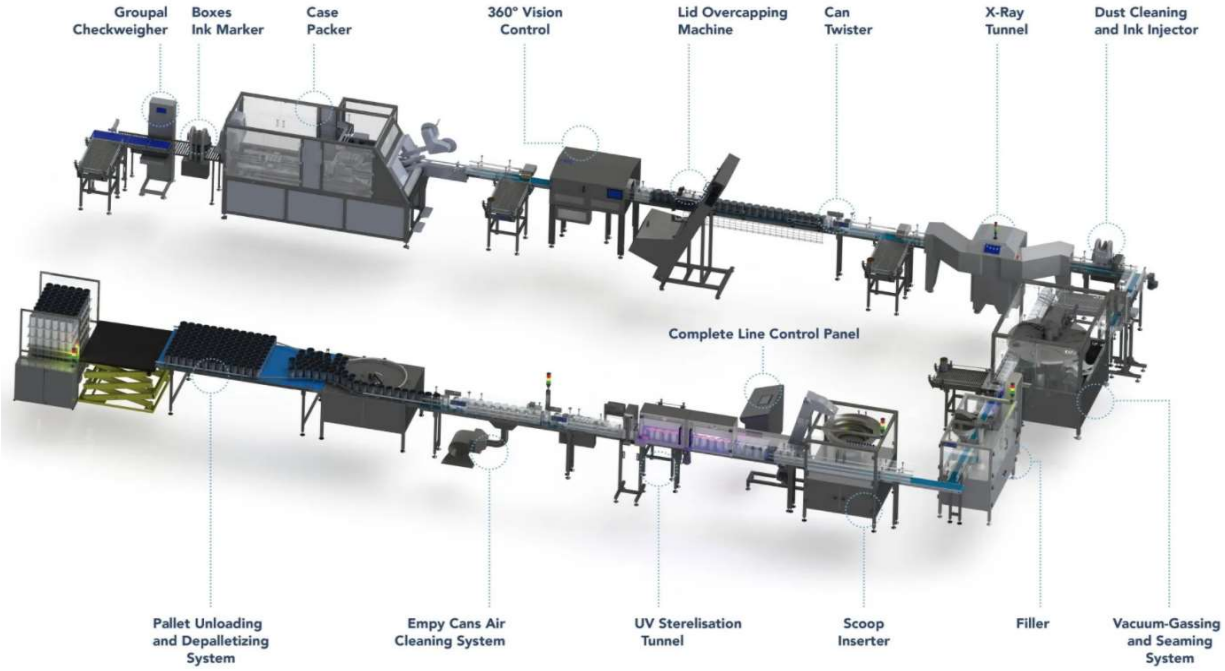
SAPLI
Packaging Technology

PRODUCT OVERVIEW
MACHINES AND COMPONENTS
PACKAGING EQUIPMENT FOR
CANNED AND POWDERED PRODUCTS



SAPLI
Packaging Technology

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INDEX

1. COMPANY PRESENTATION 4

2. SCOPE OF SUPPLY 6

3. PRODUCTS 8

3.1. HIGHLY ACCURATE POWDER AND GRANULAR FILLERS 8

3.1.1. IN-LINE AUTOMATIC FILLING MACHINES 8

3.1.2. ROTARY POWDER FILLERS 10

3.1.3. HIGHLY ACCURATE WEIGHT FILLERS 12

3.1.4. BAG POWDER FILLERS 14

3.2. VACUUM-GASSING AND SEAMING SOLUTIONS 16

3.2.1. OPTION 1 VACUUM GASSING AND SEAMING SINGLE STATION 16

3.2.2. OPTION 2 VACUUM GASSING AND SEAMING SINGLE STATION 20

3.2.3. OPTION 3 VACUUM GASSING AND SEAMING DOUBLE STATIONS 22

3.3. LID OVERCAPPING SYSTEM 24

3.3.1. LID OVERCAPPING SYSTEM LAYOUT 24

3.3.2. HIGH SPEED MULTIFORMAT LID CAPPER 26

3.3.3. CAPS FEEDER AND SORTING EQUIPMENT 28

3.3.4. COMPACT LOW-SPEED MULTIFORMAT LID CAPPER 30

3.4. VISION SYSTEMS 31

3.4.1. SPOON INSERTION INSPECTION 32

3.4.2. CANS INSPECTION 32

3.4.3. CAPS INSPECTION 33

4.MACHINERY FOR COMPLETE LINE INTEGRATION 34

4.1. DEPALLETIZING SYSTEMS 35

4.1.1. MANUAL DEPALLETIZING AREA FOR EMPTY CANS 35

4.1.2. SEMI-AUTOMATIC DEPALLETIZING SYSTEM 37

4.1.3. AUTOMATIC DEPALLETIZING SYSTEM 39

4.1.5. ROTARY TABLE + INPUT TRANSPORTATION CONVEYOR (RT-DS) 41

4.1.6. ROBOTIC DEPALLETIZING SYSTEM 42

4.2. EMPTY CANS AIR CLEANING SYSTEM 43

4.3. UV-STERILIZATION TUNNEL 45

4.4. SCOOP INSERTER 46

4.4.1 SCOOP INSERTER 46
4.4.2 HIGH SPEED SCOOP DROPPER 47
4.5. SEAMED CAN TOP CLEANER 50
4.6. LASER CODER 51
4.7. INK INJECTOR 52
4.8. CAN TWISTER 53
4.9. LEAFLET INSERTER 54
4.10 CAN BARCODE READER 55
4.11. X-RAY INSPECTION 56
4.11. CHECK WEIGHTING SYSTEM 57
4.12. CASE PACKING AND PALLETIZING SYSTEM 58
5. WHY CHOSE SAPLI? 62

1. COMPANY PRESENTATION

Sapli designs and manufactures a wide range of machines for powdered products, mainly for the food industry.
Hundreds of Sapli equipment are working around the world. We design lay-out, integrate and install machinery for packaging of powdered products into rigid containers (glass jars and bottles, aluminium cans and metal cans, plastic jars and bottles). The container volumes range from 30 to 2000 ml for a production capacity up to 350 cans per minute, or even more.

Sapli manufacturing range includes:

- Depalletising system
- Handling conveyor
- Can cleaning and UV-sterilization
- Scoop inserting
- Check weighing,
- X-Ray Inspection
- Laser coders and/or laser printing
- Lid over capper
- Palletizing system

And other auxiliary equipment for canning lines for powdered products

Sapli offers Customers their qualified engineering know-how, the highest technology and the greatest productive flexibility. We help our customers to develop their project from very first steps offering a wide range of services:

- Budgeting and feasibility studies
- Providing of information about building for installation and logistics with condition criteria
- Project planning and project realisation time
- Output and production rates calculations
- Equipment Installation and Start-Up
- Total integration of installed machines
- Different automation levels
- Customisation of layouts and working space optimization
- Adaptation of production speed according to factory needs
- Guarantying process quality and hygienic standards and certification
- Remote-service (modem/web-VPN)
- Spare Parts and Service
- Preventative Maintenance & Expert Advice
- Latest Developments and upgrading

CUSTOMER'S BENEFITS:

- Multiple formats at the same line
- Fast format changes
- Customer-tailored solutions for each products production process
- Turn-key complete equipment integrations
- Compact machine design and adaptable layouts
- Intuitive interface
- Customer Support at all project stages

2. SCOPE OF SUPPLY

Sapli manufacture and supply machines and spare parts for existent plants for powdered products, such as powdered milk, infant formula, sport supplements and coffee in metal tin cans or glass jars.

PRODUCTS

- **POWDERED MILK AND INFANT FORMULA:** Infant Formula, Buttermilk Powder, Coffee and Tea Whitener, Fat-filled milk powders, Skim Milk Powder, Whole Milk Powder, Coconut milk powder
- **SPORT NUTRITION AND PHARMA**: Whey Protein, Whey Isolate, Isotonic Powder, Powdered Vitamins and Supplements, Powdered Medicines, Veterinary Products
- **COFFEE AND COCOA PRODUCTS:** Coffee, Coffee Substitute, Cocoa, Breakfast Nutritional Drinks, Instant Drink Powder, Powdered Cereals Drinks

PACKAGING FORMATS

Metal Tin Cans,
Plastic Cups and Bottles,
Glass Jars,
Round and Non-Round Irregular Cans,
Composite and Paper Packaging

CAPS FORMATS

Snap Caps Lids
Spoon/Scoop Caps Lids
Metal/Plastic Screw Caps
Metal/Plastic Screw Caps with Liner,
Aluminium Protector, Foam Sealing

CANS SIZES

From 50 gr up to 2000 gr

PRODUCTION RATES

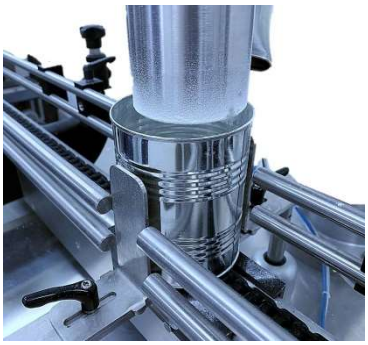
From 30 up to 250 units per minute (up to 21.000 units per hour)

3. PRODUCTS

All provided equipment photos, images and layouts are provided for informational purposes only. The final scope of supply, equipment models and layouts will be defined with the Customer.

3.1. HIGHLY ACCURATE POWDER AND GRANULAR FILLERS

3.1.1. IN-LINE AUTOMATIC FILLING MACHINES



Sapli's Linear Powder Filler can be configured with Single or Double Filling stations. In case of required higher production rate the 4 filling stations configuration is proposed (two Double Filling stations).
The equipment includes easy-clean conveyor and stainless steel food-grade product contact parts, vibration at point of fill, lift system for smooth bottom-up filling, no-container no-fill control, no tools changeover, and positive container indexing.

- Auger with servo driving
- Compact and clean machine design
- Intuitive user-friendly interface
- High precision auger machined from solid
- Food grade stainless-steel parts in contact with the product
- Format change without use of tools
- eWON VPN Router for Sapli remote technical support
- No bottle – no fill safety system Hopper coupling, self-aligning, quick disconnect
- Automatic base cabine

Production rates for 400 gr cans: up to 45 units/min
Production rates for 900 gr cans: up to 30 units/min
Production rates for 2500 gr cans: up to 20 units/min
(depending on the test with Customer's product – density, flowing rate, can size etc.)

Two auger filling heads in Siamese configuration, to include:

- Head support plate, heavy duty, aluminium
- Siamese hopper, stainless steel, c.60 litre capacity
- Hopper cover, stainless steel, dustproof with 152mm infeed duct
- Inspection port with magnetic safety switch
- Hopper coupling, self-aligning, quick disconnect
- Servo-motor for auger drive, variable speed brushless direct drive with no pulleys, clutch/brake or belts, totally enclosed with integral precision shaft encoder
- Agitation via two stainless steel stirrer blades, with 0.55KW totally enclosed brushless gearhead motor
- Fully enclosed stainless steel head cover

Two auger and funnel sets, quick release without the use of tools, in stainless steel.
Automatic base cabinet

3.1.2. ROTARY POWDER FILLERS

Continuous or Intermittent motion highly Accurate Rotary Powder Filler is a suitable solution for a wide range of powdered and granuled products to be filled with medium and high production rates. One or more filling stations options, depending on product flow characteristics and a packaging formats. Rotary machines are available with over turrets of 12 to 48 pockets, with outputs up to 400 containers per minute. These can be integrated with gross or tare and gross check-weigher feed-back systems

- Quantity of filling stations and turrets changes depending on required production rate
- One infeed and outfeed star wheel
- Clean filling process with completely sealed turrets with food grade seals
- Intuitive user-friendly interface
- Dust retention and extraction system
- High precision auger machined from solid
- Food grade stainless-steel parts in contact with the product
- Easy and simple format change without tools
- eWON VPN Router for Sapli remote technical support
- No bottle – no fill safety system
- Hopper coupling, self-aligning, quick disconnect
- Automatic base cabinet

- Servo-motor for auger drive, variable speed brushless direct drive with no pulleys, clutch/brake or belts, totally enclosed with integral precision shaft encoder

SINGLE HEAD 12 POCKET CONTINUOUS MOTION ROTARY FILLER

Production rates: 120+ units/minut:

- Head support plate, in aluminium with 38 litre stainless steel hopper with stainless steel dustproof gasketed hopper cover and 150mm diameter infeed duct
- Inspection port with magnetic safety switch
- Hopper coupling, self-aligning, quick disconnect

- Servo-motor for auger drive, variable speed brushless direct drive with no pulleys or belts, totally enclosed with integral precision shaft encoder
- Agitation drive motor 0.6KW, totally enclosed brushless gearhead motor
- Head cover, fully enclosed stainless steel
- Mounting column with support base, aluminium, with height adjustment

Main turret assembly

Turret jogging system, to assist in settling the product through the transfer funnels and compacting the product into the containers (variable frequency and amplitude)

Fully enclosed dust retention and extraction system, to minimise the build-up of dust in the filling enclosure, comprising:

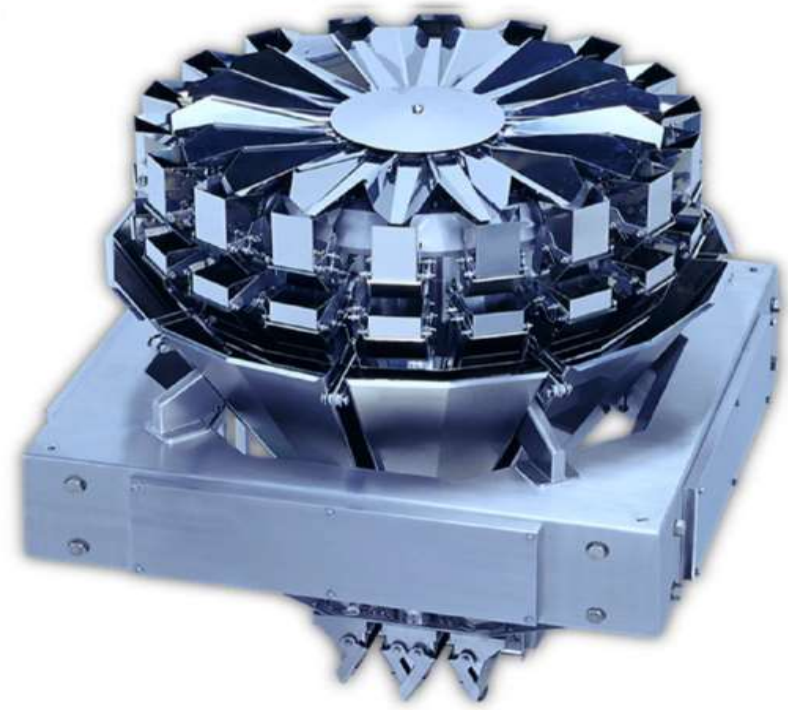
Dust collection system, via twin annular rings fixed to the rotating turret and a fixed cover with lip seals and extraction points linked to a single outlet

Full guarding to the filling enclosure

Conveyor system

Siemens PLC

3.1.3. HIGHLY ACCURATE WEIGHT FILLERS



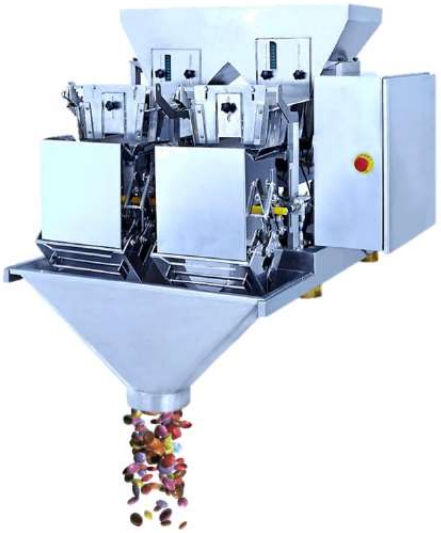
Sapli's Multi Head Weight Filler can be configured with Single or Multi stations. A multihead weight filler can be used for a variety of products and weights because of the many differences between the available versions.

Two Head Weight Filler model can be used in small production lines It is mostly applied for filling consumer packagings such as up to3000 g tin cans, jars, bags boxes and flexible packaging. such as up to 3000 gr tin cans, jars, bags and boxes or flexible packaging

Multihead weighers can be used for various applications in the food: rice and seeds; nuts and subtropical fruits; tea/coffee beans, grains; biscuits and pastry; cereals/muesli; candy; snacks, popcorn and croutons.

Production Rates	From 55 to 130 units per minute
Max Weighs	From 500 to 3000 gr
Weigh Hopper Volumes	From 0.5 to 5 L
Max. Portion Volumes	From 1 to 10 L

Operation



At the multihead the product is transported to the feed hoppers by a central vibrating top cone and vibrating feeders. The hoppers will discharge the product into the weigh hoppers, where the highly accurate load cells determine the weight. Each weigh hopper contains approximately a quarter of the set weight and the weigher itself will calculate the combination which is closest to the target weight. The selected hoppers are opened and flow together into the central discharge chute. Subsequently, the products are dumped into the packaging machine.

The Sapli's multihead weighers are made of stainless steel and can be cleaned easily, because all hoppers, vibrating feeders and chutes can be assembled and disassembled without using any tools. Because of the different weigh hopper volumes available (0.5 l, 1.6 l, 2.5 l and 5 l), it is possible to find a suitable solution for nearly every weight and volume.

The Sapli's multihead weighers are made of stainless steel and can be cleaned easily, because all hoppers, vibrating feeders and chutes can be assembled and disassembled without using any tools. Because of the different weigh hopper volumes available (0.5 l, 1.6 l, 2.5 l and 5 l), it is possible to find a suitable solution for nearly every weight and volume.

· Compact and clean machine design

· Intuitive user-friendly interface for easy adjustment of production speed, weight, opening times

· Hoppers are opened by stepper motors, no compressed air require

· Food grade stainless-steel parts in contact with the product

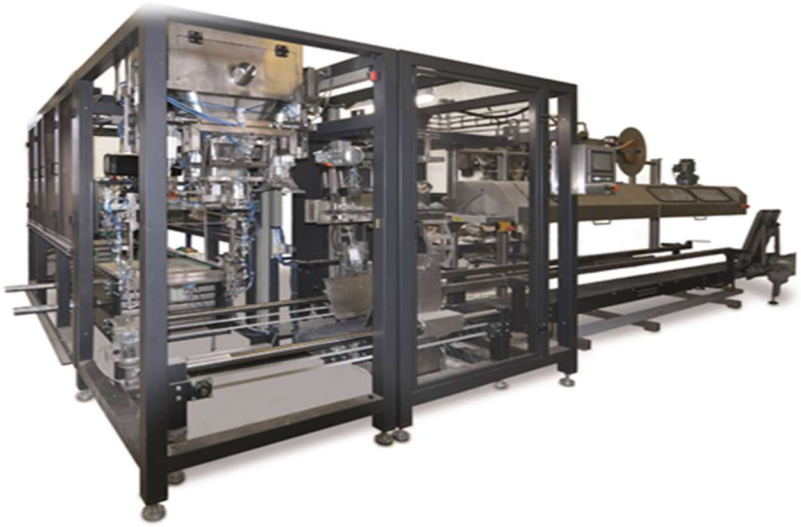
· Format change without use of tools

· eWON VPN Router for Sapli remote technical support

· No bottle – no fill safety system

· Easy maintainment

3.1.4. BAG POWDER FILLERS



Automatic bagging packaging machine. Fill products into the finished paper or plastic bags. ABPF100 withdraws a bag from the reservoir, opens the bag to fill it with product, moving, forming, closing and pushing the bag out for further processing. The dosing equipment is installed depending on the product type – pastries, granulates, pellets...

Technical Features

- Filling volumes from 1kg to 25kg
- Output up to 200 bags/hour (25Kg)
- Magazine for automatic bag feeding
- Weighing unit with 2 load cells
- Platform on the bagging machine
- Output conveyor
- Remote control system
- Sew machine including frame, cotton sensor, bag sensor, connection with central system
- PLC control via touch-screen panel

OPTIONS

- Checkweigher
- Heat welding system
- Stitching paper
- Vacuum cleaner for dusty product
- Input conveyor
- Vibratory funnel
- Roller transportation conveyor

Conveyors

Machine is equipped with 3 conveyor units. Chain conveyor in the rear of the machine is used to transport bags to the dispensing machine section. The belt height-adjustable conveyor is used to transport filled bags from filling section through shaping to the closing section and ejecting a filled packaging from the machine for further processing.

Dosing / weighing unit

The machine is equipped with a dispensing / weighing unit that corresponds with the product features. According to the type of product, a scale and a screw or volumetric feeder are installed in the machine. Based on the version, various types of dispensing equipment are set up from own control system, from the machine control system or manually.

