The future we see through

WARE HANDLING

AP PUSHER
CONVEYOR
CONVEYOR PROTECTION
TRANSFER WHEEL
CROSS CONVEYOR
STACKERS (SDA02 - SDA03)
THERMOSHOCK

BDF® industries

OUR HERITAGE

The development and integration of complex technologies to help industrial progress has been BDF Industries core business since 1906.

The **global market** requires the multi-tasking, multicultural and multi-expertise approach of BDF, that over the years has been able to evolve and shape itself according to the necessities.

With its collaboration instinct and the professionalism demonstrated in more than **115 years of tradition**, BDF offers the chance to take part in a first-rate technologic group ready to challenge current and future business opportunitites in terms of **competitivity**, **performances** and **reliability** of products and processes.

The future we see through.

OUR MISSION

BDF Industries is a manufacturer of technologically advanced machinery, a Group where performance and innovation melt together in an everlasting pursuit of excellence.

MELTING

BDF Industries Melting product line includes the complete glass melting and conditioning technologies for design and supply of furnaces, working end & forehearths. The range of products includes also the **relavant equipment** like oil and gas burners, firing system air, exhaust reverse valve, batch chargers and forehearth glass mixers.

BDF Industries furnaces are engineered with an **high level of customization**, focusing in particular on energy efficiency and environmental impacts. Thanks to a long time experience, combined with a team of skilled people that work together in a synergistic way, BDF Industries is able to offer a wide range in **design, manufacture and supply** of different furnaces types for production of containers, tableware, lighting ware and technical glassware.

FORMING

BDF Industries glass container Forming product line is the historical core business. BDF Industries is able to provide a wide range of machineries with a high level of production flexibility to meet the customers' requirements.

With more than 65 years of experience in glass forming field, BDF Industries can offer a complete range of IS machine including gob forming and delivery, ware handling, container and variable equipment. The glass forming machineries are fully designed and assembled in house at BDF Industries in Italy, which has relevant knowledge of production process with the most important glass manufacturers in the world (e.g. strong credentials for forming business in O-I, Saverglass, Sisecam, Vetropack, Vitro...).

SERVICE

BDF Industries has a Service organization dedicated to provide a complete spectrum of the highest quality service solutions to satisfy the needs of our clients from a single source. Our services support the entire product value chain from melting glass making to forming, filtering, energy facilities and automation.

The service product line includes installation & startup, upgrades of mechanical equipment and automation, technical assistance for repairing and overhauling, training, performance evaluation & long term service agreement, integrated maintenance management & diagnostic solutions and systems, spare parts.

The contents of service are the following:

- Supply local qualified supervisors
- Supply of certified end/or upgraded OEM (Original Equipment Manufacturer) spare parts for all maintenance operations
- Performance of all equipment maintenance
- Repairs using state-of-the-art technology
- Optimization of Spare Parts inventory
- On the job Training of local maintenance and operation personel.

The BDF Industries Learning Center in Italy and strategically located Service Centers offer a wide range of programs in technical courses. Our technical courses are presented by field-tested experts combining understanding of theory and practical experience.

Ware Handling

Pusher


BDF
industries

AP PUSHER

MAIN DATA

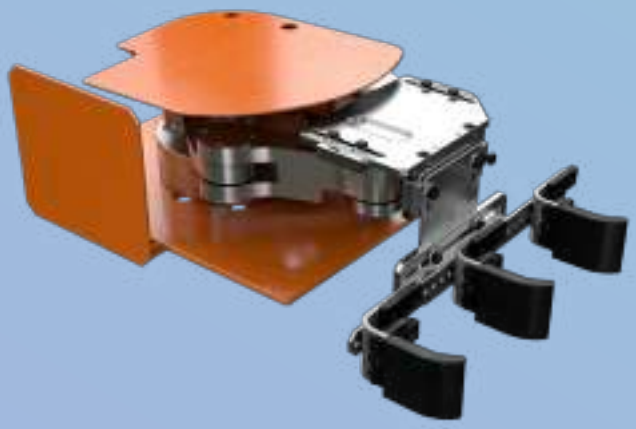
- Controlled by two coaxial torque motors
- Max conveyor speed = 50 m/min
- Articulated pentalateral linkage for the fingers control
- Control with 3 degrees of freedom on the fingers
- Available for all machines and conveyor types
- SG - DG - TG - QG

