Technology Transfer Services, LLC

Phone: 864-541-8231
Mobile: 336-327-9693
P.O.Box 161713,
Boiling Springs, SC. 29316
info@tt-services-usa.com
www.tt-services-usa.com

TTS

Technology Transfer Services, LLC

Shanghai Sail International, Ltd.

2605-2606, Jiahe International Building No 1
Lane 66 Huayuan Road,
Shanghai Shanghai 200083
China

Sail

Technology Transfer Services

Technology Transfer Services, LLC

Technology Transfer Services, LLC.

Technology and Machinery Solutions
CONSULTING SERVICES FOR THE NON-WOVEN & RECYCLING INDUSTRY

High Performance Nonwoven Lines

The latest Nonwoven Machinery | From Fiber to Finished Non-woven Total Integration of Electronics | Highest Standards & Safety Controls Long-Term Reliability and Service | Competitive Pricing

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Company Profile and Activities

Technology Transfer Services, LLC. Is an American owned consulting organization for the North American non-woven and textile recycling markets and supports producers of non-woven materials with technical assistance to help in developing advanced process techniques and product specifications as well as the transfer of proprietary processes to our customer.

Established in 2013 to serve the non-woven and recycling industry with the transfer of proprietary developments in processes along with the necessary and specific equipment for efficient and effective non-woven production.

With well over a combined 40 years of substantial process and product knowledge each of our associates can discuss with our customers solutions for equipment design, selection and layouts to provide quality non-woven and recycling process equipment at very competitive costs.
Additionally Technology Transfer Services can further provide complete project management from the initial project start to a successful completion.

We also provide a comprehensive and custom designed equipment selection process to include proven machinery that meets customer designated process requirements with maximum product capacities for each of the developed process or end products.
All of our process recommendations are in strict compliance with the current environmental and or governmental guidance on record.

At the same time Technology Transfer Services, LLC provides quality non-woven process equipment from various sources and combines them into turn key operational process lines with performance guarantees on the end product and with affordable cost structure.

Technology Transfer Services, LLC also supports the non-woven manufacturer with fresh ideas in updating or modernizing existing process equipment by combining existing production lines with new equipment components to minimize initial cost in order to prove a new manufacturing process with affordable up-front investment.

Our technical support team is available to analyze your current processes and suggest the changes required in upgrading existing production equipment and consult on regular scheduled service or maintenance contracts that can be provided by and executed by our technical support team on a timely manner.

Technology Transfer Services, LLC.

Segments of Service

Fiber Opening & Blending

Bale Opening Weighing & Blending
Fine Opening Equipment
Compression Chute Feeders

Web Forming Equipment

Carded & Air Laid
Belt Cross Lapper
Web Drafting Equipment
Vertical Lapping

Needle Punching Machinery & Accessories

Pre & Finish Needling
Velour & Structure Needling

Thermo & Chemical Bonding

Double Belt Thermo Bond Oven
Thermo Bond Calendars
3 Pass Latex Spray Bonding Systems
Spun Bonding Equipment
Complete Spun Lace Lines

Laminating & Compression Ovens & Machinery

Laminating Lines
Double Belt Compression Ovens
Powder Coating Equipment

Winding & Converting Machines

Calendars
Semi & Automatic Winder
Cross & Longitudinal Cutters & Guillotines
Accumulators
Pad Stacker
Slitting Machinery

Recycling & Tearing Machinery

Fabric Tearing Lines

Fiber Opening & Blending

Automatic Bale Opener

Automatic Bale Opener Series equipped with Bale Loading Buckets. The Bale Openers are designed to have a fiber reserve to minimize loading during operation. Each of the Bale Opener has a max. Throughput capacity of 1.000 Kg/Hr. (2.200 Lb./Hr.) The loading buckets operated pneumatically, a safety mat system protects the operator from injuries while loading the bales.

Bale Loading Bucket

Blend Pre-Opener

The diameter of the opening roll is 800mm and is equipped with Aluminum pin lags for ease of replacement. The protecting cover is pneumatically opened for maintenance and cleaning, the feed rolls are spring loaded to prevent fiber lockup.