Closing section

The closing section of the machine is used to close the top of the packaging. Typically, there is a sewing or welding unit, optionally supplemented by thread trays.

Packaging output section

The last section is a section for ejecting a filled packaging from the machine. The ejection is performed by a pneumatic pusher mechanism.

3.2. VACUUM-GASSING AND SEAMING SOLUTIONS

3.2.1. OPTION 1 VACUUM GASSING AND SEAMING SINGLE STATION

Sapli VGS-1 is the completely automatic can seaming solution with vacuum gassing option, based on vacuum atmosphere application with the consequent Nitrogen injection.

- Widely employed in the Food and Beverage Packaging Industry.
- Designed to seam metal and cardboard tin cans.
- Suitable for the wide range of product formats and heights.
- Food grade standards.
- Fully washable.
- Intuitive PLC interface
- Wide layout distribution options
- Adjustable levels of residual O2
- Modular design allows to increase the producing rates
- Low consumption of Gas
- Safe and Hygenic

MAP SEAMER - WORKING MODES:

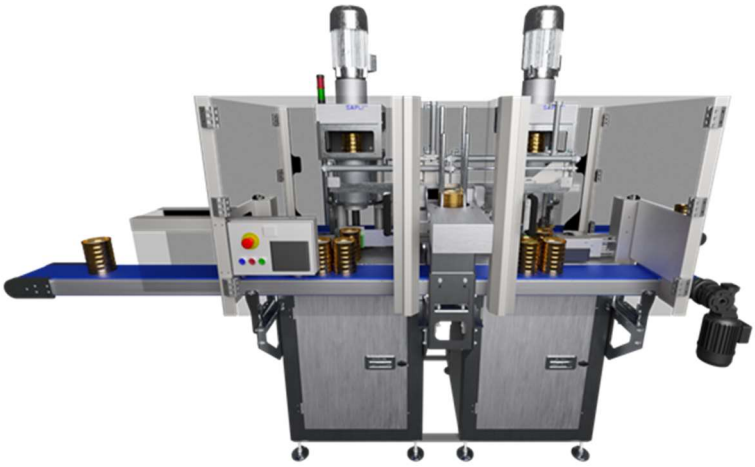
7 cans/minute : air extraction + gas injection + seal (under 0.5% O2)

14 cans/minute: gas injection + seal (under 8% O2)

14 cans/minute: seal only (atmospheric O2 value)

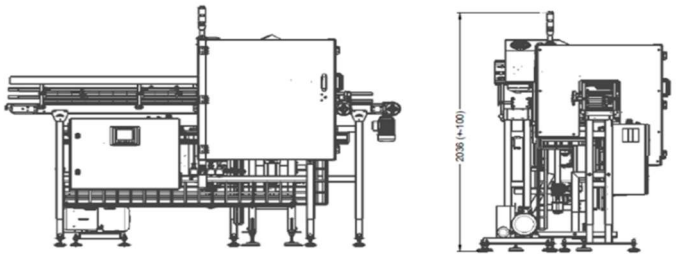
Depending on the packed product, the process may be different but it allows the user to exchange different productions in the same equipment. Equipment reduces the oxygen level inside the can to the assigned value (normally below 1-2%).

DOUBLE HEAD SEAMER VGS – 2:

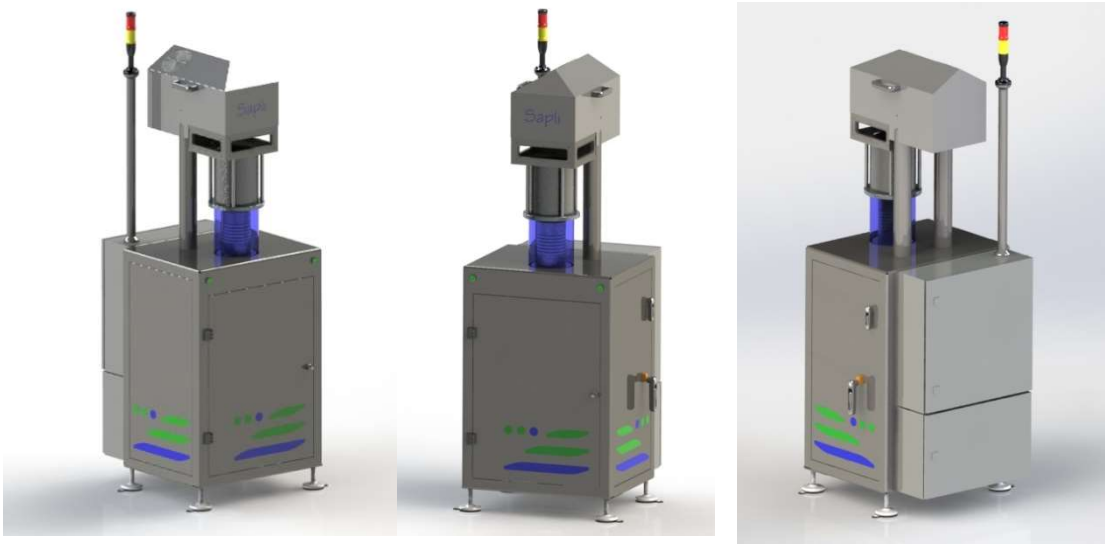


AUTOMATIC VERSION: WORKING PRINCIPLE

1. Cans are fed to the Sapli machine through a conveyor belt. A special gripper, controlled by a servo motor, places the can in an exact position on the platform of the lifting mechanism.
2. Can is raised, hermetically closing a chamber in which the vacuum-gassing and sealing process will take place.
3. The desired vacuum depth is reached inside chamber.
4. **Option (Residual Control of Suspended Particles):** Thanks to special sensors that can determine the concentration level of particulate dust at a level of 1 to 5 mg per m3, patented intelligent system helps to avoid creating a possible dust cloud in the camera. (* A person can distinguish the presence of dust at a concentration of approximately 20 mg / m3). Therefore, depending on the characteristics of the product, the system automatically adjusts the vacuum curve.
5. Inert gas is added to the container, the chamber is filled with a mixture of the necessary gases at the specified pressure.
6. Double sealing operation is performed.
7. **Option (Seal Quality Control):** After closing a certain number of cans (customer set), the intelligent system automatically controls the quality of the seal. The seamed can with the product remains in the chamber for a little longer for control. Also, the machine continues to operate in normal mode or stops and warns of a problem in the sewing device.
8. If necessary, once per cycle or once every several cycles, the vacuum chamber performs a self-cleaning operation.
9. Seamed can is fed to the conveyor belt.

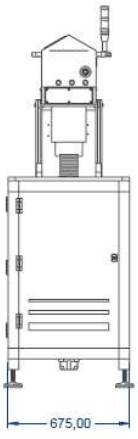


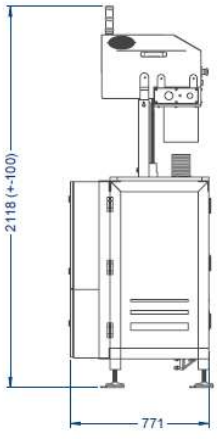
SEMI-AUTOMATIC VERSION: WORKING PRINCIPLE



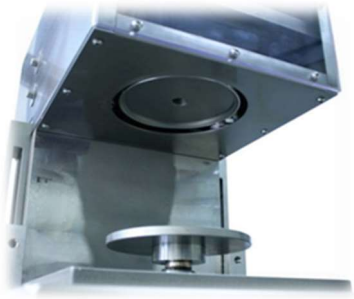
WORKING PRINCIPLE OF THE SEMI-AUTOMATIC VERSION

1 Operator manually feeds the cans to the Sapli machine, installs them in a special area on the lift mechanism platform, where the cans are gripped with special fasteners.
2 Can is raised, hermetically closing a chamber in which the vacuum-gassing and sealing process will take place.
3 Inside the chamber the desired vacuum depth is reached.
4 **Option (Residual Control of Suspended Particles):** Thanks to special sensors that can determine the concentration level of particulate dust at a level of 1 to 5 mg per m3, patented intelligent system helps to avoid creating a possible dust cloud in the camera. (* A person can distinguish the presence of dust at a concentration of approximately 20 mg / m3). Therefore, depending on the characteristics of the product, the system automatically adjusts the vacuum curve.
5 Inert gas is added to the container, the chamber is filled with a mixture of the necessary gases at the specified pressure.
6 Double sealing operation is performed.
7 **Option (Seal Quality Control):** After closing a certain number of cans (customer set), the intelligent system automatically controls the quality of the seal. The seamed can with the product remains in the chamber for a little longer for control. Also, the machine continues to operate in normal mode or stops and warns of a problem in the sewing device.
8 If necessary, once per cycle or once every several cycles, the vacuum chamber performs a self-cleaning operation.
9 After lowering the closed can from the chamber, the operator manually removes it from the platform.





TECHNICAL CHARACTERISTICS:

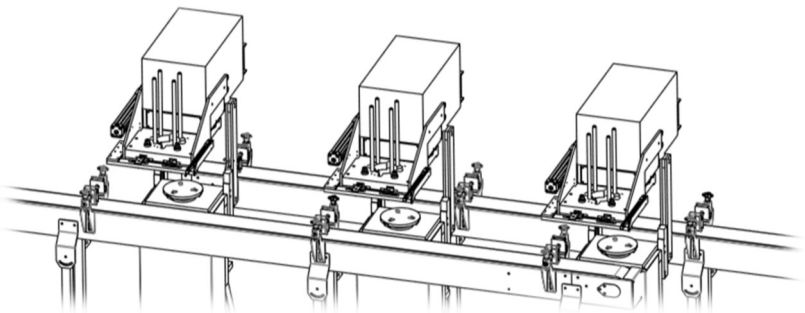


· Single gassing and vacuum sealing station: high performance solution for low production speeds.
· Suitable for vacuum-gassing and seaming metal tin, cardboard and plastic cans, designed for a wide range of industries.
· Advanced sealing technology with variable operating speeds.
· Adjustable residual O2 levels after sealing, according to product requirements to ensure long shelf life.
· Vacuum and gas pressure adjustable and can be monitored with each cycle.
· Parts that have direct contact with the product are made of food grade 316 stainless steel, which guarantees maximum food safety in accordance with EU regulations.
· Suitable for a wide range of product formats, with different can heights and diameters.
· The multi-format principle allows you to work with many packaging formats on the same machine.

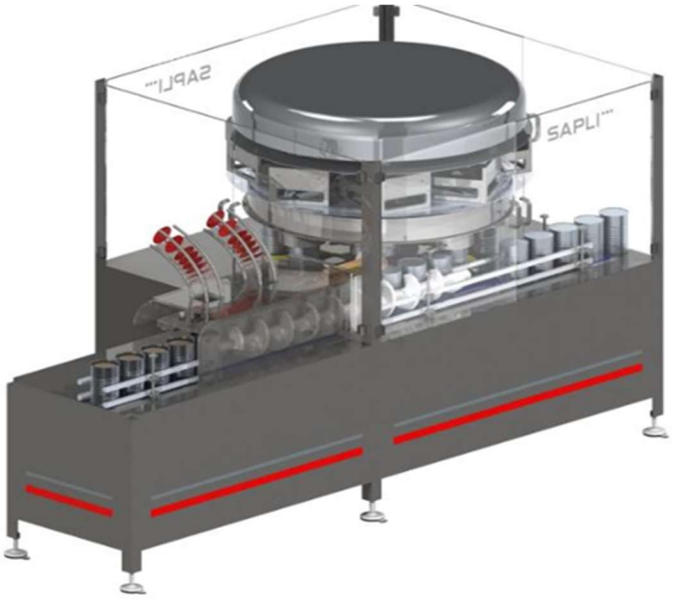
Options available:

· Smart sensors are located at the filter location to alert you when the filter needs cleaning.
· Metal lids supply can be manual or automatic (as an option for the automatic version)
· Disinfection of metal lids. UV tunnel in case of automatic lids feeding (as an option for the automatic version)
· Camera PC quality control of seamed cans.
· Automatic rejection functions (as an option for the automatic version)
· Residual control of suspended particles: thanks to special sensors that can determine the concentration level of particles from 1 to 5 mg per m3, our patented intelligent system helps to avoid the possibility of creating a dust cloud in the chamber. Therefore, depending on the characteristics of the product, our system automatically adjusts the pumping curve.
· Seal quality control: after sealing a certain number of cans (established by the customer), the intelligent system automatically controls the quality of the seal. The seamed can with the product remains in the chamber for a little longer for control. Also, the machine continues to operate in normal mode or stops and warns of a problem in the sealing device.

Products	Powdered and granular products (Infant Formula, Milk Powder, Instant Coffee, Cocoa, Nuts, Snacks)
Can type	Metal Tin Can, Composite Can or Plastic Can
Production Speed	up to 7 u/min (depending on product properties and can sizes) up to 15 u/min (sealed mode only)
Can diameter	50 mm - 200 mm (other sizes are possible)
Can height	100 mm - 200 mm (other sizes are possible)
Cans formats	Round or Irregular shape cans
Residual levels of O2	Up to 0,5% inside (depending on product requirements)
Gassing with	N2, N2+CO2 or any other gas mixture
Power Requirement	4,5 kW (automatic) 1,5 kW (semiautomatic)



3.2.2. OPTION 2 VACUUM GASSING AND SEAMING SINGLE STATION



Sapli offers the unique high-performance can feeding system for vacuum-gassing and seaming process, **VGS MASTER 1 station 4 or 6 heads**, designed specifically to minimize the vacuum-gassing and seaming cycle in order to achieve optimal residual oxygen levels.

Production speed (depending on product properties and can sizes)
Version with 1 station 4 heads – up to 24 u/min
Version with 1 station 6 heads – up to 36 u/min

OPERATING PRINCIPLE OF ROTARY VACUUM-GASING SYSTEM:

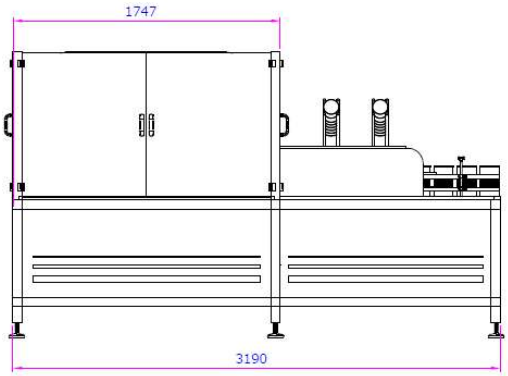
1. Cans are fed into the machine and are placed in the exact position in the vacuum-gassing chamber.
2. The chamber is hermetically closed and the process of vacuum-gassing begins (oxygen is evacuated and nitrogen is added according to an individual formula for each product).
3. Cans are transferred to the exit when the full cycle of vacuum-gassing is completed.

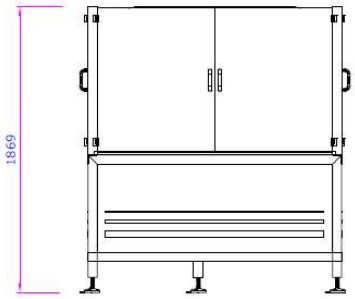
Technical features:
· The rotary vacuum-gassing system, VGS MASTER, is a high-performance solution for medium production speeds.
· The modular principle allows adding of new stations in case of an increase in production capacity in the future.
· Suitable for vacuum-gassing of powdered products in metal, cardboard and plastic cans

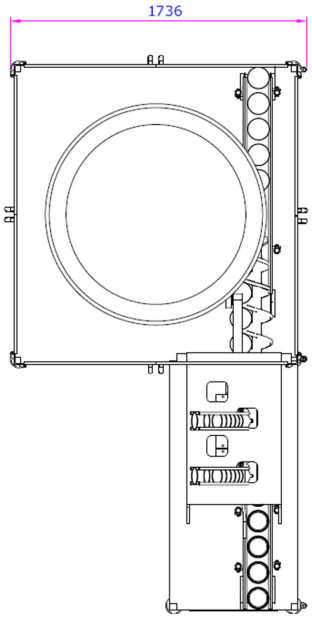
· The multi-format principle allows you to work with many packaging formats on one machine: wide range of packaging shaped, heights and diameters.
· Perfect rolling and sealing technology
· Adjustable working speeds.
· Simple and intuitive format change (approx. 45 min are required).
· Adjustable O2 residual levels depending on product requirements
· The pressure during vacuum evacuation of oxygen and during the addition of nitrogen is adjustable and can be controlled in each seaming cycle-
· The machine parts in contact with the product are made of food grade stainless steel 316, which guarantees the highest food safety

Technical features VGS-MASTER 1 station 4 or 6 heads

Production Speed	**up to 24 / 36 u/min** (depending on product properties and can sizes)
Products	Powdered and granular products (Infant Formula, Milk Powder, Instant Coffee, Cocoa, Nuts, Snacks)
Can type	Metal Tin Can, Composite Can or Plastic Can
Can diameter	50 mm - 200 mm (other sizes are possible)
Can height	50 mm - 200 mm (other sizes are possible)
Residual levels of O2	Adjustable ≤ 1% (depending on product requirements)
Gassing with	N2 or N2+CO2 gas mixture
Power Requirement	**3 kw / 4.5 kw**







3.2.3. OPTION 3 VACUUM GASSING AND SEAMING DOUBLE STATIONS

VGS MASTER XL 2 stations 4 heads / 6 heads / 8 heads

Sapli offers the unique on the market highly-efficient cans seaming system, developed specially for maximum reduction of vacuum gassing and sealing cycle and achieving of the optimal level of Oxygen.

Production speed (depending on product properties and can sizes):

Version with 2 stations 4 heads – up to 48 u/min
Version with 2 stations 6 heads – up to 72 u/min
Version with 2 stations 8 heads – up to 96 u/min

Vacuum gassing is needed in multiple products such as milk powder, baby infant formula, coffee, snacks, crisps or peanuts depending on their requirements. The VGS Master XL seamer is applied in high speeds production and automatic lines.

OPERATING PRINCIPLE OF ROTARY VACUUM-GASING SYSTEM:

1. Cans are fed into the Sapli machine via a screw dividing product into 2 stations.
2. Each can is individually and hermetically closed and the process of vacuum-gassing begins (oxygen is evacuated and nitrogen is added according to an individual formula for each product).
3. The can and lid are clamped onto the stationary seaming chuck, and the double seaming operation is initiated.
4. After seaming, the closed can is gently taken into the transportation conveyor.

Features

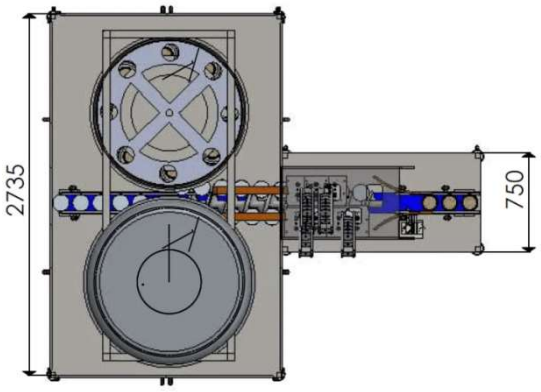
· Rotary vacuum-gassing machines are high performance solution for medium and high production speeds.
· The modular principle allows adding new seaming stations in the future, in case of increasing of production capacities.
· Suitable for the seaming and vacuum gassing products in tinplate, aluminium, paperboard and plastic cans packaging across a wide range of industrial sectors.
· Perfect sealing technology with adjustable working speeds.
· Easy and intuitive format change.

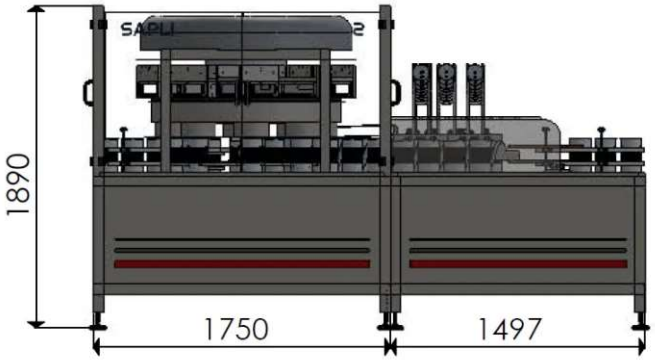
· Adjustable levels of residual O2 level after seaming, depending on the product requirements for guaranteeing a long shelf-life of the product.
· Vacuum and gassing pressures are configurable, and can be monitored on each can seaming cycle
· Guarantying the highest food security and produced with EU Declaration of Conformity.
· Suitable for the wide range of tin cans formats, heights and diameters.
· Multiformat principle allows working with lots of packaging formats at the same machine.

