



TECNOMECCANICA

Ploner

BIELLESE



Specialized in planning and construction of machines and complete plants for the preparation of textile fibres for spinning since 1968, the company gained vast experience in all sectors where staple fibres are processed (combing, woollen and semiworsted, spinning, production of non woven fabrics, felt, wadding and waste regeneration plants). **Futhermore it is active in the sector of removal by suction of dust from rooms, machines, and fibres with system of automatic filtering and dust packing.**

Tecnomeccanica Biellese cares the **planning as well as the construction of all the components** that are part of its plants. Production is characterized of an extreme flexibility and adaptability of the spaces and of the client's needs. That's why they always make projects on measure.



MEMBER OF :



Teachings from the father Giuseppe Ploner to the two sons Luigi and Mario and to the daughter Paola that today manage the company, guarantee linearity and constancy in the planning choices and allow to maintain a well known leadership in their own sector. Among its most famous clients, Tecnomeccanica reminds **Loro Piana, Zegna, Piacenza, Botto Giuseppe, Cerruti, Reda, Barberis** (all most known as high quality and fine fabrics producers).

Tecnomeccanica Biellese specializes in the study, design and construction of machines for the preparation of textile fibres and of pneumatic conveying, for the following areas of textile production:

Woollen and semi-worsted spinning

- Semi-and fully automatic plants for preparing, blending, dust removal and automatic feeding of Carding-machines.
- Fully computerized management of complete production plants.
- Suction and recycling plant, for broken ends, bad-ends from condensers.
- Bailing of fibres and various conveying system.

Non-woven products

- Fibre blending plants at different stages of automation.
- Automatic card-feeding plants.
- Lines of weighing hopper feeders.
- Edge trim suction.

Dye-plants, production of synthetic fibres

- Automatic blending-bins for blending of complete lots.
- Dust suction plants for fume removal.

Spinnig-lines O.E.

- Blending, moistening and automatic feeding plants.
- Suction and recycling of roller wastes, with air-cleaners.

For combing mills:

- Automatic plants for opening, beating and blending the greasy wool with automatic feeding on to scouring line.
- Beating and dusting of scoured wool.
- Pneumatic transport to automatic storage bins for scoured wool and card feeding.
- Suction, transport and recycling of bye-products from the carding section.
- Centralised suction plant for noils and short noils in the combing department.
- Centralised filter station and air recycling.

Rag tearing mills

- Blending, moistening and dust suction of rags - automatic feeding to opening machines - re-suction and continuous conveying of waddings from tearing plant.
- Centralized dust-suction plants with automatic filtering and airrecycling.

Cloth finishing-departments

- Plants for the suction of droppings, trash and fumes, with dust filtering.

Willow wastes beating and cleaning

- Pneumatic conveying system - suction and separation of bye products-pneumatic bailing.
- Variuos Plants for the suction of trash, vapour, fumes, wood, paper, rubber, plastic, etc.
- Pneumatic and feeding of various fibre materials via conveyor belts.
- Pneumatic conveyor belt transportation of various fibres and materials.
- Metal Detector applications.

1

FIBER BLENDING SYSTEM AND
PNEUMATIC CONVEYING PLANTS

pag.
07

2

BALE BREAKER AND OPENERS

pag.
13

3

AUTOMATIC BIN EMPTIERS

pag.
31

4

AUTOMATIC CARD FEEDING SYSTEM BYE
PRODUCT SUCTION AND RECYCLING PLANTS

pag.
41

5

CENTRALIZED FILTERING STATION

pag.
45

6

MIXING AND DOSING SYSTEM FOR
PLASTIC SCRAPS



pag.
51

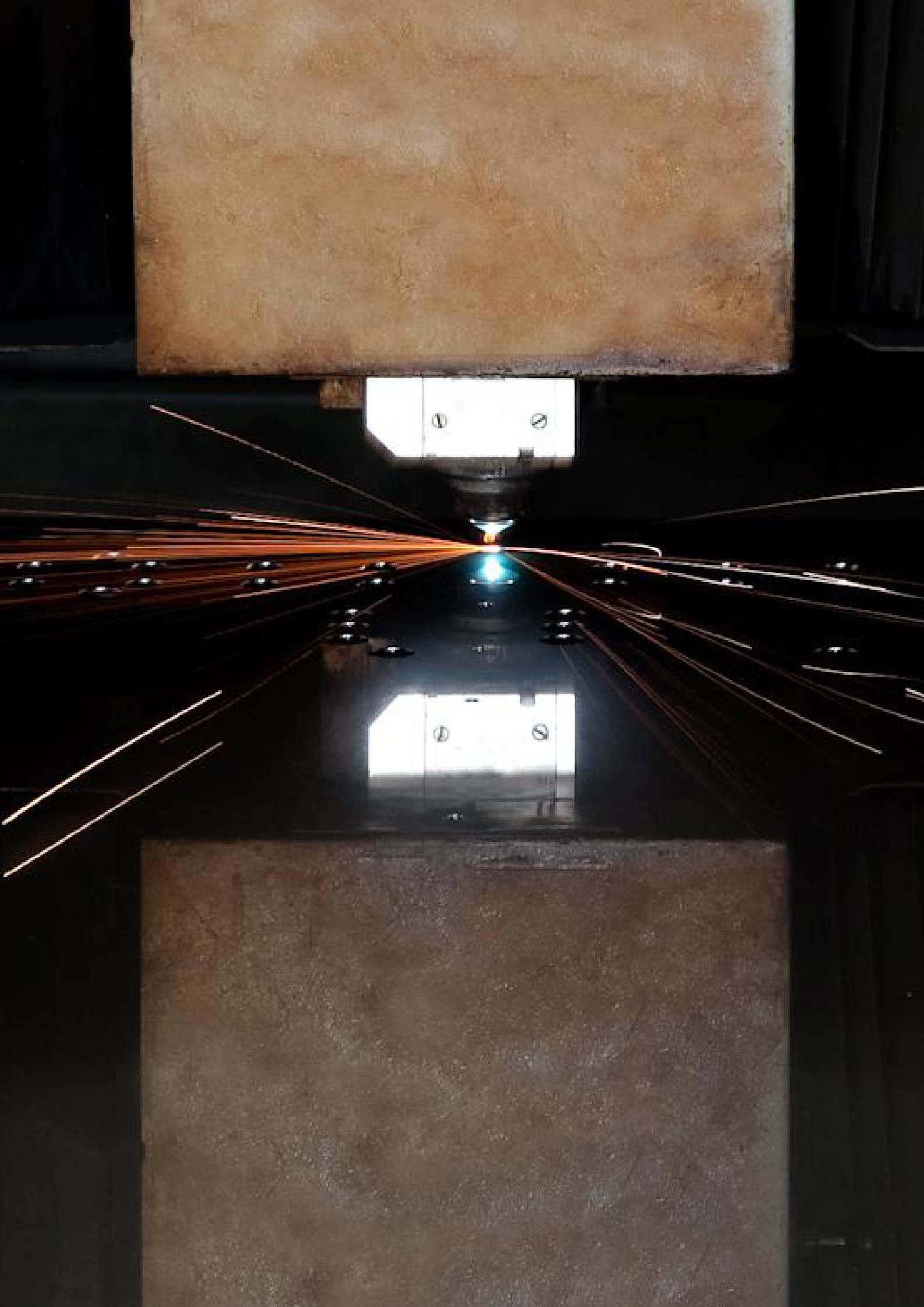
7

PROJECT "WOOLRES": WITH WOOL
WE CLEAN UP THE SEA



pag.
55







FIBER BLENDING SYSTEM AND PNEUMATIC CONVEYING PLANTS



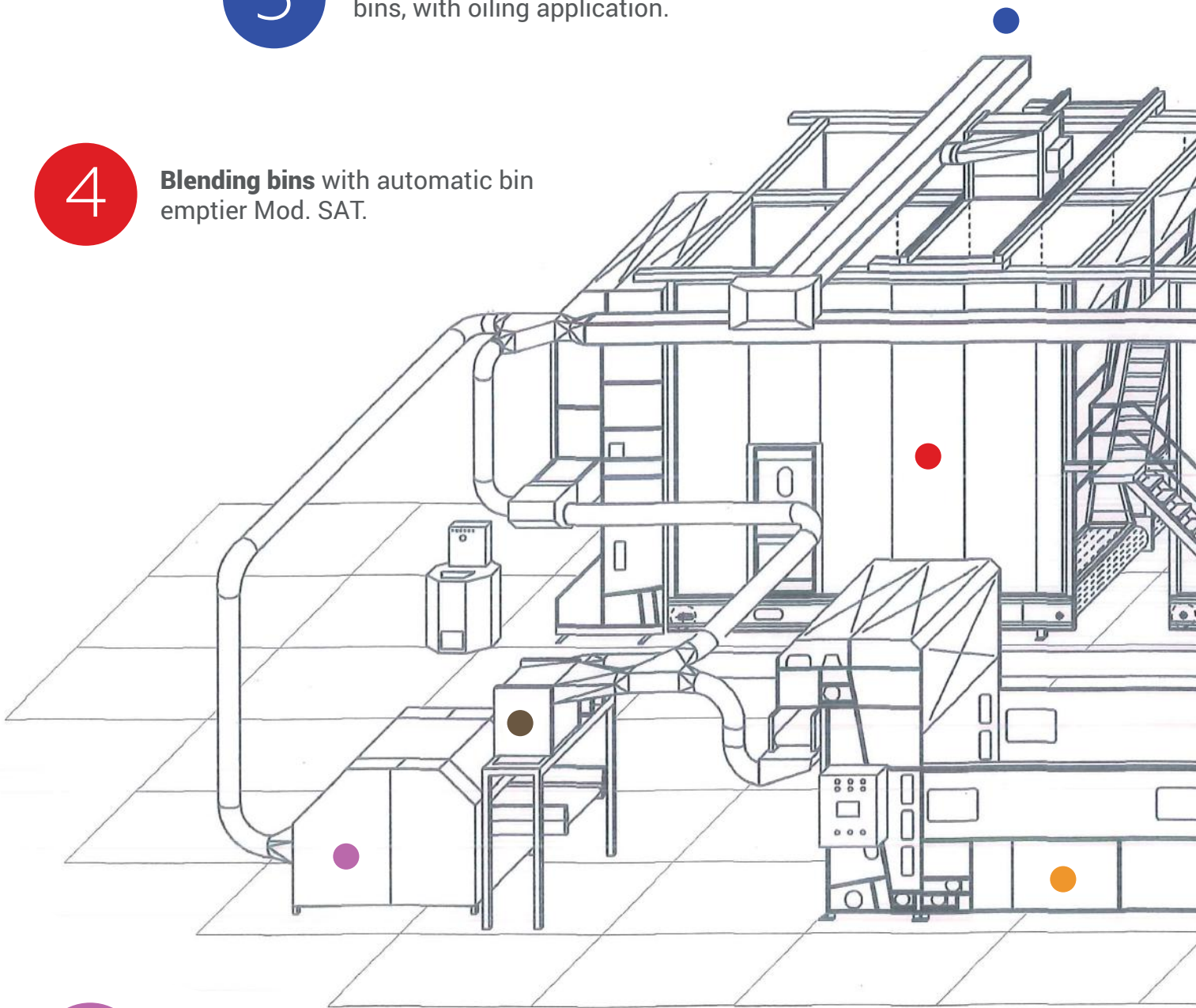


5

Mechanical feeding system for bins, with oiling application.

4

Blending bins with automatic bin emptier Mod. SAT.



3

Carding Willow.

