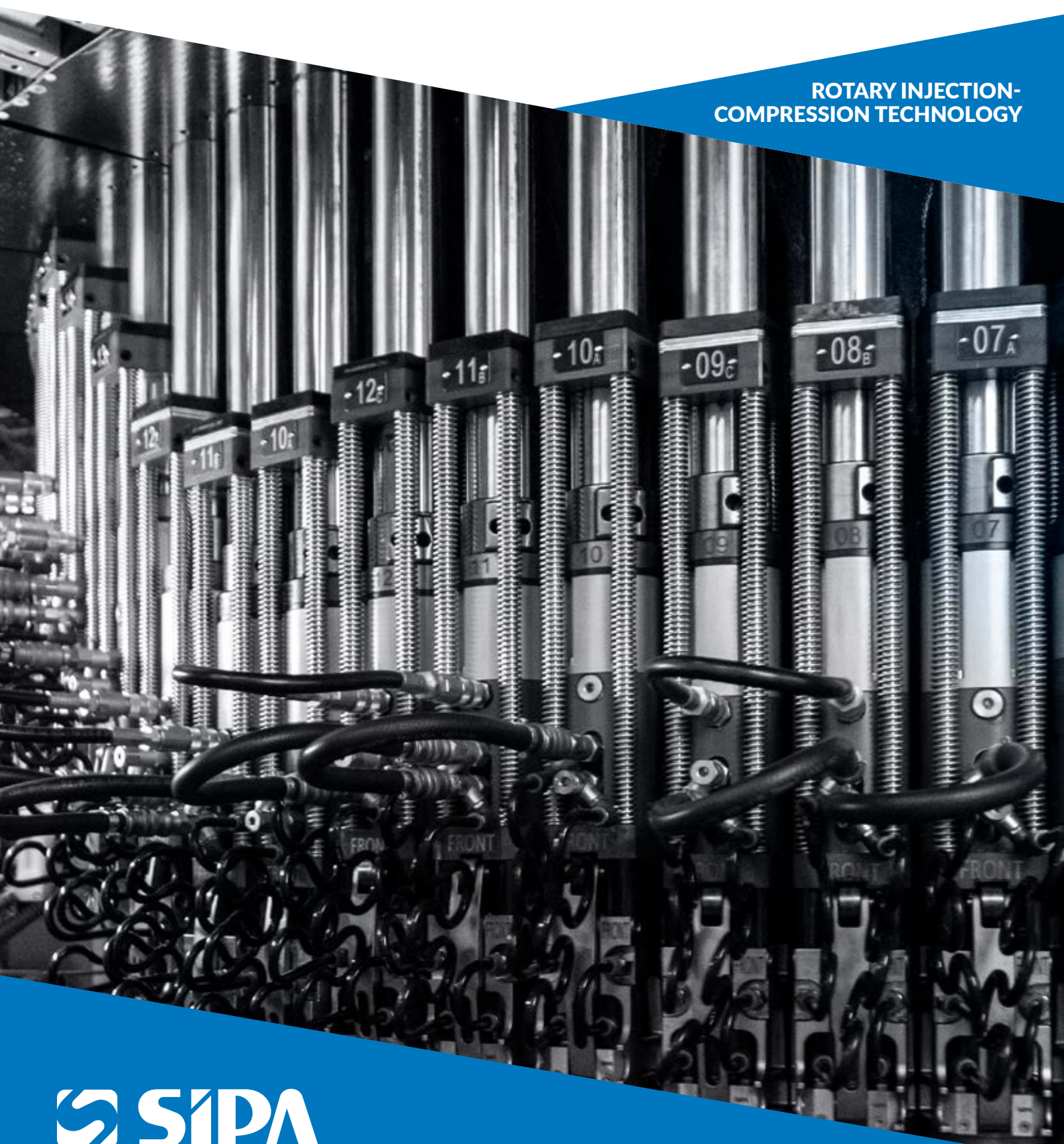


XTR^EME

ROTARY INJECTION-
COMPRESSION TECHNOLOGY



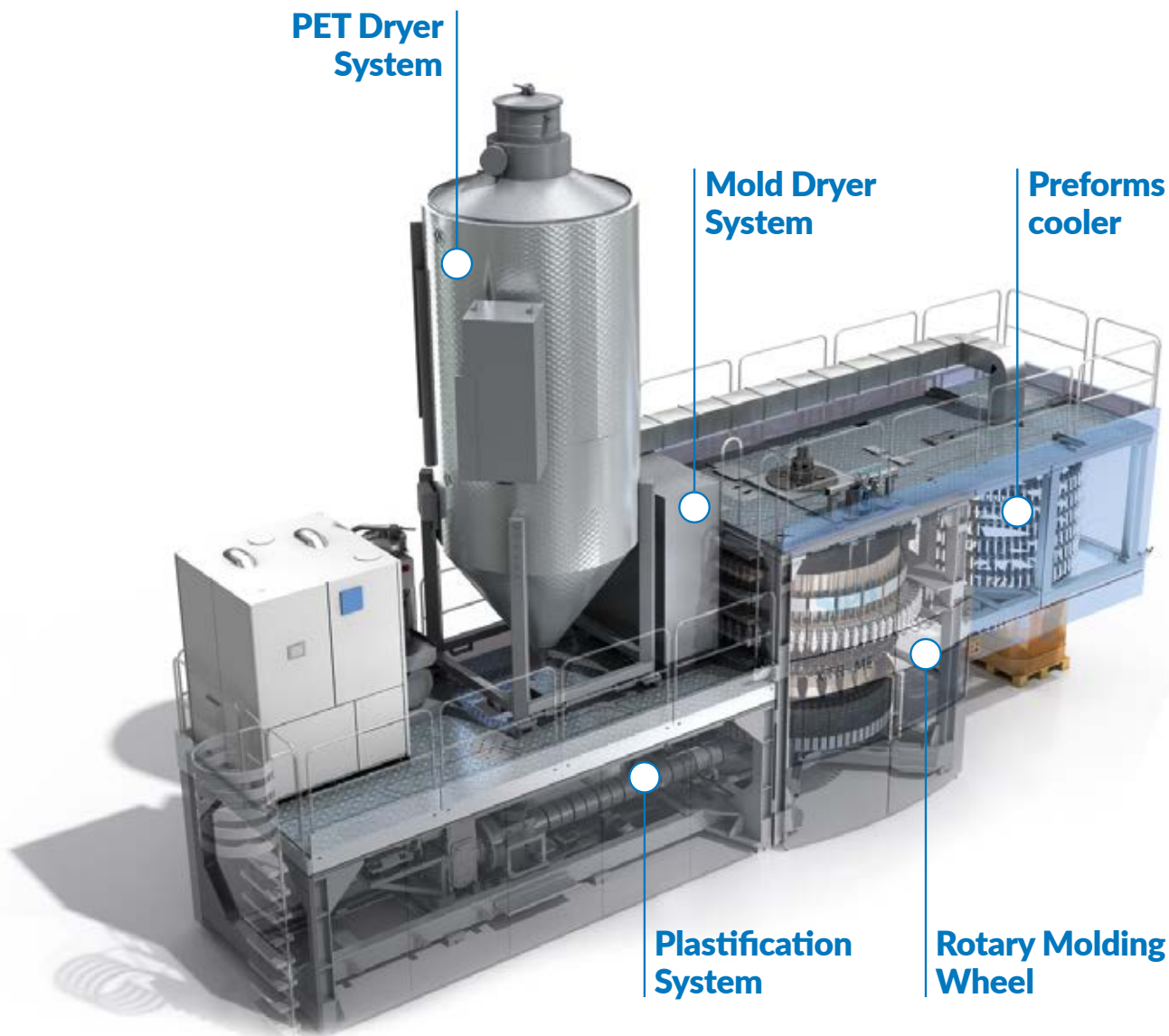
THE PRODUCTION OF PET PREFORM BECOMES XTREME

Thanks to its **distinctive cutting-age technology and innovation**, SIPA has created in a single platform the best solution for the different production needs of customers worldwide. **XTREME** is a rotary platform for manufacturing lightweight preforms destined for mineral water and aseptic bottles, with **the utmost levels of efficiency** and **the lowest TCO**.

This **revolutionary injection-compression molding system** permits the highest L/t ratios in the industry, enabling **the production of preforms that are 10% lighter** than traditional injection molding, with a **5-time lower pressure and stress on material**. This translates into **AA levels reduced by 40%** and **IV falls over 70% lower**. Also, the possibility to produce two different preforms simultaneously, **the 100% preform inspection capability**, the much faster **mold changeover time of only 1 minute per cavity** and the **reduced carbon footprint** make XTREME the forerunner of a new era in packaging design.