Technical features VGS-MASTER-XL 2 stations 4 heads / 6 heads / 8 heads

Production Speed	up to 48 / 72 / 96 u/min (depending on product properties and can sizes)
Products	Powdered and granular products (Infant Formula, Milk Powder, Instant Coffee, Cacoa, Nuts, Snacks)
Can type	Metal Tin Can, Composite Can or Plastic Can
Can diameter	50 mm - 200 mm (other sizes are possible)
Can height	50 mm - 200 mm (other sizes are possible)
Residual levels of O2	Adjustable ≤ 1% (depending on product requirements)
Gassing with	N2 or N2+CO2 gas mixture
Power Requirement	6 kw / 9 kw / 12kw

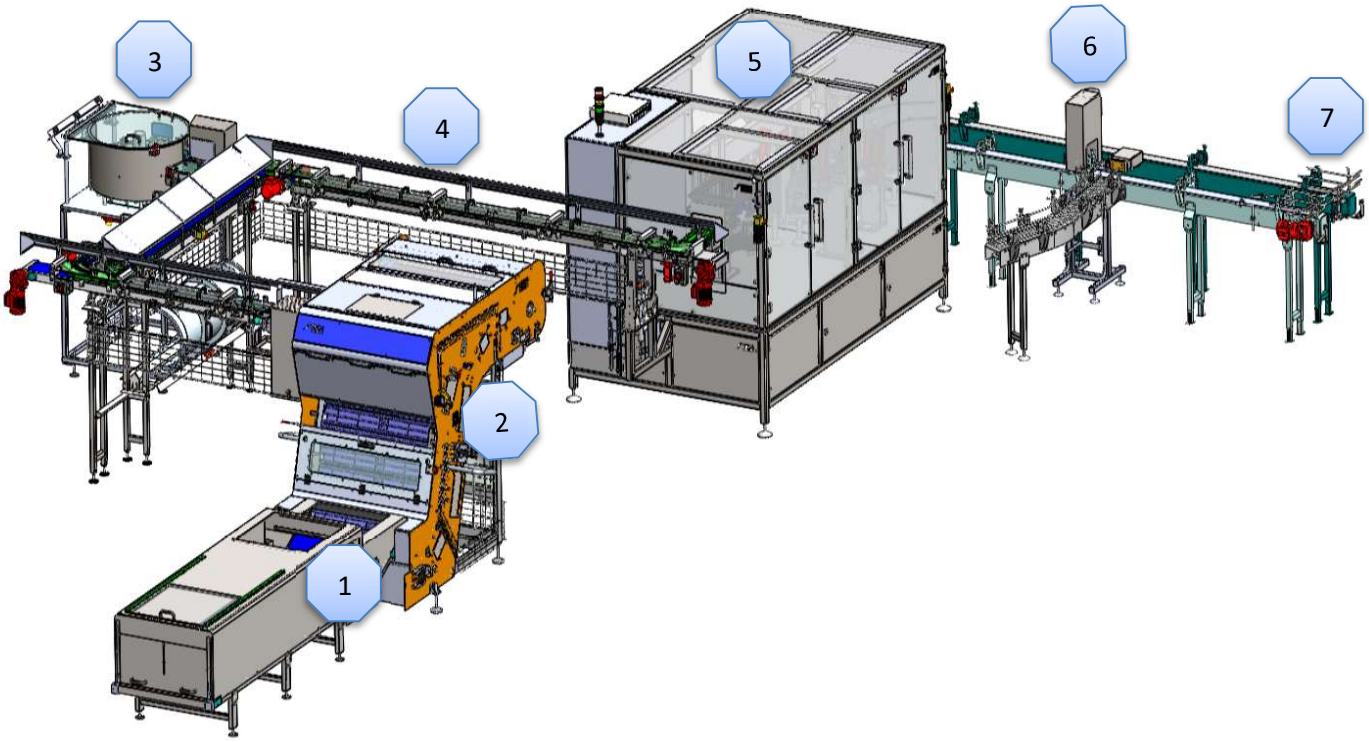
OPTIONS:
· The feeding of metal lids can be manual or automatic
· Metal lids disinfection UV tunnel for automatic lids feeding
· Artificial vision for the quality control of the seamed cans
· Automatic rejection functions



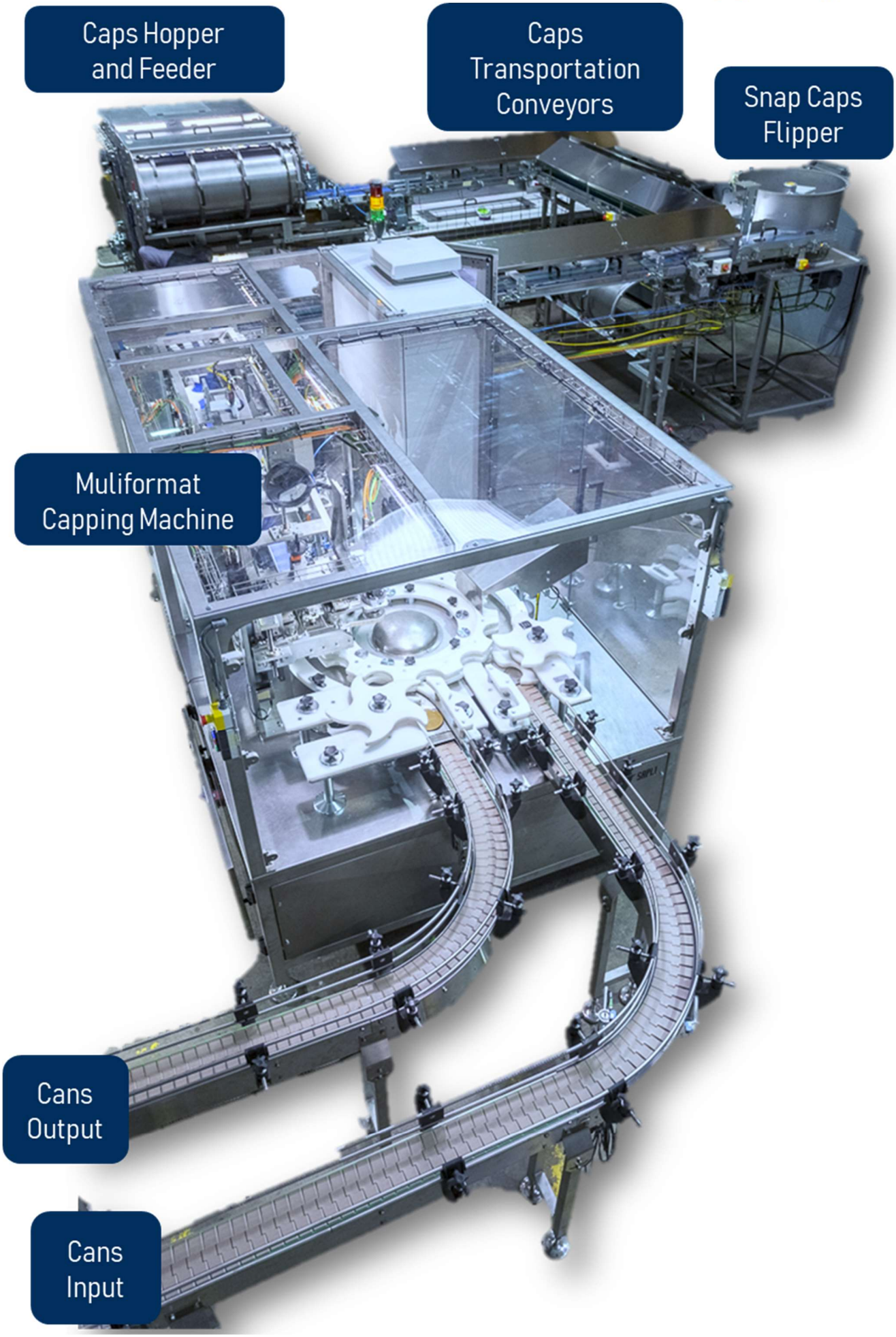


3.3. LID OVERCAPPING SYSTEM

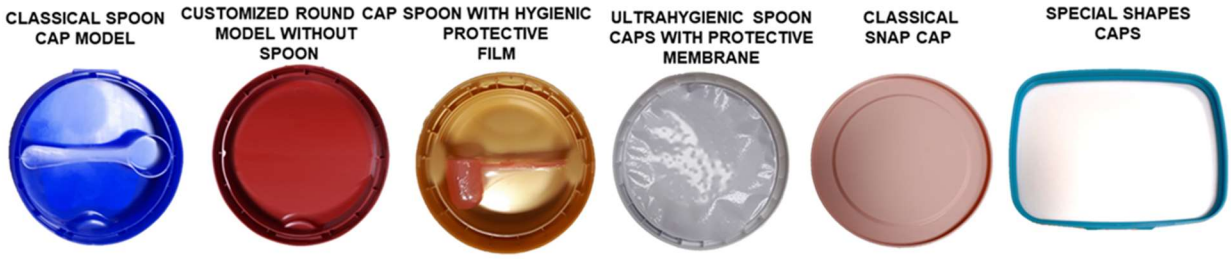
3.3.1. LID OVERCAPPING SYSTEM LAYOUT



1. Bulk Hopper
2. Waterfall Type Caps Feeder
3. **Caps Flipper Machine**
4. **Transportation Conveyors**
5. **Capper**
6. **Artificial Vision Quality Control System**
7. **Capped Cans Exit**


Caps Hopper and Feeder
Caps Transportation Conveyors
Snap Caps Flipper
Muliformat Capping Machine
Cans Output
Cans Input

3.3.2. HIGH SPEED MULTIFORMAT LID CAPPER



Features

- Production speed: up to 350 caps per minute (21 000 caps per hour).
- Range: plastic or metallic caps with different shapes/designs and diameters
- Available caps sizes: from 20 to 250 mm inner diameter or size and multiple caps high
- Package heights (cans, tins, bottles …): from 40 to 400 mm
- Quick and easy format changes: manual or semiautomatic

Additional options

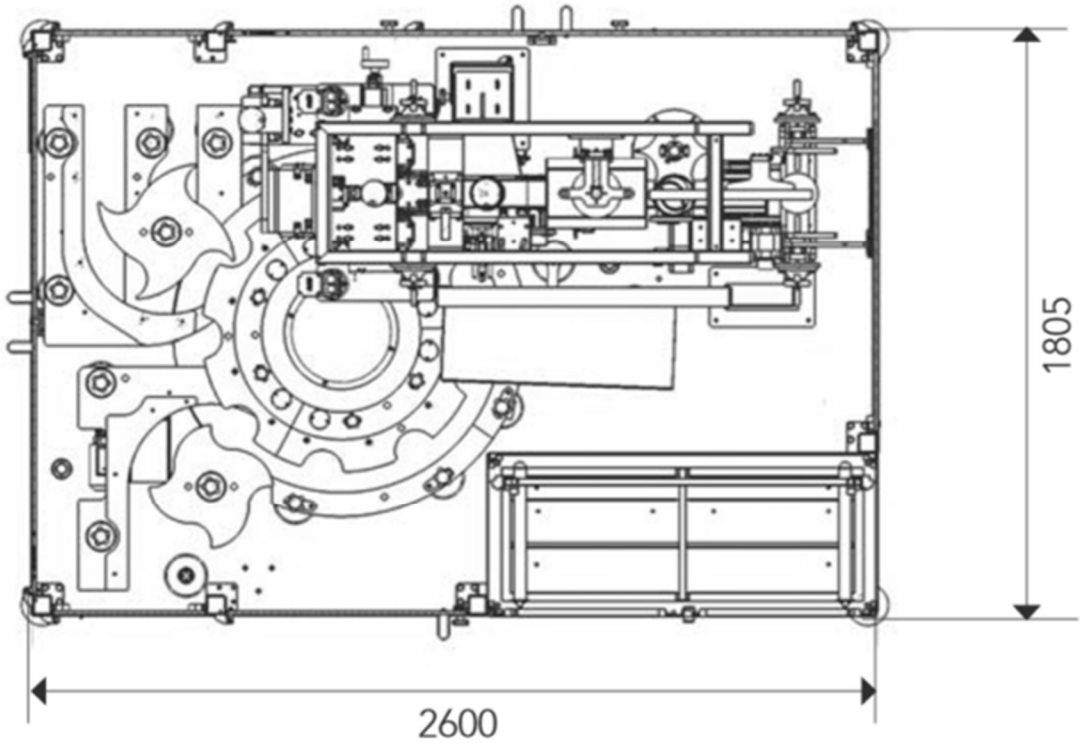
- Orientation between cap and package
- Automatic teaching of new formats of caps and cans
- Extensible tactile HMI
- Inspection vision systems before and after capping:
- Cans sizes inspection: height, product, quality.
- Caps inspection: product, quality
- Assembly inspection: quality.
- Easy addition of new formats in future needs of new caps or packages designs.
- Remote diagnostic and technical assistance
- Adjustable configuration for multiple layouts in customer's factory

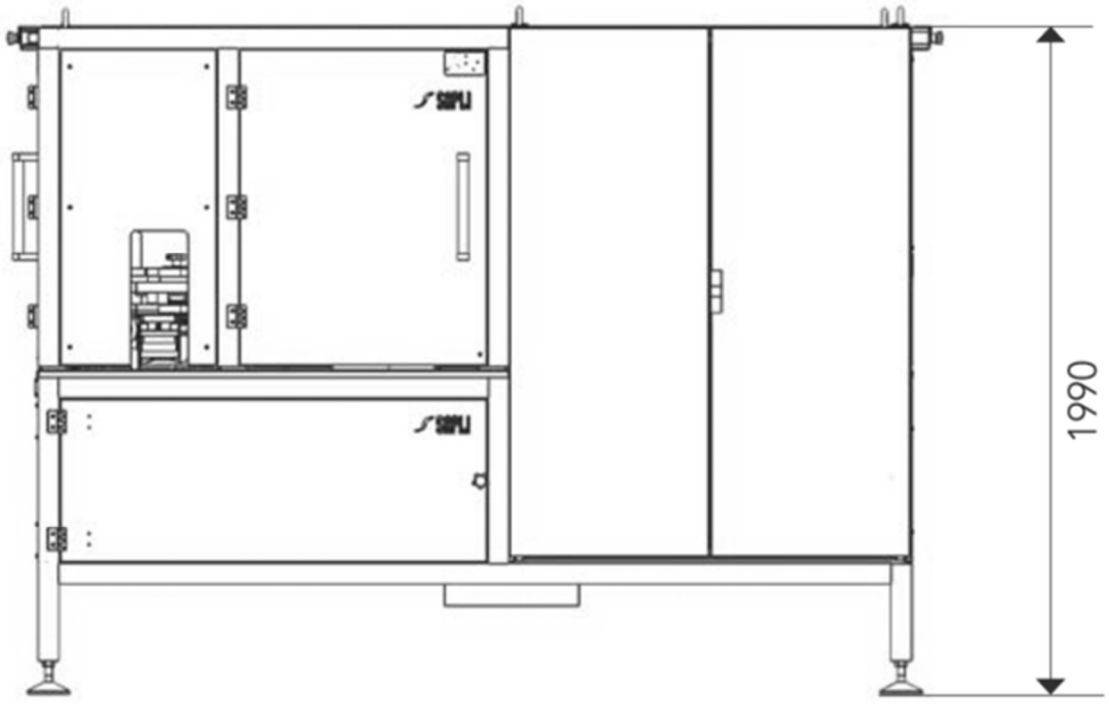
3.3.3. CAPS FEEDER AND SORTING EQUIPMENT

Features

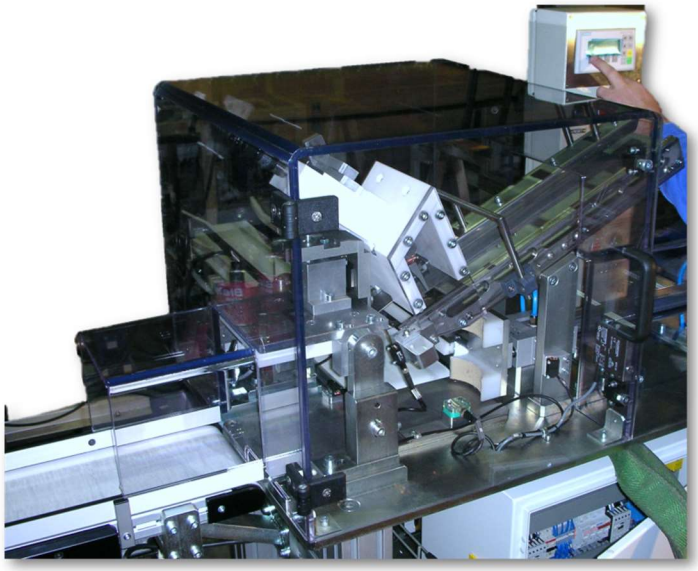
- Feeding rates: up to 350 caps per minute / 21.000 caps per hour.
- Range: plastic or metallic caps with different shapes/ designs and diameters.
- Available caps sizes: from 20 to 250 mm. in diameter or size and multiple caps high.
- Machines versions: standard painted steel, high care area aseptic type (food grade materials of parts in contact with product).
- Quick and easy format changes: manual or semiautomatic.
- Adjustable configuration for multiple layouts in customer's factory.
- Snap caps, flexible caps, lid caps, snap on caps, plastic pressure caps, spoon caps, scoop cap, overcaps, hinged caps, flip to caps, pressure covers.
- Multiple diameters + multiple highs
- Consistent equipment with minimum maintenance and low noise level.
- Adjustable feeding rate with integrated control system.
- Product orientation and positioning for the following machine (capper or others).
- Check out vision system integrated for quality assurance.
- New caps formats can be added in future customer capping needs.

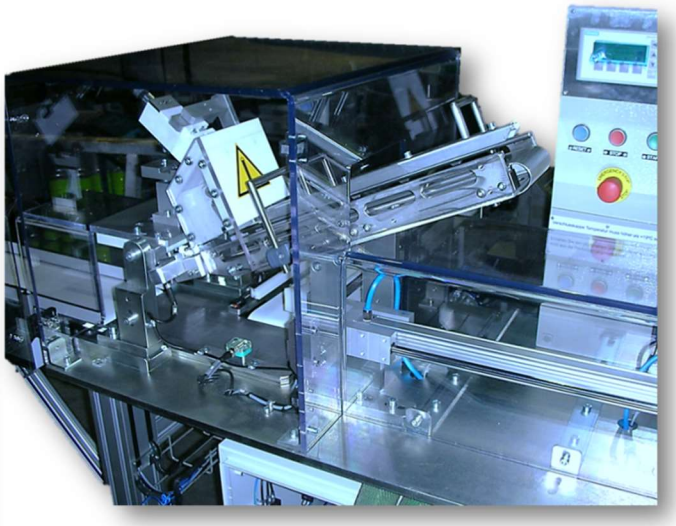
Capper dimensions





3.3.4. COMPACT LOW-SPEED MULTIFORMAT LID CAPPER





MAIN FEATURES

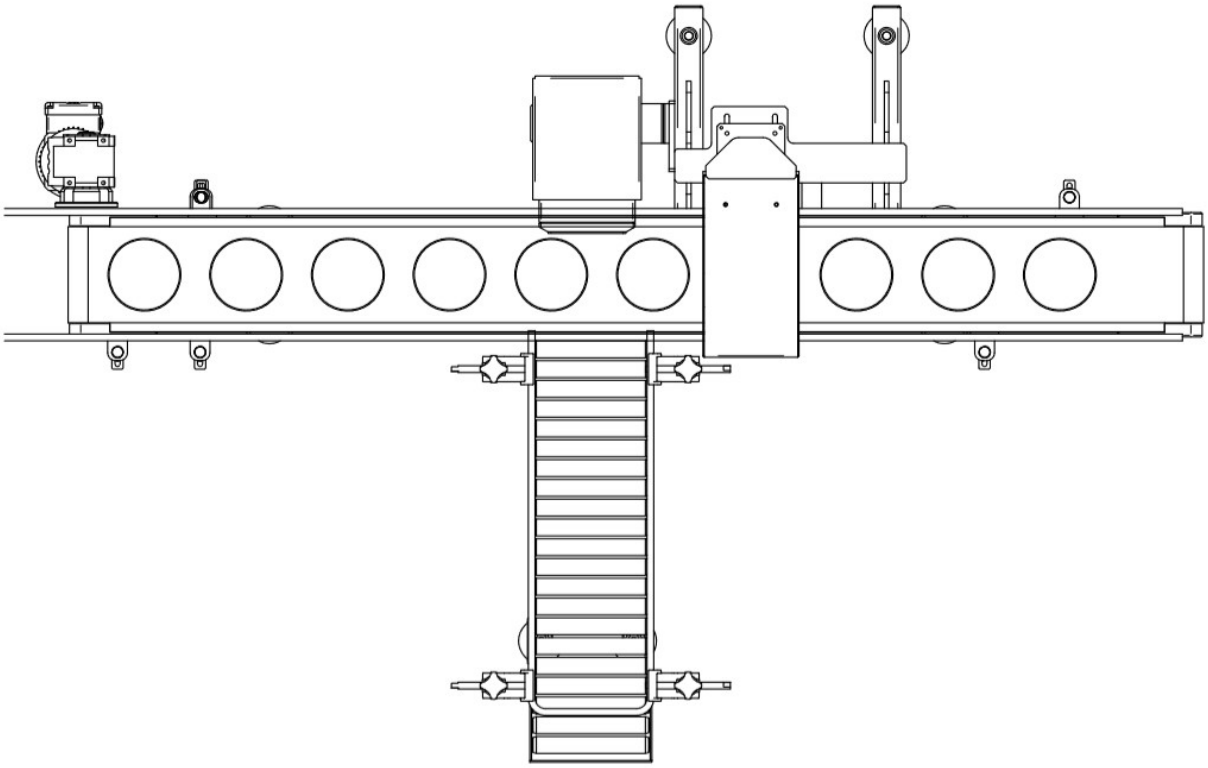
- Production speed: up to 30 caps per minute (1.800 caps per hour).
- Range: plastic or metallic caps with different shapes/designs and diameters
- Available caps sizes: from 20 to 250 mm inner diameter or size and multiple caps high
- Package heights (cans, tins, bottles …): from 40 to 400 mm
- Quick and easy format changes
- Compact design
- Semi-automatic and automatic options
- Spoon caps orientation option

ADDITIONAL OPTIONS

- Orientation between cap and package
- Automatic teaching of new formats of caps and cans
- Extensible tactile HMI
- Inspection vision systems before and after capping:
- Cans sizes inspection: height, product, quality
- Caps inspection: product, quality
- Assembly inspection: quality.
- Easy addition of new formats in future needs of new caps or packages designs.
- Remote diagnostic and technical assistance

3.4. VISION SYSTEMS

Sapli offers customized solutions for quality control and defects detection at the main production stages by Artificial Vision systems. The quality control solutions allow to eliminate risks for consumer safety and preserve the brand reputation.