2

Drum condenser feeding Carding Willow.

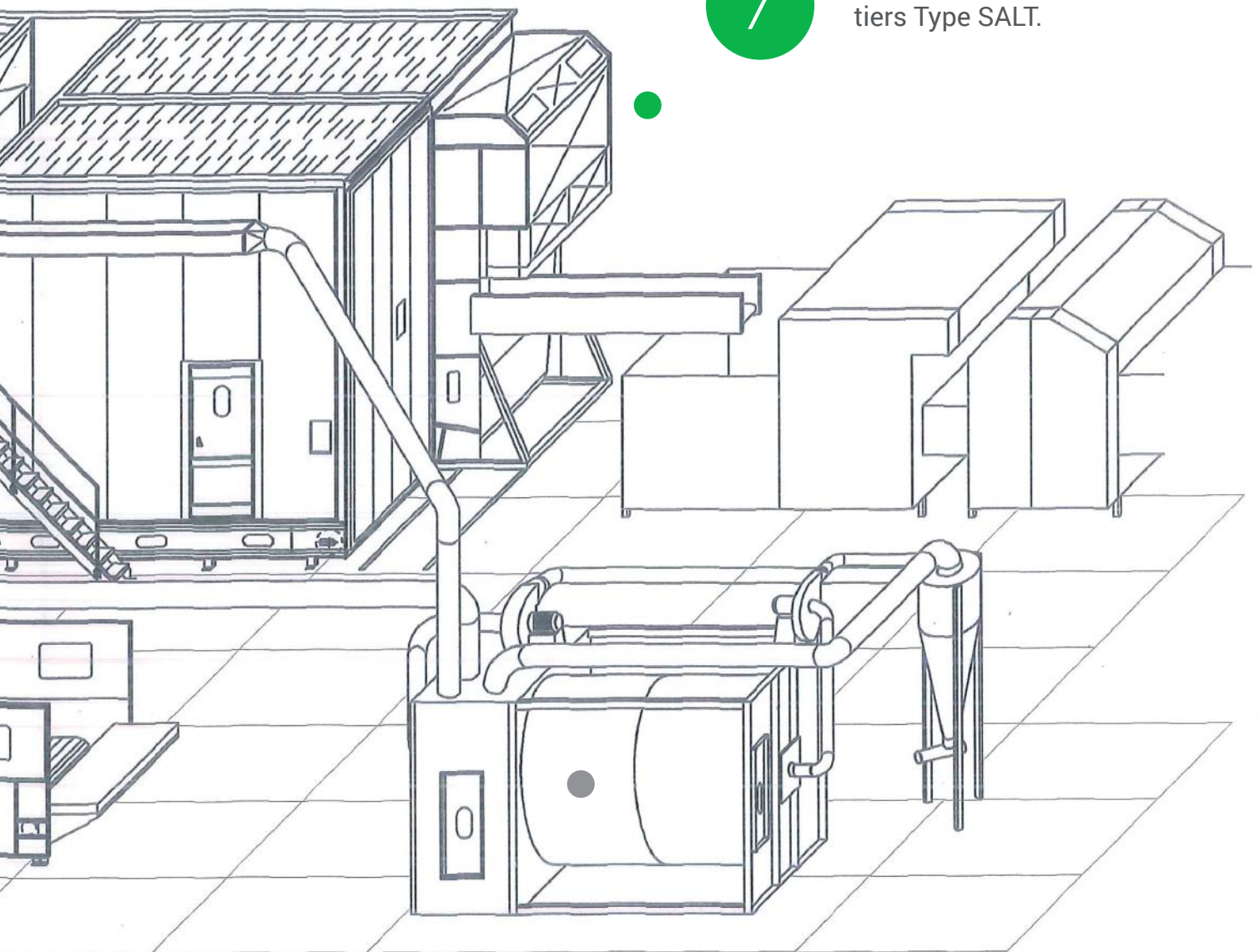
FIBER BLENDING SYSTEM AND PNEUMATIC CONVEYING PLANTS

6

Distribution to the storage bins,
with moving belt system.

7

Automatic card feeding, with emp-
tiers Type SALT.

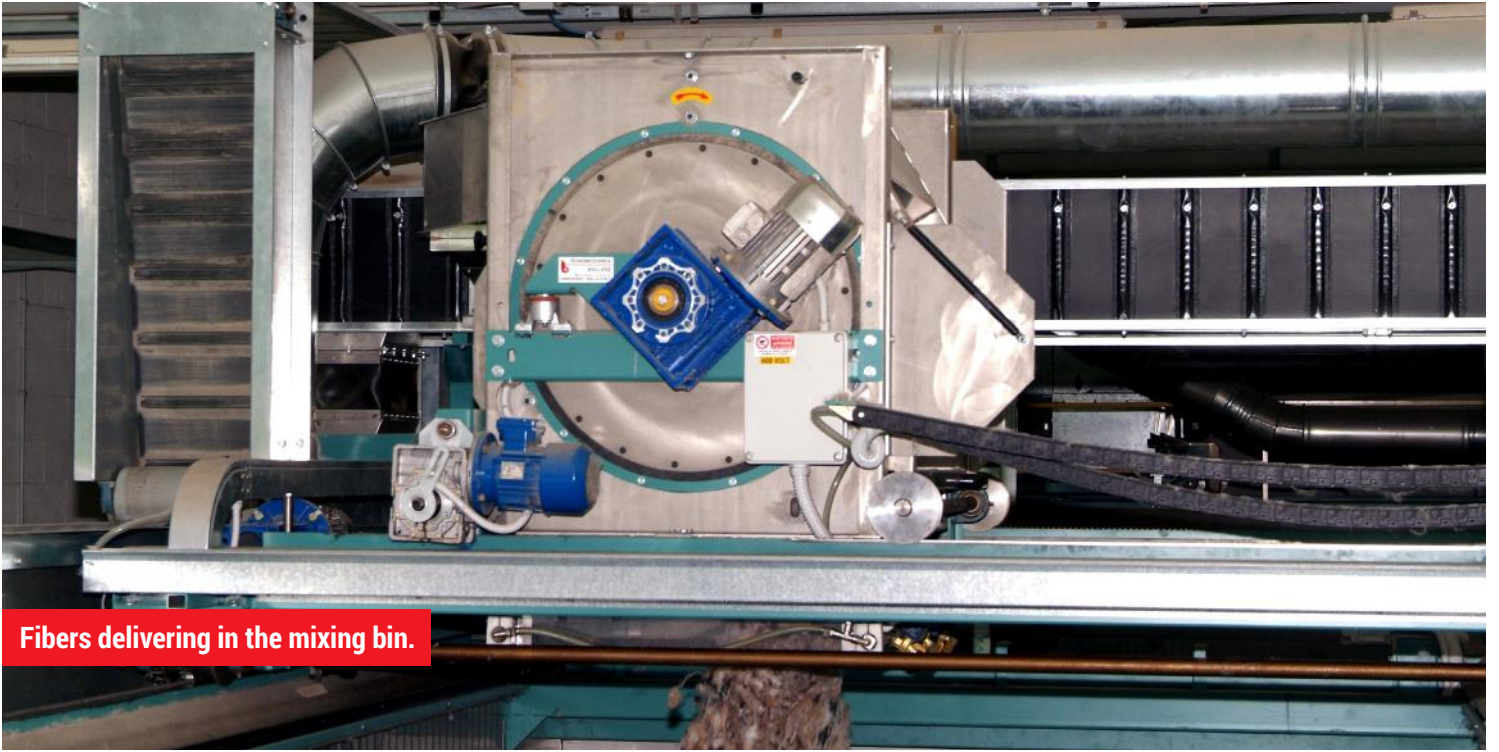


1

Bale-Breaker Type AB.

8

Filtering station.



Fibers delivering in the mixing bin.



Blending system plant for cachemir fiber.



Blending system plant.





BALE BREAKER AND OPENERS





Automatic Bale Plucker is used to **mechanically strip fibres** from pressed bales and automatically drop the fibre on to the feed table of the opening machinery at the beginning of spinning lines.

This system also provides a good first blending operation of the fibres.

Mainly composed of a metal bridge moving on rails which gives vertical movement to the plucker head.

The different functions of taking, discharging and cleaning are controlled by a computerised digital panel with touch-screen.

Photo electric sensor beams provide complete protection against accident in line with European legislation relating to Health & Safety.



BALE PLUCKER





- **Bale breakers, types AB and ABR for the opening of bales and other compressed agglomerates of textile fibres, in working-width of mm.1000 to 4000**, consisting of an **horizontal feed table in two sections** which enable an initial breaking of the layers, a **vertical spiked lattice conveyor**, an **opening-batching cylinder with adjustable pitch** and a **stripper**. It can be used in various sectors of the textile industry, from the opening of greasy wool bales to blend preparation departments, the feeding of carding-machines, the preliminary phase of staple fibre dyeing or the opening of dyeing cakes for conveyance to dryers;
- The supporting structures of these machines consists of **heavy steel ribbed panels**. This characteristic enables the construction of various models, according to the individual requirements of the fibre material to be processed;
- Length and inclination of the spiked belt, types of pins and laths, diameters and adjustments of opening and stripping rollers are all variables which are taken into consideration and selected according to the fibres to be processed;
- **The spiked lattice conveyors can vary from the type** which characterises our Exclusive technology for bin emptiers with laths in **flexible vulcanised PVC** on the surface of the belt which are very strong and easy to clean to the more classical types with laths on the reverse in **multi-layered wood**;
- The bale breakers can be used either **individually or in a line of different machines** to discharge the fibre material onto a single conveyor and to dose the exact percentages of the different components for the preparation of blends;
- The first section of the horizontal lattice, can be so large as to create an important storage for bales to be opened.

