

TECHNO*plants*

technologies for nonwovens

TECHNOplants

technologies for non woven



To help its customers to find the right configuration and to test their fibers, Technoplants has built a complete 2.8 m wide show room line where they can perform any kind of trial thanks to: Opening and blending line, Airlay card, Thermobonding oven, Cutting unit, Winder.

TECHNOplants srl was founded in 1984 and soon became a recognized supplier to many well known companies internationally.

The product range, which initially included cross lappers and needle looms, was extended with a new series of cutting, winding, and wrapping units.

The experience gained of over many years of successful installations allows **TECHNOplants** srl to supply complete production lines, including patented innovations for the production of technically advanced products; thanks to the revolutionary MULTiline Airlay Card and Thermobonding Oven.

TECHNOplants' goal of constantly researching and developing innovation, whilst focussing on quality and customer satisfaction hasn't changed through the years. Our extensive on-going development programme ensures that new horizons are always near.

To guarantee this technical ability, **TECHNOplants** srl and its staff call upon this wealth of experience to serve every customer who has any question or request regarding technical or commercial aspects of our products.

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Production Line

Design, engineering, manufacturing, installation and commissioning

TECHNOplants can provide turnkey lines, from design and engineering to installation and start-up of complete plants for the nonwovens industry.

The thirty years experience in machine manufacturing and full project management, is a guarantee of reliable and top performance production lines.

The fields of activity are:

- Thermobonding lines for waddings
- Needle punching lines
- Direct card products (air bonded - thermal bonded - chemical bonded - spunlace)
- Revamping of existing plants
- Entry level production plants

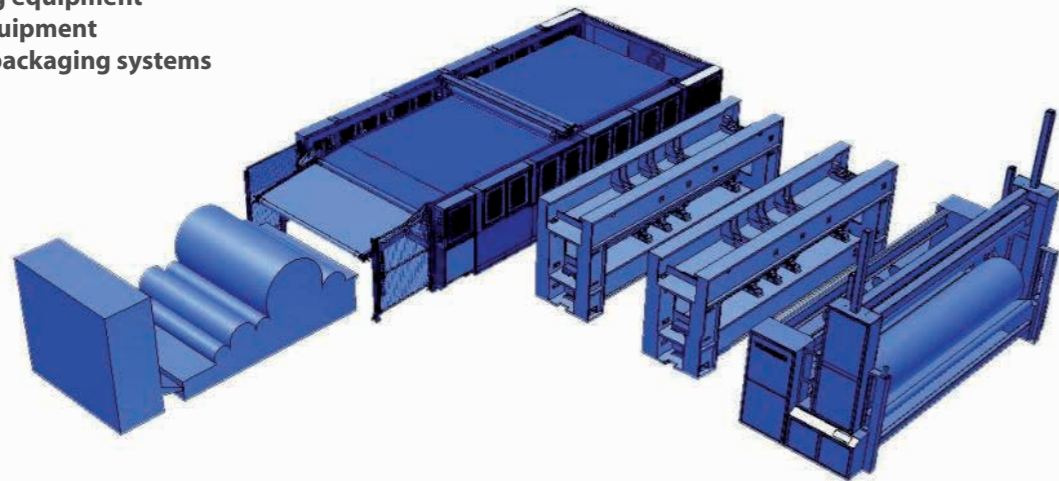


- FOOTWEAR
- ABRASIVE WEB
- FIBER GLASS PANEL / VEGETABLE FIBERS
- CARPETS
- ROOFING
- WIPES & COTTON PADS
- AUTOMOTIVE
- FILTRATION
- WADDING FOR MATTRESSES
- INSULATION PANELS
- PADDING
- GEOTEXTILE



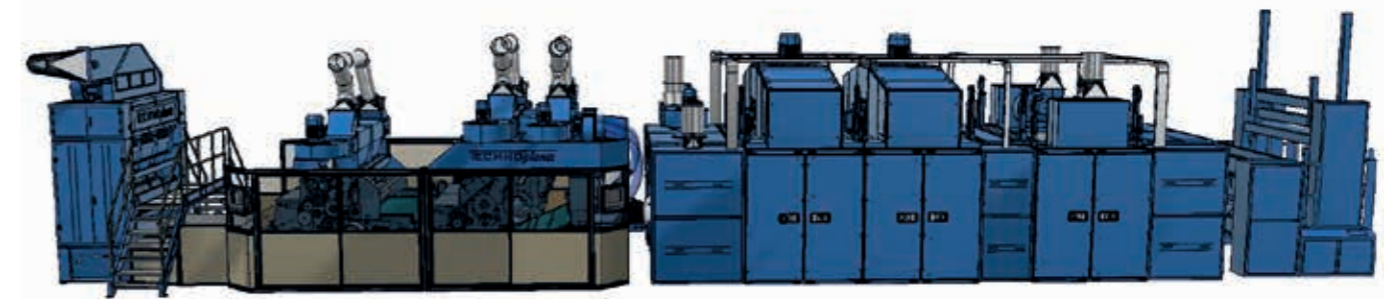
Needle punching lines

- Airlay Card
- Web forming unit
- Crosslappers
- Needle looms
- Cutting units
- Roll winding equipment
- Stacking equipment
- Automatic packaging systems



Airlay Thermobonding line

- Web former
- Airlay card
- Thermobonding oven
- Cutter
- Winder
- Stacking
- Packing



Footwear



Carpets



Automotive



Filtration



Geotextile



Wipes & cotton pads



Wadding for mattress



Insulation panels



Padding



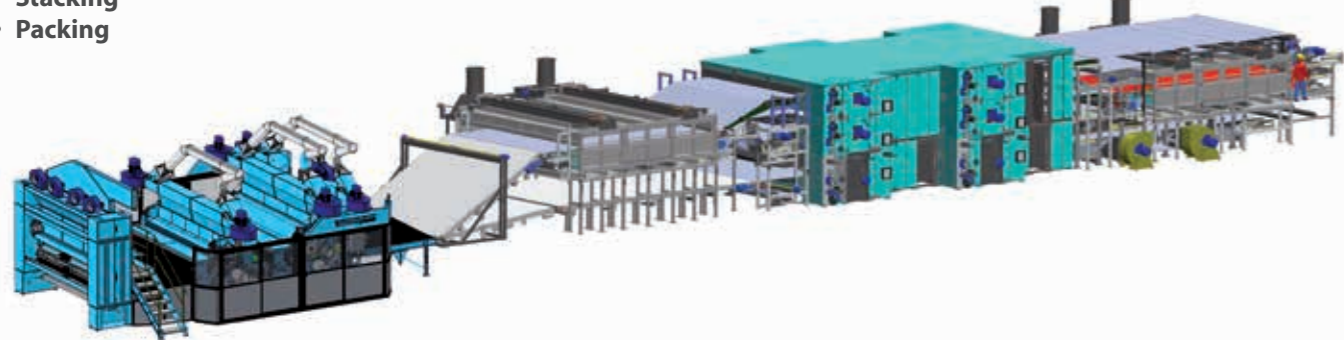
Fiber glass panels



Resin bonding lines

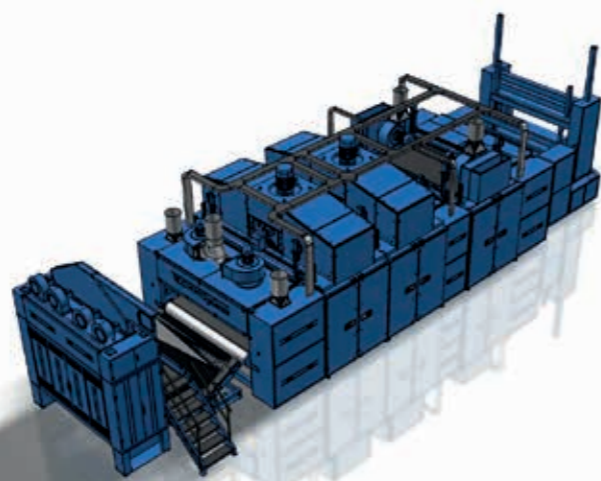
- Web former
- Airlay card
- Resin padder
- Thermobonding oven
- Cutter
- Winder
- Stacking
- Packing