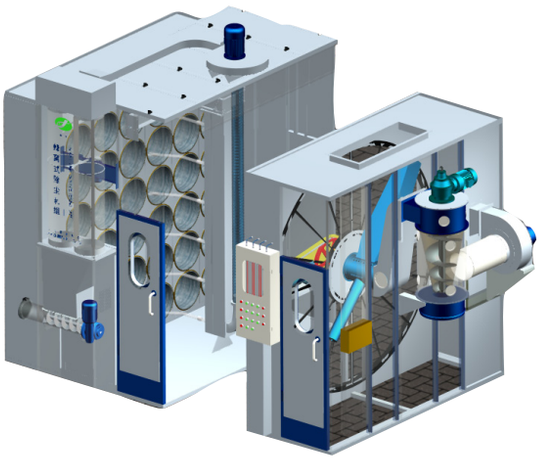
Cross Blend Conveyor

The collecting cross conveyor works in sync with the bale openers and transports the fibers towards the pre opener a slow rpm fiber distribution roller is built into the system to even the fibers before entering the pre opener

Fiber Opening & Blending

Fiber Fine Opener

The fibers has to pass through a series of 4 saw tooth wire wound rolls thus achieving a maximum of fiber opening by preserving the blend ratio, dust and lumps of fibers are extracted and collected below the opener into a through connected to the filtration system. A metal detector and separator device protects the saw tooth wired opening rolls from damage. Capacity at 100 inch working width 2.000 kg/hr (2.200 lb/hr)



High Volume Compact Rotary Dust Filtration System

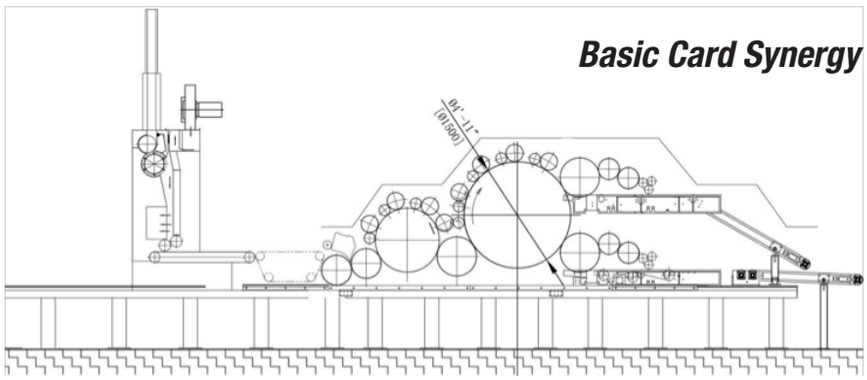
Web Forming Equipment

High Capacity Carding Line

The TTS carding machine is of a modular design to facilitate service and maintenance. The standard Synergy of the carding machine with 1500 mm diameter main cylinder and double doffer system with quick exchangeable condensing or randomizer rolls, fiber doffing is with high-speed comb boxes and cleaning brush rolls.

Technical Parameter:

Working Widths	1800/2200/2500/3000/3850 mm
Web Weights	14 to 80 g/m2 /Dofer
Web Speed:	
Condensed Web	100 m/min
Parallel Web	120 m/min
Main Cylinder Diameter	1500 mm
Breast Cylinder Diameter	850 mm
Number of Worker/Stripper	Breast 3 Main 5
Number of Doffers	2
Number of Condensing Rolls	2
Edge Suction Fan	2



Basic Card Synergy

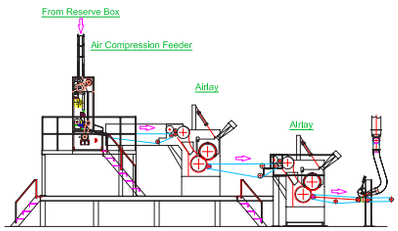
Carding Line with Compression Chute Feed System

Web Forming Equipment

Aero Dynamic Web Forming Machine (Air Lay)

The TTS air lay machine is available either in single or double section with quick exchangeable feed section to accommodate all kind of fibers at the maximum evenness and side-to-side weight distribution, weight in machine direction is controlled via built in belt scale system.
The machine is suitable for high loft products from 6 to 200 mm depending on weight and fiber opening.