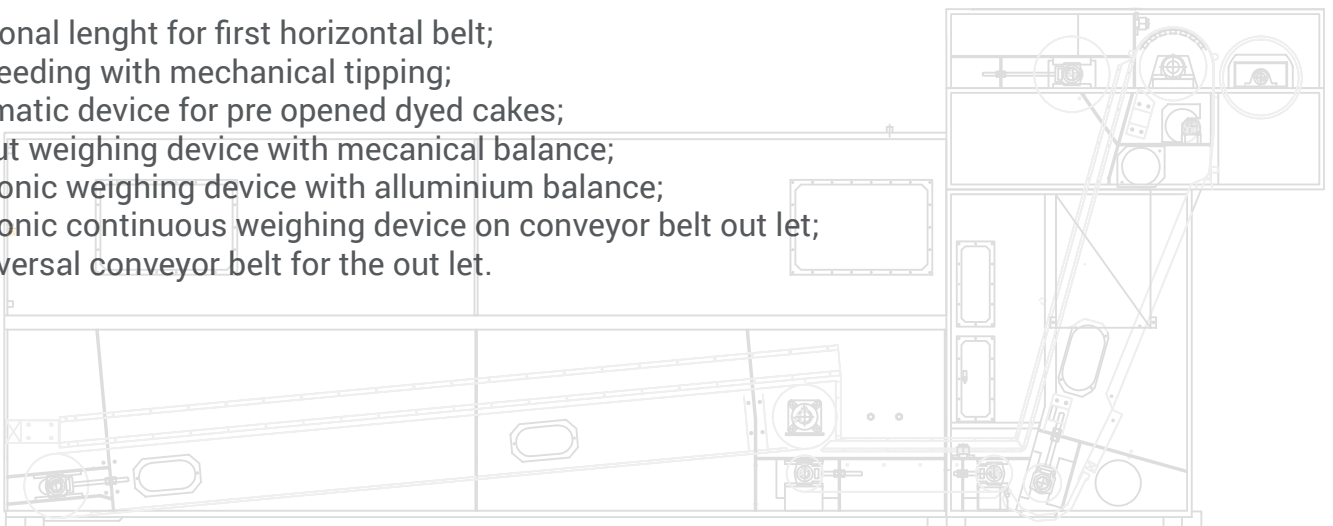


BALE OPENER



● **OPTIONALS:**

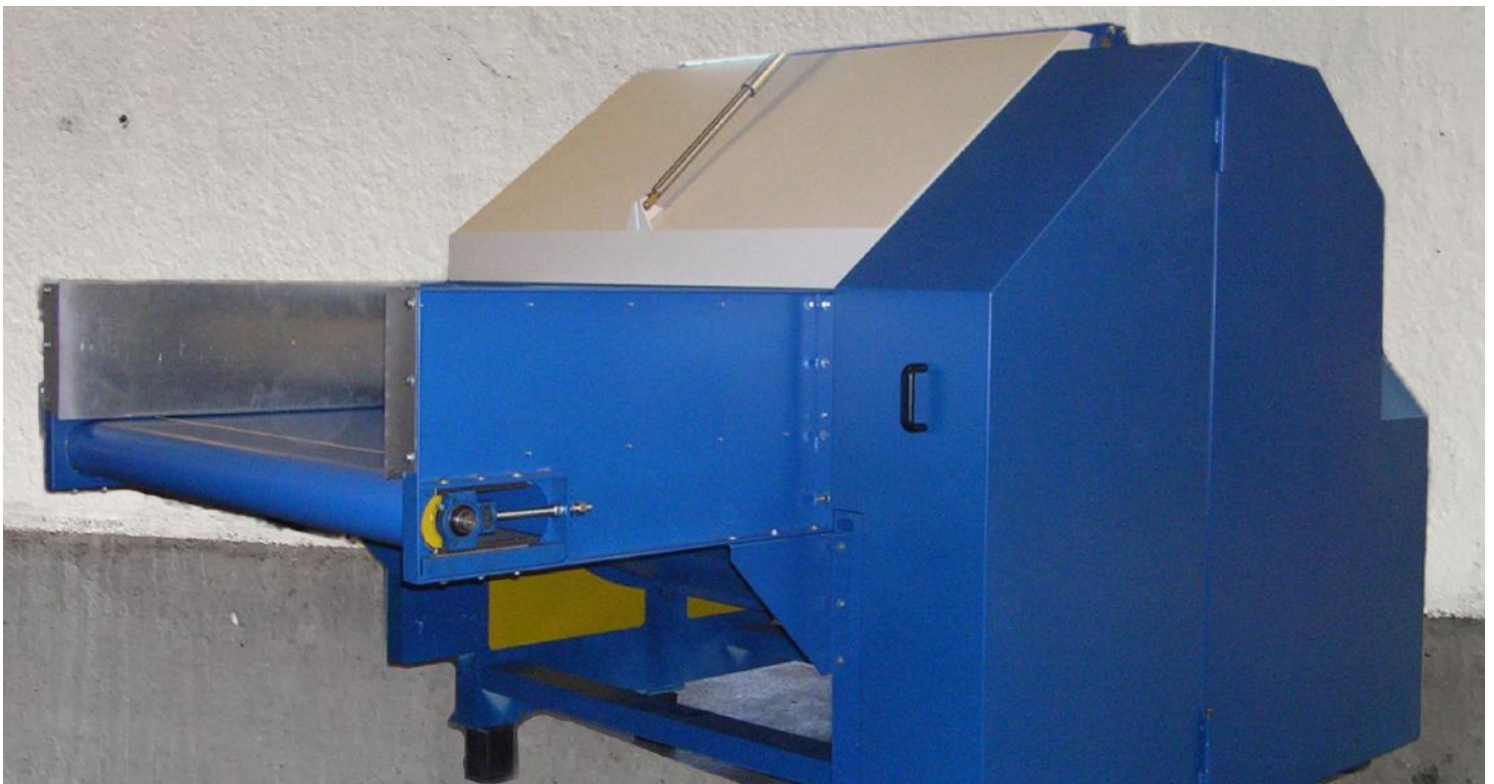
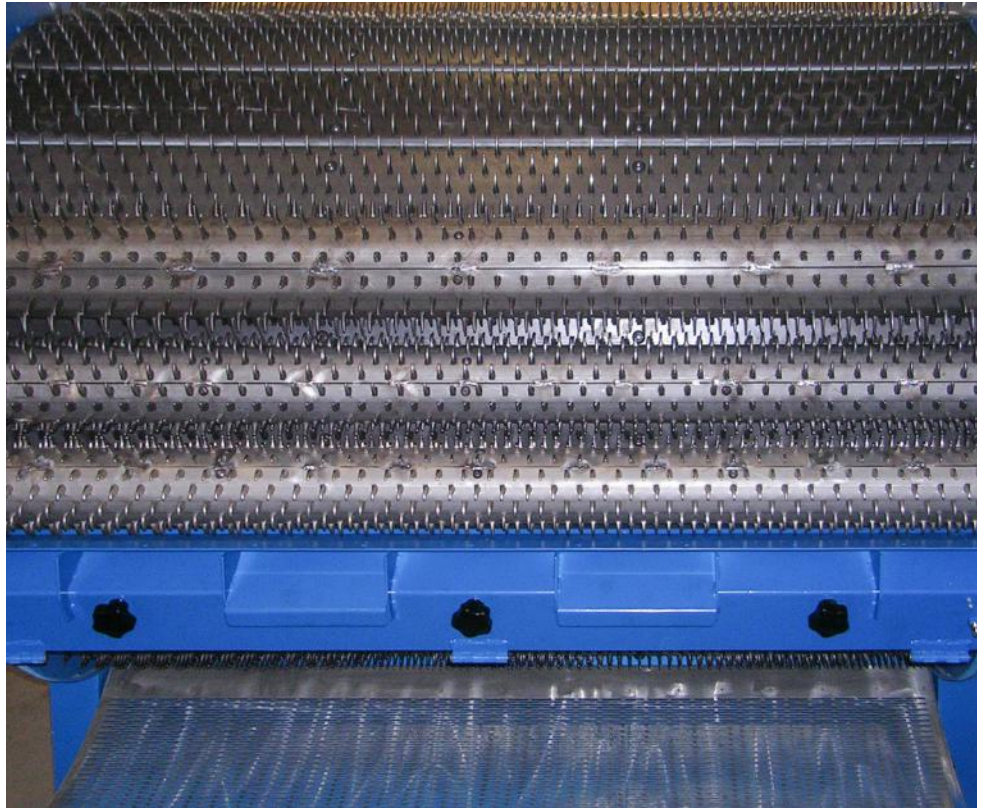
- Additional length for first horizontal belt;
- Bale feeding with mechanical tipping;
- Pneumatic device for pre opened dyed cakes;
- Out put weighing device with mecanical balance;
- Electronic weighing device with alluminium balance;
- Electronic continuous weighing device on conveyor belt out let;
- Transversal conveyor belt for the out let.



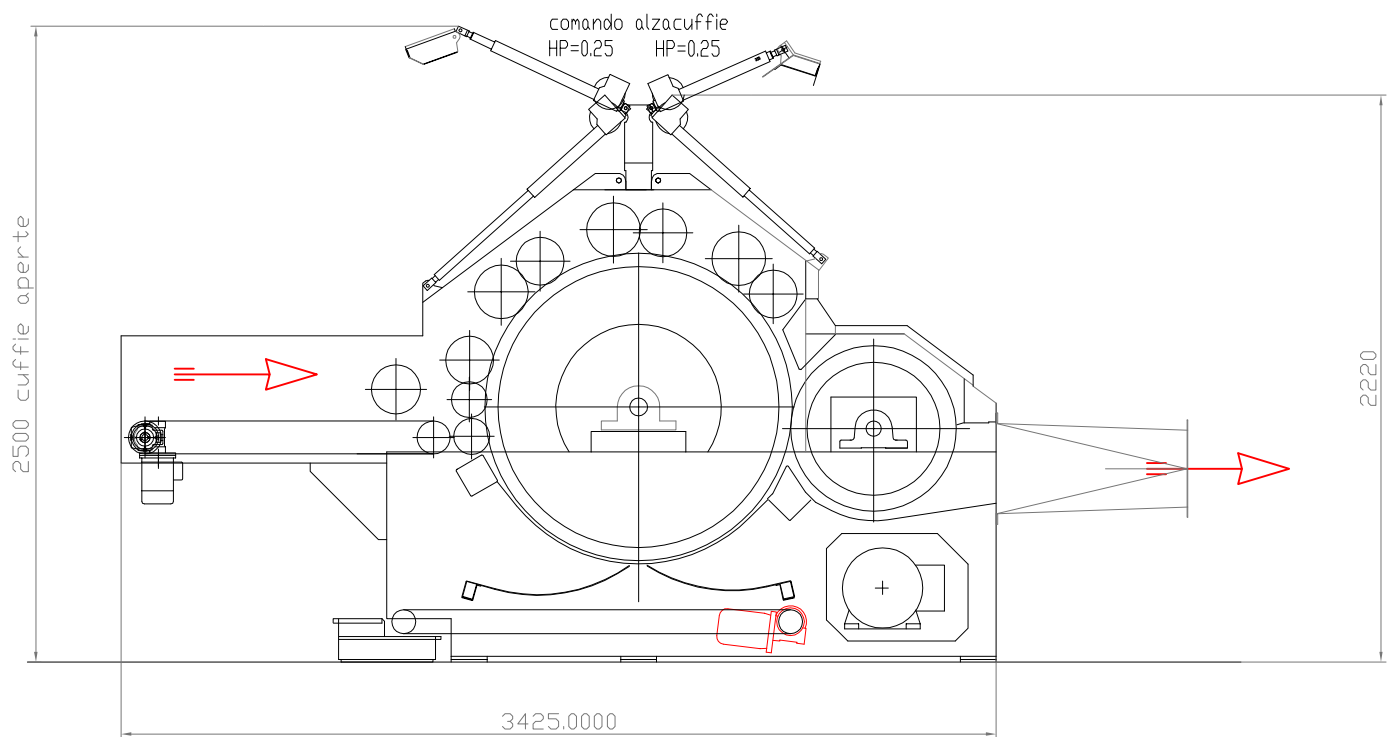


The machine is basically equipped with a **large main cylinder, 3 pairs of workers and strippers and one pair of feed rollers and at the end a large diameter doffer helps to strip the fibre from the doffer.** The fibres are fed to the machine by a horizontal belt on to which any pneumatic system can deliver the fibres from previous processes.