Abrasive web



Fiberfoam Production

- Web forming
- Oven
- Cutting
- Roll wind
- Stacking
- Packing



TECHNOplants has developed a line for the production of thermobonded mattresses starting from fiber balls. The resulting material, which is called Fiberfoam, is characterized by an increased resilience in the three dimensions, making it highly suitable for insulation, furniture, filtration and other applications. The production line for Fiberfoam products can be summarized in the following steps:

1. Bale opening, blending and fine opening of the fibers
2. Shaping of the fiber balls in the ball making machine
3. Conveying of the ball shaped fibers to a forming device, in order to obtain a continuous mattress
4. Calibration and bonding of the product inside the thermobonding oven
5. Cutting to size, rolling or stacking, according to the final application.

Insulation



Wadding for mattress



Fiber Ball Machine

Insulating waddings, mattress

TECHNOplants fiber shaping unit is suitable for transforming (polyester) previously opened fibers into small balls.

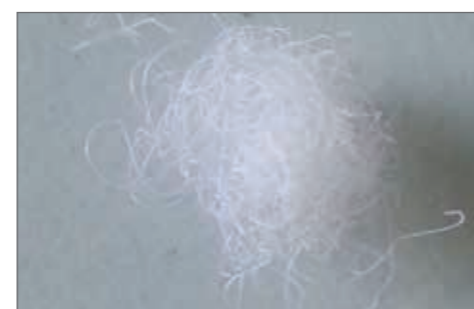
Hourly production: about 300 Kg/h per machine.

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THE PRODUCTION LINE FOR FIBERFOAM PRODUCTS CAN BE SUMMARIZED AS FOLLOWS:

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Range of fibers

Unlike other types of ball making machines, that can only use conjugated hollow fibers, the **Technoplants** ball shaping machine manages a wide range of ordinary fibers, such as polyester or wool.



Non-stop Pillow Filling

The machine allows the continuous filling of pillows, which is more productive than the common batch filling processes.



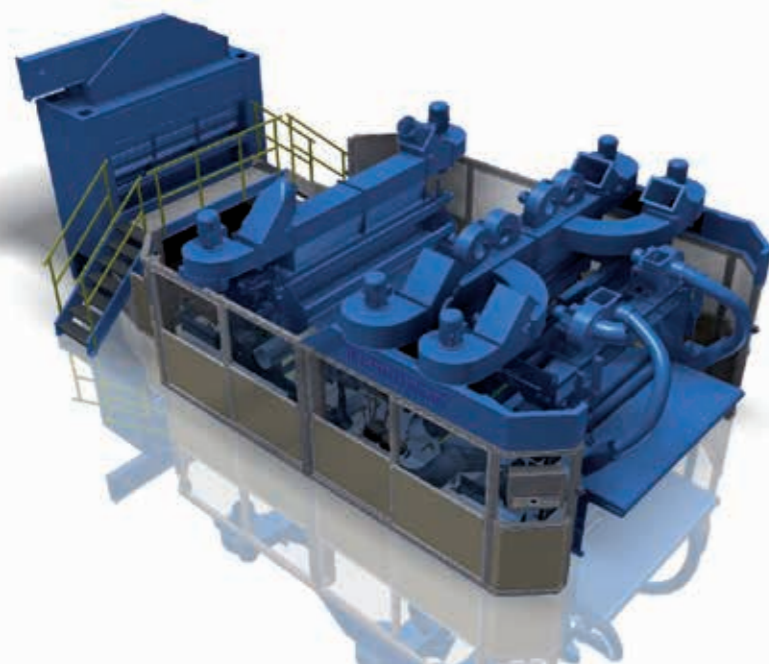
Complete Airlay System

Glass fiber, Fiber pads, Cotton pads, Interlining supports, Insulating waddings, Shoddy felts and wadding

The air forming system is composed of a series of different fiber treatment sections, which perform different tasks on the fibers. A series of switch units allows easy selection of sections to quickly adjust the machine for different fiber type and web weights.



- FIBER GLASS PANELS/ VEGETABLE FIBERS
- WIPES & COTTON PADS
- WADDING
- INSULATION PANELS
- PADDING
- TECHNICAL FELTS
- CARPETS
- AUTOMOTIVE
- FILTRATION
- GEOTEXTILE
- ABRASIVE WEB



TYPE OF FIBERS

- Natural
- Synthetic
- Regenerated
- Frayed knitted
- Fiber length from 5 to 80 mm
- Denier: from 0.9 to 120 dtex

TECHNICAL FEATURES

- Working widths: up to 4000 mm
- Weights: from 50 to 5000 gsm or more
- Thicknesses from 5 to 600 mm

PRODUCTION CAPACITY

- up to 300 kg/h/m for synthetic fibers
- up to 500 kg/h/m for shoddy fibers
- For example: for a 3.0 m machine up to 900 kg/h for synthetic fibers up to 1500 kg/h for shoddy fibers



Pneumatic Forming Unit

- Pressurized forming unit.
- Very uniform batt formation system.
- It can be used as a stand-alone air forming system or as a feeding system for the following airlay cards.
- Precise weight control system with 6 loading cells and PID feedback system.
- Weight variation along the working width $\pm 2\%$ max.



Pre-Card

A further "pre-carding" section can be added between the pneumatic former and the airlay card, for the production of low weight uniform webs.

The unit serves to preliminarily work the batt of fibers, in order to give to the following airlaying section a more uniform, pre-carded web.



Main Airlay Card

The airlay card refines the batt of fibers created into the pneumatic forming section, sets the final thickness and gives the direction and orientation to the fibers.

To do so, the machine is provided with a first pre-carding section complete with opening cylinder, workers and strippers, followed by second section where the fibers are air-shaped.

MULTIline fpc

Available in the following combinations:

MULTIline fp

MULTIline fc

MULTIline f

Card Feeder

Insulating waddings, Glass fiber pads, Card feeding

TECHNOplants has developed an air forming unit based on pneumatic formation. The pressure feeding assures high accuracy in the cross section, and a homogeneous fiber web formation. It can be used as a card feeding system or for direct fiber web formation to feed ovens or other bonding systems. The machine can be equipped with a belt weigher to better control weight in cross and longitudinal direction.

The machine can manage long, short, virgin and recycled fibers.