BENEFITS

- No belt transmission or reduction-gear on the drive but only linkage system for a very reliable mechanism
- Low inertia high rigidity design
- Accurate wares handling with the possibility to adjust the angular and axial positioning of the wares on the conveyor
- Very good performances on high speed conveyors
- High flexibility with the cam generator

MECHANICAL FEATURES

- Motors and linkage in alluminum alloy
- Integrated or stand alone control with the possibility of easy synchronization with no BDF IS forming machines
- Use of digital drives and brushless torque servo motors
- Possibility to easily modify the cam parameters from the machine computer
- Cam Generator Software to make or modify the cam profile



Bottles delivery

AIR JET **AP PUSHER**

MAIN DATA

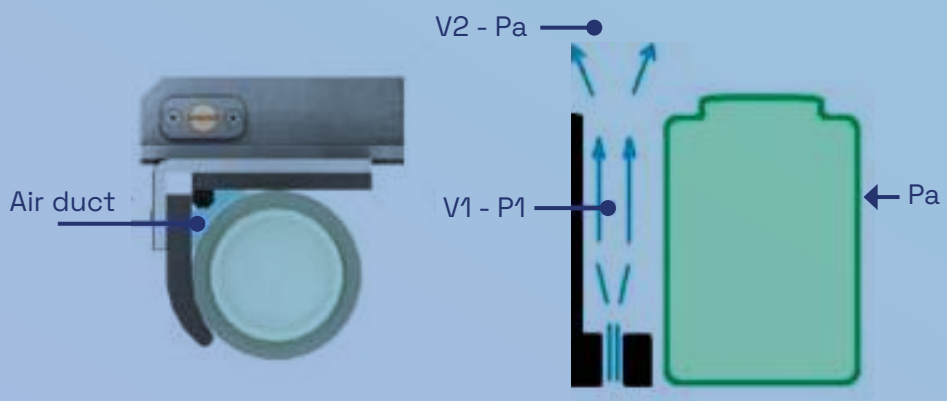
- Max conveyor speed = 65 m/min
- Use the venturi effect
- Indipendent and easily accessible air flow adjustments for each cavity positioned upon the finger
- Finger suction with regulated compressed air (4.5bar)
- Available for bdf AP pusher mechanism in DG-TG-QG

BENEFITS

- Increased bottle stability for high speed conveyor
- Minimize harmful air flow to keep the bottle temperature under control