At the exit a large diameter pinned doffer with rubber laths takes the fibre through a galvanised trumpet and onwards pneumatically. **Completely constructed in steel plate the machine has each pin individually screwed in order to allow the replacement of every pin individually.**



CARDING WILLOW

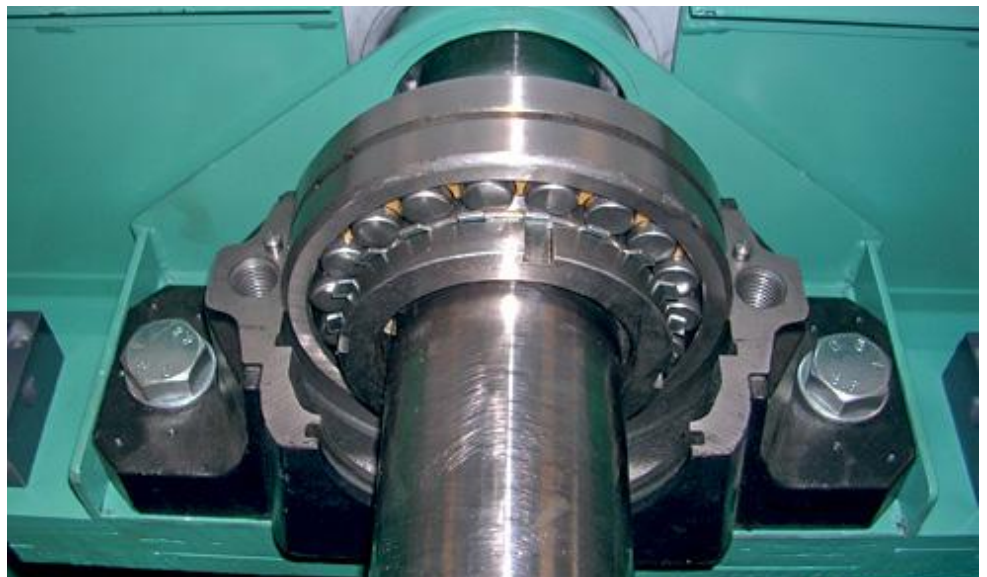
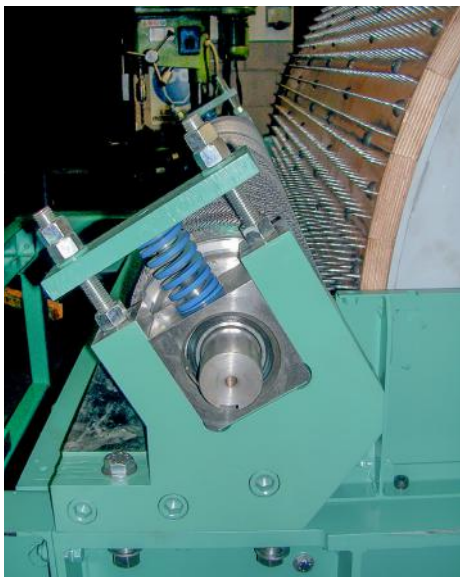
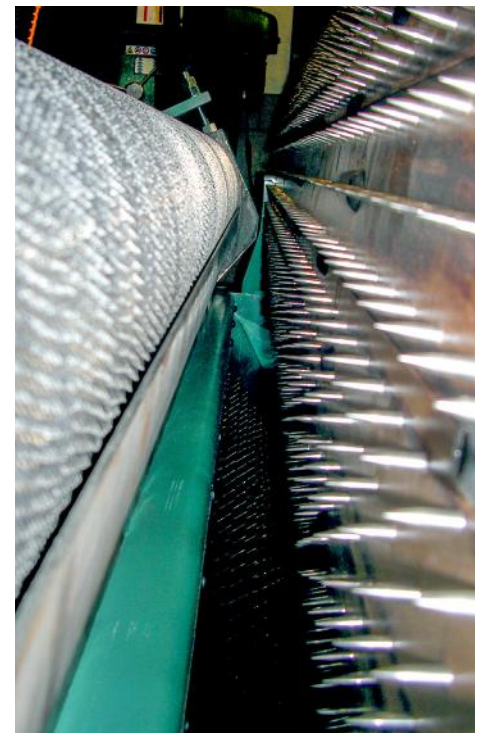




FIBER OPENERS

We have realised different types of openers with different characteristics according to the needs of our customers and the fibres to be processed. Different models:

- **Mixing Picker** with feed cylinder and inclined pins on the main cylinder;
- **Fine Opener** with clothed feed cylinders and main drum clothed with 5mm pins.

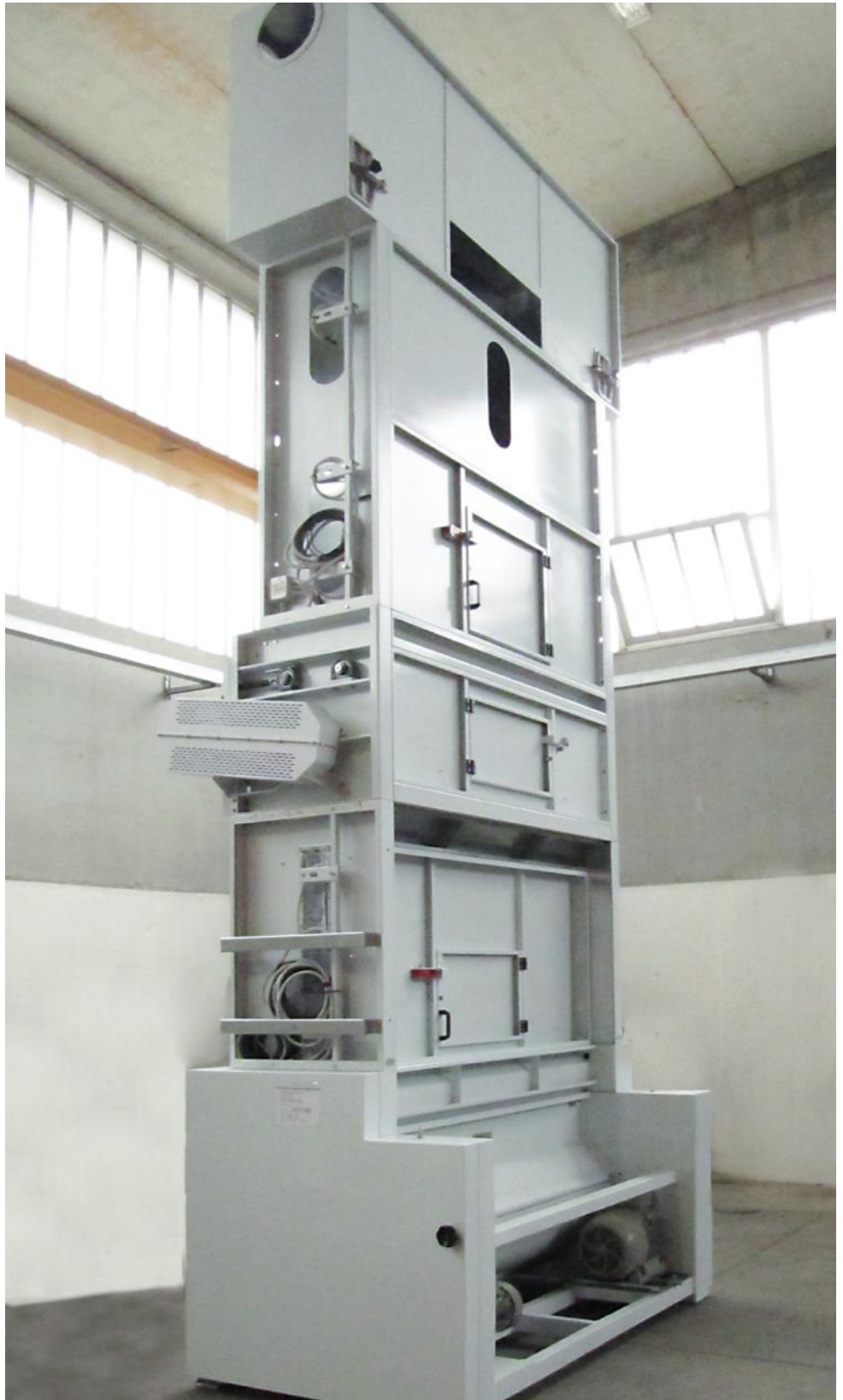


Vertical opener machine allows to obtain a deep spread out of fibers and it is commonly used as final opening process before sending the material to the card. **Good results in opening is guaranteed by the vertical silo filling system** that includes a preopening cylinder and immediately after a forwarding to the below opener through a vertical thickening column that ensures a constant density on entering cylinder.

The machine is compact as it grows vertically, so it occupies a small space and it is perfect for opening medium and short kind of fibres.

Mainly used in the preparation lines for non wovens –thermal bonded- or needlepointed fabrics that contains different kind of fiber components.

Main opening drum is usually covered by **steel pins fixed on wood staves, with different gaps** depending on characteristics of fibre to work.



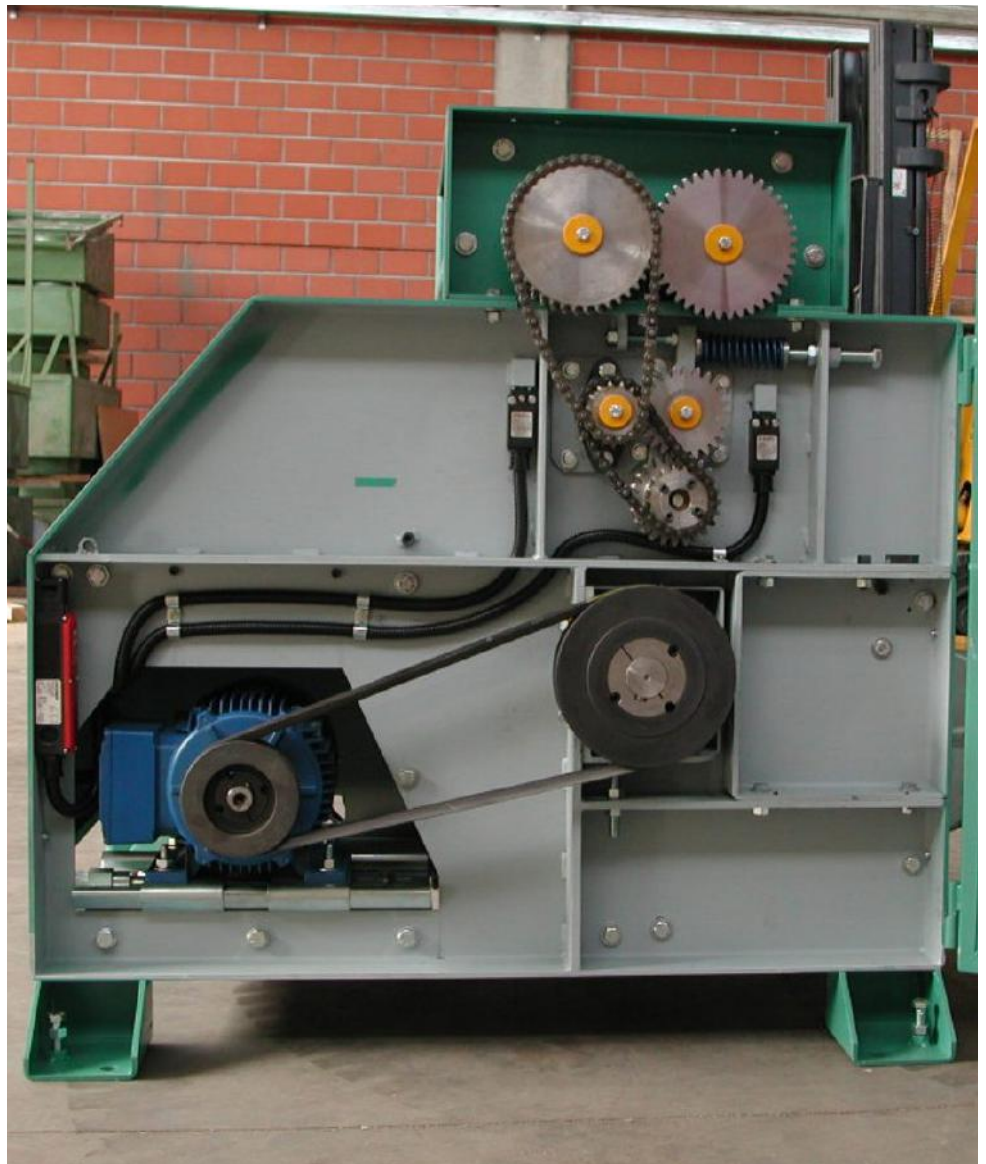


SMALL OPENER MODELAF 500 S is supplied with an opening cylinder which is totally covered with steel pins, **dynamically balanced and assembled on adjustable supports with ball bearings**. This machine is suitable for opening soft wastes such as condenser bobbin waste which can be recycled either during or after carding.