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- CARPETS
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- ABRASIVE WEB



FEEDING UNIT FOR TRADITIONAL CARDS

The pneumatic forming unit gives top performances in cross-web regularity. For this reason it is suitable to feed high performance carding machines which require strict tolerances in terms of weight and productivity. The belt weighing system is a further guarantee for longitudinal stability in term of weight.

TECHNICAL FEATURES

- Working widths: from 1000 to 5000 m (or more)
- Capacity up to 400 kg/h/m for synthetic fibers
- Capacity up to 700 kg/h/m for shoddy fibers
- Product weights: from 450 to 5000 gsm or more
- Strict weight tolerances
- Fibers: synthetic, natural, minerals and mixes
- Fiber length: from 10 to 100 mm.



Direct line formation for glass fibers

Technoplants has developed a glass fiber line on the base of the pneumatic feeding unit.

The pneumatic feeding is able to vertically displace the fibers, allowing a better resilience and elasticity of the wadding.

The product is then able to return to the original size even 6 months after the packaging operation.

The forming unit includes a fine opening group and a launching fan which can be included in a standard thermo bonding line.



Direct line formation for synthetic and regenerated fibers

The pneumatic forming unit can manage a huge variety of fibers for a range of different application fields such as insulating products thermo and sound proofing, furniture, mattresses, automotive. The machine consists of:

- Continuous weight control of the batt incoming and outgoing

- Steel framework, stainless steel transit chambers of the fibers.
- Full operation control and automatic setting: through the touch panel
- The unit can directly feed an oven, a needle loom or any other kind of bonding machine



Volumetric feeding unit

- Volumetric dispenser
- Balance or weighing conveyor belt
- Constant and homogeneous feeding

Crosslappers

**Automotive felts,
Geo textiles,
Insulating waddings**

TECHNOplants horizontal crosslappers are designed for a wide range of uses in card-crosslapper installations for the processing of staple fibers.

TECHNOplants can provide a range of low cost to high performance crosslappers, according to product requirements. Working widths start from laboratory sizes (300 mm) up to 8000 mm or more.

TECHNOplants crosslappers can be equipped with profile control system, electronic belt tracking system and compensation unit.



- TECHNICAL FELTS
- CARPETS
- AUTOMOTIVE
- FILTRATION
- GEOTEXTILE



MODEL HOC

- Lapping speed 130 m/min
- Two lapping carriages
- External compensating system
- Electronic belt tracking system
- Profiling system

MODEL OC

- Lapping speed 90 m/min
- Two lapping carriages
- Electro-pneumatic belt tracking system
- Profiling system

MODEL OE

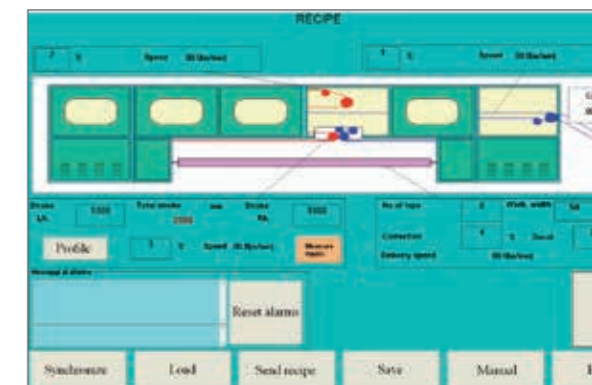
- Lapping speed 60 m/min
- Two lapping carriages
- Electro-pneumatic belt tracking system



Profiling system

Setting of different shaped profiles of the laid down web, according to production needs.

Up to 21 correcting zone within the web width.



Electronic tracking system

Electronic belt centering system with proportional sensor for detecting the edge of the belts.



Diagnostics

Real-time diagnostics:

- Drives
- Sensors
- Emergencies
- Control boards

Web Turner & Vertical Lapper

TECHNOplants presents a new range of machines to allow you to use your thermobonding line in a versatile way, producing vertically lapped as well as multilayer materials.

Vertically lapped materials are well known and appreciated by professionals of the insulation and padding industry because of their thermo-acoustic properties and compressive strength. Nevertheless, the vertical lapping technology has achieved limited success due to its high initial cost.

TECHNOplants proposes a new layout of machines. It avoids the purchase of an entire dedicated line complete with a card, a vertical lapper, a thermobonding oven followed by cutting and winding/stacking equipment.



- WADDING
- INSULATION
- MATTRESSES



Vertical lapper on existing line

To produce vertically lapped materials it is sufficient to add to your existing thermobonding line:

- A web turner to be mounted on top of the existing crosslapper.
- A vertical lapper to be applied to the entrance of the existing double band oven.

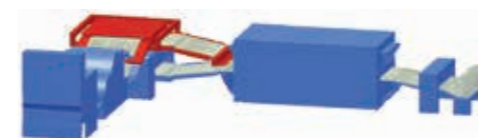
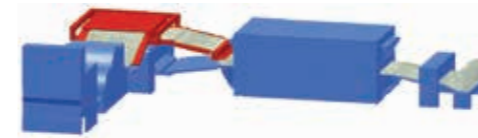


VERTICAL LAPPED NONWOVENS

- Advanced acoustic characteristics: + 6 dB of R_w (Weighted Sound Reduction Index) with respect to glass or rock wool.
- Can be combined with cross laid or air-laid materials to maximize the sound protection level. The different inclination of fibers acts like an acoustic trap.
- High thermal performances ($\lambda \leq 0,04$ W/mK).
- High compression resistance and resilience.
- The structural integrity can be further improved by unwinding additional nonwoven layers on the top and/or bottom side of the vertical lapped layer.
- Non-toxic and recyclable.
- Higher hygienic properties when compared with foams.

The web turner receives the web coming from the carding machine, turns it at 90 degrees and conveys it to the downstream vertical lapper.

The web entering the vertical lapper VL is fed by means of a cylinder with feeding (toothed) discs to a following cylinder with special forming discs, suitable to fold the web to become fiberwave material.



Feeding from web turner

Using a single doffer carding machine it is possible to feed the web turner/vertical lapper, or alternatively to feed the pre-existing crosslapper.

Feeding from card or airlay

With an airlay card, it is possible to install the vertical lapper between the airlay card itself and the thermobonding oven. An adjustable apron feeds the air-laid web to the vertical lapper, or directly into the double apron thermo-bonding oven.