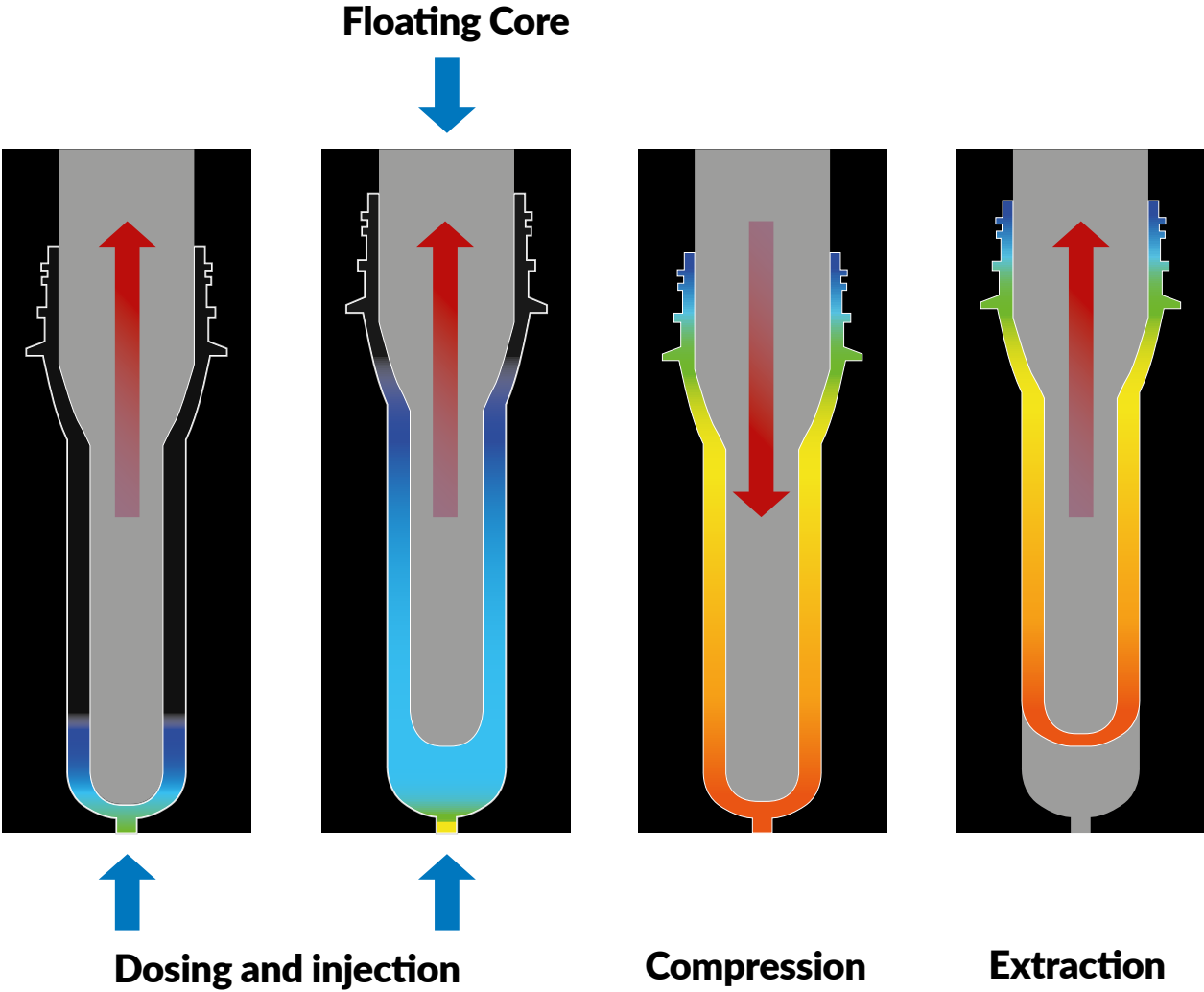
XTREMELY EFFICIENT, FLEXIBLE AND FAST



XTREME PLATFORM RANGE		
Cavitation	Extruder size/Max melt flow rate (kg/h)	Max mechanical speed (P/H)
72	120/850	57,600
96	120/850	69,000