Product weight from <300 to 2500 gsm
Working widths from 1.2 to 4.0 meter
Capacity 2.500 kg/hr.
depending on fiber and product weight



Double Forming Head Airlay

High Loft Web Former

This type of web former is equipped with a large diameter-condensing roller to achieve the maximum in loft. The web forming section is easy accessible for maintenance and cleaning all covers operated pneumatically, the forming sections are connected to a filtration system for dust control.

The air lay equipment is suitable for either thermo, chemical or dry powder resin bonded products.

Upper Condenser Roll Diameter 400 mm
Lower Condenser Roll Diameter 800 mm
Each independently driven for to achieve desired fiber orientation.

Web Forming Section with Safety Doors

The TTS air lay equipment is delivered meeting all OSHA requirements including safety protection for the operator while maintaining the maximum of accessibility.

Retracted Web Forming Air Fan

The web forming air fan system is completely retractable from the web former to access the individual fan assemblies retraction is via pneumatic cylinders and operated from the HMI control panel.

Air Fan speed infinitely adjustable from 900 to 2100 rpm
Licker-In Roll Diameter 400 mm
Licker-In roll,
saw tooth wired or with pin lags 1200 to 2500 rpm

Web Forming Equipment

Belt & Carriage Cross Lapper

Our cross lapper system is made in two executions, the basic design for low input speed requirements, and the high-speed system for maximum production speed to meet the carding machine delivery speed.

The basic design is with single PVC feed belts with incorporated belt guiding device, cross lapping is executed with a mechanical carriage system controlled by timing belt drives for accuracy.

The high speed cross lapper is built in double belt execution the fibers are fed into the lapper via a double belt and continuously carried throughout the lapper between the belts for better fiber control and the least distortion. All drives are servo controlled.

Feed speed basic design lapper
up to 50 m/min

Feed speed
high-speed double belt lapper
up to 110 m/min

Working width from
2500 to 7000 mm

15 Roll Web Drafter

Web drafter design with up to 15 saw tooth wired rolls interacting in series of three rolls to re orient the fibers from the cross lapper to even out the fiber laydown as well as drafting out weight and increase line speed for light weight products to use the maximum carding machine capacity.
The upper rolls are lifted by hydraulic cylinders to allow free passage of 1000 mm between the rolls, each set of 3 rolls are controlled by servo motors for accuracy.

Working widths	from 2500 to 7000 mm
Roll diameter *depending on working widths*	from 200 to 350 mm

Needle Punching

Needle Punching Machinery

We manufacture and deliver different types of needle punching machinery suitable for the general non-woven production. For low density and lightweight products our mechanical design with a single shaft excenter drive is used.

Characteristics of our basic design are:

Stroke Amplitudes fixed	20, 40, 60 and 75 mm
Number of Stroke	maximum 600/min
Line Speeds	up to 10 m/min

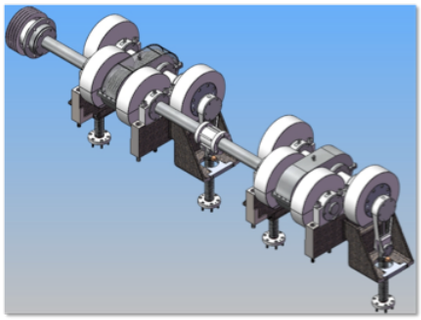
The TTS high-speed needle loom design is with oil filled crankcases suitable for all types of non-woven production, the design features for this type of needle looms are

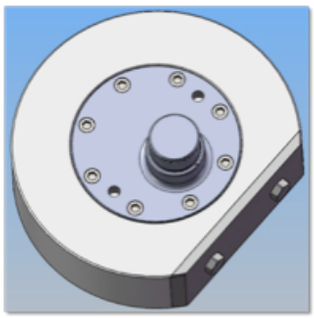
Stroke Amplitudes fixed	20,30,45,60,75 mm
Number of Stroke	maximum 1200 /min
Line speeds	up to 14 m/min

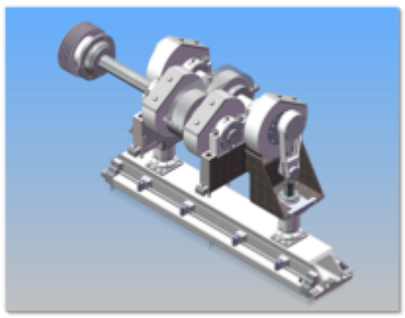
All our needle looms are built for a maximum working width of 7000 mm