3.4.1. SPOON INSERTION INSPECTION

The inspection module can control the follow aspects:

- Presence/Absence of the spoon
- Deformed or broken spoon
- Double or multiple spoons
- Detection by design and colour

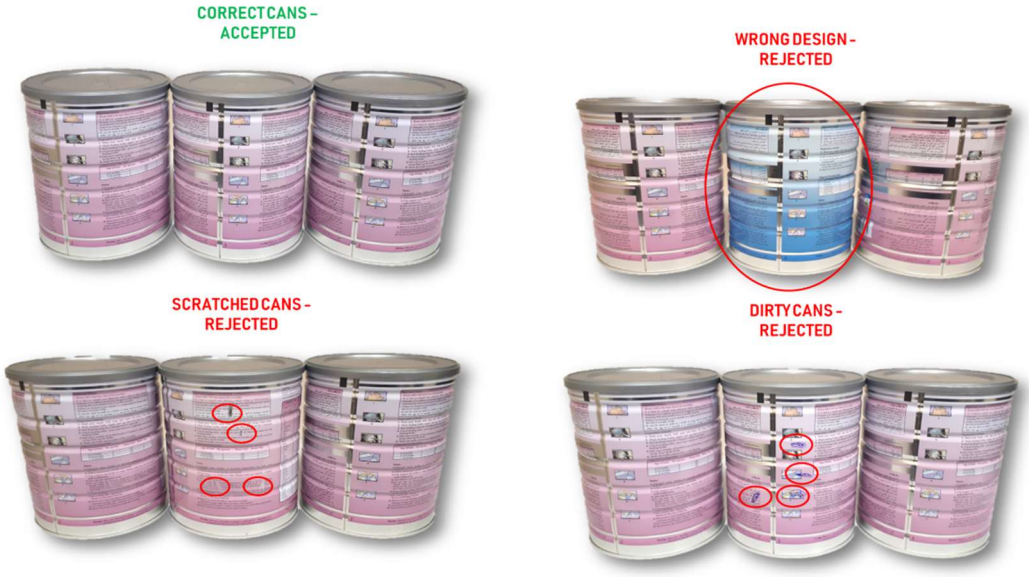
Also able to detect and inspect transparent spoons. Rejection function. Storage of pictures and statistics.

3.4.2. CANS INSPECTION

Cans Defects Inspection Module can be installed before or after filling process. The sensitivity for the inspection can be adjusted to fit product requirements with setting the software adjustment. All defective cans are rejected from the production line and their images are stored and an alarm is generated. For optimal security 360° inspection is available.

The main functions are:

- Confirmation of the correct can design
- Rejection of dirty and contaminated cans
- Rejection of scratched and defective cans



3.4.3. CAPS INSPECTION

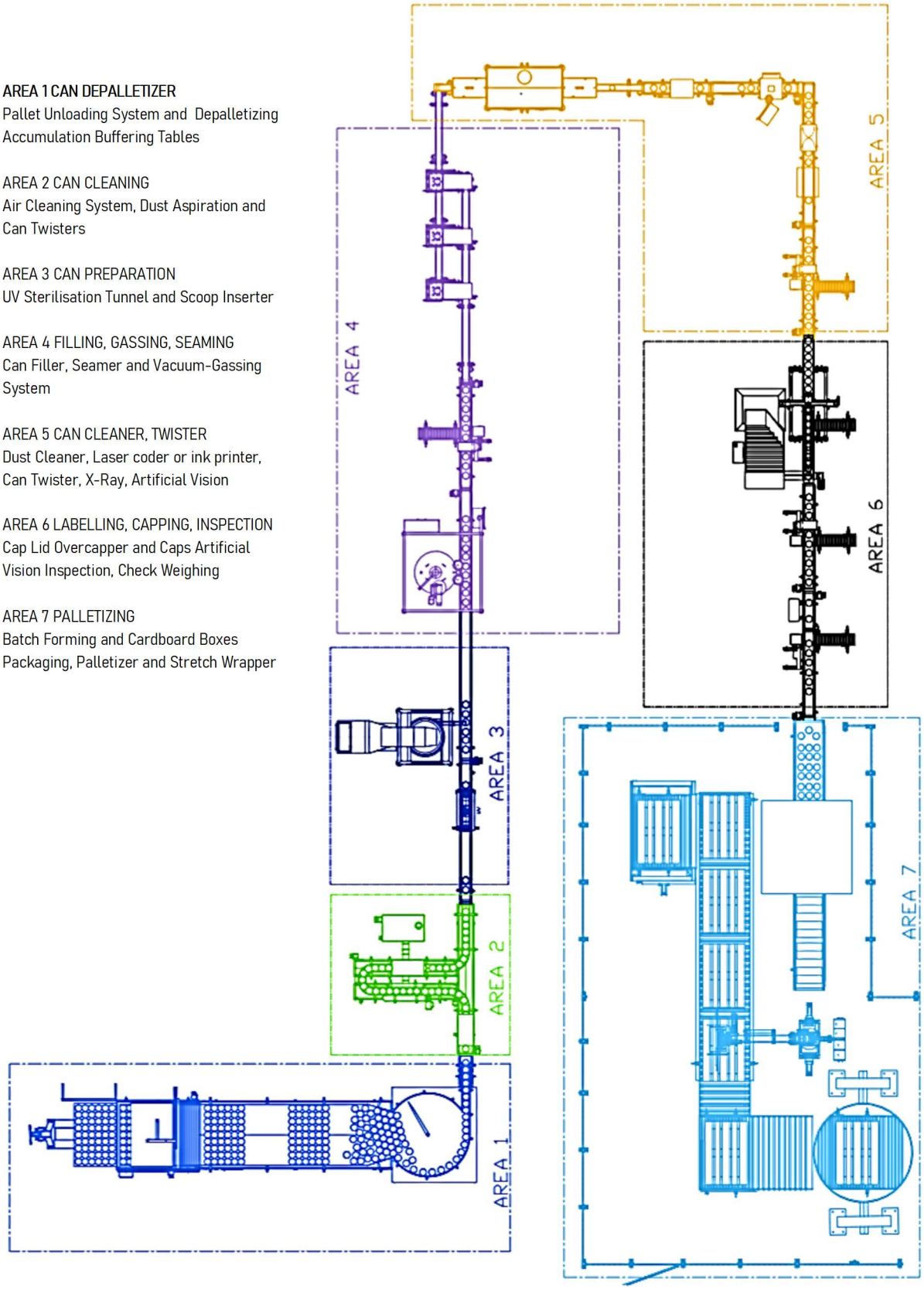
Caps Artificial Vision Inspection Module is installed after the capping process. The inspection features can be adjusted depending on product formats range and the production requirements. The mains points to be inspected:

- Correct closure position
- Caps colour
- Cap model, shape and format
- Rejection of defective, dirty and scratched caps
- Rejection of no oriented spoon caps in relation to the can's front side

4.MACHINERY FOR COMPLETE LINE INTEGRATION

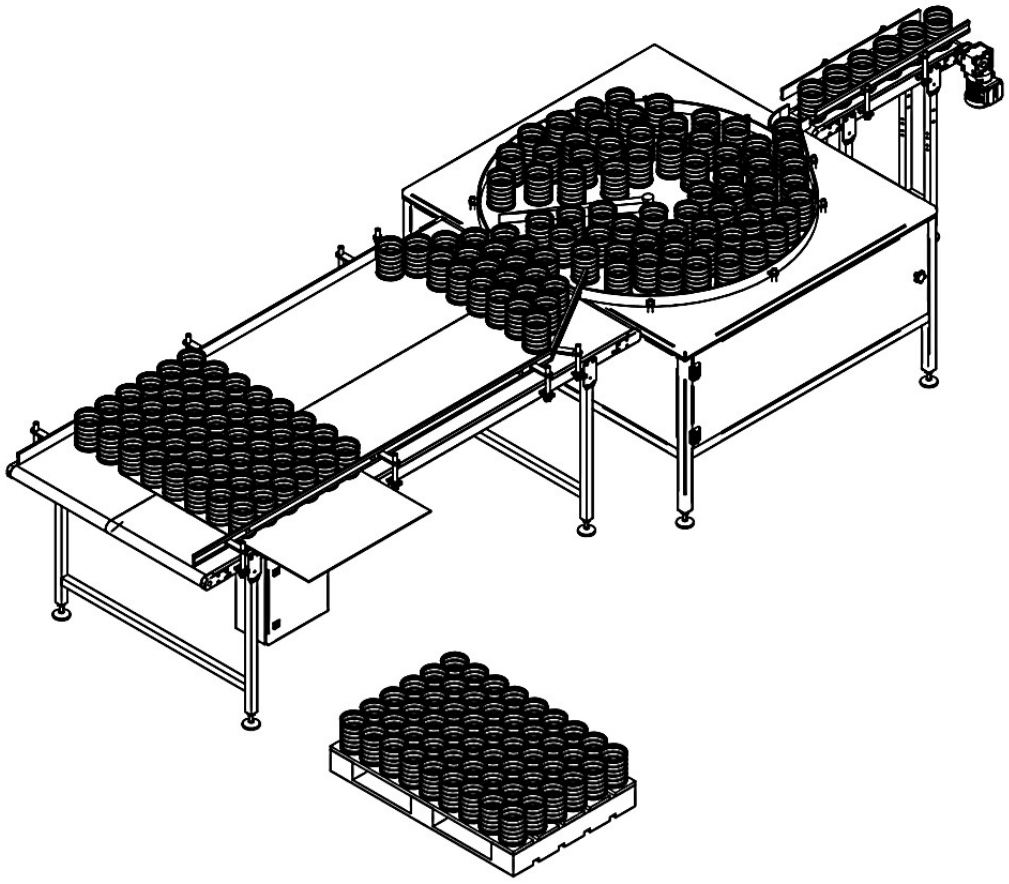
GENERAL LAYOUT EXAMPLE CANNED POWDERED PRODUCT

- AREA 1 CAN DEPALLETIZER
  Pallet Unloading System and Depalletizing
  Accumulation Buffering Tables
- AREA 2 CAN CLEANING
  Air Cleaning System, Dust Aspiration and
  Can Twisters
- AREA 3 CAN PREPARATION
  UV Sterilisation Tunnel and Scoop Inserter
- AREA 4 FILLING, GASSING, SEAMING
  Can Filler, Seamer and Vacuum-Gassing
  System
- AREA 5 CAN CLEANER, TWISTER
  Dust Cleaner, Laser coder or ink printer,
  Can Twister, X-Ray, Artificial Vision
- AREA 6 LABELLING, CAPPING, INSPECTION
  Cap Lid Overcapper and Caps Artificial
  Vision Inspection, Check Weighing
- AREA 7 PALLETIZING
  Batch Forming and Cardboard Boxes
  Packaging, Palletizer and Stretch Wrapper



4.1. DEPALLETIZING SYSTEMS

4.1.1. MANUAL DEPALLETIZING AREA FOR EMPTY CANS



Sapli's Cans Feeding Area is designed to depalletize cans from pallets manually and subsequently feed them to the Can Filling Line.

The system consists of the follow parts:

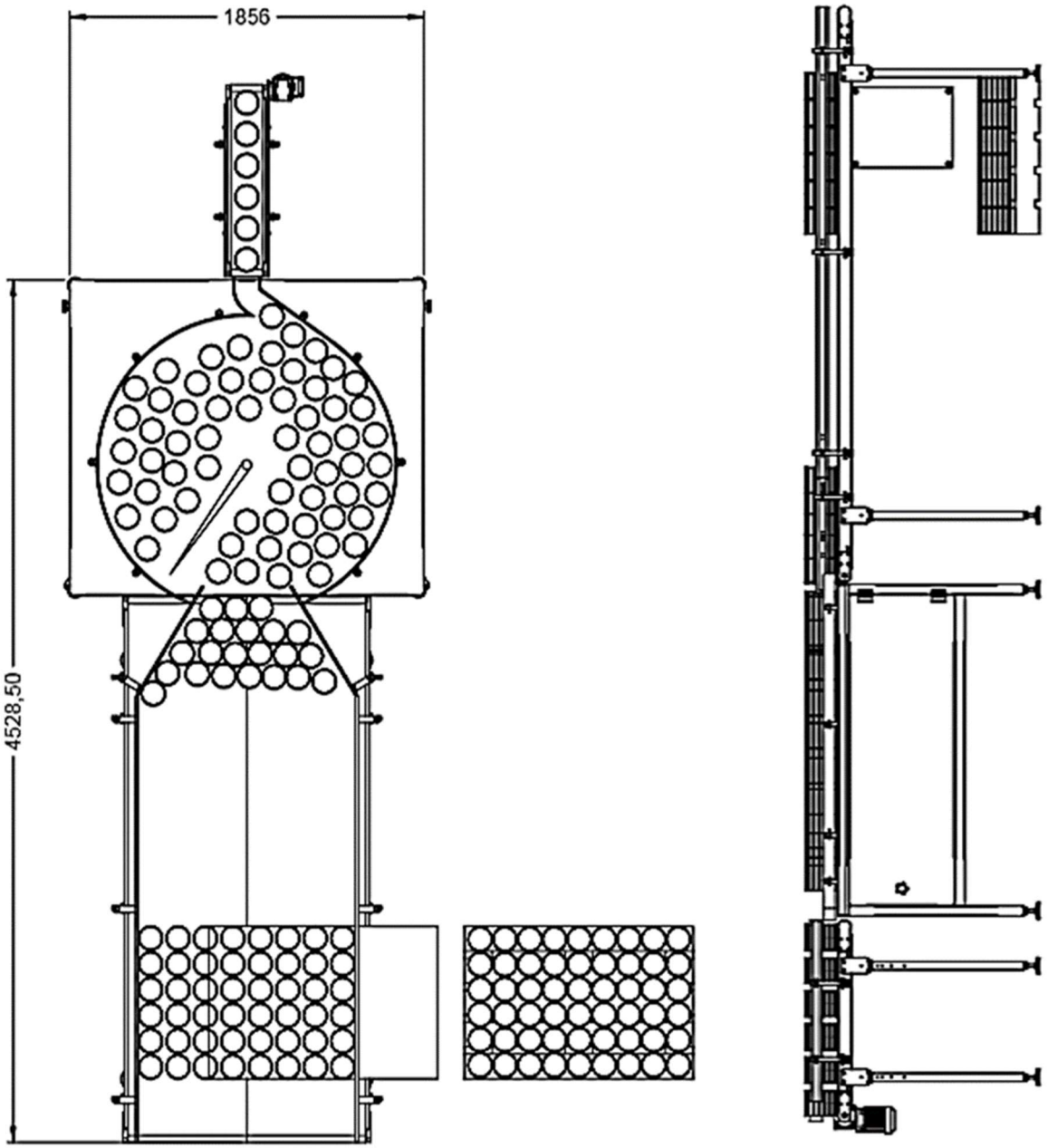
- Cans Feed Conveyor
- Rotary Table
- Can Feed Conveyor Oriented Cans Exit and Handling Conveyors

Suitable for any kind of pallet size and specially designed to handle any kind of can heights and can diameters. Made of AISI -304 stainless steel.

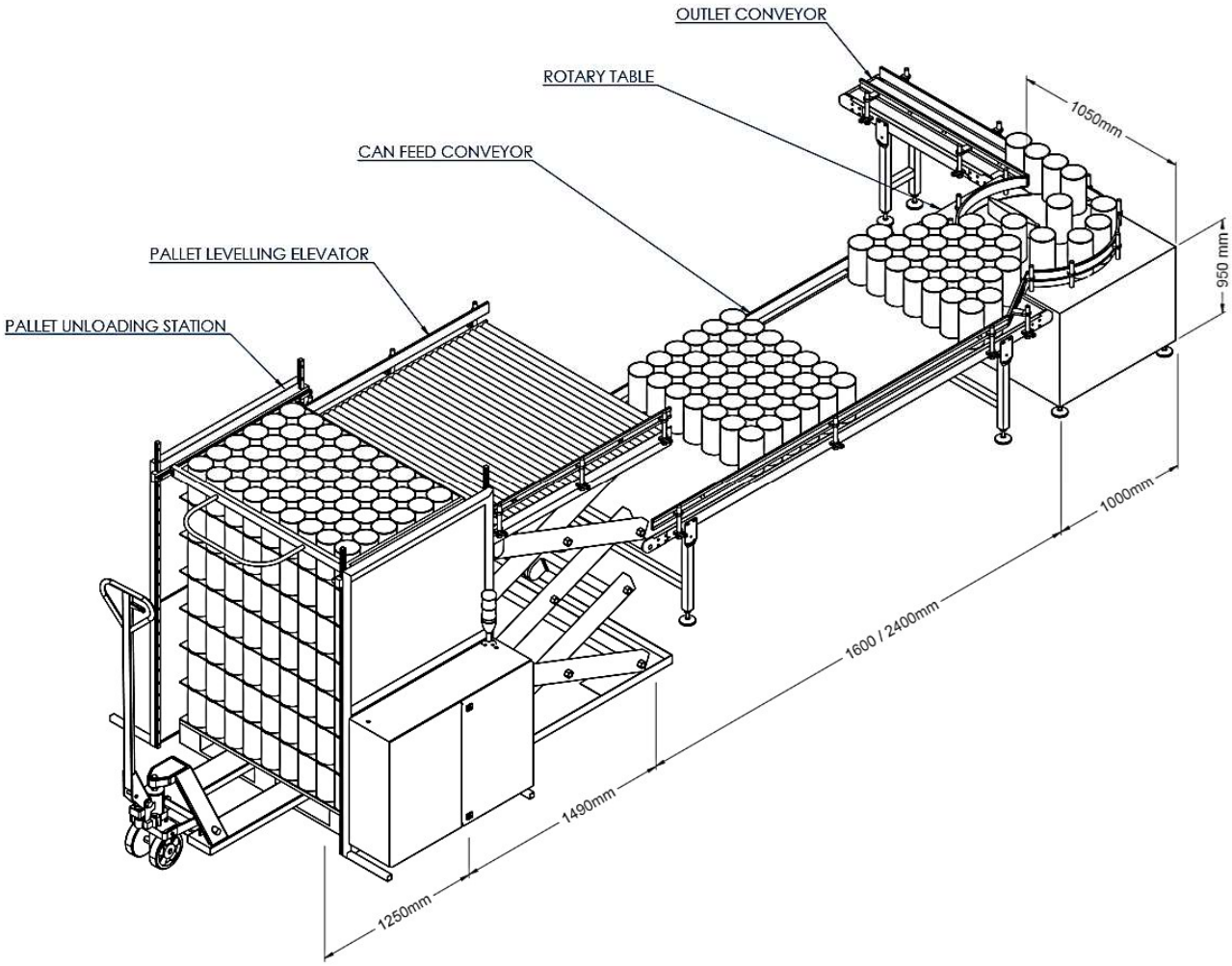
Operations instructions:

- The operator leaves cans on the can feed table
- Motorized Can feed table moves empty cans forward to the rotary table
- On the rotary table empty cans are oriented and fed forward to the outlet belt conveyor

The workload the operator depends on the speed of the line and the palette and can size. To avoid any build-up of too many cans in the line our machines have for every step a sensor that gives the feedback to the inbuilt computer system.