SIPA'S INJECTION-COMPRESSION TECHNOLOGY

PROCESS DESCRIPTION



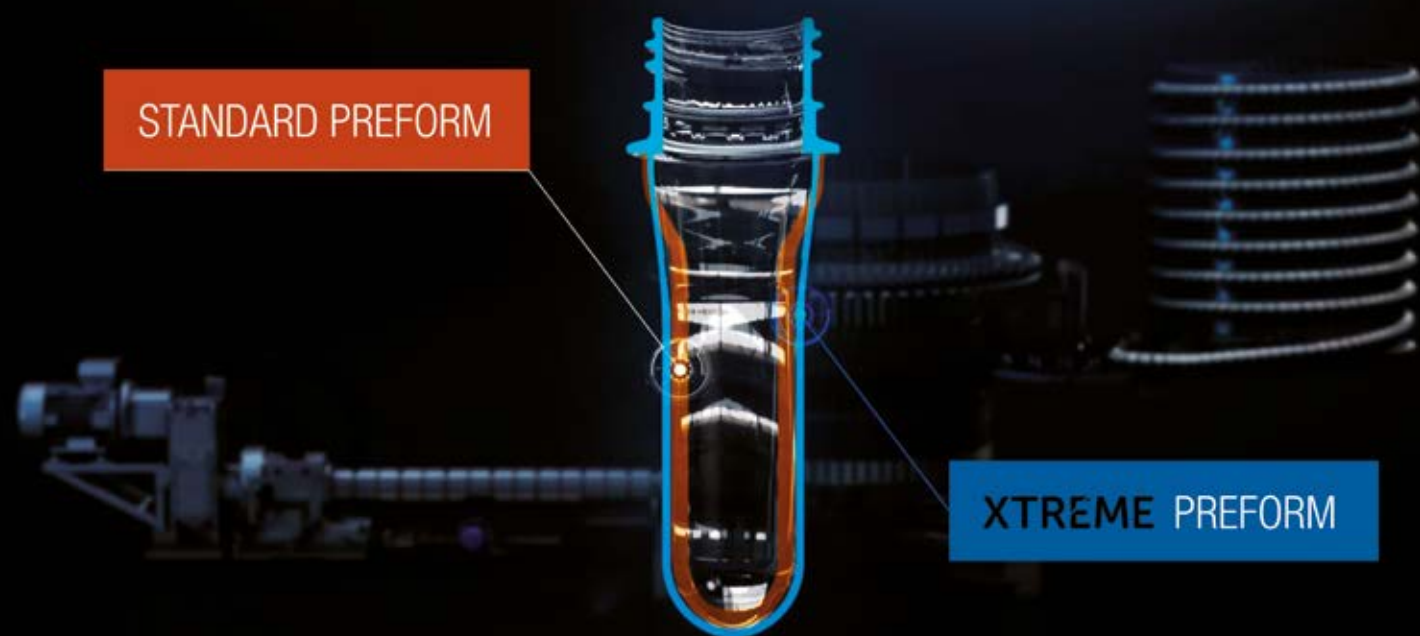
BENEFITS VS TRADITIONAL INJECTION

- Low injection pressure
- Reduced stress on melt
- Lower IV drop
- Low tonnage system
- Consistent and precise part weight

XTREME KEY VALUES

With XTREME injection-compression molding technology, SIPA has taken the production of PET preforms into a new dimension. All of these values, together with the possibility to reduced waste generation due to lighter preform production, come together to create a high-performance and high-quality preform production system, with lower costs than any other in the world today.





2. ENERGY EFFICIENCY: BEST PERFORMANCE WITH UP & DOWNSTREAM INTEGRATION



In combination with upstream and downstream integrated components, XTREME contributes to huge energy and CO₂ savings.

- **30% of energy cut in XTREME Renew configuration** for production of preforms starting from 100% hot-washed post consumer flakes
- **80% of CO₂ emissions cut** compared with a system making preforms from virgin PET
- **25% of total electricity saved** eliminating IR oven before blowing thanks to ISBM system integration (**XTREME SINCRO**)

1. LIGHTWEIGHT: EXTRA FREEDOM IN DESIGNING PREFORMS



XTREME technology has the inherent advantage of producing preforms with lower and more uniform wall thickness distribution around the base. This is possible thanks to the lower pressure involved in the PET preform molding process than that used in conventional injection molding. The weight reduction creates important savings in the amount of PET used, reducing both costs and CO₂ emissions.

- **Less material:** up to 10% lighter preforms with **no performance loss**
- The **highest L/t ratio**
- **Gentle material treatment** with very low injection pressure
- Freedom in preform design with almost **no limitations in thickness**
- **Consistent preform weight**, mechanically adjustable on the machine **without stack change**
- **Lowest preform cost** in the industry



4. OIL-FREE: SAFETY FIRST, CLEANLINESS ALWAYS



XTREME is clean and safe for operators and food containers as it's the first high-output preform system totally oil-free.