Multilayer materials

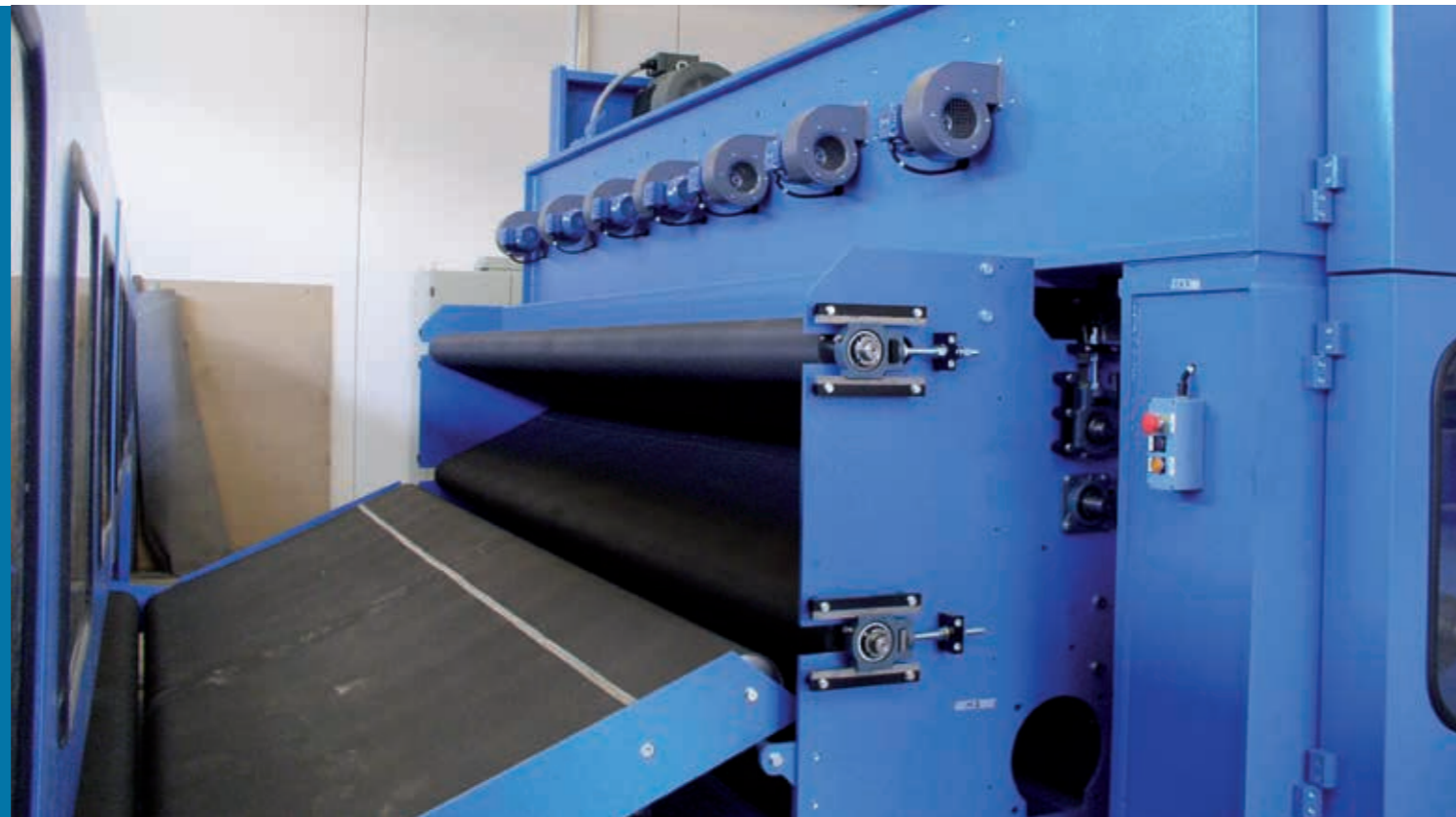
Using a double doffer carding machine it is possible to produce multilayer materials, by feeding the web turner/vertical lapper and the crosslapper at the same time.



Needle Looms

**Automotive felts,
Geo textiles,
Insulating wadding**

TECHNOplants has a wide range of needle looms. The main characteristic of these machines is high reliability, due to the particular design with two counter rotating shafts and grease lubrication for bearings and guides. This system avoids oil leakage and gives longer durability, thereby reducing down time for maintenance. Machines can be provided in different width from 2500 to 7500 mm. Technoplants provides full entanglement systems composed of feeding, pre needle loom and needle loom. Technoplants needle loom is a good choice in terms of balance between performance and price.



- TECHNICAL FELTS
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- GEOTEXTILE
- FIBER GLASS PANELS
- VEGETABLE FIBERS



Pre-needle looms and finish needle looms

MACHINE TYPE	NEEDLING ACTION	MAX NEEDLES PER LIN. METER	MAX. STROKE FREQUENCY
Single board	▼▲	7500	1500 rpm
Multi board	▼▲▲	15000	1500 rpm
Twin punch	▲▼	15000	1000 rpm
Tandem punch	▲▼▲	15000	1000 rpm
Quadro punch	▲▼▲▼	30000	900 rpm



Feeding group

The pre-needle loom feeding unit consists of a compression batt feeder, with 2 converging conveyors. The conveyors compress the nonwoven web and convey it to a series of instruction fingers, which also compress the web. The system is separate from the rest of the machine and is adjustable.



Grease lubrication system

All machine moving parts are grease lubricated. The grease lubrication automatically takes place at regular intervals, thanks to a lubricating circuit with integrated pump.



Thermobonding oven

Acquisition layers for hygiene, Insulating panels, Energy recovery, Home furnishing

TECHNOplants has designed a high efficiency thermal bonding oven. The machine has a perfect cross air control that allows a homogeneous bonding through the width, in a wide range of fan speeds. The independent air management allows blowing of hot air from top to bottom, from bottom to top or from both directions, to satisfy every production needs. The air through bonded oven is especially designed for light weight products (20 to 150 gsm) required in the hygiene market as Acquisition Distribution Layer. Air heating can be direct gas or with heat exchanger to fit every customer working conditions.



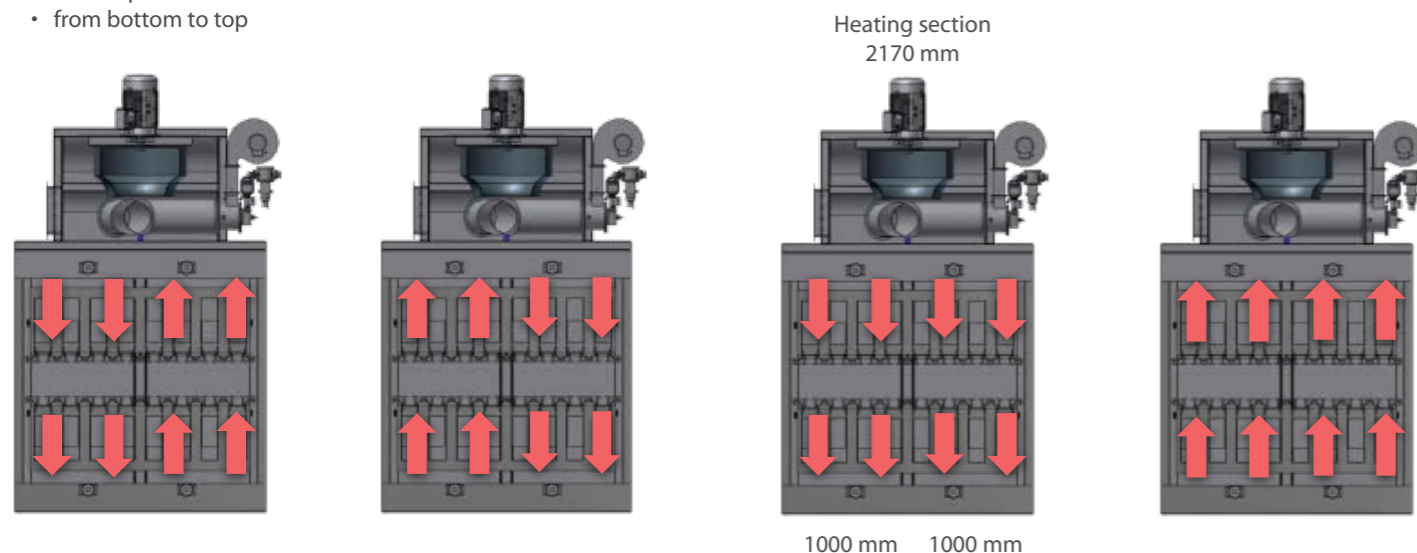
- WIPES & COTTON PADS
- WADDING
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- ABRASIVE WEB



Airflow adjustment

For each half heating section (1000 mm length) it is possible to adjust the air flow direction:

- from top to bottom
- from bottom to top



MULTIline oven



FHR heat recovery system

The exhaust air from the heating section and from the first part of the cooling section is recovered and sent to the entry section, to allow a fabric "pre-heating". No insulated pipes: the recovered air duct runs in an internal warm area of the oven. This system allows to reach up to -30% less of gas consumption in the first heating section.