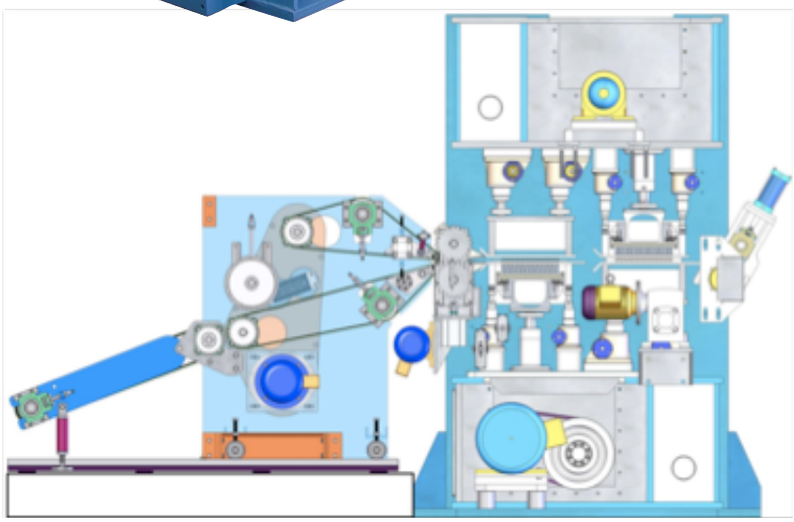
Needle boards and bedplates are pneumatically clamped for quick removal, bed and stripper plates are height adjustable by means of screw jack system encoder controlled. All looms can be supplied with either single or double needle beams in combination up/down stroke set up.

Needle Punching







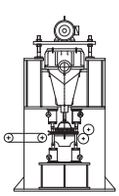


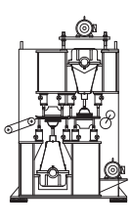
NEW High Speed Design Needle Loom

This newly developed high speed needle loom design is without any crankcases, the connecting rods connecting the excenter drive to the needle beam is with carbon bushings and they are water cooled in a close loop, additionally the crank shaft is further cooled by blowing ambient air onto it during operation.
The stroke amplitude is adjustable by exchanging the connecting discs of the excenter shaft the crankshaft is segmented and equipped with a counter balance shaft to eliminate vibration to a maximum.

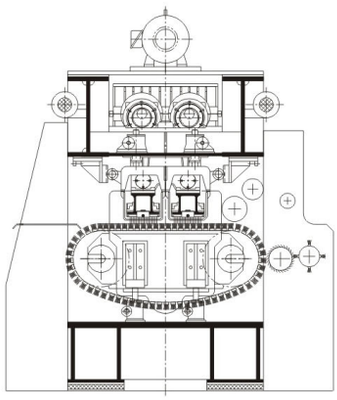
Stroke Amplitude	from 20 to 100 mm
Number of Strokes	up to 1600/min
Line Speeds	up to 15 m/min
Working width	up to 7000 mm

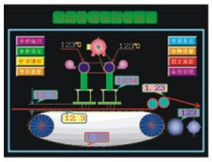
Single or double needle beam for up/down stroke combination.





Needle Punching





Velour Needle Punching Machine

The velour needle-punching machine is with double beam design and is either an in line or off line set up. The bedplate is a moving brush belt precisely driven by servo motor control, brush segments are easy exchangeable.

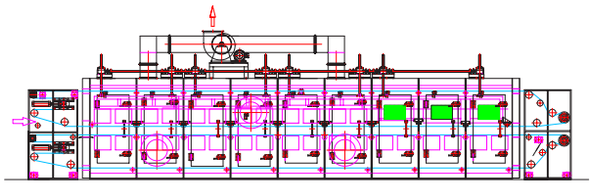
Needle capacities for both needle beams 14,000 per meter working width.