- No need for **complex hydraulic system** for machine functions and to achieve high injection pressure
- No **oil leak** contamination threat
- No expensive exhaust **oil disposal**

3. 100% IN-LINE INSPECTION: TOTAL REAL-TIME CONTROL

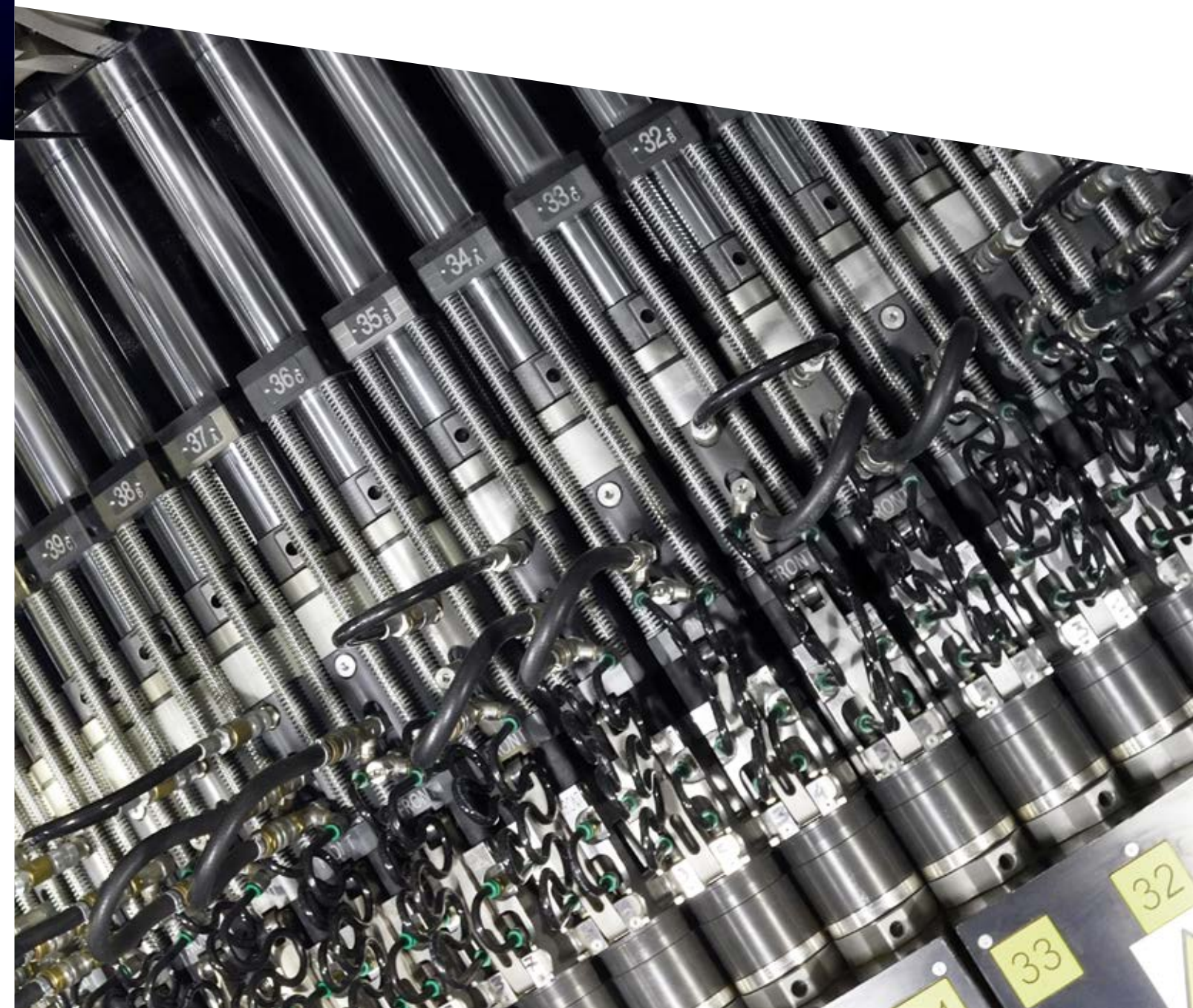


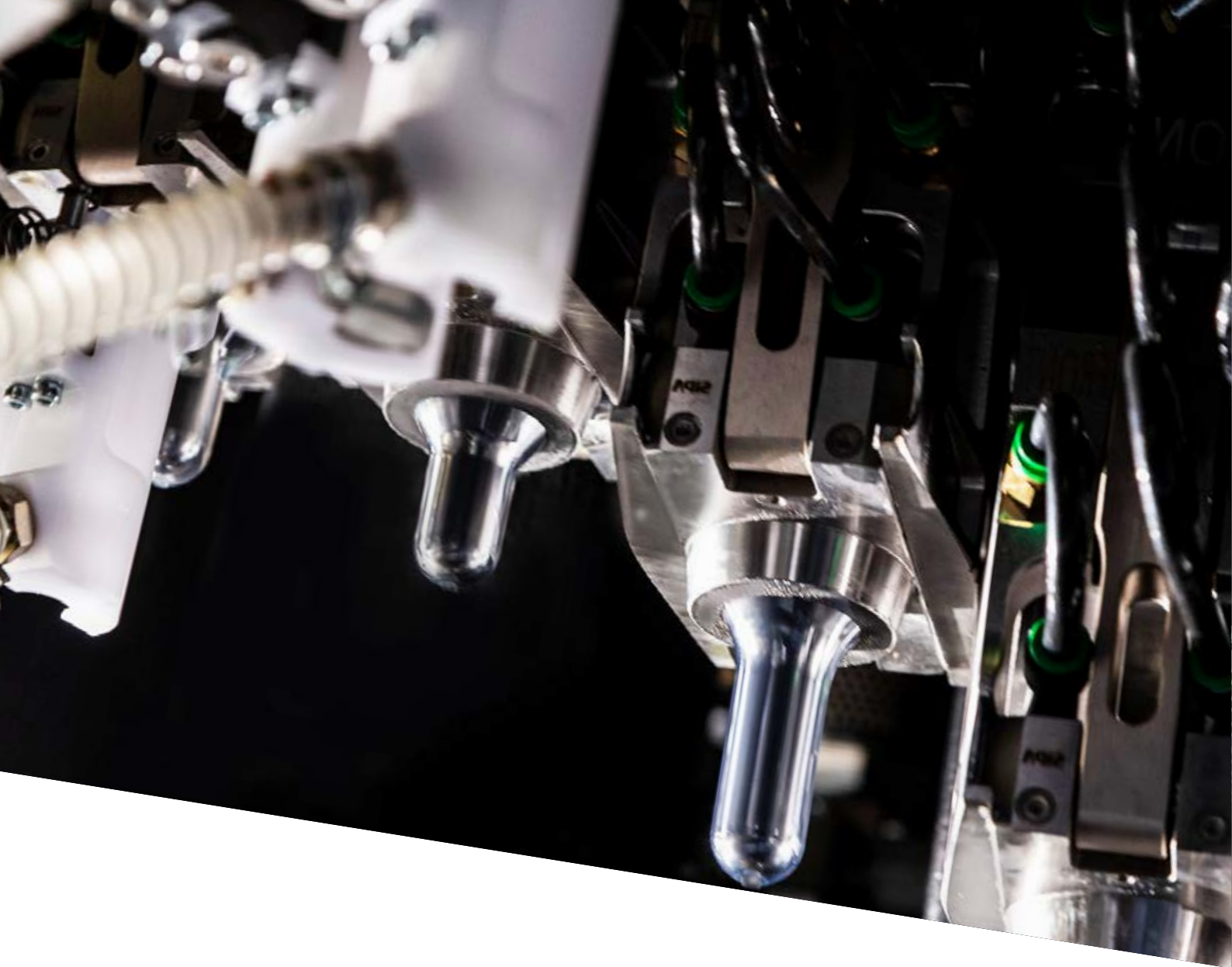
Inspection cameras installed both on the transfer wheel and on the post-mold cooling system check the neck and the body quality of the preforms produced, using a special software.

- Up to 6 **highly sophisticated cameras**
- Temperature measurement with **optical pyrometer**
- **Fully automatic ejection** of out of spec preforms
- Complete integration into the **HMI**
- **Less operators** needed

SOME OF CAMERA INSPECTIONS:

- TOP SEALING SURFACE
- NECK FINISH OVALITY
- NECK FINISH FLASHES
- DEFECTS ON PREFORM BOTTOM
- GATE HOLES OR FOREIGN PARTICULARS
- BLACK SPECKS
- BUBBLES
- SCRATCHES
- SCRUBS AND DIRTINESS
- INCLUSIONS
- CRYSTALLIZATION
- HAZE
- HUMIDITY
- THERMAL DEGRADATION
- LONG GATES
- COLOR DEVIATION





5. FLEXIBILITY: TWO DIFFERENT PREFORMS AT THE SAME TIME!



This rotary platform produces preforms in two different formats at the same time. The preforms can be of various weights, for bottles with distinct volumes, and they can also have different neck sizes.