The air recovery system also includes a "pre-cooling" effect which makes the fabric cooling process more powerful and efficient.



Blowing nozzles

Specially designed alternating slot nozzles, which blow the hot air directly through the

material from top to bottom, from bottom to top or from both directions.



Symmetrical oven for large widths

Internal symmetrical configuration of the pressure chamber and air ducts, for a high accuracy of temperature and air speed in case of large working widths.



Adjustable double belt

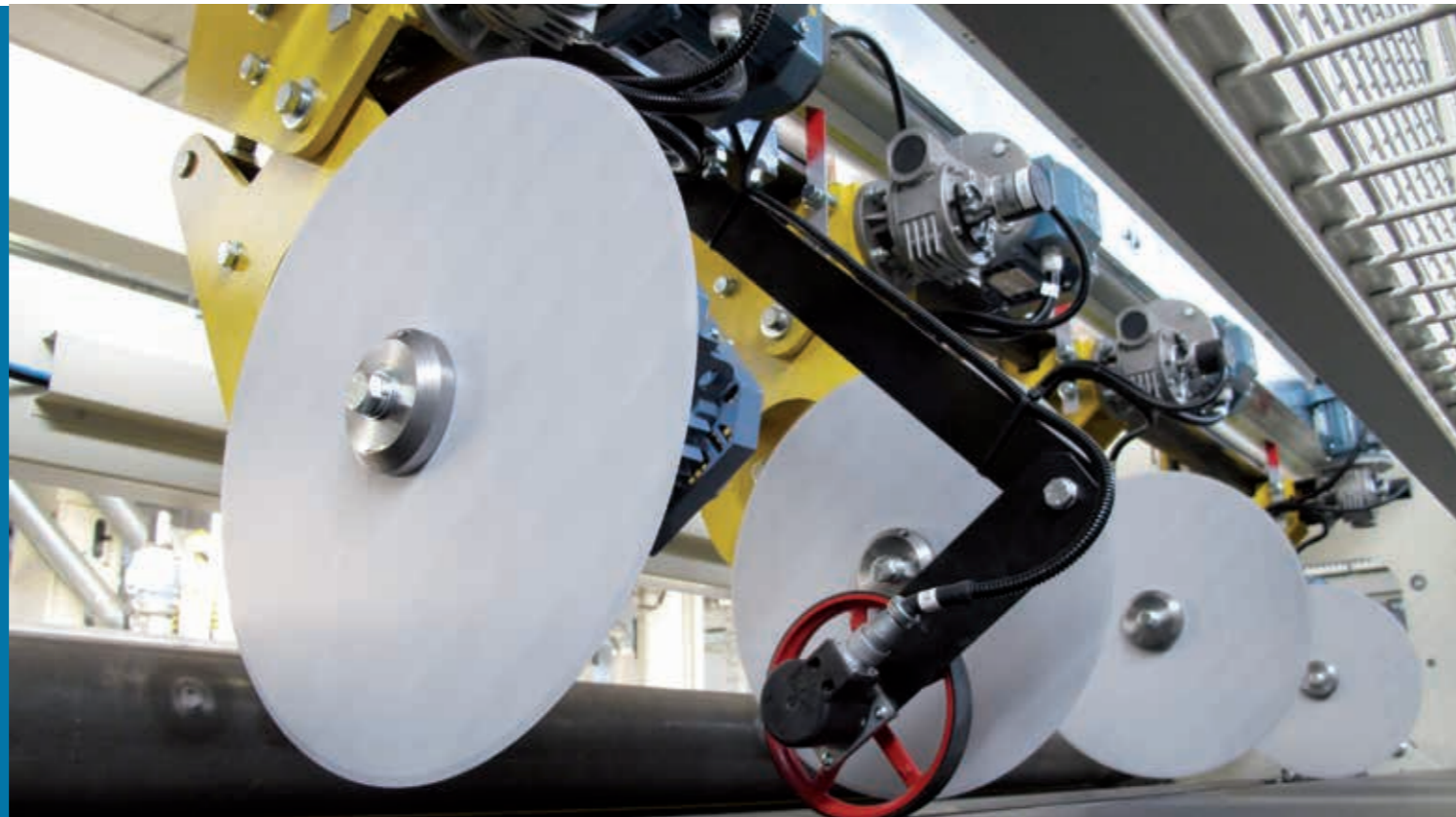
The distance of the upper belt can be adjusted by up to 200mm for the standard version using the control panel.

The lifting screw jacks also move the structure with the calibrating roller and the suction hoods.

Cutting Units

**Mattress padding,
Automotive felts,
Roofing, Geo textiles,
Insulating waddings**

TECHNOplants designs and produces many types of longitudinal and cross cutting systems to manage all type of nonwovens. In order to simplify and to reduce space requirements, our combined system, slitting + cross cutting, can be integrated into our end of line, mainly for wadding and high volume products. Technoplants can also provide entry level cutting units designed to meet the most stringent budget while still providing high quality, efficient and productive equipment.



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- ROOFING
- GEOCOMPOSITES



TECHNICAL FEATURES

Working width	up to 8000 mm
Weight	30 - 6000 gsm
Thickness	0.5 - 300 mm
Production speed	up to 60 m/min
Cutting frequency	up to 30 cuts/min