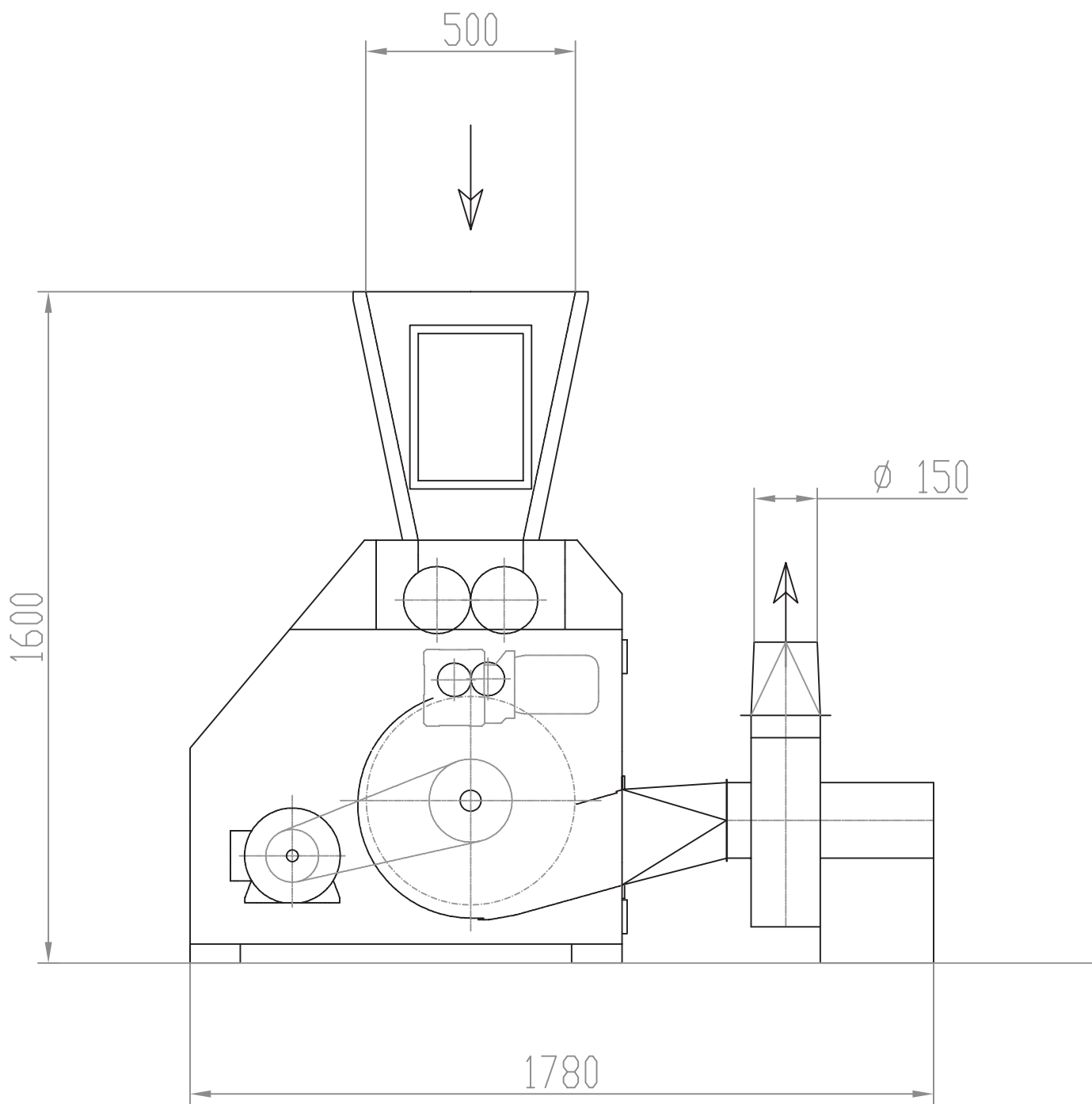
There are fluted feed rollers at the entrance, assembled on oscillating supports which together with the main cylinder can be fed by a reserve silo feed tower.

Separate inverter controlled motors are provided for the feed rollers and main cylinder. The guards can be removed easily when access to the internal components is required for cleaning. **The machine has an auto control security system with double circuit**.

The working width of the machine is 500 mm.



SMALL OPENER



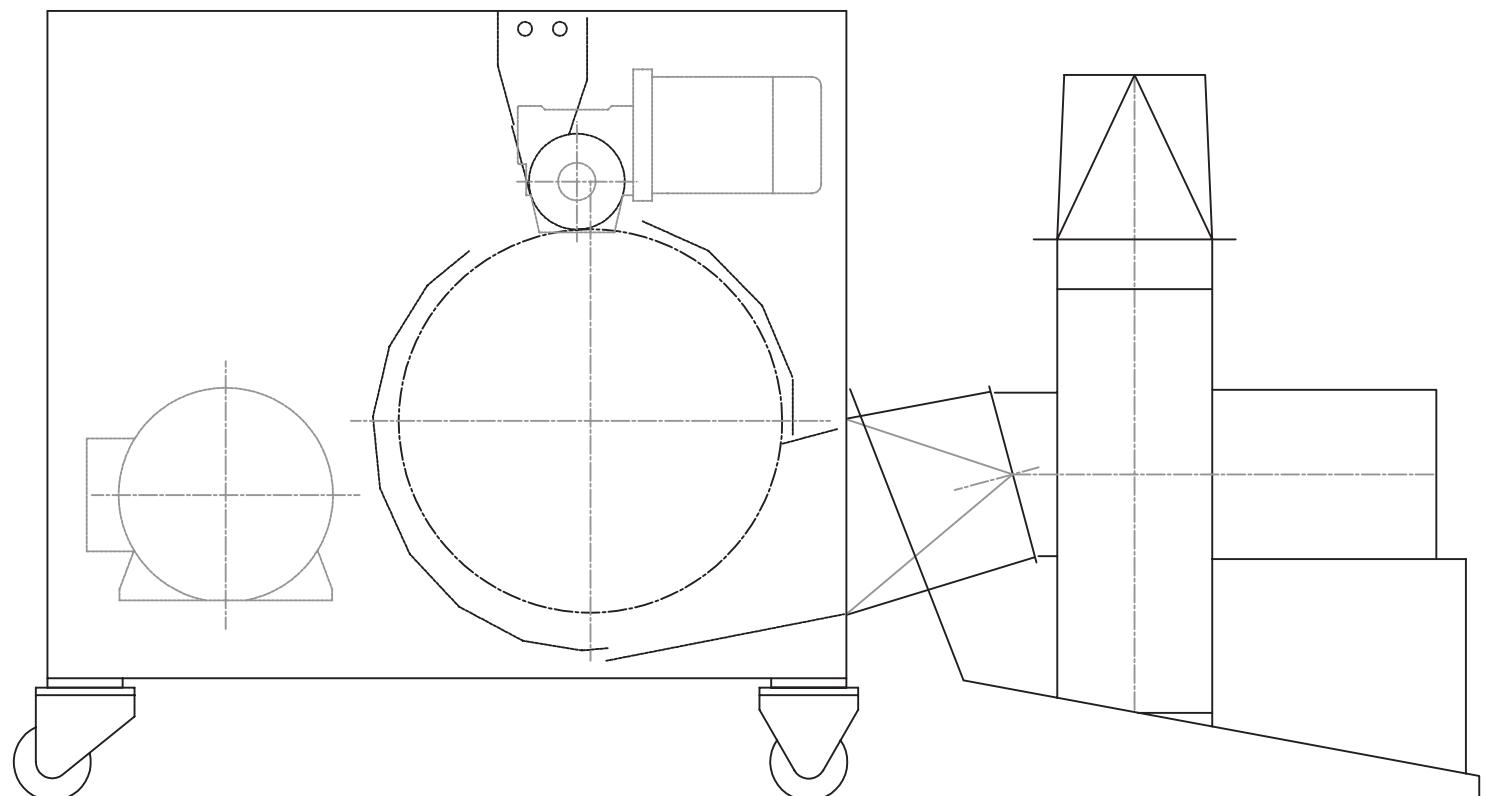


EDGE TRIM OPENER AC 300 with opening cylinder totally covered with **steel pins, dynamically balanced and assembled on adjustable supports with ball bearings.**

This machine is suitable for opening soft wastes such as condenser bobbin waste which can be recycled either during or after carding.

Separate inverter controller motors are provided for the feed roller and main cylinder. The guards can be removed easily when access to the internal component is required for cleaning.

The machine has an **auto control security system with double circuit.** At the exit the fibre can be conveyed pneumatically to the next process.



TRIM OPENER





STEP CLEANER for opening, **beating, cleaning and de-dusting of scoured wool fibres** (or cotton).

It comprises a group of 3 main beating drums with welded steel pins with an external diameter of **800 mm** rotating at **300 rpm** featuring an independently driven screw conveyor in the bottom which is provided to remove all dust and vegetable matter which has been separated from the fibres.

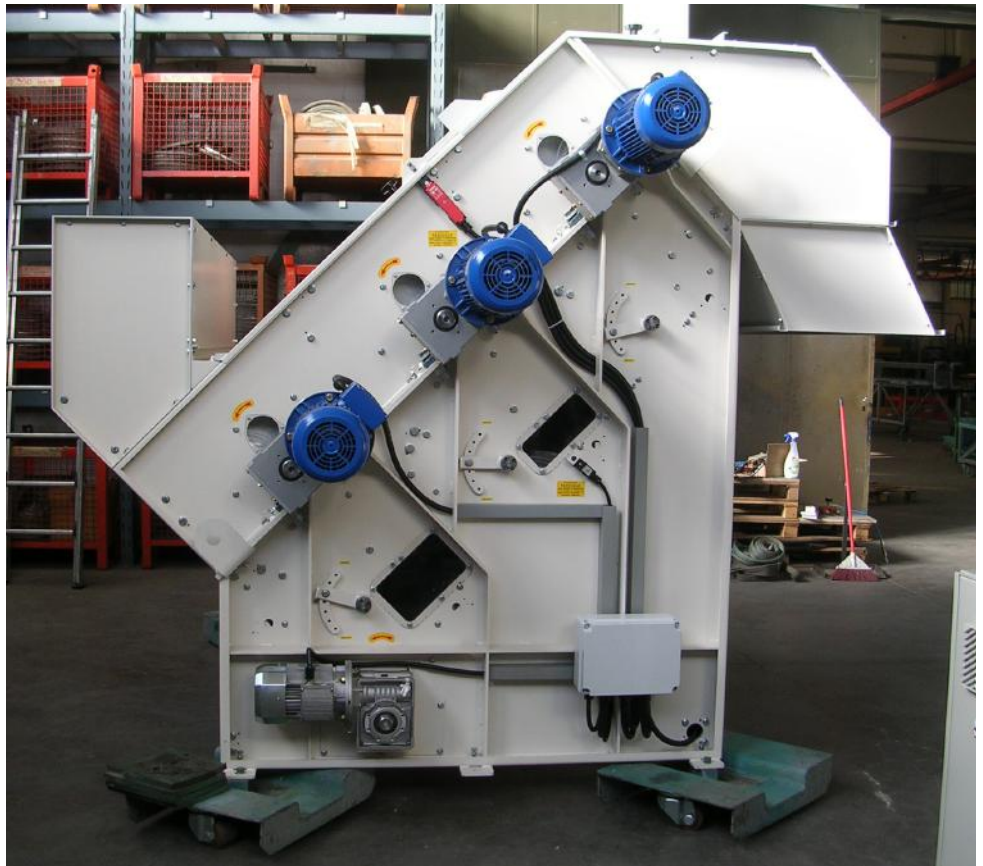
The screens provided in the basic execution are in perforated steel plate.