- **Alternating mold sets**
- **Use of a single dosimeter** per cavity for simultaneous production of 2 preforms
- **Bottles size range:** from 0.2 up to 3.5 liters
- **Hot and cold-fill containers** without any changes to the system
- **Automatic sorting** of different preforms in the correct bin



6. HIGH UPTIME: THE FASTEST MOLD CHANGEOVER EVER



XTREME's rapid mold change system enables the operator to completely replace all the molds on the carousel in no time, increasing machine availability.

- **Fast changeover time:** less than 1 minute per mold
- **More time dedicated to production of preforms**
- **Easy to use:** cam-driven synchronism prevents operator error
- **Lowest TCO** in the industry



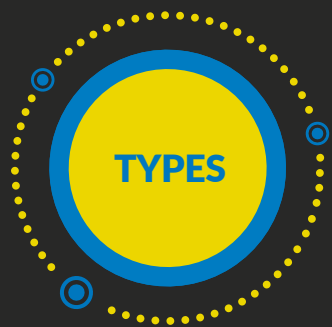
APPLICATIONS

Material & containers type

XTREME rotary preform injection-compression system produces a wide range of light weighted preforms with the freedom to create new and unique designs. There is almost no limitation on wall thickness, and L/t can be higher than that normally possible with injection molding.



Virgin PET,
rPET pellets
rPET flakes



- Lightweight (mineral water, edible oil)
- Longer preforms with ultra-thin wall < 1.7 mm
- Innovative neck finish & base design for extreme lightweighting

DOWNSTREAM AND UPSTREAM INTEGRATION: ALWAYS THE PERFECT MATCH

The exceptional flexibility of XTREME stands on its ability to be connected with other key pieces of equipment in the total PET bottle making and filling process, upstream and downstream. This machine can be combined with other systems or be included in a production cycle in a truly innovative approach, improving overall performance and energy saving levels, as well as line efficiency in a variety of ways. Discover the huge potential of this unique Open System.

XTREME RENEW

100% rPET HOT WASHED FLAKES + PREFORMS

XTREME SINCRO^{CUBE}

PREFORMS + ROTARY BLOWING + FILLING & CAPPING

XTREME RENEW SINCRO^{CUBE}

100% rPET HOT WASHED FLAKES + PREFORMS
+ ROTARY BLOWING + FILLING & CAPPING

PREFORM PRODUCTION FROM UP TO 100% rPET

The first "bottle-to-bottle" system in the world designed for the circular economy that produces food-grade preforms while saving the environment, energy and costs. XTREME RENEW patented technology, developed in collaboration with Erema, is unique in producing preforms from 100% rPET washed flakes in a single heat cycle.

XTREME RENEW

ADDED VALUES

- Production of PREFORMS containing up to 100% rPET from simply washed flake to food-grade PET with virgin-like quality
- Major process simplification
- Safe and approved process (FDA, Efsa, Invima, Anvisa, ...)
- Top preform quality: IV stability, top colour values, clear preforms, food-contact compliant
- Sustainable process, from waste to resources
- Up to 15% lower TCO vs. traditional recycling concept
- Major energy savings (30%) vs. traditional recycling concept
- Up to 20% reduction in logistics/warehouse vs. traditional recycling concept

PRE-DRYING/
DECONTAMINATION



Post mold cooling

Rotary Molding Wheel

Melt filtration

Plastification

ADDED VALUES IN FEW NUMBERS

10%

10% lighter PET containers,
leading to a competitive
advantage in packaging.

15%

Lower TCO, up to -15%,
compared to conventional
recycling.

20%

Advantage in logistics: -20%
logistics and transportation
costs.

30%

Energy savings: -30%,
only 0.58 kWh/kg PET.

80%

CO₂ emissions: -80%
compared to virgin resin.

100%

100% sustainable:
only recycled PET flakes.



FROM PREFORMS TO FILLED BOTTLES ALONG THE SAME LINE

The ultimate integration combining preform production, bottle blowing, filling and capping. XTREME SINCRO CUBE can be configured for a wide range of products. This solution is compact, flexible, easy to operate and extremely energy efficient. With the additional benefit of removing preform, total overall costs are significantly lower, while the quality of the finished bottle is better. Preform production up to bottle blowing version is available, excluding the filling if not needed.