Longitudinal cutting units

- Crush cut
- Motorized circular blade
- Shear cut
- Band saw blade



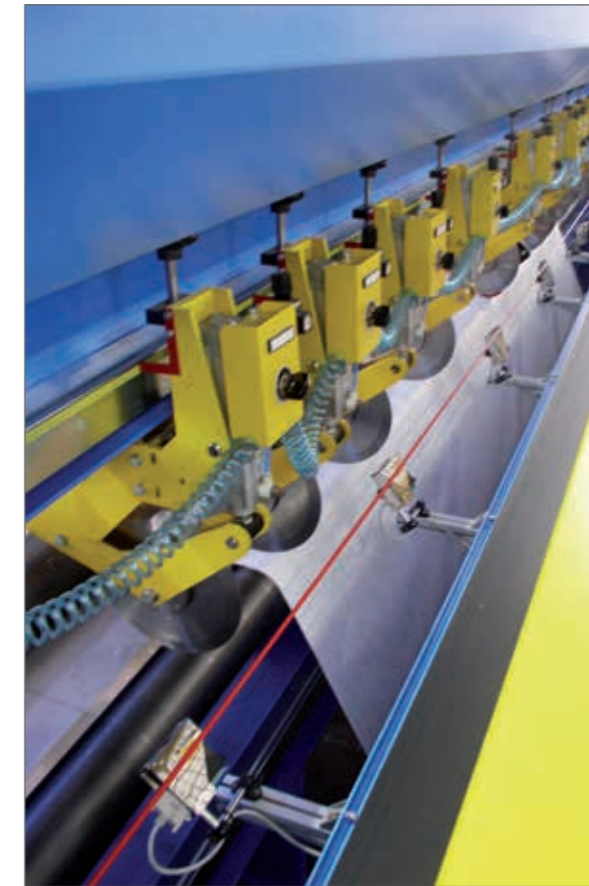
Cross cutting units

- Guillotine cut
- Motorized circular blade
- Shear cut
- Band saw blade



Accessories

- Edge trim discharge
- Pre-cutting
- Blade cooling
- Dust suction



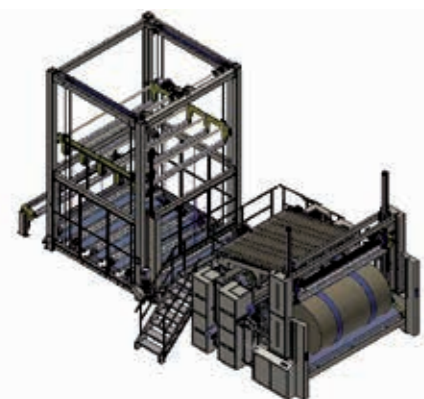
Winders

Roofing, Automotive felts, Mattress padding, High loft, High stiffness, High speed, Insulating wadding, Geo textiles, Core less

TECHNOplants high speed winders, with or without cardboard cores in conjunction with our combined slitting and cross cutting units, offer the ability to automatically cut, thread, wind and doff a very wide range of nonwoven products. Material ranges start as low as 40 gsm and go up to nonwovens well beyond 1000 gsm needle punched, thermobonded, chemical bonded or calandered bonded. Technoplants can also provide a whole series of intermediate or entry level machines and even used machines, depending on customer requests.



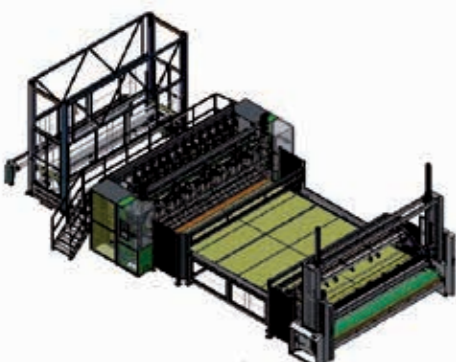
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Fully automatic end of line equipment

Groups designed for the continuous trimming, slitting, cutting and winding for a wide range of nonwoven products.

- Geotextiles - Edge trim discharge
- Automotive - Cardboard cores magazine
- Carpets - Automatic roll start
- Technical felts - Pressing roller



End of line for waddings

Groups designed for the continuous trimming, slitting, cutting and winding for a wide range of nonwoven products.

- Mattress paddings - Band saw cutting
- Insulating products - Automatic roll start
- Natural fiber mats - Pressing roller

FELTS WINDER

Working width	up to 8000 mm
Product weights	from 80 to 3000 gsm
Roll diameter	up to 1500 mm
Production speed	up to 50 m/min

WADDING WINDER

Working width	up to 5000 mm
Product thickness	up to 300 mm
Roll diameter	up to 1200 mm
Production speed	up to 50 m/min

ROOFING WINDER

Working width	up to 6000 mm
Product weights	from 40 gsm
Roll diameter	up to 1500 mm
Production speed	up to 100 m/min



Coreless winding

Our fork range winders allow the winding of high loft materials without any winding core.

Compression system

Volume reduction with our range of compressive winders.

Tape dispenser

For the taping of nonwoven rolls with cling film. Automatic positioning and cutting of the cling film.



Stacking Equipment

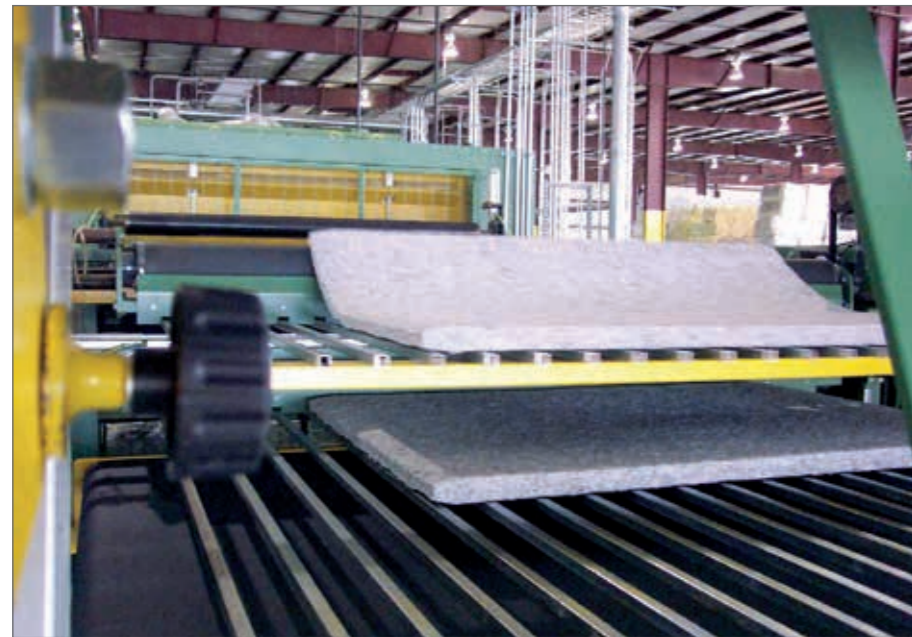
Insulating wadding, Non-stop stacking, Bedding, Easy pick-up, Automotive felts, Constructions

The **TECHNOplants** pad stacker has been designed to take the felt sheets coming from the cutting unit and lay them on top of each other on a collecting conveyor.

High precision stacking to meet the strictest tolerances.
 Continuous stacking cycles even during the discharging of the full pile of felt pads.
 Setting of a predetermined number of sheets by control panel.
 Double position stacking units to meet the highest production speeds.
 Centered or side stacking with respect to support pallet.



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FORK TYPE STACKER

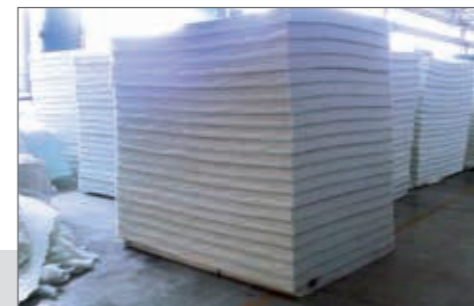
Working width	up to 5000 mm
Max. pads length	4000 mm
Max. stack height	2000 mm
Production speed	up to 30 m/min

BELT TYPE STACKER

Working width	up to 6000 mm
Max. pads length	up to 6000 mm
Max. stack height	2000 mm
Production speed	up to 40 m/min

X-Z AXES STACKER

Max. stack height	2500 mm
Stacking of several pads along the width and length.	
Two stacking positions or more.	



Easy forklift pick up

Delivery chain conveyor to allow the stack pick-up by a forklift.

Management of soft pads

Special tools for soft pads handling which allow to transfer high loft, soft products.