All of the upper covers can be opened to allow easy access for cleaning.

Clean fibre is taken from the machine by pneumatic transport. Safety switches are provided which allow the safe running of the machine in production or when cleaning.

Optional: An adjustable screen can be provided made from triangular steel profiles and sprocket which adjusts the gap for the dust removal.

Automatic cleaning of screen with compressed air nozzles.



STEP CLEANER



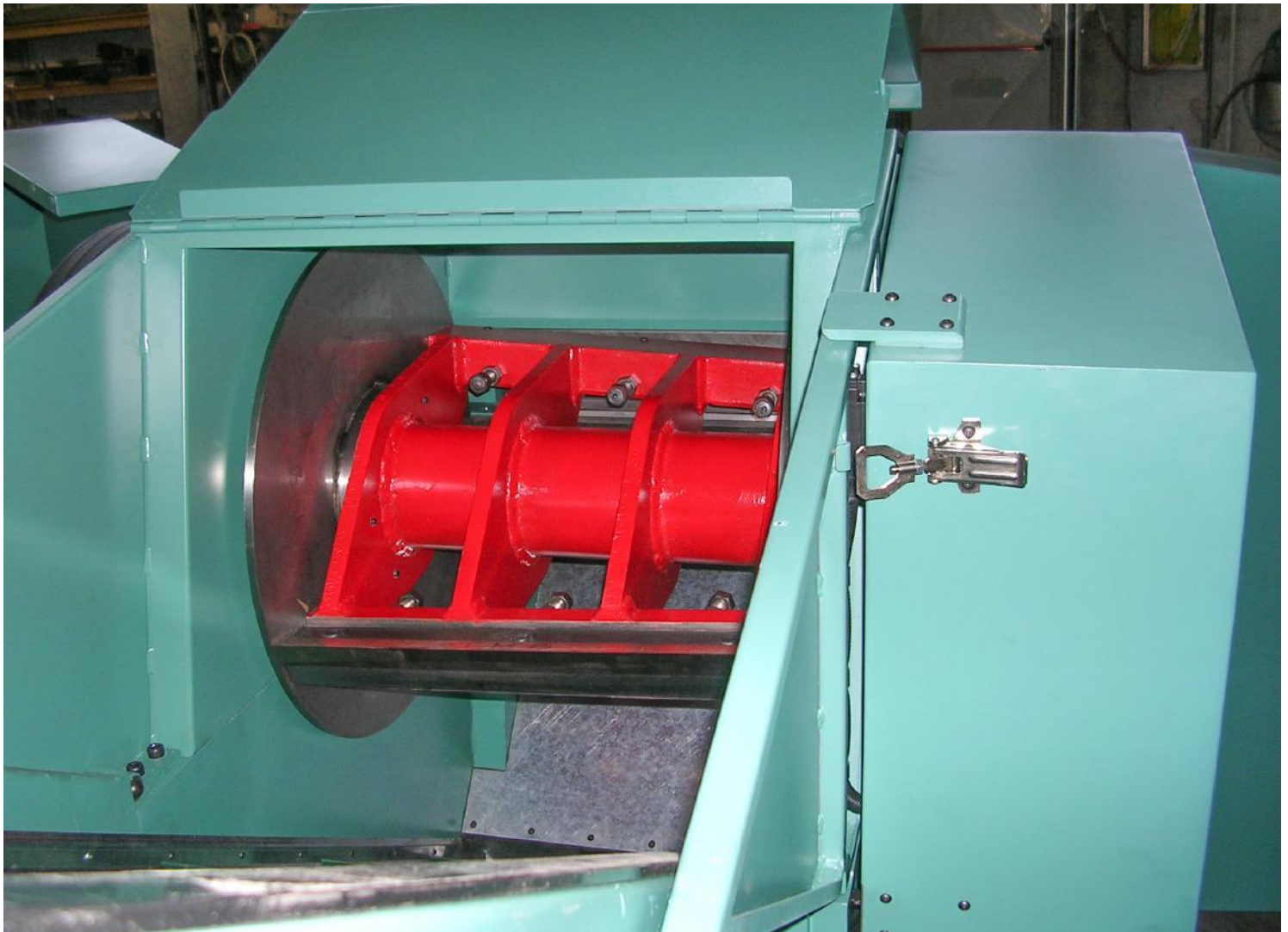


CUTTING MACHINE TG 500 is for cutting **long staple textile fibres or yarns and rags in different sizes or any other type of soft and hard wastes.**

The machine comprises a main drum carrying two blades on opposite sides and is reinforced and protected with roller bearings. The feed table to the machine is PVC canvas and there is one feed cylinder to ensure even feeding together with a fixed blade located on a solid structure.

At the exit the cut materials are conveyed by a mechanical inclined belt. **Drives to the feed section and the main drum are by independent motors and gear boxes.**

The machine is completely guarded for safety and the guards can be removed for safe access inside the machine for cleaning purposes.



ROTARY CUTTING MACHINE



The rotating blades are helicoidally shaped which ensures a perfect cut on the entire 500 mm width and also distributes the cutting load over the length of the blades.

The blades are easily adjustable to ensure the perfect and accurate cutting point whilst at the same time they allow easy access for replacement purposes.





3



AUTOMATIC BIN EMPTIERS





AUTOMATIC BIN EMPTIER

The automatic bin emptiers type **SAM** are ideally suited to **achieve homogeneous blending, through the vertical cutting of the material fed into the bin in horizontal layers.**

- **Types: SAM 75 - SAM 100 and SAML**, depending on the quantity and on the type of fibres to be processed;
- **Constructed to measure**, in order to suit individual space requirement with working-widths **varying from 2500 mm. up to 4000 mm.** The bins can have a capacity of over 400 cubic meters useful material;
- The bin emptier SAM is a **mobile unit which travels inside the bin** for the emptying operation and moves laterally in front of different bins;
- A leading feature of this equipment is the **complete use of the vertical space available** (in low premises) and suitability for working with several bins in line;
- The bins can be either of **steel sheet construction** or in the walled-up version;
- The material can be fed via a series of **stationary rotary distributors which work automatically in alternation** or by chute feed systems in the absence of moving air;





The automatic bins type SAF are ideally suited to achieve homogeneous fibre blending, at average and high production, through the perfect cutting of the material fed into the bins in horizontal layers. Various models are available depending on the type of fibres to be processed:

- **SAF 75** for short fibres (cotton cut);
- **SAF 100** for long fibres (wool cut);
- **SAF 100/R and 100/G** for fabric clippings, fibres to be regenerated and greasy wool;
- Constructed in working-widths which range from **2500 mm. to 4000 mm.**, the automatic bins SAF can have a capacity of over **300 cubic meters useful material**;
- Main features of bins type SAF is the **existence of a bottom apron covering the entire surface of the bin** to support and move ahead all the fibrous mass. The front bin emptier SAF doesn't move when working and takes vertical portions of the whole face of the fibres which are conveyed forward by the bottom apron;
- All models are also available with a **traversing emptier** which means that it is able to move laterally in order to empty two or more bins located side by side;
- **The Bin Emptiers SAM and SAF have been realized with simple technical features, basing on advanced technology** (automatic speed variation - detectors of work intensity with devices for intervention) which guarantee: **constant and high production, long life, low operative requirements, easy maintenance and cleaning.**



AUTOMATIC BIN EMPTIER





The continuous oiling system with rotary vessel in stainless steel model IB 2500, equipped with sprayer Idromix 350 for the preparation and addition of oil or other fibre additives for different applications: The conventional blending and oiling bin, with pneumatic feeding via cyclone - for oiling application onto conveyor belts or rotary drum condenser above the bins - the most sophisticated electronic application with continuous control of the weight of fibres at the inlet which ensure homogenous distribution in the vessel, **IDROMIX PROCESS**.

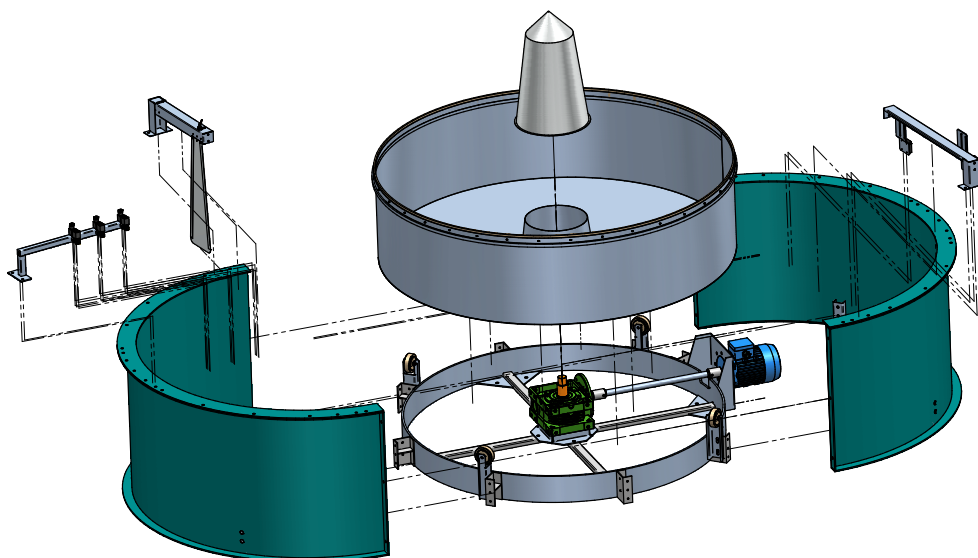
The rotational speed of the vessel, the percentage of lubricant applied and the degree of suction are all adjustable which makes this **equipment suitable for all applications and production levels**.





New studies and experiments carried out in view of the various problems connected with the application of oil and other additives have led to the realisation of the **new spraying system for direct application to the fibres being fed into the blending bins via conveyor belts.**

The blend is sprayed and fed into the bin where it has time to absorb the lubricant before being in contact with pipes or with any other parts of the plant.





Detail of the oiling system during the unloading of the fibers into the blending box.







AUTOMATIC CARD FEEDING
SYSTEM BYE PRODUCT SUCTION
AND RECYCLING PLANTS



AUTOMATIC CARD FEEDING



Completely automatic card feeding process.

Is achieved by the use of storage bins with bin emptiers mod. SALT, workingwidth **2500 mm. to 4000 mm**. The equipment generally consists of two storage bins of any requested size and one bin emptier, which removes the blend by cutting it across the stack from the bottom to the top.

Where possible, the bin emptier can be coupled to a feed-system, which performs the function of conveying the **fibres directly into the hopper-feeder via a moving conveyor**.

This operation ensures optimum fibre opening and blending, with the result of a superior final end product. The blend can be fed into the storage bins SALT via a **special system of distribution in order to limit to a minimum the number of ducts needed for pneumatic conveyance**, which normally involve cleaning problems for every batch of fibre material.

For combing mills where many cards are producing the same lot we have realised a special distribution system with a moving conveyor belt able to distribute wool to groups of 2 up to 6 cards.