4.1.2. SEMI-AUTOMATIC DEPALLETIZING SYSTEM



Sapli's Cans Feeding System is designed to depalletise cans from pallets and subsequently feed them to the Can Filling Line.

The system consists of the follow parts:

1. Pallet Unloading System
2. Pallet Leveling Elevator
3. Can Feed Conveyor
4. Oriented Cans Exit and Handling Conveyors

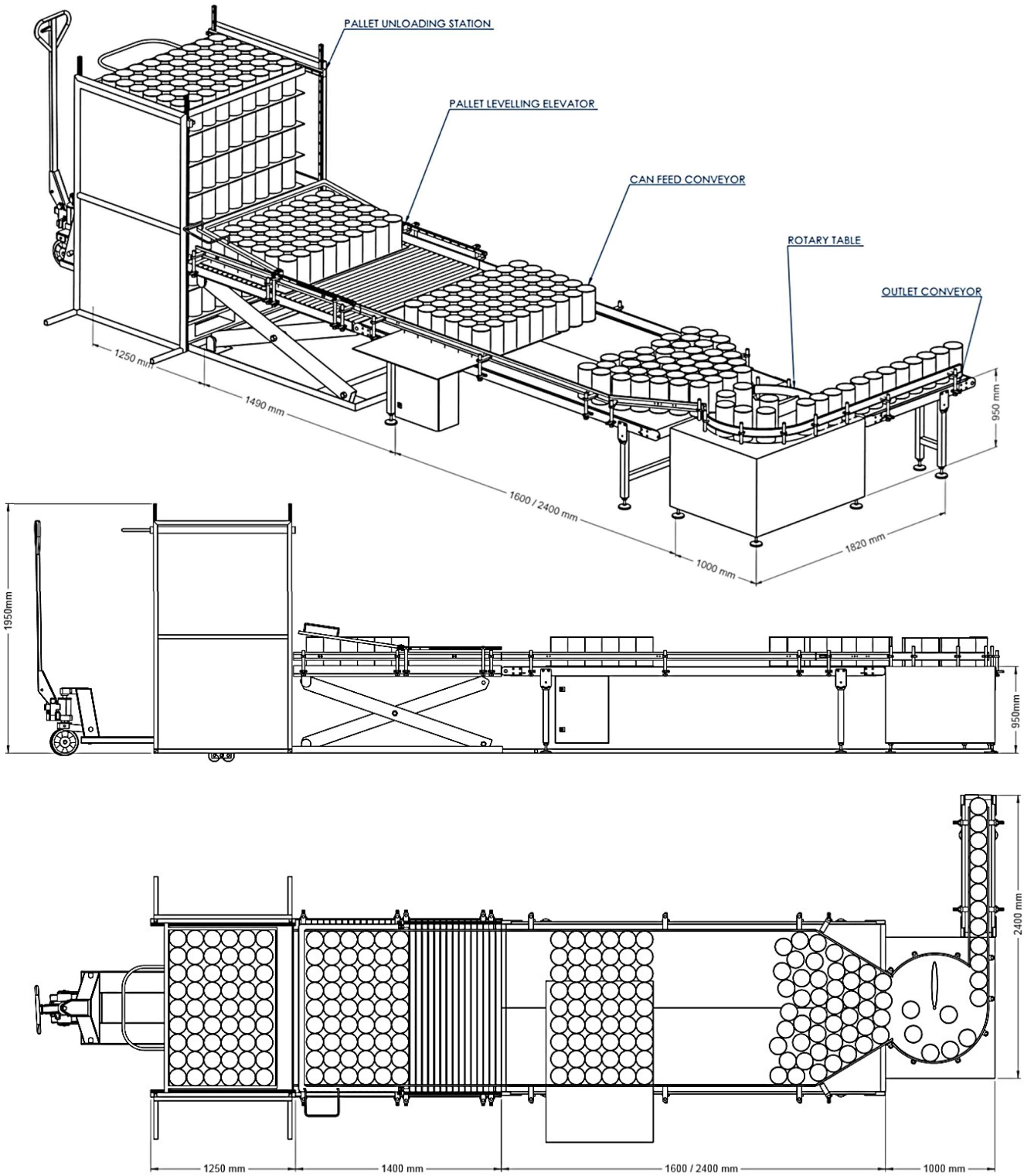
Suitable for any kind of pallet size and specially designed to handle any kind of can heights and can diameters. Made of AISI -304 stainless steel.

Operations instructions:

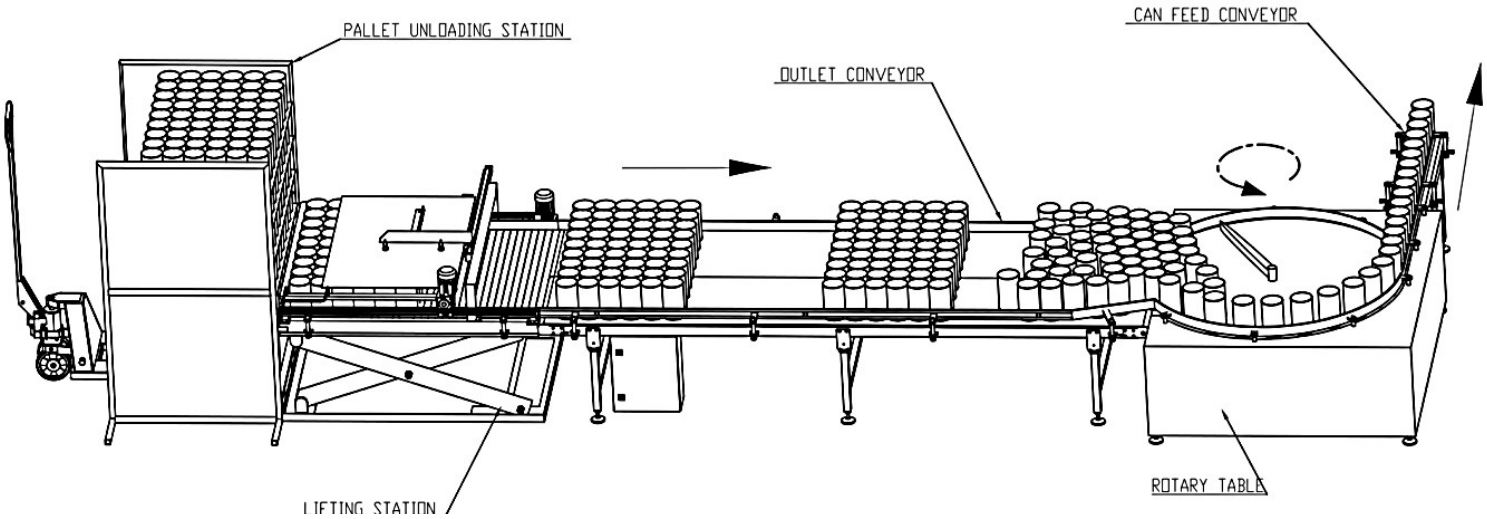
- The operator sets the height of the elevator table with the height of the last can floor
- The operator pushes the can layer until the roller table
- The operator sets the height of the elevator table with the height of the outlet belt conveyor
- The operator removes the paperboard

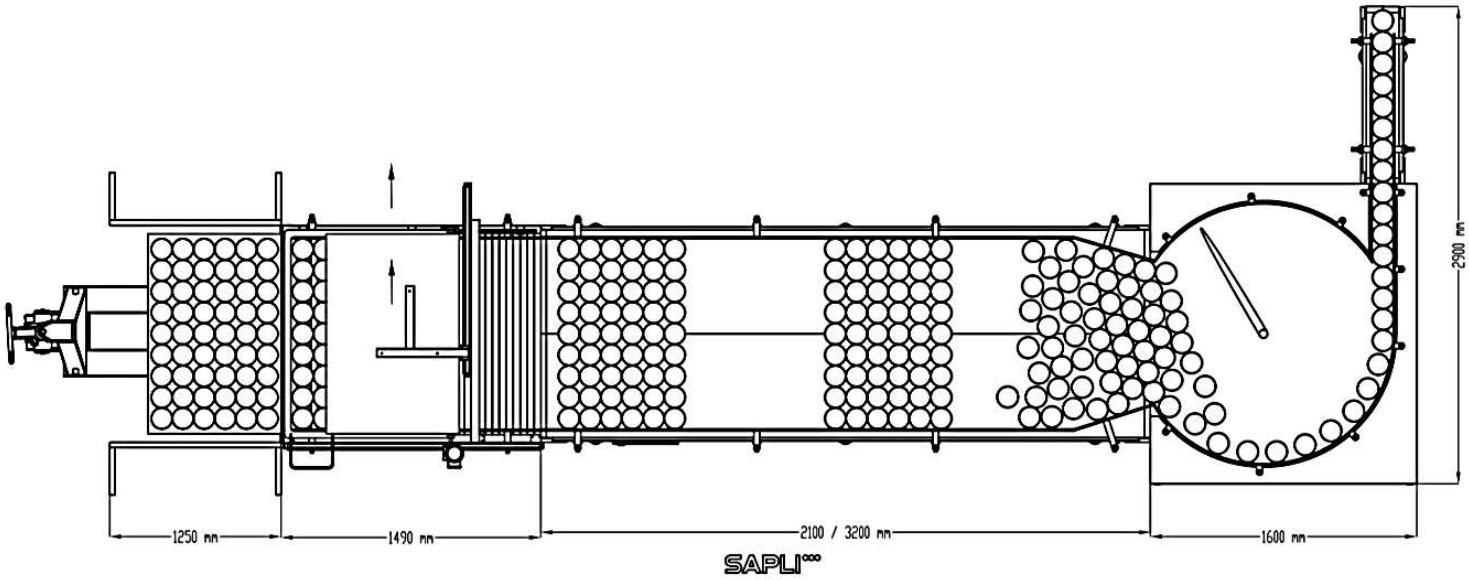
The workload the operator depends on the speed of the line and the palette and can size.

To avoid any build-up of too many cans in the line our machines have for every step a sensor that gives the feedback to the inbuilt computer system.



4.1.3. AUTOMATIC DEPALLETIZING SYSTEM





Sapli's Cans Feeding System is designed to depalletize cans from pallets and subsequently feed them to the Can Filling Line.

The system consists of the follow parts:

1. Pallet Unloading System
2. Depalletizer
3. Can Accumulation Buffering Tables
4. Oriented Cans Exit and Handling Conveyors

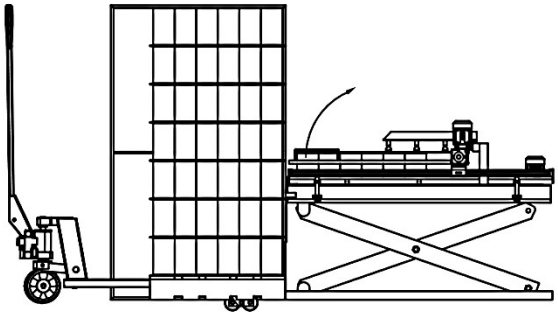
Suitable for any kind of pallet size and specially designed to handle any kind of can heights and diameters.
Made of AISI -304 stainless steel

Operations instructions:

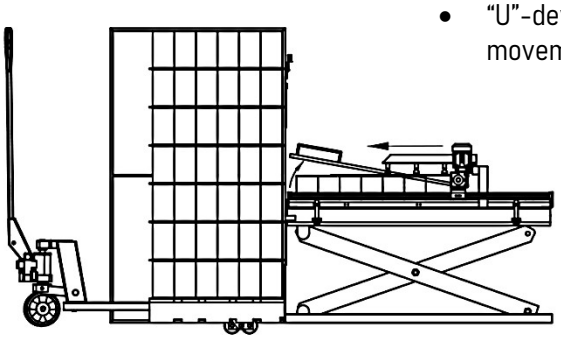
1. An operator puts the pallet with the cans in in the right position before the lifting station (once per pallet)
2. Can layers are moved on the lifting station by an automatic pushing "U"-device
3. The cardboard or plastic layer is automatically separated by vacuum pick&place device
4. The cans are gently fed from the intermittent conveyor into the can sorting rotary table that smoothly feeds the line cans inline.

The workload the operator depends on the speed of the line and the palette and can size.

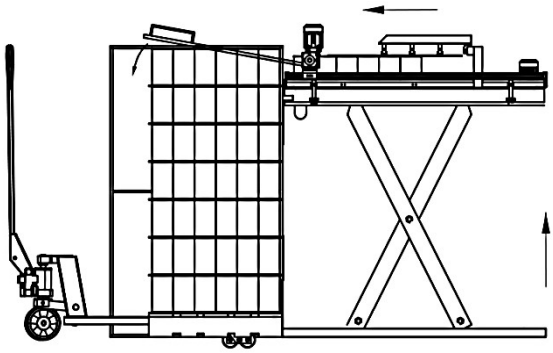
To avoid any build-up of too many cans in the line our machines have for every step a sensor that gives the feedback to the inbuilt computer system.



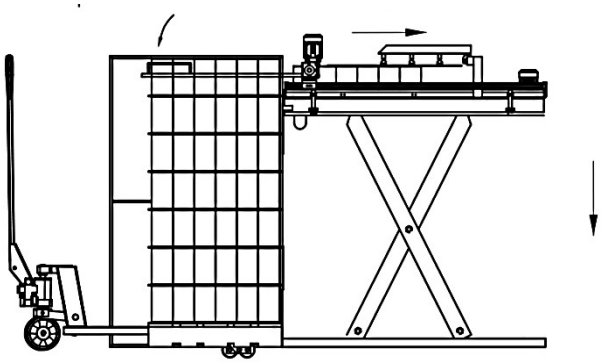
- "U"-devise movement

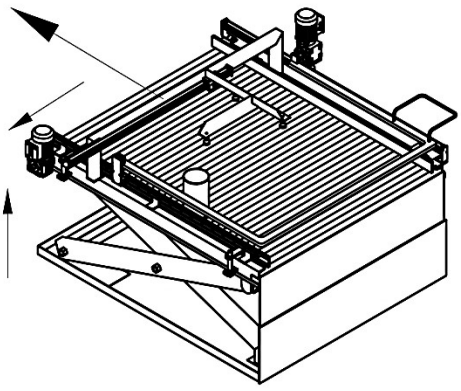


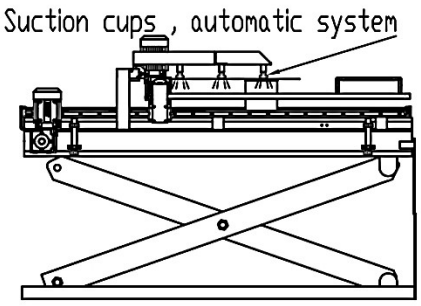
- Cans layer collecting



- Cans layer handling
- Station going down

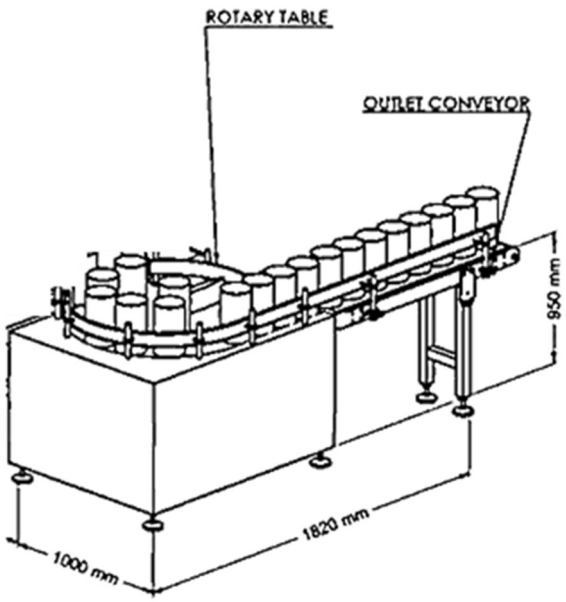


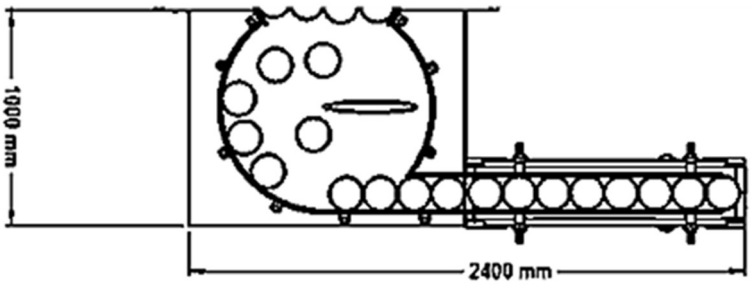




SAPLI

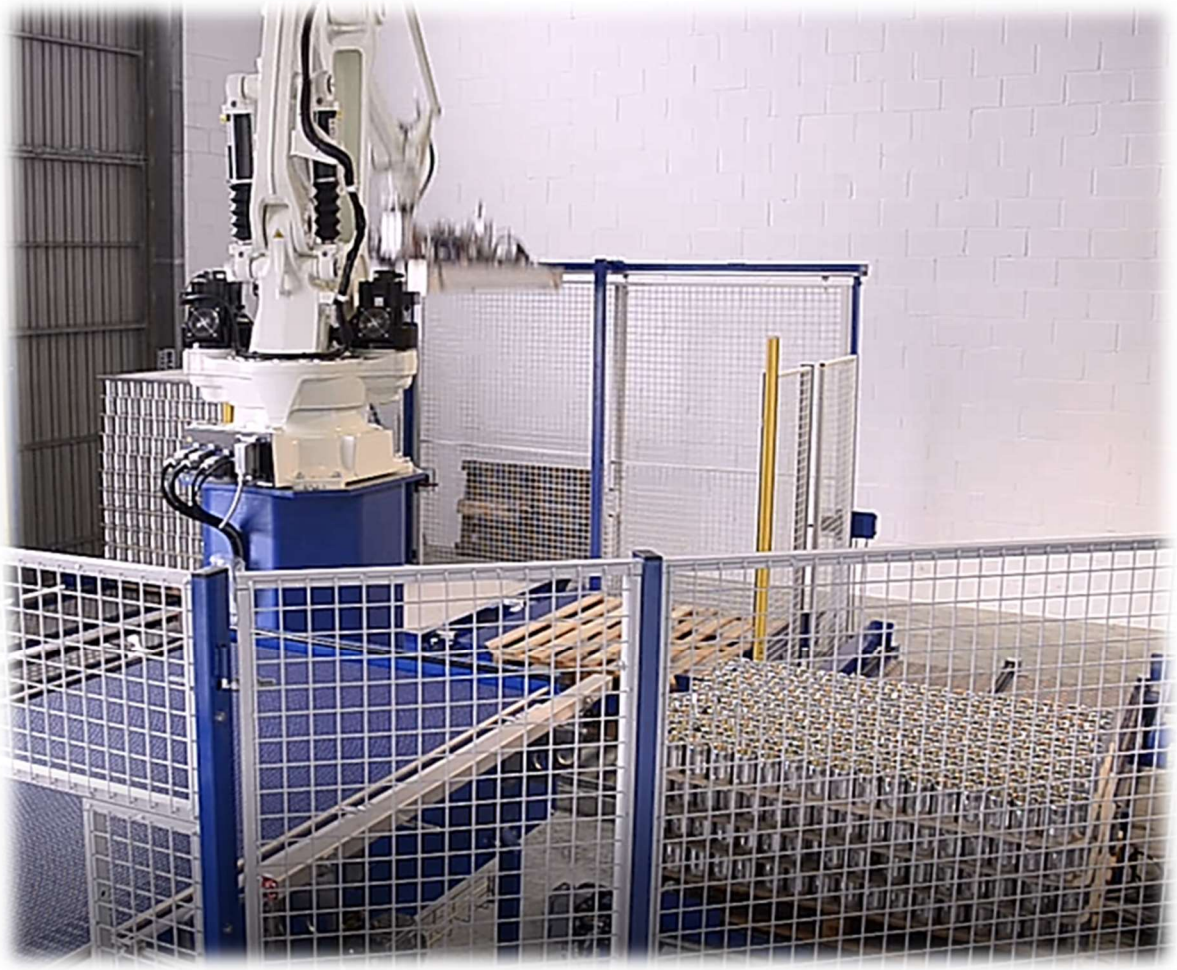
4.1.5. ROTARY TABLE + INPUT TRANSPORTATION CONVEYOR (RT-DS)





Rotary table with sorting device allows the manual feeding of opened tin cans one by one through the transportation conveyor forward the seaming station. The operators leaves opened cans on the rotary table, and the system orients and feeds them automatically.