Stacking up to the highest heights

Thanks to our collecting, vertical moving conveyor.



Automatic Packaging System

**High productivity,
High level of automation
and integration, Volume
reduction, Pallet strapping**

The basic function of a wrapping machine is to put a thin plastic film around the product, to provide a close envelope at high speed and to protect the product from handling, heat, contamination, etc. during shipping and storage.

TECHNOplants can supply both roll and pad packaging systems. A single machine can manage both formats.

Various roll and pad wrapping systems are available to satisfy different applications and customers requirements.

Depending on the materials to be processed and on customer specifications, three main types of wrapping units have been designed.



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Pallet strapping

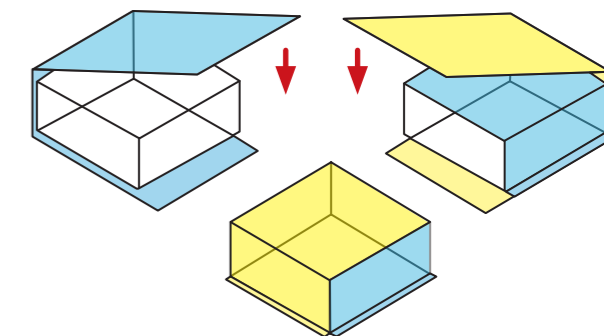
The pallet strapping forms packs that are composed of adjacent rolls and placed on top of each other. More than one strapping can be made consecutively on the same pack.

Max. pallet width	1200 mm
Max. pallet height	1200 mm
Max. pallet length	7000 mm



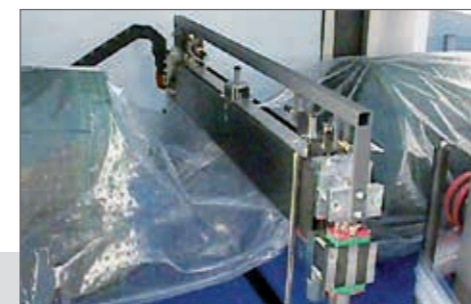
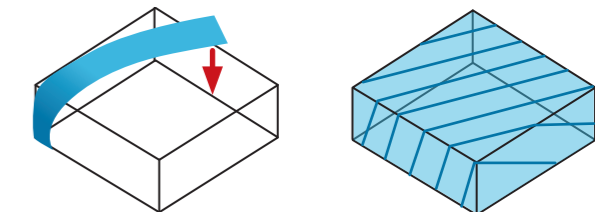
Compressive wrapping machines

Max. width	4000 mm
Max. length	3000 mm
Max. height	2500 mm
Compression	Pneumatic or hydraulic



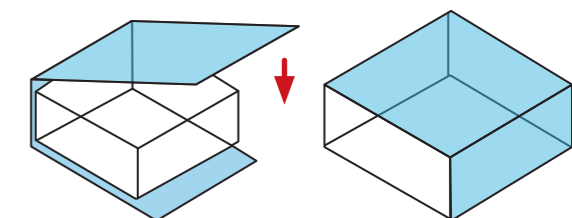
Spiral wrapping

Max. roll diameter	1500 mm
Max. stack section	2000x1500 mm
Product length	up to 8000 mm



Flow-pack machines

Max. roll diameter	700 mm
Max. stack section	800x800 mm
Product length	up to 8000 mm