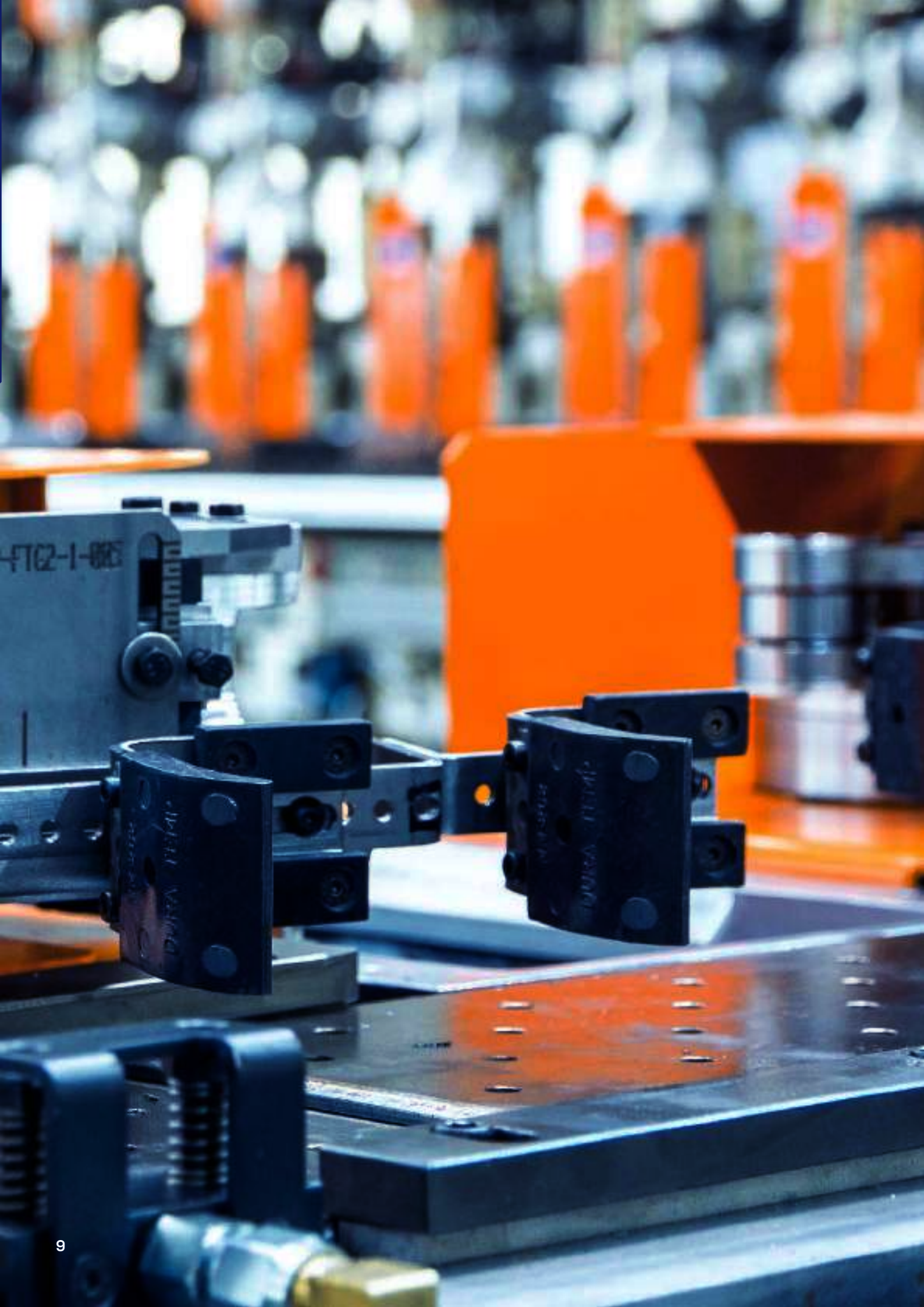
VENTURI EFFECT

The Venturi effect states that in a situation with a constricted section of a duct the pressure of the fluid reduces. The air duct consists in the residual space between the pusher finger and bottle. When an high speed air flow go through in this space, a depression happen in relation to the outside normal pressure. In this way, the atmospheric pressure will push the bottle against the pusher finger.