Stroke capacities	1600/min
Stroke amplitude	25 mm
Line speeds	up to 6 m/min

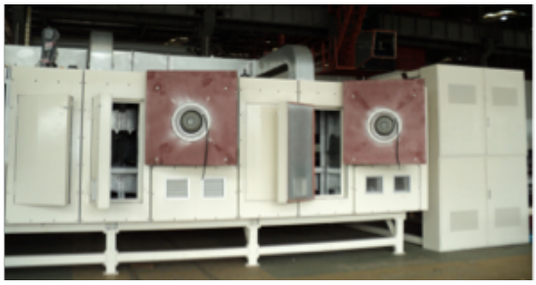
Thermo & Chemical Bonding

Thermo Bond Calendar

The hot oil heated thermo bond calendar design is delivered in two executions, one with a two roll design for nip and S loop treatment of light weight non woven material.
The high capacity design is with 3 rolls for specialty effects such as soft and singed sides finishes as well as for S loop combinations.
Both designs can be delivered with electrical heaters and oil filled calendar rolls or with a separate hot oil generator and double jacketed calendar rolls with rotary joints.
Working widths of up to 7000 mm



Double Belt Thermo Bond Oven



Thermo & Chemical Bonding Ovens

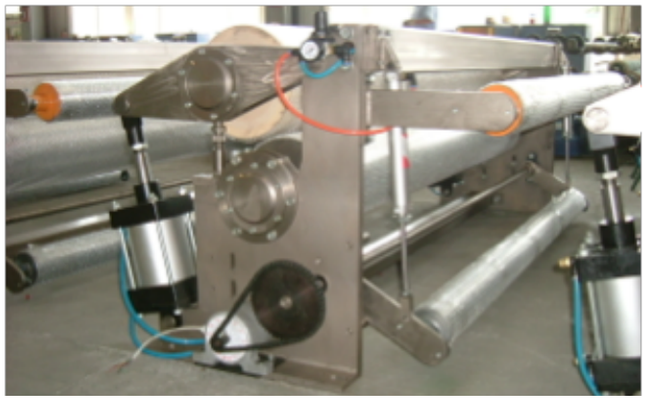
Thermo bond oven for non-woven products are built in either double or single belt design to accommodate every possible process, the heating medium in general is with direct fired gas burner systems precisely controlled air flows.
The belts are selected to suit the process and the fibers in use, from metal to glass fiber belt types in wide or narrow mesh designs.

Ovens are available in single or triple pass design
For technical details see separate specification sheets

Complete Calendar Finishing Line

Illustrated is a non-woven process line with in line carding machine followed by a 3 roll thermo bond calendar and automatic batch winder 2500 mm wide

Thermo & Chemical Bonding



Finishing and Application Padder

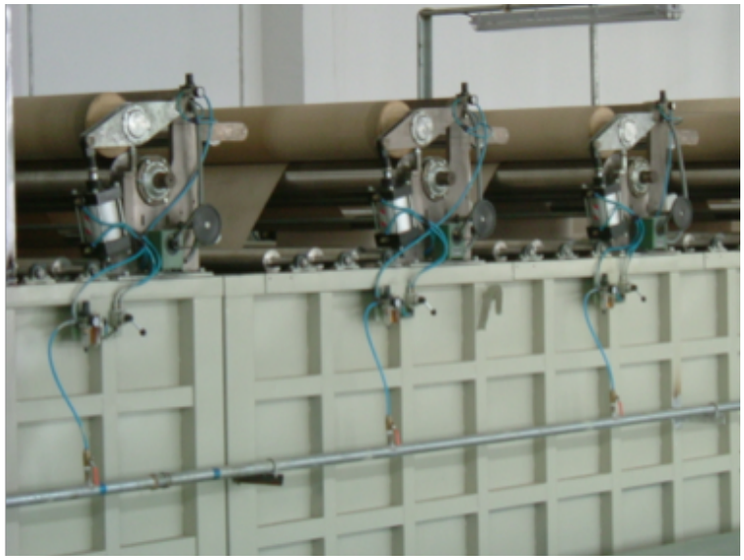
For either liquid or foam application to non-woven an application Padder is used followed by a drying and curing oven or tenter frame

Coating Equipment

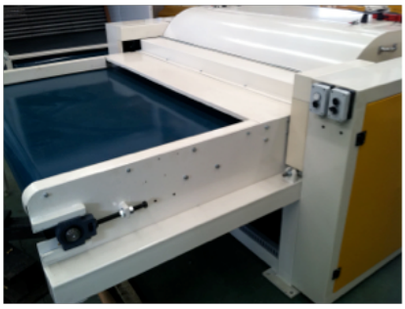
Coating of non woven material with PU, PVC or other substances is accomplished by using either a roll or knife over table coating machinery followed by a drying and curing oven or tenter frame. The accuracy and flexibility in adjustments of the coating machine is important for the finished products as well as for raw material savings.