“The automatic roller feeders with Silos” mod. AS are designed to store fibres and to automatically feed Hopper Feeders, OE spinning lines or to deliver the blend on to the feed sections of different machines. There is a wide range of models available dependent on the filling height which varies from 250 to 3,000 mm and in different working widths to suit individual requirements.

The model AST is equipped with a **fibre opening system below the delivery rollers to provide optimum opening of the fibres which are fed into the hopper feeder**. These silos are generally used in woollen spinning plants and are recommended to achieve homogenous blends.



SYSTEM PRODUCT SUCTION

Complete suction lines for carding sets, with opening and recycling system for the hopper feeder which takes opened waste from bad/broken ends, condenser waste ends and other soft wastes from carding and spinning. The soft wastes are conveyed pneumatically into the storage silo which ensures an even and constant feed to the hopper feeder whilst maintaining a constant ratio in the hopper feeder between the blended raw material and the recycled material. Before being fed into the hopper feeder the wastes can also be conveyed into a small opener for homogeneous opening.



COMPLETE PLANTS FOR COMBING MILLS BYE-PRODUCTS E.G.

SHODDY:

with intermittent motorie scrapers positioned on the floor of the card pit and with suction of fibre either into direct baling presses or beating and continuous recycling in the same lot.

BURRS:

with intermittent suction from the different points of the card and storage of the waste.

NOILS/SHORT NOILS:

continuous suction from combing machines, dust removal with the possibility of going directly to the baling press.

OPEN TOPS:

with continuous suction from combing machine at the exit end, storage into bins and automatic baling press. All dusty air can be conveyed to our centralised filter station.







CENTRALIZED FILTERING STATION





Automatic Filtering system.

Our long experience in the field of suction of dust, waste and fabric clippings from different types of processing machines has led us to develop a **new automatic filtering and cleaning system with significant advantages both from the automation and efficiency points of view.** It consists of a monobloc unit optionally fitted in galvanised sheet iron panels containing a pre-filtering system for fibre separation and a drum filter to collect the particles. Because of the action of the unique automatic cleaning systems the efficiency of the unit is guaranteed. The clean air can either be recycled directly in the room or expelled externally. It is possible either to connect the unit with the air conditioning system or alternatively to have an independent system with preheating and/or humidification of the air. The separated dust particles can either be released without air pressure via a condenser - compactor located on top of containers or on bale presses. It can also be conveyed to a pneumatic bagging machine which compacts into bags "type Australia." The section can either be centralised, via one fan only, or subdivided into individual sections for each machine or for different lines utilising more fans and taking into consideration the possible utilisation of existing plants.

Fabric finishing departments suction from shearing machines, raising machines and singeing machines.

Fibre blending departments for woollen and semi worsted spinning:

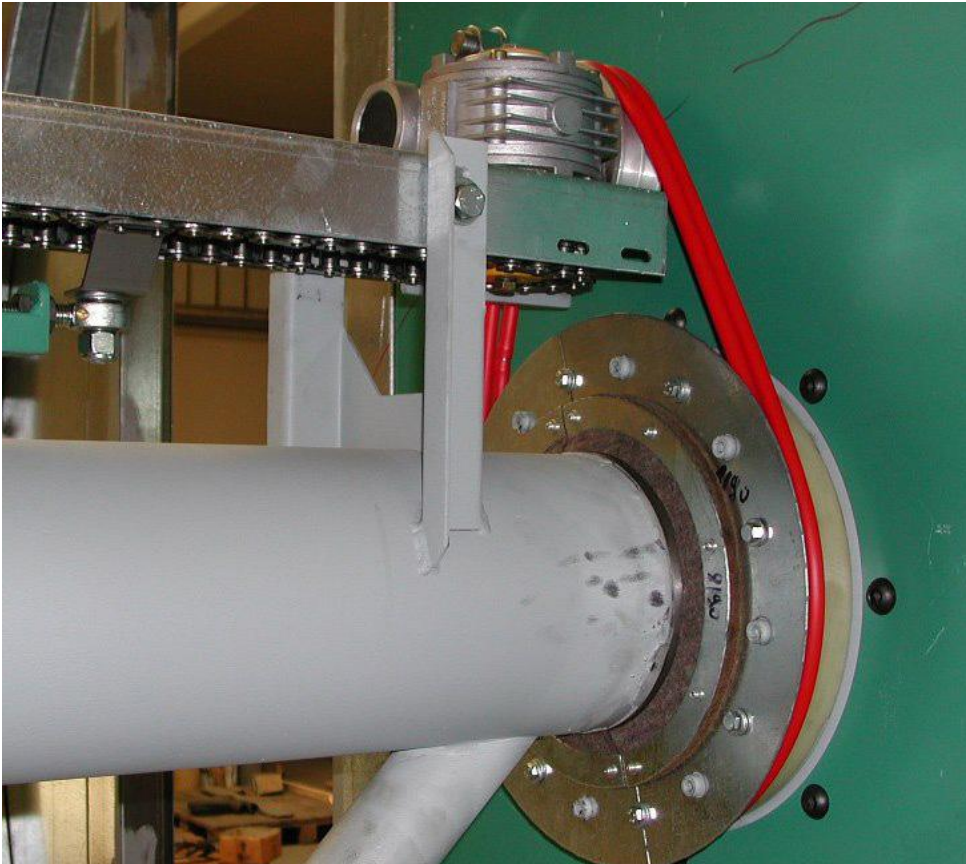
suction from condensers, storage bins, beaters, carding willows and bale openers etc.

Rag tearing

Energy saving centralised suction from tearing machines with can also be fed direct from rag feeding and packing plants.



AUTOMATIC FILTERING SYSTEM



O.E. Spinning

Connection with suction lines from flat cards. Suction from hopper feeder silos, condensers for feeding flat cards and recycling of raw materials, beaters, cleaners etc.

Non-wovens

Suction for dust suppression on cards, fibre preparation machines, condensers etc.

Combing mills

Suction of noils and carding wastes.

New special applications to other sectors with feasibility studies according to your own requirements.





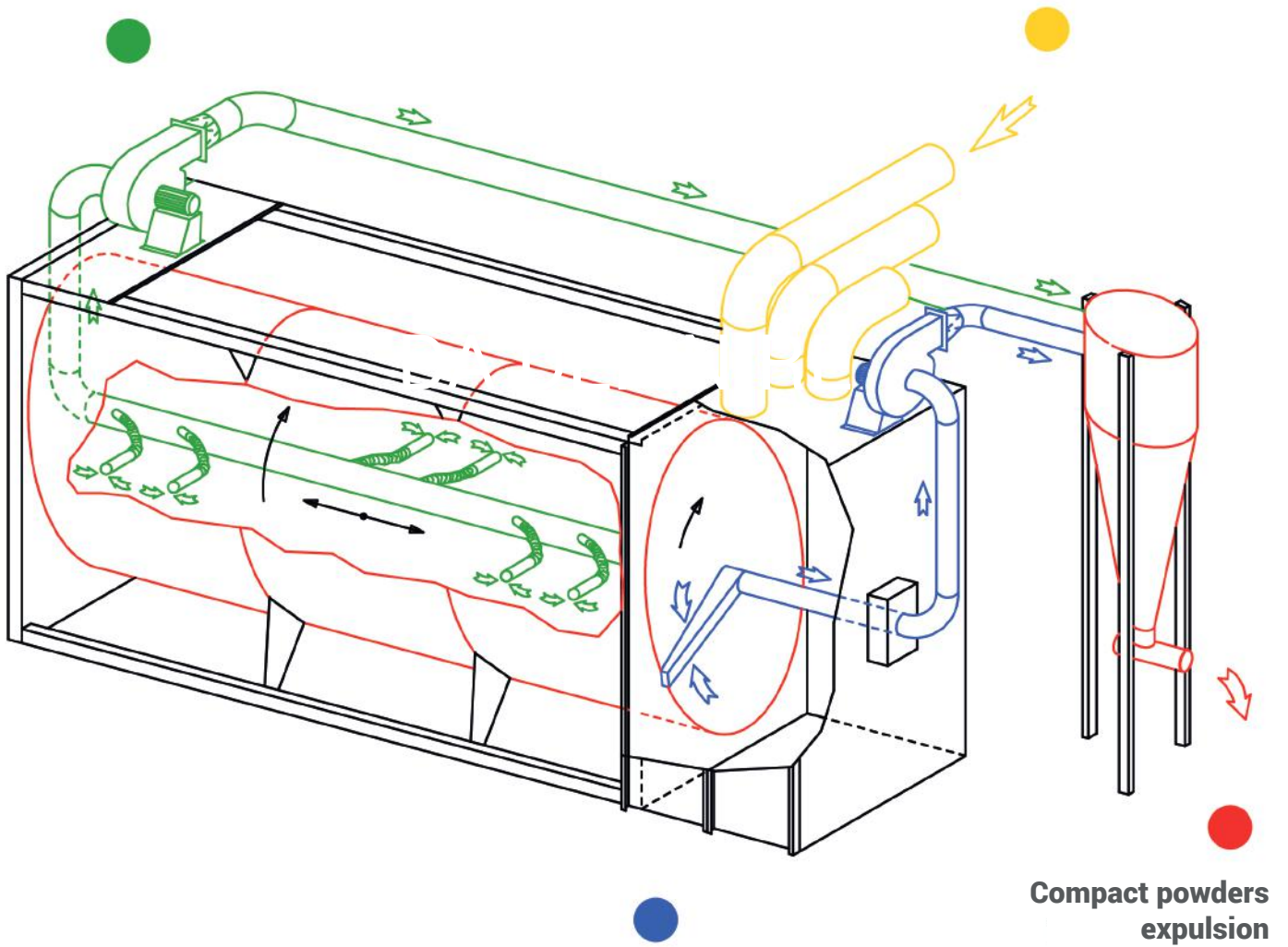
CARATTERISTICHE FILTRI A TAMBURO

Ø Prefiltro	Dimensioni filtro	Superficie filtranteP	ortata consigliata	Velocità filtrazione
mm	Ø x 1 mm	m ²	m ² / h	m / 1"
2000	2000 x 3000	18,84	25 / 30.000	0,368 / 0,442
2500	2500 x 3000	23,55	30 / 38.000	0,353 / 0,448
2500	2500 x 4500	35,32	50 / 60.000	0,393 / 0,471
2800	2800 x 4500	39,56	60 / 70.000	0,421 / 0,491
2800	2800 x 6000	52,75	80 / 90.000	0,421 / 0,473
3000	3000 x 4500	42,39	70 / 80.000	0,450 / 0,520
3000	3000 x 6000	56,52	90 / 100.000	0,440 / 0,490

COURSE MATERIAL INSIDE FILTER SELF-CLEANING

Suction of dust deposits from fixed woven media and sent to the compactor cyclone

Polluted air inlet



Suction of dust deposits on nylon net and
sending the compactor cyclone





MIXING AND DOSING SYSTEM FOR PLASTIC SCRAPS





Our long experience in various sectors of textile industries let us built multifunctional and complex machinery. In the very last years this quality has been succesful and allowed us to expand in many different sectors and markets.

A great important experience has been the development of an innovative plant for the recovery of non-textile products as industrial plastics.

This experience induced us to re-draw and completly re-projecting machinery traditionally used for the fiber mixing in order to fit them in the mixing and dosing process of plastic clippings.

The usage of blending and dosing box to add waste products from extrusion lines of poliesterre cips powder (PET) has been a great discovery process to obtain considerable energy savings.