Ware Handling

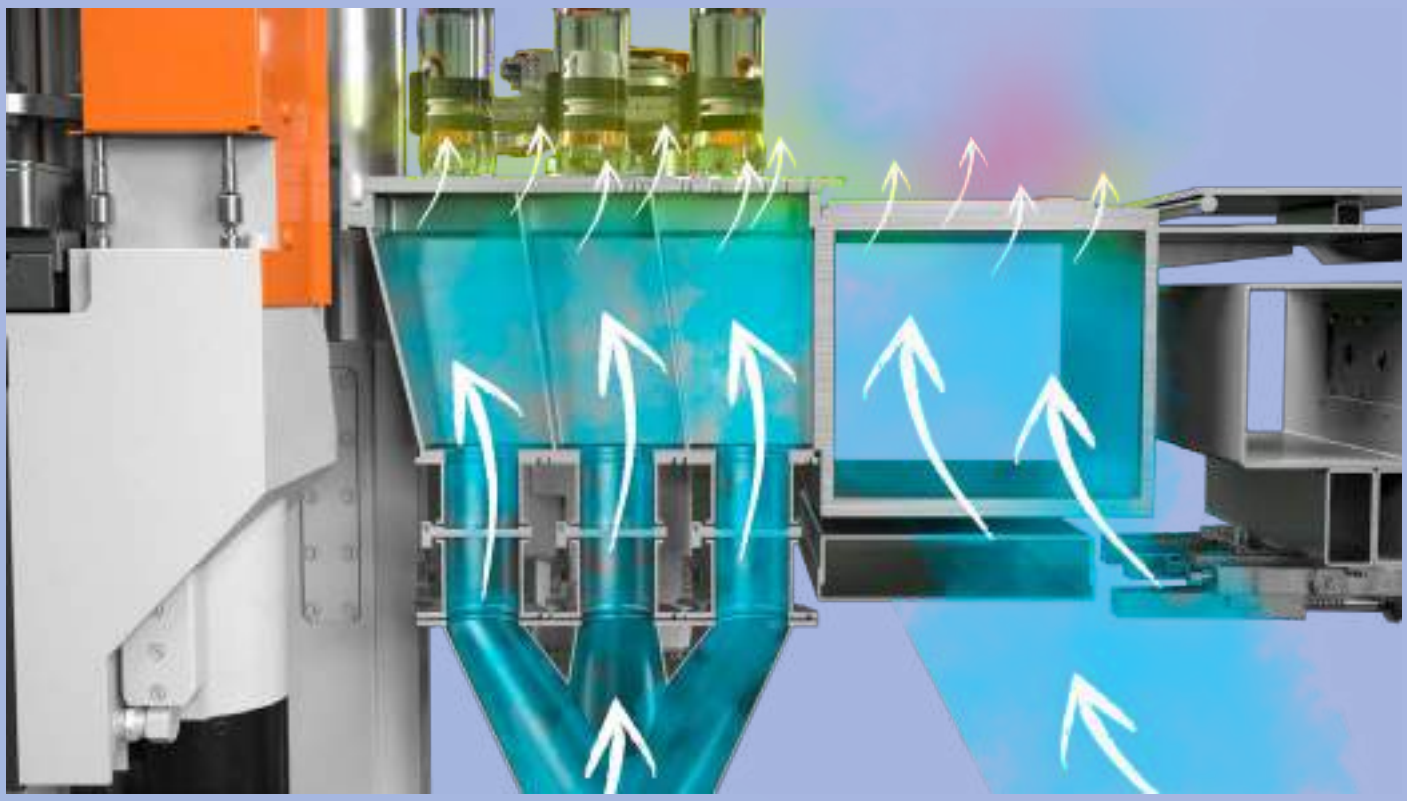
Conveyor



CONVEYOR **HSS**

GENERAL FEATURES

- Accurate ware positioning & handling combined with AP Pusher operation very good performance on high speed conveyors (up to 750 bottles/min, 10-12 sec. and tandem IS machines, also in DGTG) flexibility and possible adjustment of bottles' angular and parallel position on the conveyor
- High reliability thanks to direct drive transmission with no belt
- Higher cooling management
- Independent air feed wind box and dead plate cooling for each cavity
- Independent (not from conveyor frame) axial air feed with timing control
- High flexibility and adjustment for different containers
- Wind box with adjustable dead plate's height
- Precise alignment and tension thanks to a 3-level adjustment belt tightener
- Low maintenance
- Sturdy structure with moveable beam support
- Hs-conveyor designed for 10-12 sections and tandem machines up to 750 bottles/min
- Servo pusher mechanism with two motors (AP-pusher)
- Independent control of dead plate air cooling for cavity
- Independent axial air feed with timing control
- Wind box with dead plate height adjuster
- Conveyor beam supports and lifting device
- Conveyor belt tightener