XTREME SINCRO^{CUBE}



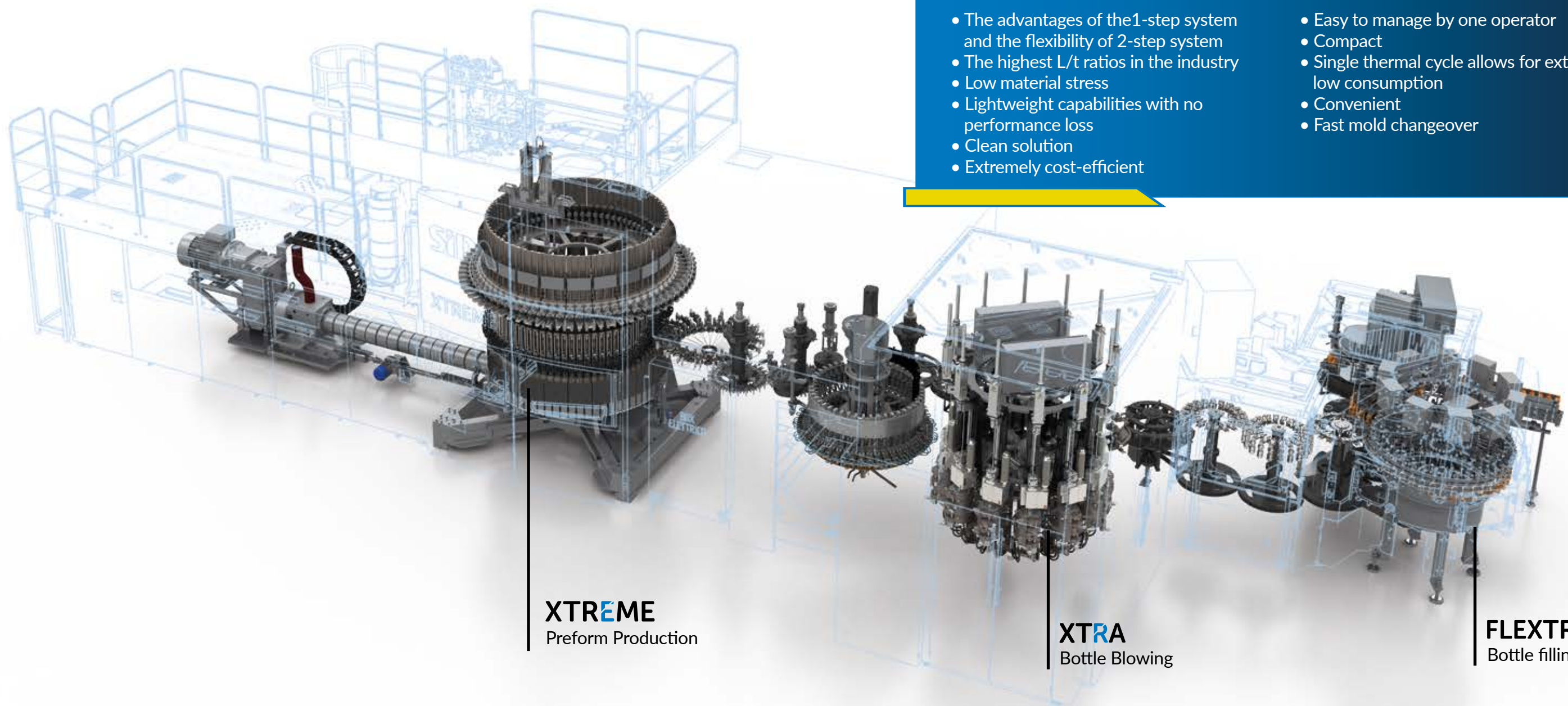
ADDED VALUES

- The advantages of the 1-step system and the flexibility of 2-step system
- The highest L/t ratios in the industry
- Low material stress
- Lightweight capabilities with no performance loss
- Clean solution
- Extremely cost-efficient
- Easy to manage by one operator
- Compact
- Single thermal cycle allows for extremely low consumption
- Convenient
- Fast mold changeover

XTREME
Preform Production

XTRA
Bottle Blowing

FLEXTRONIC
Bottle filling & capping



THE FULLY INTEGRATED SYSTEM FROM 100% rPET TO FILLED BOTTLES

XTREME RENEW SINCRO CUBE is a unique configuration for PET containers worldwide. This machine makes use of the whole Open System potentials in SIPA technology, giving the exceptional chance to produce preforms, blow and finally fill 100% rPET containers from hot washed flakes.

XTREME RENEW SINCRO CUBE

ADDED VALUES

- Reduced power consumption
- High flexibility and ease of use
- Low material stress
- Lightweight capabilities with no performance loss
- Clean solution
- Extremely cost-efficient
- Optimized oven ventilation system
- Wide range of fillers
- Compact
- Single thermal cycle allows for extremely low consumption
- Sustainable process, from waste to resources

XTREME RENEW
Preform Production

XTRA
Bottle Blowing

FLEXTRONIC
Bottle filling & capping



sipa.it

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