Saturation Resin Application

This method is used to apply high amounts and concentration of resin onto a non-woven product by using a pre set solution in which the running nonwoven product is saturated, between each of the saturation tanks the materials is squeezed with a high pressure padder to retain the resin and extract the water before entering the next step or the drying oven.
A non-woven saturation system usually contains 4 to 5 saturating chambers and 6 extraction padders with different presser settings.



Winding & Converting

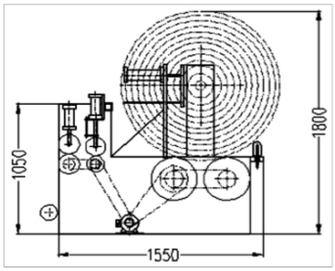


Two Roll Shredder & Guillotine Cross Cutter

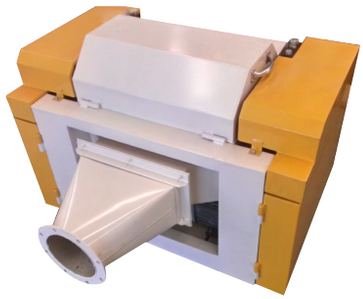
Semi Automatic Batch Winder

The semi automatic batch winder is used in needle punch as well as in light weight thermo bonded production and usually consist of two bed rolls and a simple cross cutting knife, longitudinal slitters are incorporated for edge and multiple center cuts

Working width
from 1800 to 7000 mm



Edge Grinder



Turret Batch Winder

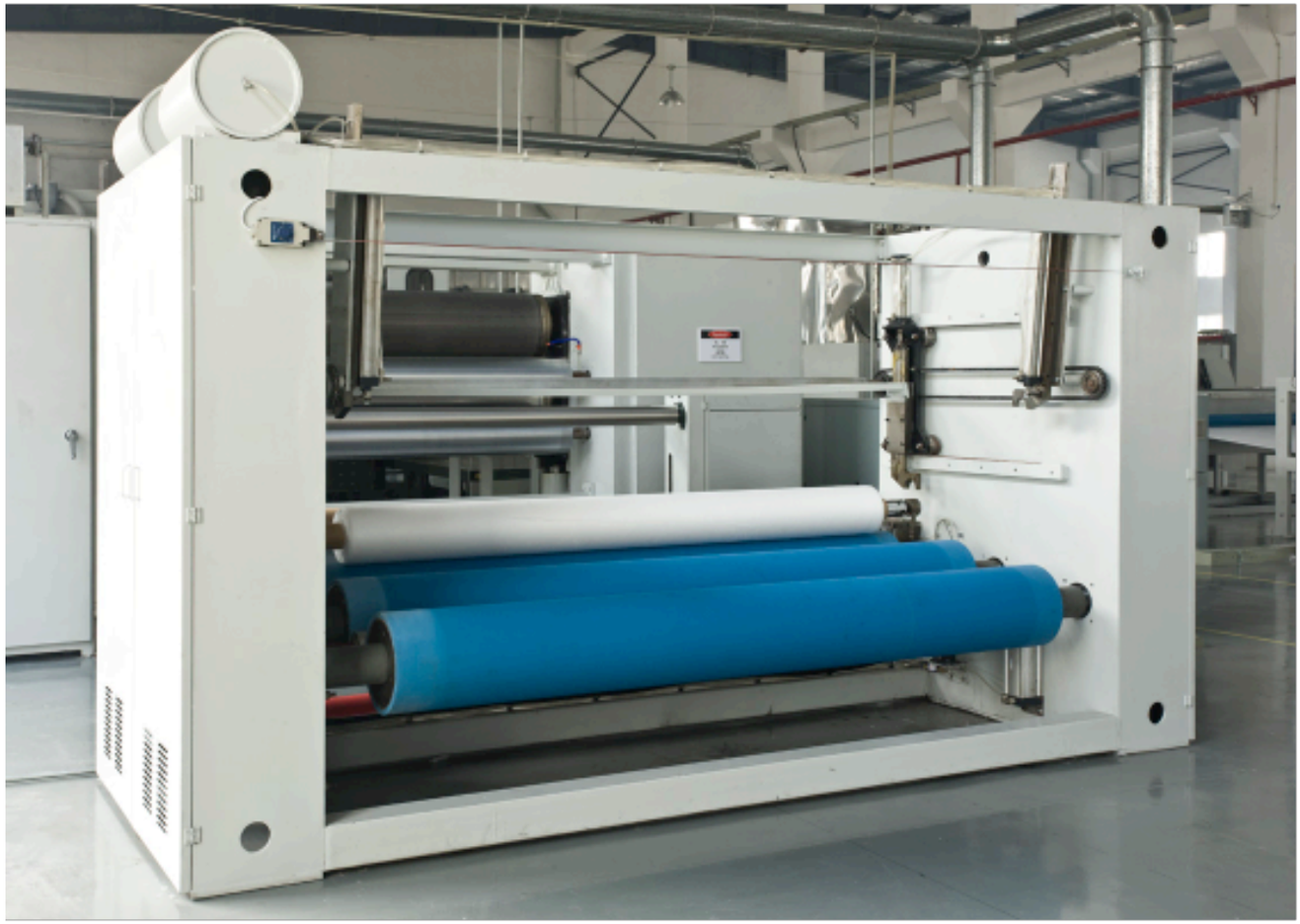
A turret batch winder is an automatic type winder and roll change is accomplished without stopping production by rotation the full roll position into a discharge position and the pre prepared empty one into the winding position.