4.1.6. ROBOTIC DEPALLETIZING SYSTEM



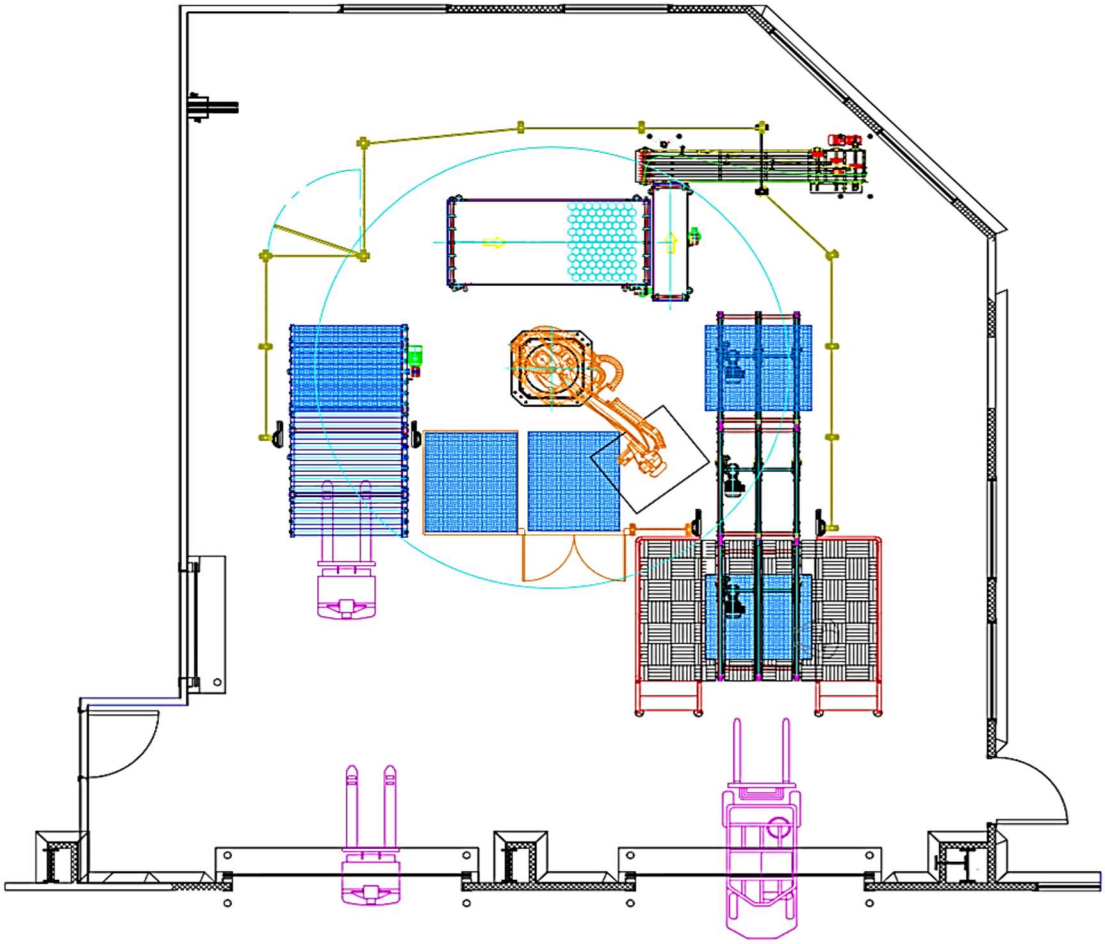
The complete cell of unstacking cans, consisting of:

· Zone of manual elimination of retractable pallet packaging.
· Transportation of cans pallets to the cans robotic area, with a buffer of 2 pallets.
· Robot, equipped with clamp four functionalities:

- Removing of top frame,
- Removing of cans layers,
- Removing of plastic layers
- Removing of empty pallets

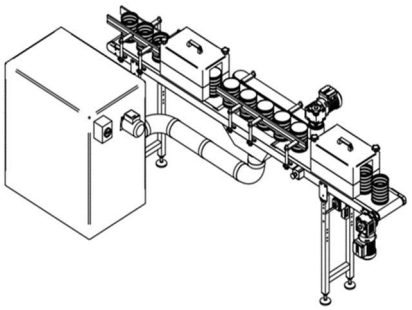
· Zone for top frames and zone for separators.
· Leaving and stacking of pallets, with roller conveyor.
· Security fencing, with two access opening with wheelbarrow and a personal access door, with its corresponding securities
· Robot control panel, and installation
· Robot programming and PLC control

The conveyors to achieve the alignment in 1 row of output, composed of conveyors of modular band finished inox, with dimensions according to a complete layer of the pallet, with guides and control elements included.



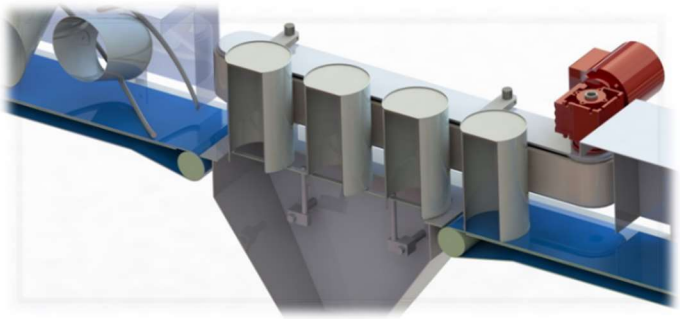
4.2. EMPTY CANS AIR CLEANING SYSTEM

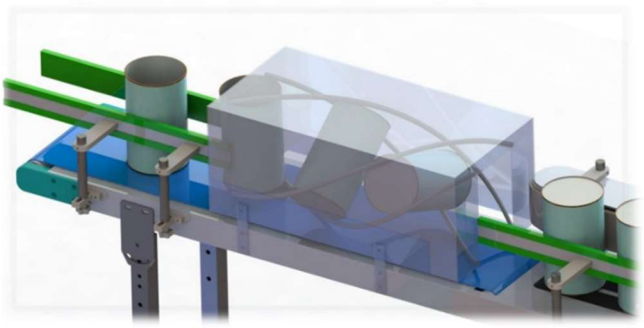
Sapli's Empty Containers Cleaning System allows cleaning all possible dust from the packaging inside. The system is composed by:

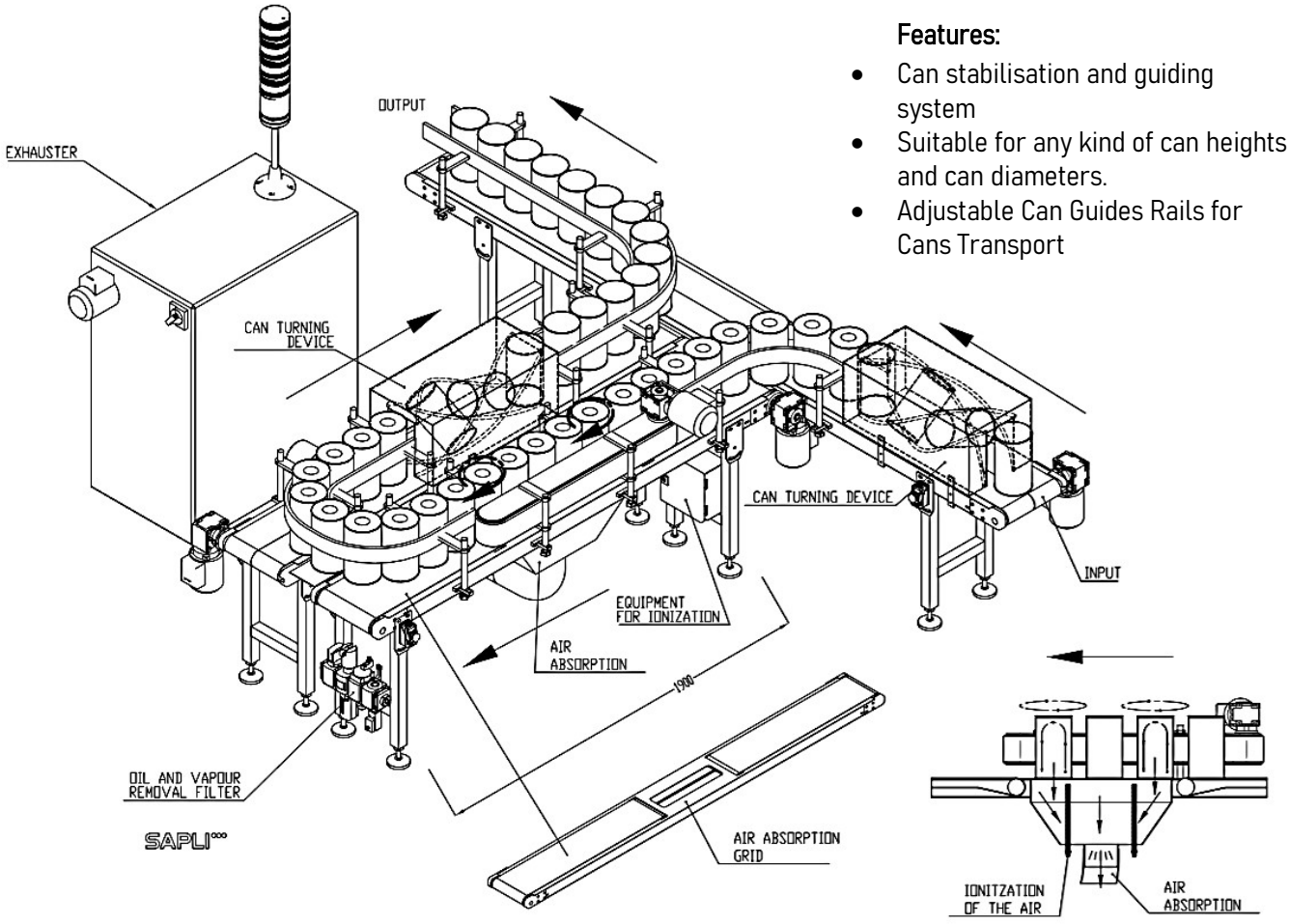


1. **Twister**: (open side up to open side down)
2. **Cleaning System** with two ionising nozzles (anti-static system)
3. **Dust Collection System** (with dust hopper)
4. **Twister**: (open side down to open side up)
5. **Handling Conveyor**

Containers enter into twister tunnel, then they are turned from open side up to open side down, and possible dust and dirty particles fall down. Dust Aspiration System collects all dust into Dust Hopper. Two ionising nozzles blow air inside containers, assuring that all dirty is removed from packaging corners and is not stuck to the walls. After this operation, the containers are turned again from open side down to open side up and moved forward to the next production stages by handling conveyor.





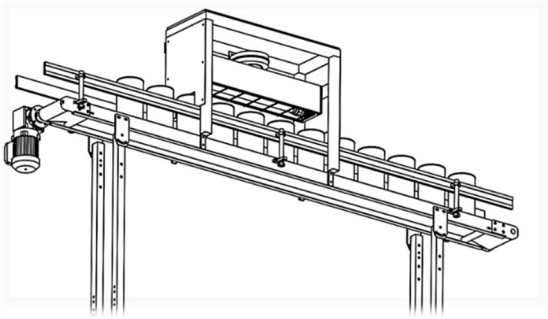


Features:

- Can stabilisation and guiding system
- Suitable for any kind of can heights and can diameters.
- Adjustable Can Guides Rails for Cans Transport

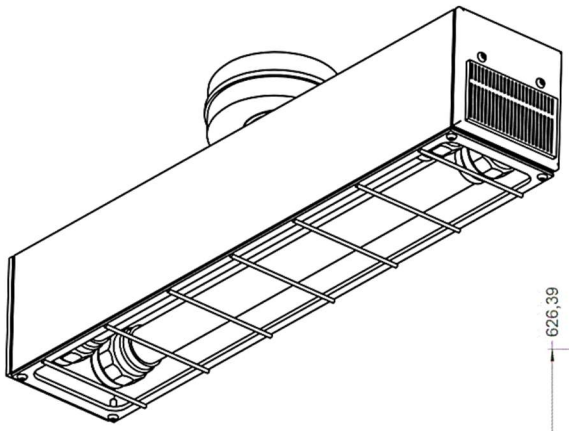
4.3. UV-STERILIZATION TUNNEL

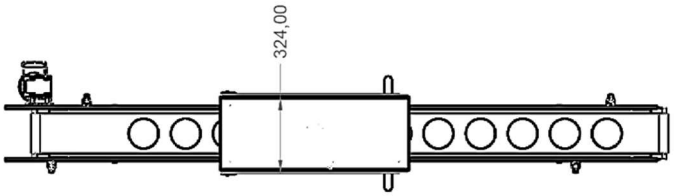
Contaminated packaging is one of the primary causes of the contamination of food with bacteria. For this reason, it is very important to treat a packaging with effective system before it will be filled. Sapli's UV Sterilization Tunnel allows to sterilize cans inside and outside, due to a powerful UV lamps what allow to reach LOG3 result. In this way, cans leave the tunnel clean and aseptic, totally prepared for filling process.

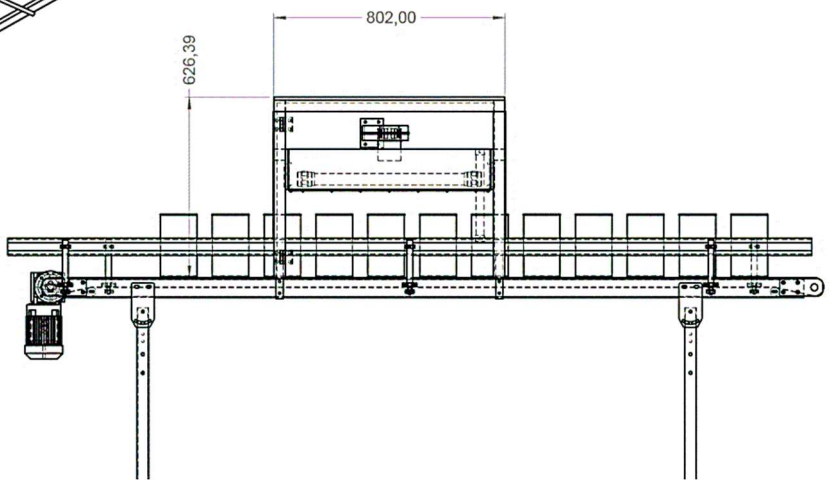


Features:

- The tunnel is completely made of stainless steel.
- Secure and lasting system
- Multiple lamps with individual security control
- Easy installation and low maintenance requirement.
- Recommended lamp replacement: every 10.000h
- Adjusted to packaging requirement and production rate
- Suitable for any kind of can heights and can diameters
- The current status is displayed via LED
- Safe reset-procedure
- Low energy consumption
- Non-stop disinfection system
- No microorganisms on packaging and products
- Extended shelf-life
- No use of chemicals
- Adjustable options to different customer's tins
- Possibility of modular designs
- Processing speed, bandwidth and Product height can be optimally designed.

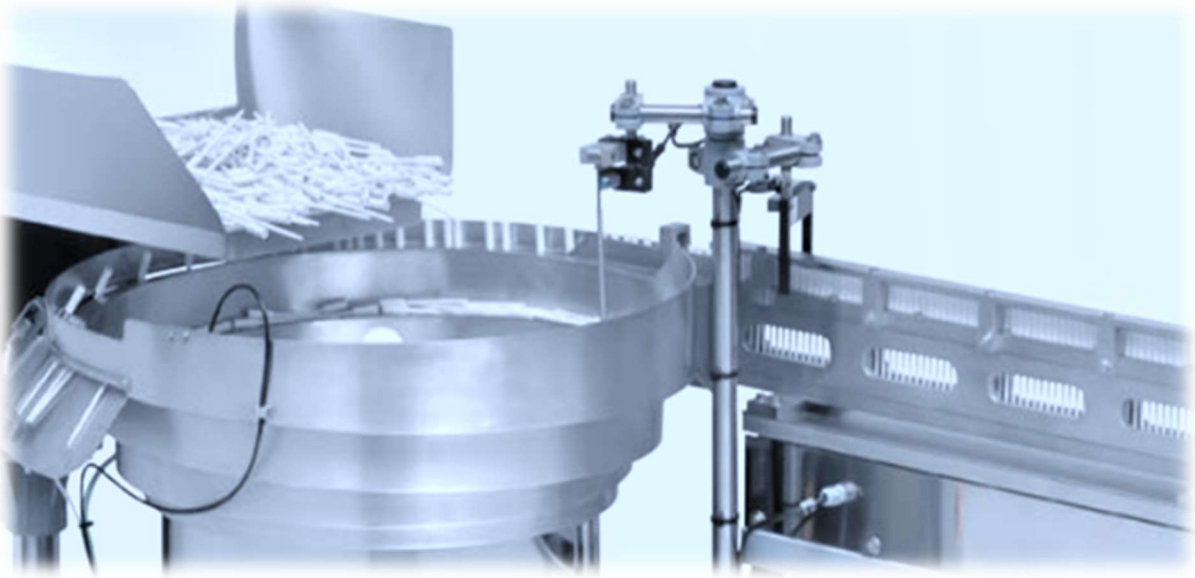






4.4. SCOOP INSERTER

4.4.1 SCOOP INSERTER



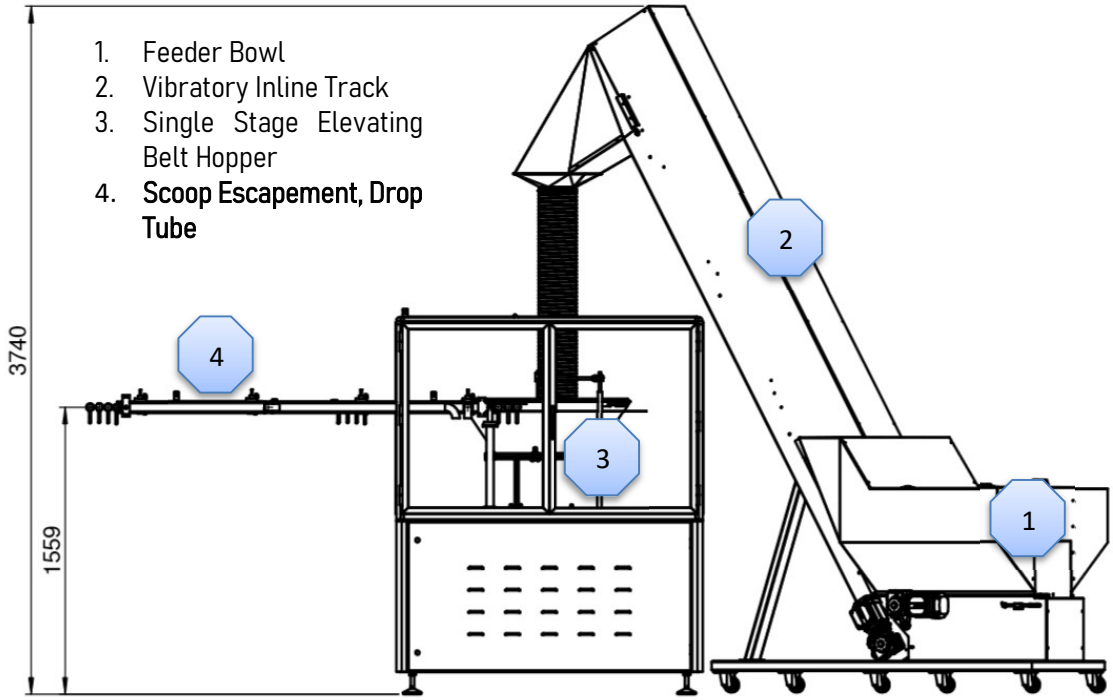
After cleaning and UV sterilization, cans are placed on the conveyor, with passes through a centrifugal scoop feeder that places a scoop into each can. The scoops are dropped into a hopper, from which an inclined water-fall type feeder lifts them up to the sorter, where they are oriented. The scoops are handled through discharge tunnel, which maintains the orientation and then they are dropped into each can. A sensor at the entrance of the scoop feeder detects the presence or absence of cans and turns the feeder on or off accordantly.