Double direct air flow
for DG - TG - QG

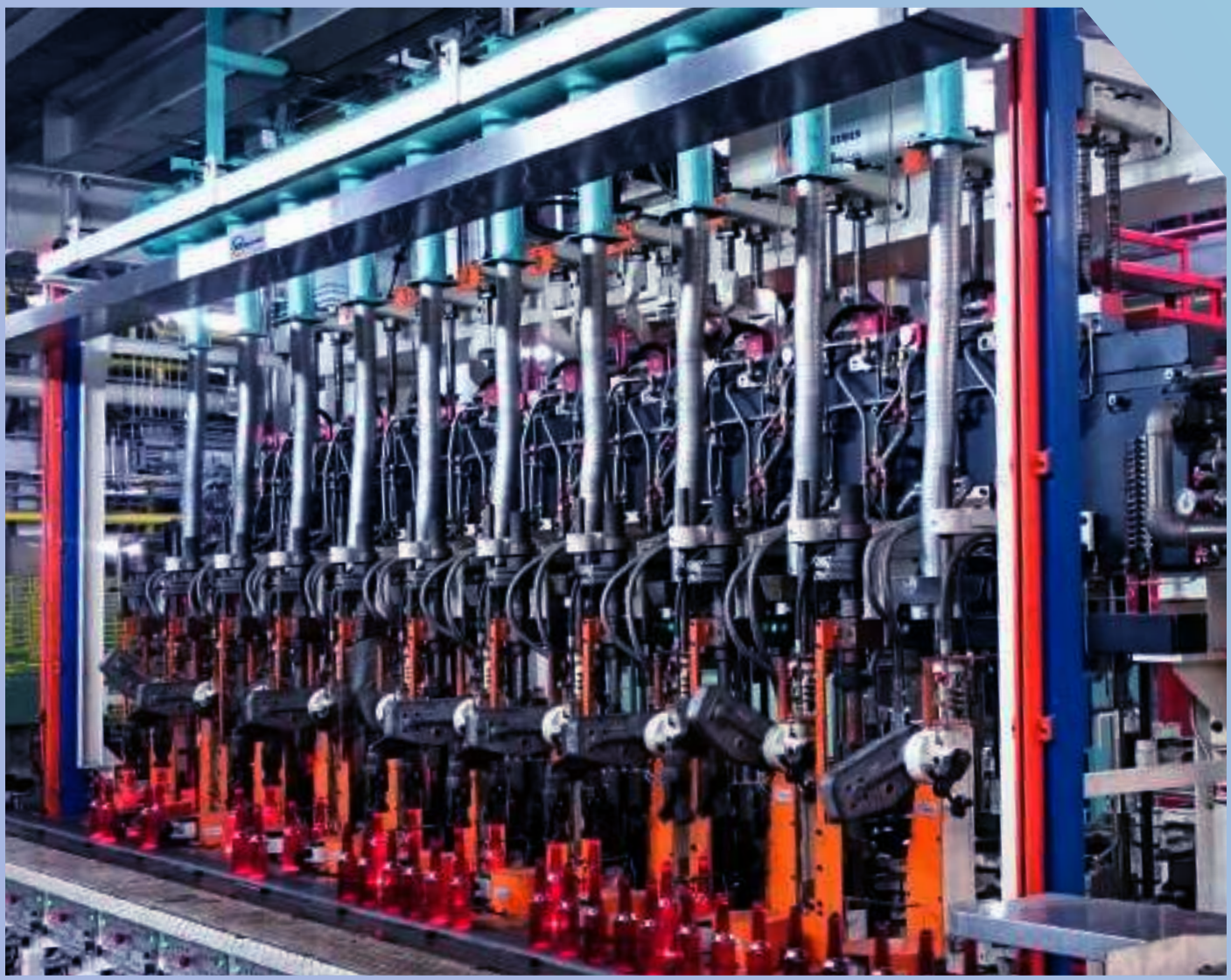
Conveyor

CONVEYOR
PROTECTION COVER

Mainly required for containers' production addressed to:

- Baby food
- Pharmacy
- Cosmetics
- Avoidance of any contamination of foreign materials coming from glass production operations in the plant
- Cover's adjustable height on conveyor
- Sturdy and stable structure fixed onto the IS machine
- Light structure with stainless steel cover for conveyor, transfer wheel, cross conveyor

IS machine



Ware Handling

Transfer Wheel

NEW
TRW 1305 HS

This transfer has been specifcally developed for use with high speed production lines. Max speed 500 bottle per minute.

FEATURES & BENEFITS

- Precise retraction of pushing fingers on the output side of the
- transfer wheel
- Adjustable top and bottom ware guide
- Operate with 150, 175, 200 and 250mm wide delivery belts
- Small width of the transfer plate (120 mm)
- Chain: pitch 3/4”, lenght 90” (120 links), double row with extended pins
- Chain tension system
- Phase/emergency clutch
- Quick change finger & different finger size

NEW
TRW HSS DOUBLE CHAIN

Ware transfer system specially developed for handling coniteners on TG and QG production machine with high speed production lines. Max speed 900 bottle per minute.

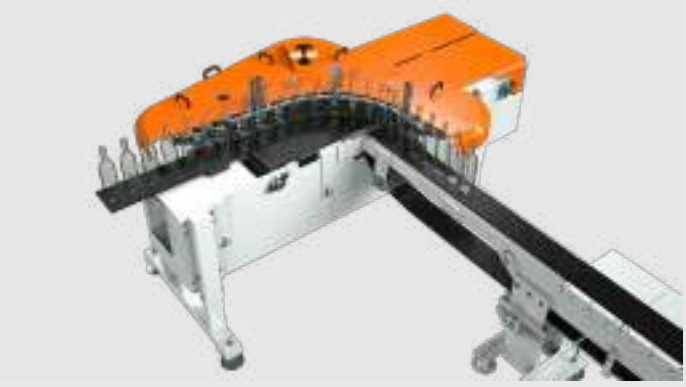
FEATURES

- Double belt conveyor drive and transfer wheel with large transferring radius
- Short conveyor belt speed can be regulated indipendently
- Precise retraction pushing finger on the input and the output side of transfer wheel
- Adjustable top ware guide (in-out & up-down) and bottom wareguide (in-out regolation)
- Chain: pitch 3/4”, lenght 157.5” (210 links), double row with extended pins
- Electronic timer and clutch handling
- Phase and emergency clutch
- Quick change finger
- Optimize lubrication system

Standard conveyor belt configuration: 6” wide is conveyor belt + 8” wide short conveyor belt.

BENEFITS

- Smooth and accurate cointener positioning to the cross-conveyor belt due to special finger motion system
- Short conveyor belt ensure that cointener are in steady contact with finger during transfer



Ware Handling

Cross Conveyor

TYPE 3800
TYPE 3900 WATER COOLED

MAIN STRUCTURE

- Divided in individual adjustable sections to correct possible structural deformations due to the heat given off by the annealing lehr

DRIVE SYSTEM

- Oscillating drive group for belt constant self-tensioning
- Gear reducer directly coupled to the motor

GENERAL FEATURES

- Simple and strong construction
- Individual adjustable sections on the structure
- Adjustable cross conveyor height
- Dead plates in refractory steel
- Supplied for all lehr widths
- Low maintenance
- Reduced wearing parts
- Air or water cooled