Winding & Converting

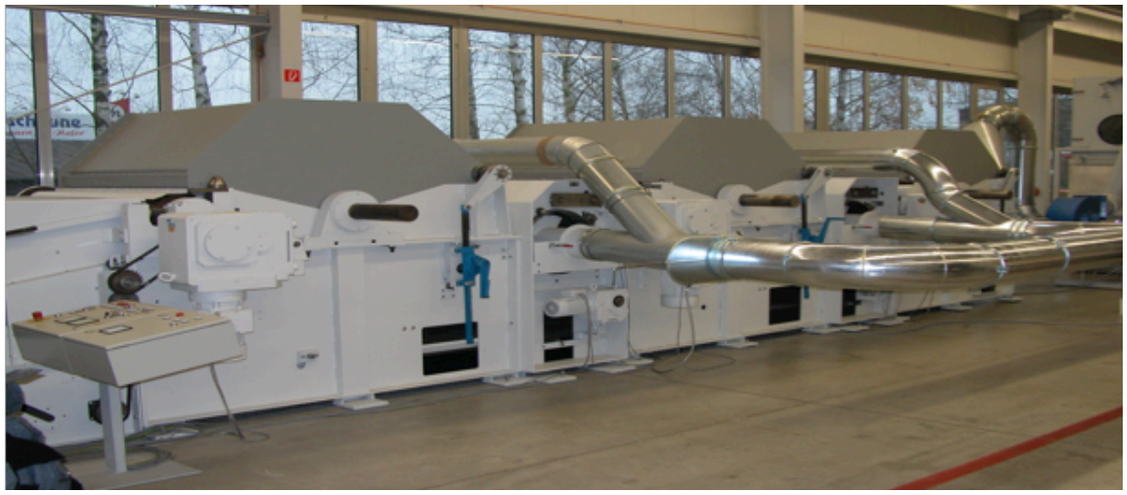
Automatic Batch Winders

Full Automatic batch winders with semi and automatic core change for high speed non-woven production lines.
Built in cross cutting device for light weight fabrics with cross driven chain knife, for higher loft with cross travelling large diameter motor driven circular blade.