This technology has been developed in cooperation with manufactures of equipment traditionally used in the extrusion and the results were excellent.



Traditional system provided a premelting of the shredded product in order to store it in vertical silos. Our application instead allows to avoid this step of heating and fusion because our storage boxes allow to standardize the product, store it and take it automatically with a dosing system that blends different types of products in order to send them to the extrusion line.

Recovery of plastic products field is constantly growing because both, the cost of the raw material (oil) and the waste disposal problem, are stimulant factors that induce to invest money in that field.

Usage of our dosing plants also helps the recovery of unappetizing waste because the precision of dosage allows to introduce also low percentage or even well determinate that guarantee a constant quality of the product.



MIXING AND DOSING SYSTEM FOR PLASTIC SCRAPS



Setting system is very performing and allows to feed an extrusion line with more than **2.000 Kg/h** of regenerate products. Is handled automatically leaving to the operator the task to put the raw material on the conveyor stacker, from where the cycle do not need any manual intervention up to the storage of pallets of finished cips.

Types of recyclable materials are very varied and include:

- Plastic films for food packaging;
- Various kind of ropes;
- Mooring lines;
- Cutted box packaging;
- PET bottles in different sizes;
- Edges and waste from the production of fabrics, nonwoven composites;
- Flat woven raffia bags, big bags;
- Various types of plastic bag;
- Fishing mesh.





PROJECT "WOOLRES":
WITH WOOL WE CLEAN UP
THE SEA



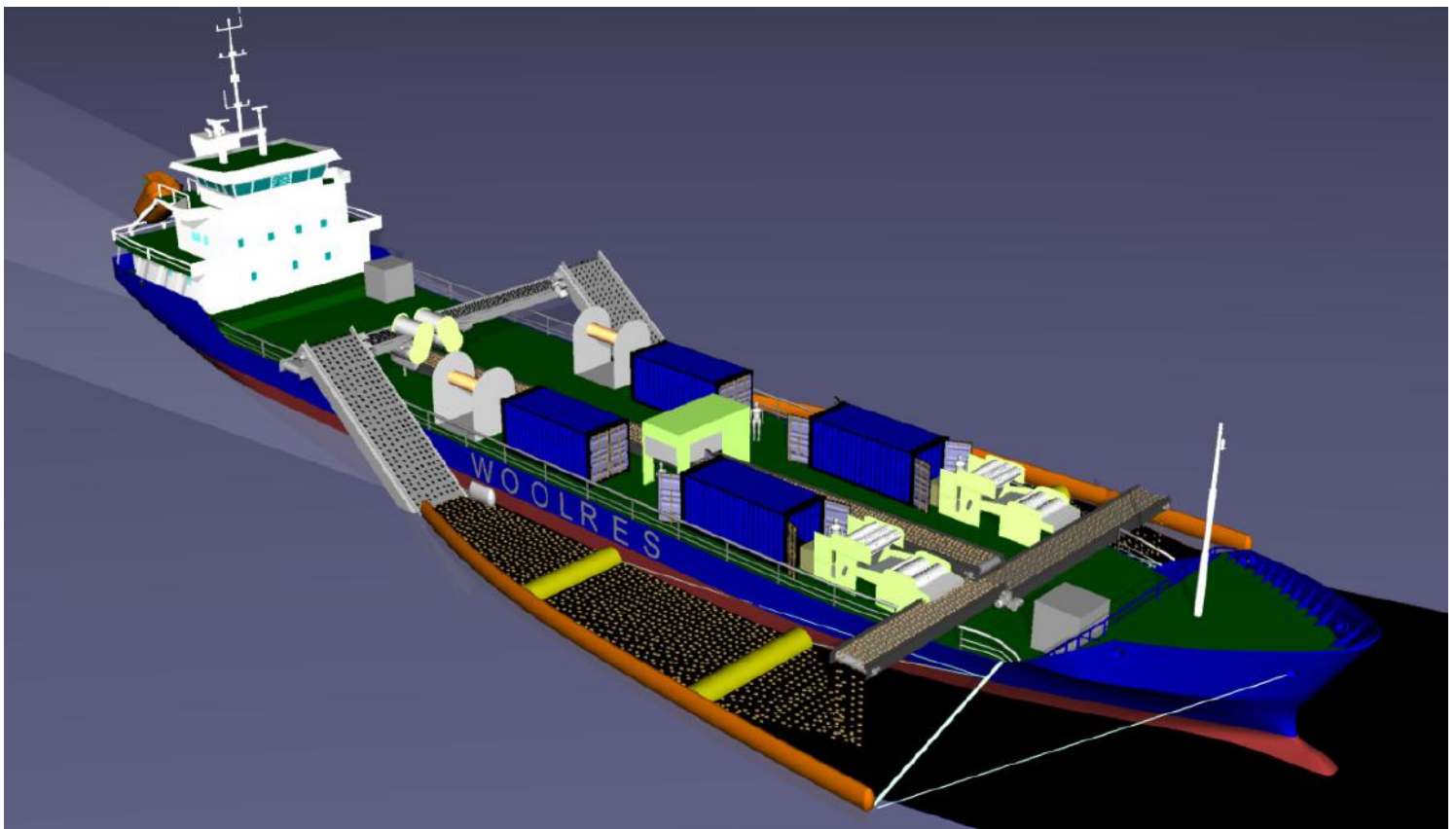


Tecnomeccanica Biellese successfully set out an easy-fitting system that is capable to clean up water from gasoline, gasole and oil, by using greasy wool. The trademark project is named **“WOOLRES: Wool Recycles Eco System”**.

Technology, machine and process have all been patented. The secret resides in coarse wool. Coarse wool is the waste material you get after sheepshearing, which cannot be used in the production of fine yarns and fabrics. **Raw material contains lanolin, that is highly waterproof, yet capable to absorb oily liquids.** Soon after the first use, wool is pressed in a machine



woolres
WOOL RECYCLE ECO SYSTEM

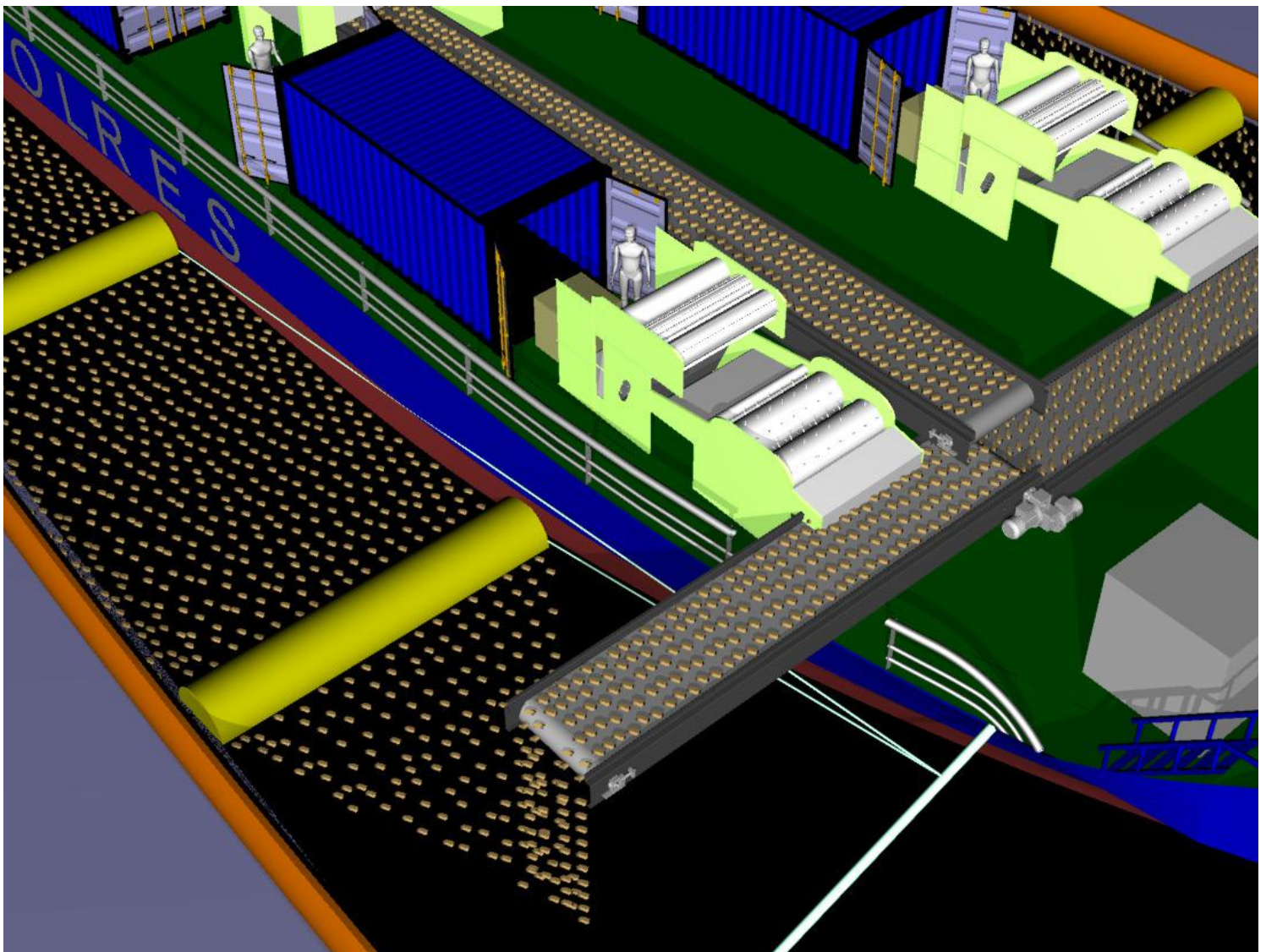


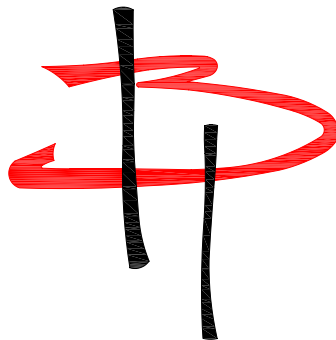
PROJECT "WOOLRES": WITH WOOL WE CLEAN UP THE SEA

created by the three entrepreneurs from Biella, and then thrown back into the sea in order to absorb more polluting liquid.

10 tons of greasy wool can easily help to retrieve 950 tons of oil, that's to say 6.350 barrels, since the wool can be used at least ten times. Once the oil is collected, it can be worked in a refinery. Last but not least, the wool can be burnt in a waste-to-energy plant, to get even more energy. The ship designed for the registered project has a capacity of one million litres; the ship's hold for the clean greasy wool has a storing capacity of 10.000 Kg and further, below-deck compartment can be used to store worn-out wool. This second hold will have a weight of about 20.000 Kg, as the wool retains part of the oil at the stage of pressing process. A specific ship won't be needed. **The project of Tecnomeccanica Biellese can be adapted both to old oil tankers as small vessels, depending on the case.**

Other solutions are surely more expensive or polluting, while this project is ecofriendly. The use of chemical products doesn't clean the oil, it simply push it down to the sea bottom. Nanofibers are indeed very expensive and single-use only. **This idea, instead, is low cost and totally ecologic.**





Tecnomeccanica Biellese is
a member of *Beppe Ploner Group*



Via Molino 9, 13891 Camburzano, Biella - ITALY
P.I e C.F 02391360027 - REA BI-0188308
Tel: +39 015 590993, Fax: +39 015 591145
[www. tbsrl.it](http://www.tbsrl.it) - tmb@tbsrl.it