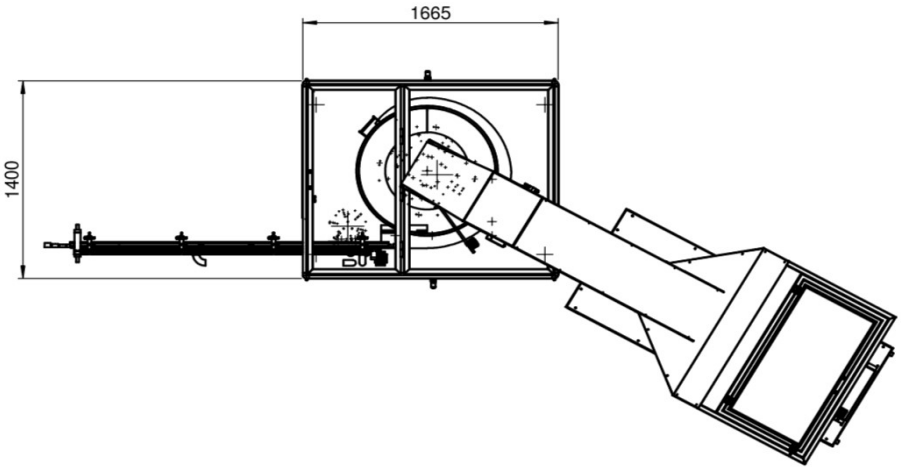
Sapli's Scoop Dropping System consists of:

- Scoop Hooper
- Water-Fall Type Feeder-Elevator
- Vibrating Sorter
- Discharge Tunnel

Features:

- Clean, non-painted, non-marring surfaces
- Different options for system autonomy depending on hopper sizes
- Easy maintenance system
- Low noise mechanism
- Refill alarm
- Easy changeover modular change parts
- Easily accessible for operation
- Direct entrance discharge to customer's constant speed, continuous motion conveyor
- Vision Control option available


1. Feeder Bowl
2. Vibratory Inline Track
3. Single Stage Elevating Belt Hopper
4. Scoop Escapement, Drop Tube
3740
1559
1
2
3
4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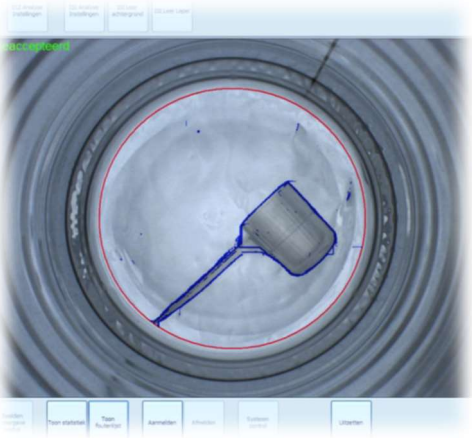
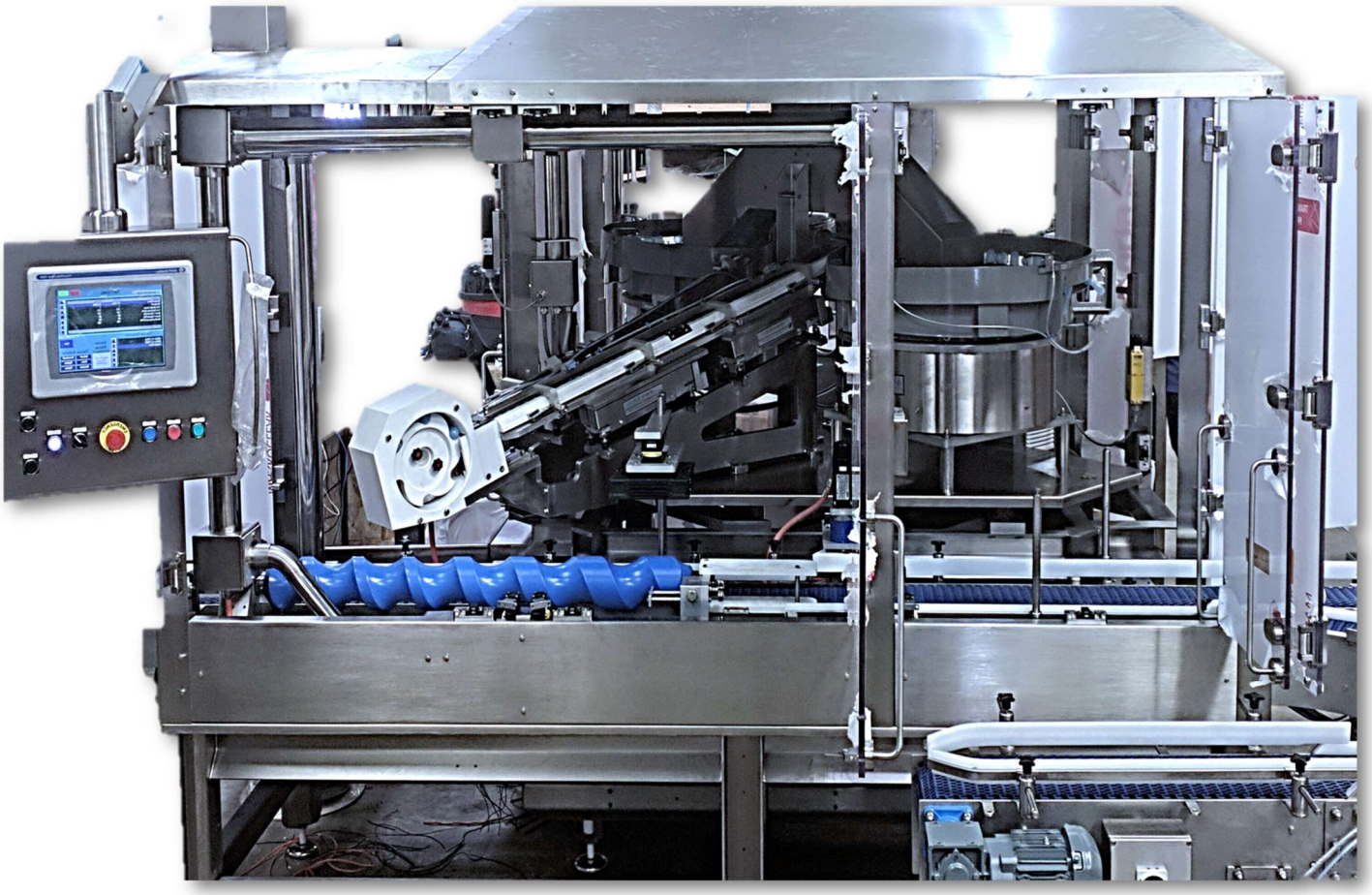


4.4.2 HIGH SPEED SCOOP DROPPER

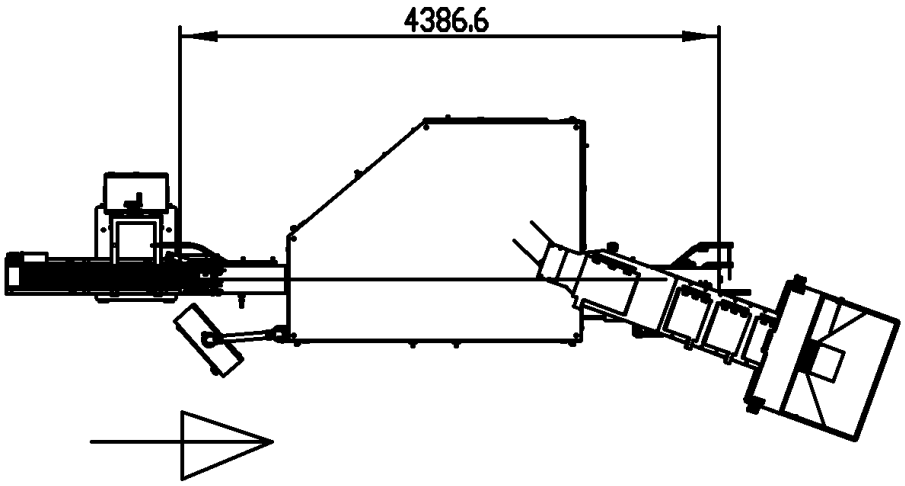


A belt conveyor introduces the cans into the machine where the scoop is placed it in the corresponding position according to the programming. Single feeding machine capable of feeding and dispensing scoops into two sizes of can at 150 cans per minute and including a 350 litre capacity bulk storage elevating hopper loader.

.High care area

- Unit by unit dropping principle
- Aprox. Cell Sizes: 3700x3000

Two head high speed scoop dropper to reach 300 u/min is available.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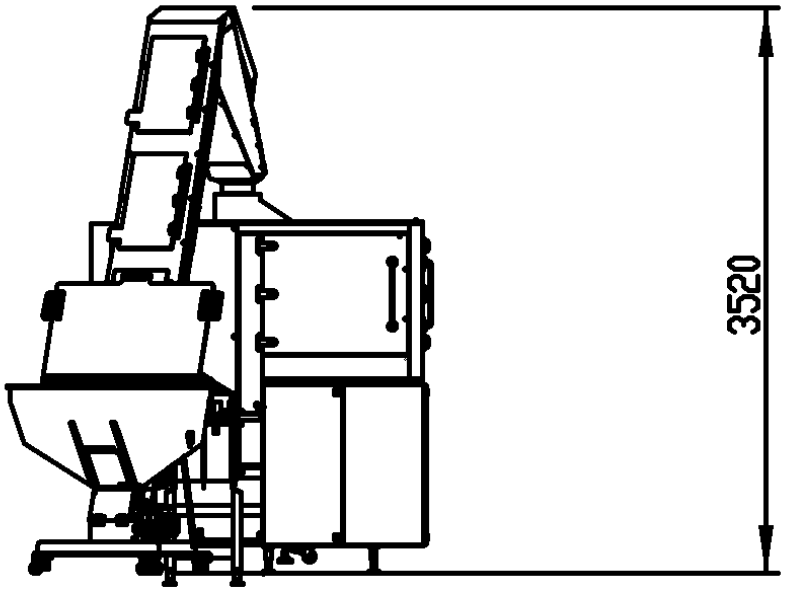
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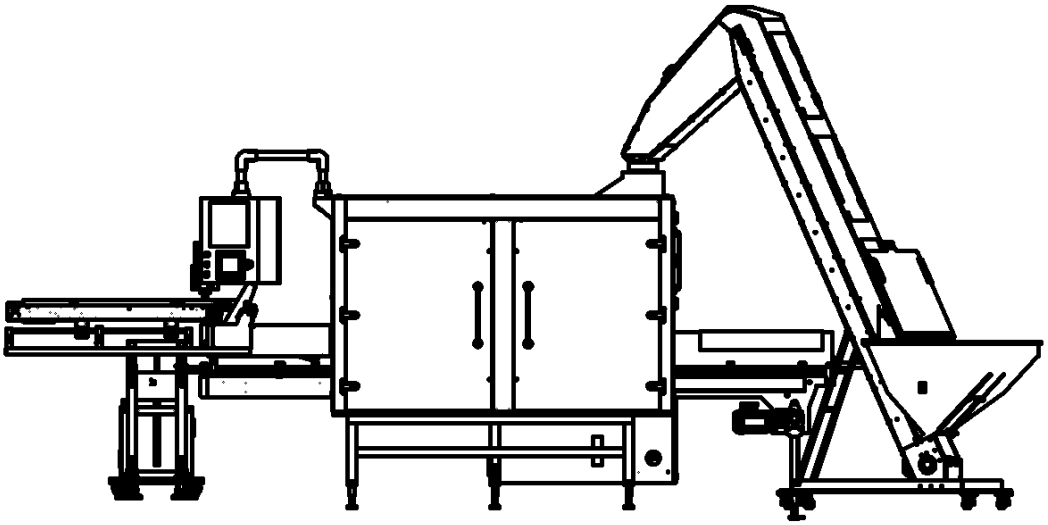
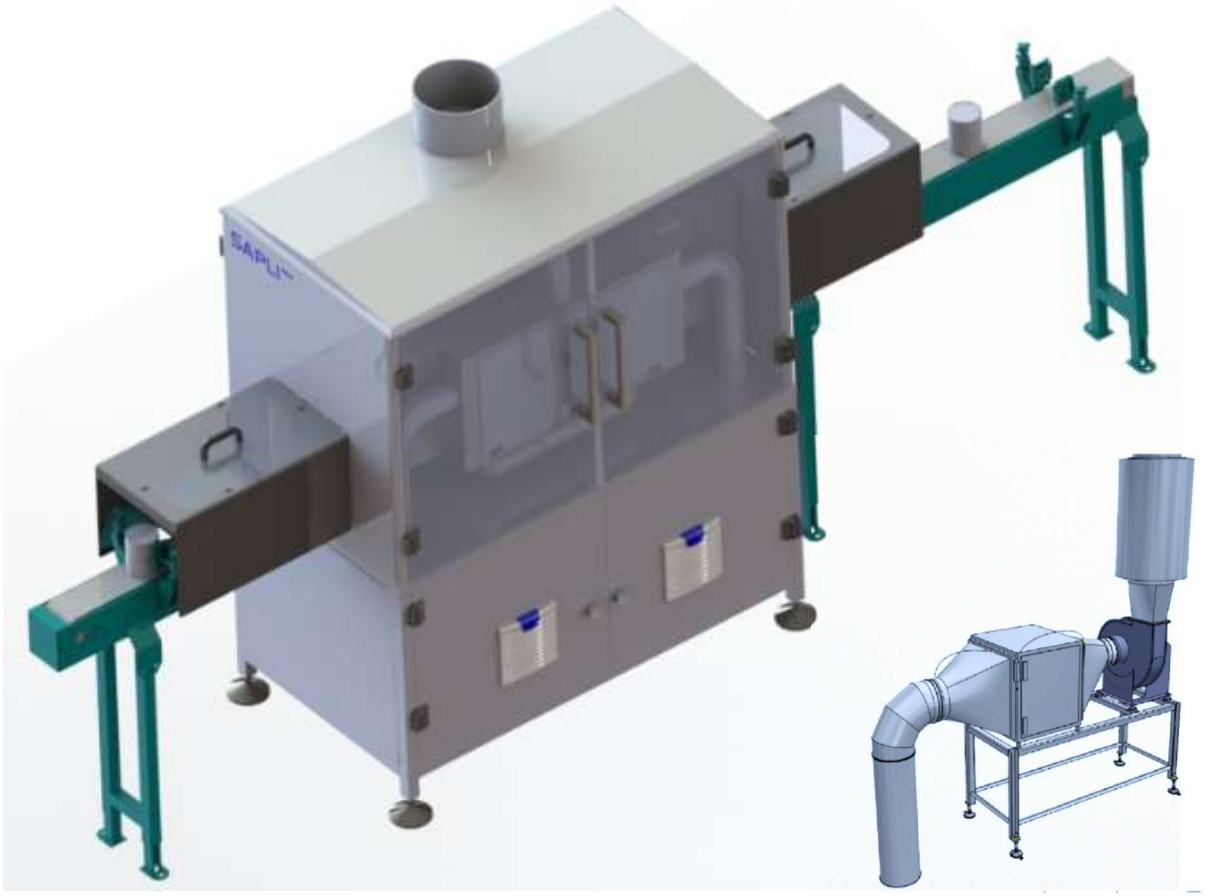
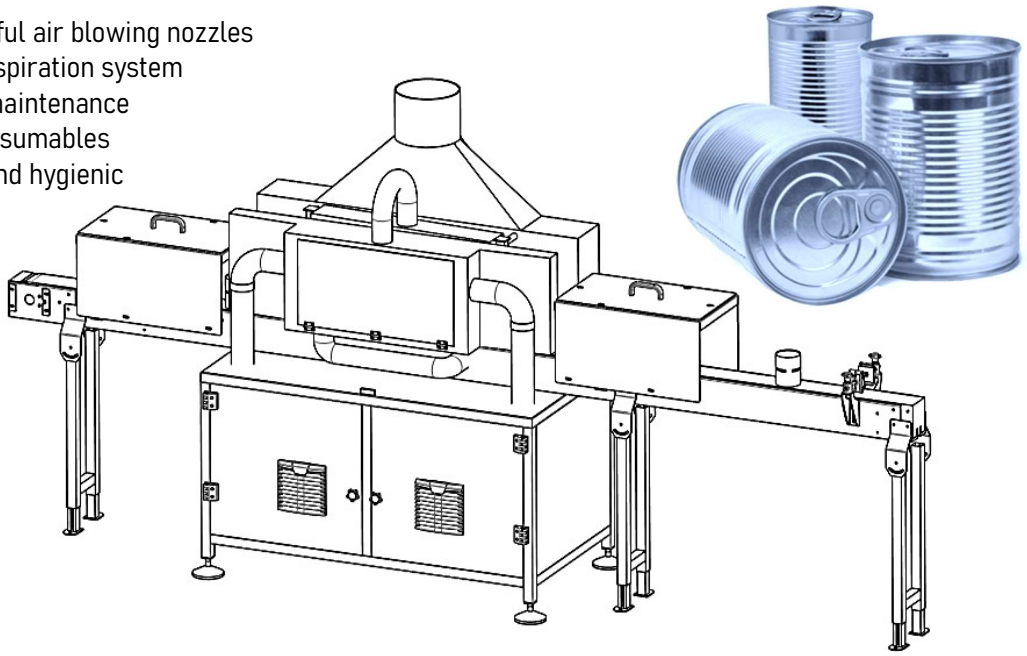


4.5. SEAMED CAN TOP CLEANER



It is very important to clean already filled and seamed cans, especially aluminium peel off lids, in order to prevent the future contamination of the clean material while the can opening. Sapli offers an effective solution for the can top cleaning. SCC-1 is the completely automatic solution, based on air cleaning concept. Seamed cans enter into the tunnel where powerful air nozzles blow air from different angles assuring the complete elimination of possible stuck powder or dust. The aspiration system absorbs dust particles. The cans leave the tunnel completely clean and ready for the next processes.

- Powerful air blowing nozzles
- Dust aspiration system
- Easy maintenance
- No consumables
- Safe and hygienic



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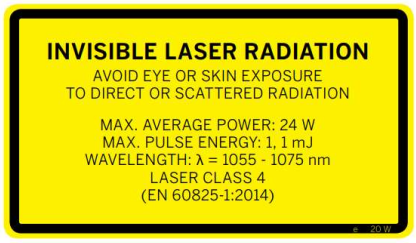
4.6. LASER CODER



Laser marking system delivers versatile, permanent coding with a small footprint and low maintenance requirements.

Features:

- Compact size
- High quality printing
- Low maintenance
- Power level adjustments
- Beam orientation
- Automatically
- Suitable for metals, plastic s and other hard-to-mark materials
- Intuitive software
- Automatically updated content
- Laser cooling with fan

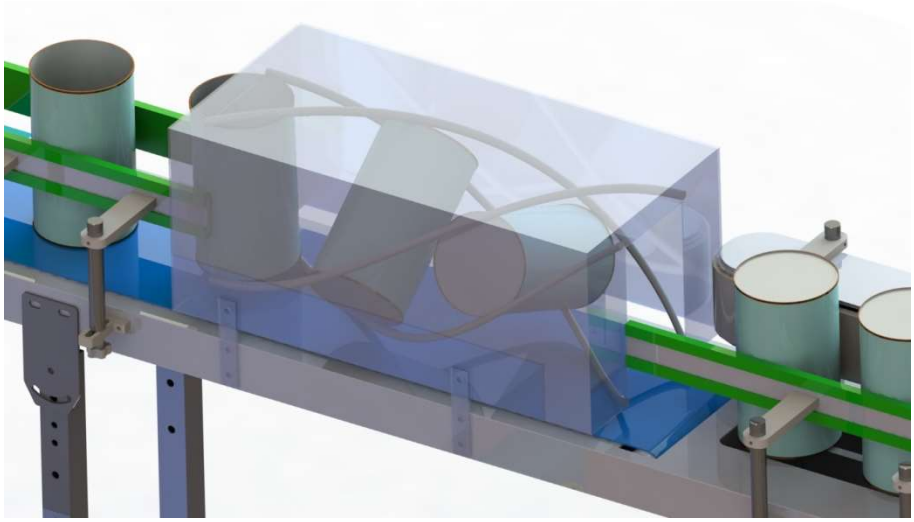
4.7. INK INJECTOR

Continuous ink injection system has been designed for customers who print six to eight hours a day for five days a week, provides up to 9,000 hours of production before mandatory preventative maintenance.