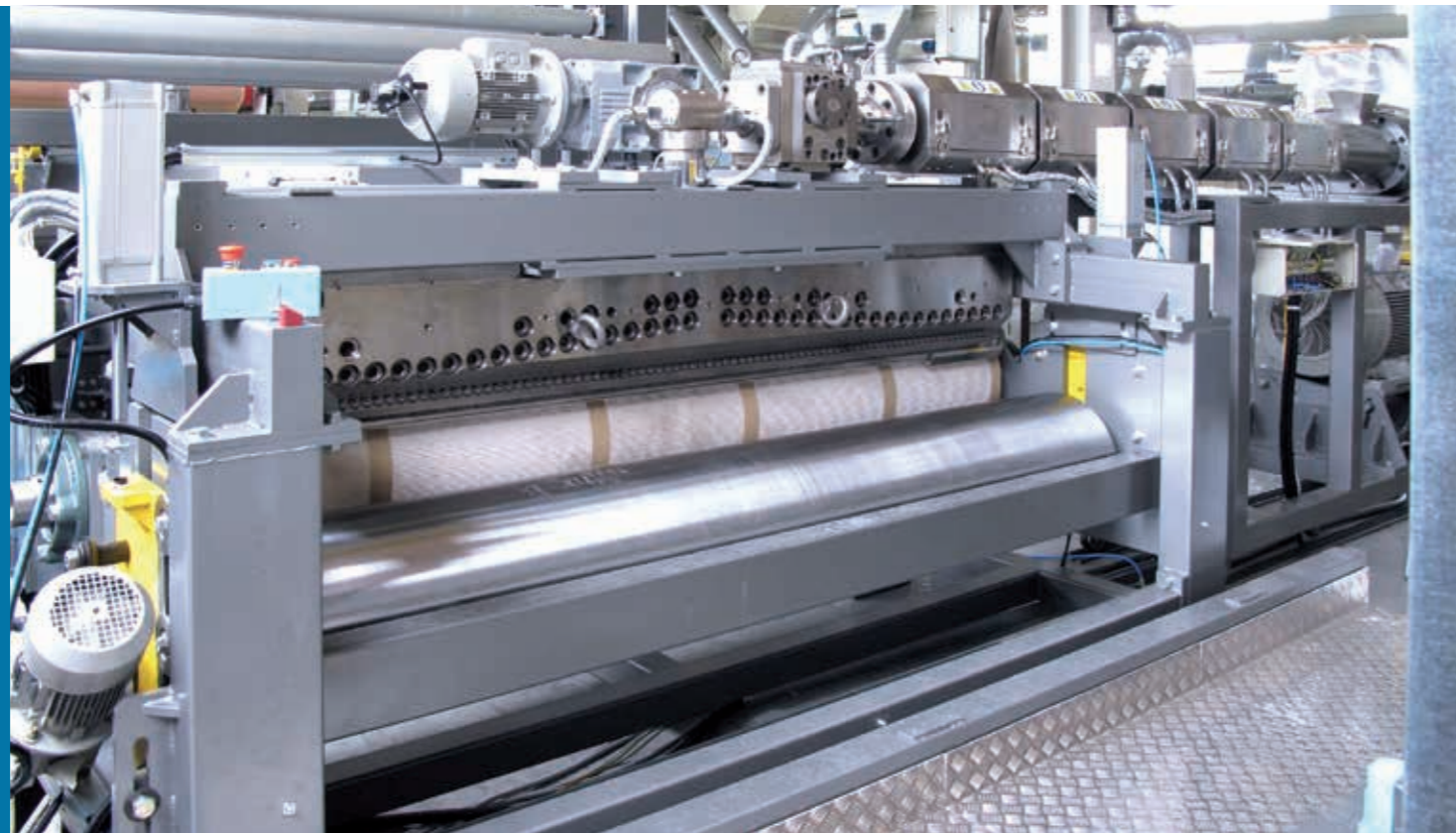


Coating Lines

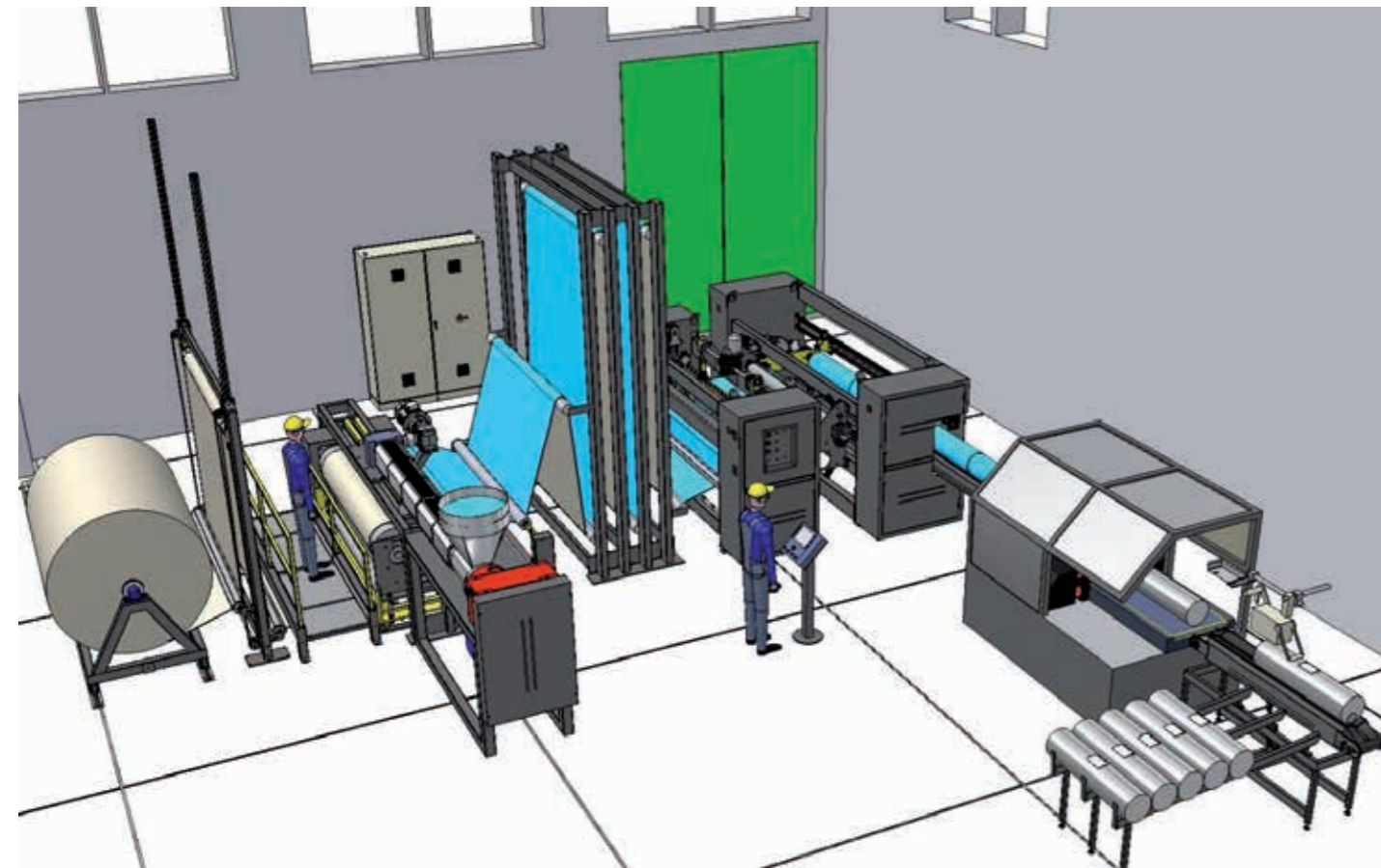
Hygiene coating, DIY market, Waterproof felts

Slot Die Coating consists in applying a coating material to a flexible substrate. The coating material is forced out from an extruder through a slot by pressure, and transferred to the moving web. If the web is moving slowly, the coating is thick; if the web is moving quickly, the coating is thin. The slot supplies the exact amount of coating material to give the required coat weight and then transfers it all to the web. Coat weight is not affected by viscosity. The **TECHNOplants** slot die coating system consists of:

- An extruder which melts the polymer.
- A pump to feed the solution to the die.
- The die plates, which contain a distribution manifold to distribute the flow across the web.
- The exit lips of the die.
- A support station to rigidly hold the die and to adjust bead gap and die angles.



- **DIY MARKET**
- **HYGIENE COATING**
- **WATERPROOF FELTS**
- **GEOCOMPOSITES**



Advantages of extrusion coating

- High quality of the coated product.
- High uniformity of coating thickness.
- Absence of point or line defects.
- Uniform surface finish.
- Increased efficiency and productivity.
- Cost reduction.
- No contaminations or aging effects due to coating solution recirculation.



Technical characteristics

- Processable polymers:
- Low density polyethylene (LDPE)
 - Polypropylene (PP)
 - Polyamide (PA - also known as nylon)
 - Working width: from 1000 to 6000 mm

- Production speed: up to 40 m/min
- Thickness of polymer film: from 20 to 500 µm (with the same slot die coater)
- Type of production: in-line or off-line.



Lamination Through

- Electric resistances
- Flame burners
- Hot melt
- Hot cylinder
- Extrusion coating
- Ultrasonic welding
- Powder and infrared heating

Laboratory Lines

Students training, Small-scale production, Research and development

The laboratory system is the smaller version of our production lines. Originally, laboratory systems were destined to the fiber preparation industry. Such a machine served to test new fiber and color mixes. The system was composed of a small carding machine with large roller on which the fiber web was wrapped. Laboratory system evolved over the years as new machines such as crosslappers, pre-needle looms and winders were added. The original equipment has now become a miniature production system suitable for small production of high quality felts and pads to be used in the cosmetics industry, medical industry and for the research of new biotechnologies, among other specialist uses.



Many years of consolidated experience in constructing equipment for demanding and technologically advanced sectors, together with Technoplants ability to customise every order, allow us to satisfy every specific need of our customers.

Application fields

- R&D divisions
- Universities and research centers
- Training lines
- Small volume, high value productions
- Medical and pharmaceutical industry



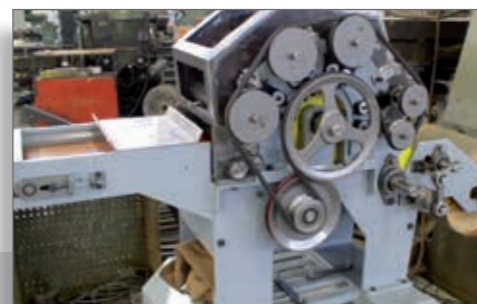
Main features

- The machines can be in compliance with cleanroom standards
- Possibility to add cutting and winding equipment
- Management of all the line by control panel
- Customization according to client requirements



Data sheets

- Working widths: from 200 mm
- Line speed: up to 10 m/min (standard)
- Type of lines: needle punching / thermobonding / spunbond / coating



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+TechnoplantsSrl

YouTube



Via San Pierino Casa al Vescovo 2° tratto 1/E
51100 Pistoia (PT) Italy
Tel.: +39 0573 98471
Fax: +39 0573 984740
info@techno-plants.com

www.techno-plants.com