CONNECTION TO THE ANNEALING LEHR

- Stainless steel dead plate
- Each plate is freely connected to the cross conveyor frame by means of two pins and, on the opposite side, it lays on the lehr belt
- An adjusting device to be operated from outside the cross conveyor allows to adjust the height of the plates for an optimal connection between cross conveyor and lehr

Cross type 3800

Cross type 3900 Water Cooled

Stacker

SDA 02 DUAL AXIS
SERVO STACKER

GENERAL FEATURES

- Rotation and arm movements controlled by two identical brushless servo motors
- Installed on rails with easy and quick withdrawal system
- Push-bar with variable step inserts and ready to accept different type of inserts
- Inserts in graphite with easy change system
- Faster push-bar replacement
- Accurate and absolutely repeatable movements
- Extremely reduced maintenance
- Different types of cycle synchronization
- User-friendly operator interface
- Programming, saving, loading of configuration and production data
- Stabilization bar (optional) with height adjustment

TECHNICAL DATA

- Cycle speed: up to 11.5 cycles per minute
- Cross conveyor speed: up to 45 m/min
- Glass containers max. height: 450 mm

PUSH-BAR

- Max. width 4500 mm
- Min. inserts centre distance: 60 mm
- Inserts step: 20 mm
- Stroke in lehr direction: 415 mm
- Side shift stroke: 430 mm
- Admissible lehr belt height: 800 ÷ 950 mm
- Min. fingers quote: 825 ÷980 mm

SDA 03 THREE AXIS
FULL SERVO STACKER

GENERAL FEATURES

- X-Y-Z axis movement controlled by three brushless servo motors, accurate and absolutely repeatable movements
- Installed on rails with easy and quick withdrawal system
- Safety guards
- Kit of inserts in graphite with easy change system
- Push-bar with compressed air cooling capability
- Stabilization bar for particulary unstable ware, with remote horizontal and vertical adjustment
- Extremely reduced maintenance
- Different types of cycle synchronization
- User-friendly operator interface
- Easy data programming, saving, loading of configuration
- Operator terminal and control installed on top of the cabinet

TECHNICAL DATA

- Cycle speed: up to 21 cycles per minute
- Cross conveyor speed: up to 60 m/min
- Glass containers max. height: 500 mm

PUSH-BAR

- Max. width 4500 mm
- Min. inserts centre distance: 60 mm
- Inserts step: 20 mm
- Stroke in lehr direction: 480 mm
- Side shift stroke: 480 mm
- Vertical stroke: 525 mm
- Admissible lehr belt height: 800 ÷ 1100 mm

Ware Handling

Ancillary

THERMOSHOCK TESTING MACHINE

The machine is essentially formed by a basket where the containers are placed in vertical position, and by two tanks, one containing hot water with the heating element, and one containing cold water. Two pumps provide to maintain water at the required temperature by circulation of hot water and cold water respectively.
Each tank has a thermometer allowing to read the water temperature with ± 1 °C accuracy. An automatic programmer transfers the container basket from the hot to the cold bath.

FEATURES & BENEFITS

- Testing time is about 6 minutes as follow specifications: Max thermal head: 65°C (with cold water at 20°C and hot water at 85°C)
- System accuracy: ± 1°C
- Transfer time of the basket: 15 ± 2 seconds
- Basket dimensions where to put the bottles: 600 x 550 x h 400 mm
- Construction material of the tanks: AISI 304
- Overall dimensions: 2600 x 1600 x h 1750 mm
- Weight: 910 Kg

MECHANICAL FEATURES

- The machine is provided with hot and cold water tanks
- The tanks are provided with pumps for continuous water flow from lower part to the upper one of each tank
- Useful capacity of each tank: 270 litres

ELECTRICAL FEATURES

- The machine is provided with one hot and cold water temperature control system by means of 2 electronic regulators and 2 thermocouple
- Heater power: 16 kW
- Total installed power: 20 kVA
- Power supply (typical): 400 V – 50
- Hz threephase

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