Features:

- Multi-shift or single shift applications
- Ideal for moderate production line speeds
- Single print head
- Up to 5 printing lines
- LCD with membrane keyboard display
- Auto cleaning print head for fast start-ups
- Nominal character height from 2mm to 10mm
- Character sets American, Arabic, Bulgarian, Chinese, East European, European, Greek, Hebrew, Hungarian, Italian, Japanese, Japanese/Kanji, Japanese/Katakana, Korean, Russian, Simplified Chinese, Scandinavian, Thai, Traditional Chinese, Turkish, Vietnamese

4.8. CAN TWISTER

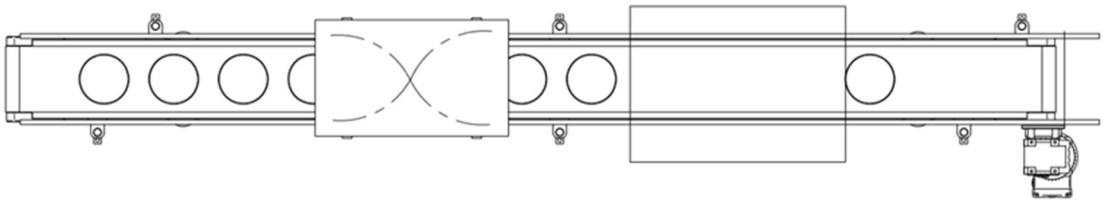


Sapli supplies an inline 180° degree can twisters, which gently and rapidly invert or rotationally position metal tin cans. These devises are normally needed in tree points of line:

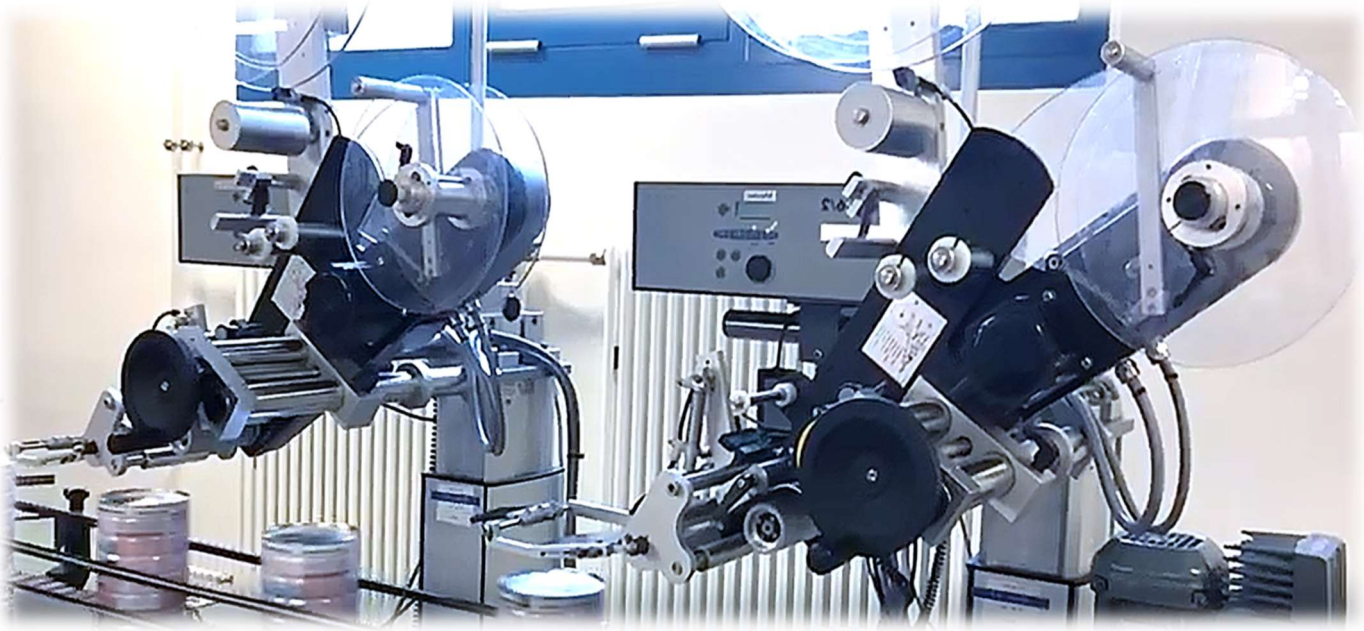
1. Before **Can Cleaning System** (open side up to open side down)
2. After **Can Cleaning System** (open side down to open side up)
3. After **Seaming, Cleaning, Leak Testing** and **Laser Coding Processes** (bottom side up to bottom side down)

Features:

- The twister allows any required sequence of attitude changes when positioned in combination.
- No practical limits to the size and shape.
- Constructed in highly abrasion resistant, low friction and light weight material.
- Compact design
- Accurate operation
- Simple installation and integration in production process
- Quick format change-over
- Low maintenance requirements

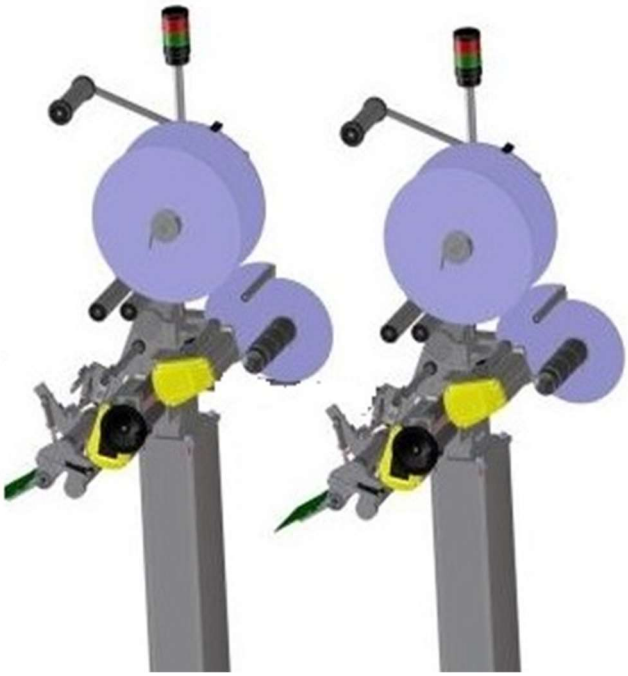


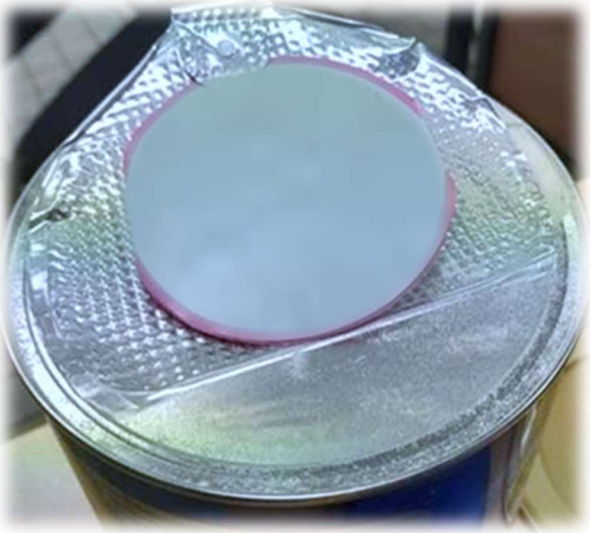
4.9. LEAFLET INSERTER



Non-stop twins model leaflet attaching machine:

- Easy date backup
- Top can labelling
- Product sensor: light barrier and reflector
- End of label roll – signal lamp
- Conveyor speed: up to 74 m/min
- Max diameter of label roll: 400 mm





4.10 CAN BARCODE READER

Can barcode reader is based on 3 cameras, able to capture the barecode on the can lateral side from all possible angles. The system allows to assure the correct tracibity of the packing process.

Connection type	Ethernet
Scanner design	Line scanner
Focus	Fixed focus
Scanning frequency	400 Hz ... 1,200 Hz
Code resolution	0.2 mm ... 1 mm
Reading distance	60 mm ... 365 mm 1
Bar code types	All current code types, Code 39, Code 128, Code 93, Codabar, GS1-128 / EAN 128, UPC / GTIN / EAN, Interleaved 2 of 5, Pharmacode, GS1 DataBar, Telepen, MSI/Plessey
No. of characters per reading interval	1,500 500 (for multiplexer function in CAN operation)

4.11. X-RAY INSPECTION

The end-of-line X-ray inspection system detects contaminated, damaged and defective products and packaging. Besides metallic and non-metallic foreign objects it detects missing, defective or misshaped products. All foreign objects are detected due to their density, chemical components or mechanical dimensions: the density differences are compared to the product to be inspected. X-Ray system detects metal, glass, ceramics, stones, raw bones, PVC, Teflon, rubber and glass fibber reinforced plastics, Device detects product defects such as cracks or air pockets in tins.

Features:

- Real time results
- Inspection of products with variable density ranges
- No dead angle
- Easy and intuitive operation
- Easy maintaining and cleaning
- Compact, open and modular design
- Digital record of every package
- **Rejection function** for manual inspection
- Rotary main switch, key switch, switch On/Off, emergency STOP switch
- Max inspection width up to 450mm
- Max inspection height up to 250mm
- Installation length 1400 mm
- Max load up to 15 kg
- Conveyor belt width up to 610 mm
- Conveyor belt height up to 950 mm

4.11. CHECK WEIGHTING SYSTEM

Equipment for continuous control of weight for the verification of one hundred per cent of the products manufactured in a production line. Able to indicate and/or reject all those that do not comprise with the standard specifications.

Maintains flexibility, easy installation and commissioning, betting on the new technology: comprehensive menu-driven touch screen, communication systems and versatility

Two options:
Group weighting and individual weighting

Features:

- LCD-LED touch colour 12" display
- Rejection signal time control
- Storable memory formats
- Emergency stop

4.12. CASE PACKING AND PALLETIZING SYSTEM

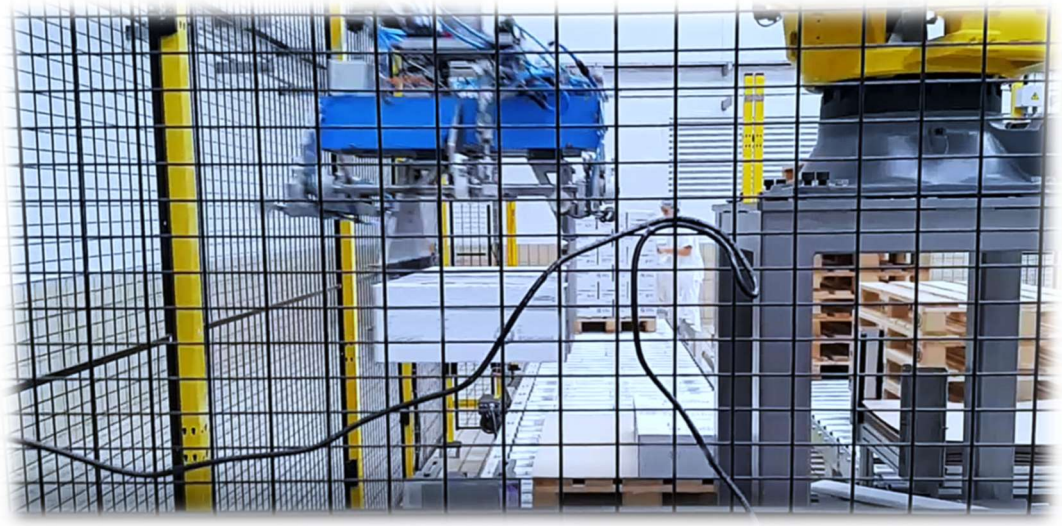
Palletizing system can be customized and adapted to the production needs, Different automatizing levels are available.

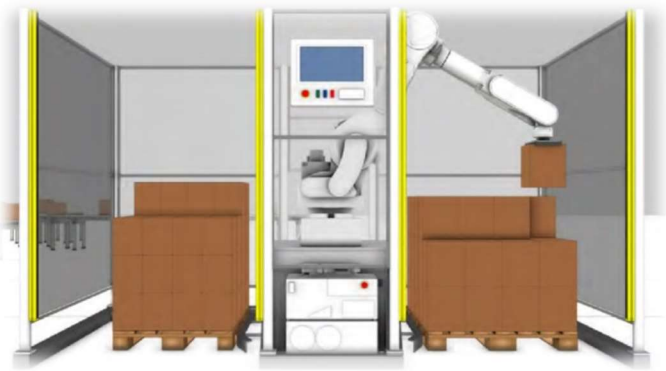
Sapli Machinery offers the follow equipment options:

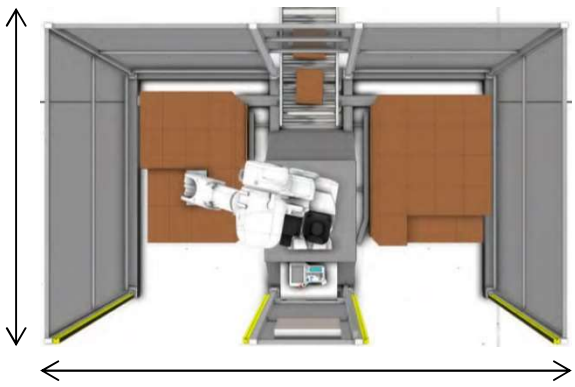
- Cardboard box erector
- Cardboard box packer
- Full automatic cardboard boxes folding and closing
- Cardboard boxes labelling
- Palletizing robot cell
- Conveyors of end packaging
- Pallet Stretch Wrapper

Cardboard boxes folding and labelling

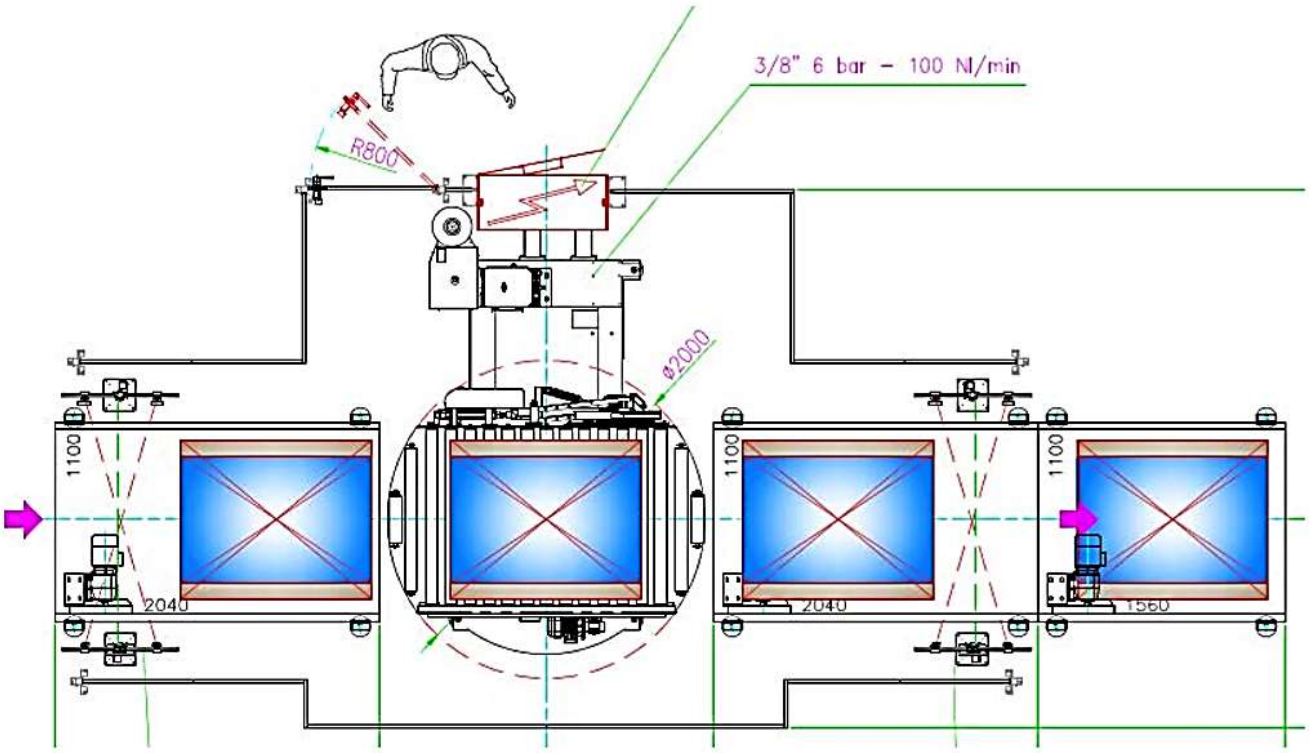
Palletizing robot cell

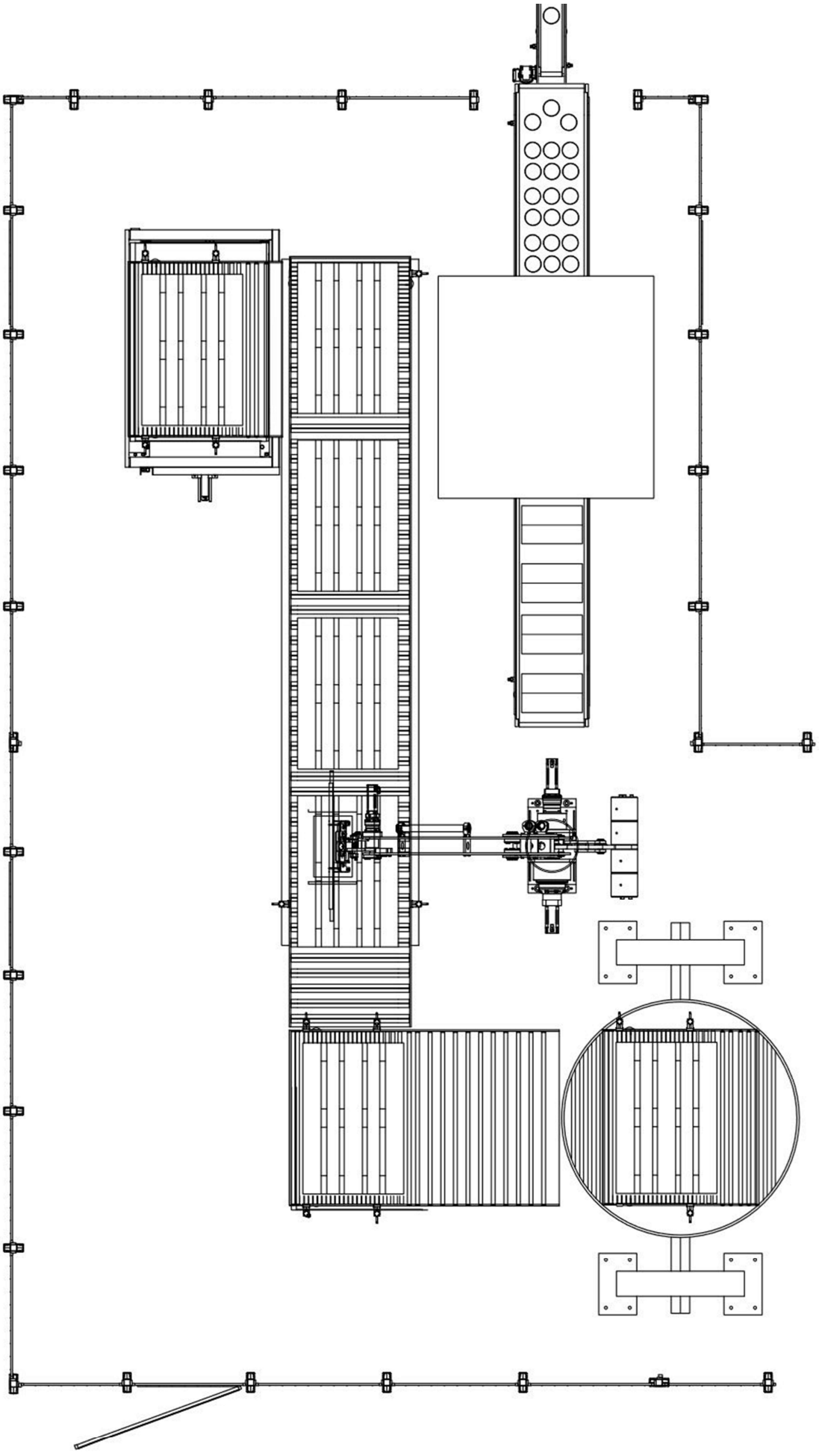






Pallet Stretch Wrapper





5. WHY CHOSE SAPLI?

Sapli offers Customers their qualified engineering know-how, the highest technology and the greatest productive flexibility, helping the customers to develop their project from very first steps offering a wide range of services:

Customer's benefits:

- Wide experience in Canning Packaging sector of Powdered Products
- A wide range of options and machinery configurations
- Customer-tailored solutions for each products production process
- Multiple formats at the same equipment
- Fast format changes
- Compact machine design and adaptable layouts
- Intuitive interface
- Complete equipment integrations
- Excellent Customer Service
- Guaranteed safety in every project stage

CE

Our values:

- The continuous investment in R&D allowed developing and patenting the original capping solutions, giving to Sapli an important competitive advantage in quality and features.
- Sapli offers to the Customers complete services and support, including: customized project and equipment engineering; PLC programming; spare parts manufacturing and rapid supply; machine assembling, commissioning and repair; maintenance service in customer's site and training, which is supported by our highly-qualified after sales service.
- We focus on custom projects which include turnkey for new plants, modernization of existing production lines or special engineering designs, taking into account the latest standards for health and safety.
- Sapli values are based on the spirit of excellence, creativity and ethics as a way of ensuring customer satisfaction.