Winding diameter of	up to 1500 mm
Line speeds of	up to 120 m/min
Working widths	up to 7000 mm



Fabric Tearing & Recycling



Rag Tearing Machinery

Rag tearing machine with large diameter tearing drums usually 5 to 6 in row each with different pin population to achieve maximum fiber results.
Bit return to front section via air conveying, rag feeder system according to size either large hopper feeder or chute feeder for smaller clippings.
Pin population from 25,000 to 95,000 per tearing drum depending on material.

Tearing drum diameter	1000 mm
Working widths	1000 & 1500 mm
	2000 mm *upon request*

Dust suction system included

Rag Tearing Line for OE Fibers 50

This tearing line is designed to produce OE yarn basis from textile clippings, usually in 6 steps, the clippings are transported from section to section via individual air separators to achieve the maximum results in final fiber quality. Pin population increase from one tearing position to the next one, unopened bit return to front clipping station to avoid unopened material is transported to the automatic baler.

Working width	from 1000 to 15000 mm
Tearing drum diameter	800 mm

Spun Lace & Spun Bond Lines

Spun Lace Production Line 51

Spun bond carding and hydro entangling equipment for the production of disposable wipers either in direct in line or with cross lapped out of line production, two carding machines are in use each produce a web with a different fiber component Suitable for synthetic fibers as well as cotton products. Double hydro entangling design with cylinder dryer systems

Line speed	up to 120 m/min
Working width	up to 3500 mm

Spun Bond Production Line

Spun bond production lines are available from 1,6 to 3.2 meter in working width to produce non-woven from PET, PP or PE pellets directly extruded into non woven material and precisely calendared to thickness and tensile strength.

Technology Transfer Services, LLC.

Our expertise and equipment selection starts from fiber to the finished products, with cost completive advantages.

Equipment ranges from fiber bale opening, weigh blending, fine opening, carding or aero dynamic web formation, cross-lapping with traditional carriage cross lapper and ultra high speed double belt cross lapper, as well as needle punching machines for all kinds of needled products, including velour or structure pattern needling. We also supply semi automatic, as well as fully automatic winder and pad stacking machinery including guillotine cross cutters and high speed slitters. We are a fully-staffed after-sales department with several factory trained, technicians. These include our PLC programmer and control cabinet designers who are available to assist with any equipment sold through Technology Transfer Services, LLC.

TTS, with substantial experience and expertise, enables technical discussions with our customers to help design, engineer, start up, and service the very best, non-woven, manufacturing lines at a competitive cost.

Complete Non Woven Production Lines for:

Needle Punched Non Woven

Working Width: Up to 7.0 Meter or 21 Ft
Stroke Capabilities: Up to 1500-rpm
Products: from 100 to 2500 gsm (3.5 to 88 oz)

Thermo Bonded Non Woven

Working Width: Up to 7.0 Meter or 21 Ft
Products: From 40 gsm to 3000 gsm (up to 105 oz/yd2)
Process Speed: Up to 20 m/min or 65 ft/min
Production: carded 400 Kg/per 1 M Working Width/hr

Air Lay Working Width: from 1.5 to 4.0 M (60 to 157 Inch)
Production Air Lay: up to 2.200 kg/hr

Spun Lace Non Woven

Working Width: Up to 3950 mm or 147 inch
Process Speed: Up to 100 m/min or 328 ft/min
Product Range: 30 to 240 gsm or 0.9 to 7-oz/yd2

Vertical Lapped Non Woven

Working Width: Up to 3000 mm (118 Inch)
Products: from 500 to 4000 gsm (17 to 141 oz/yd2)
Capacity: up to 750 Kg/Hr (1650 Lb/hr)
Loft: from 12 mm to 150 mm (½ to 6 inch)

Nonwoven Coating & Saturation Equipment

Working Widths: Up to 4.0 Meter

Needle Punched Geo Textile Non Woven

Working Width: Up to 7.0 Meters or 21 ft
Products: From 100 to 600 gsm (3 to 17 oz/yd2)

Recycled Fiber Non Woven

Working Width: Up to 4.5 meter or 177 Inch
Products: Up to 2500 gsm or 73 oz/yd2
Capacity: Up to 2.200 Kg/hr or 4.800 Lb/Hr
With Phenolic or Synthetic Resins or without

PP Spun Bonding Non Woven

Working Width: Up to 3.2 meter or 105 Inch
Process Speed: Up to 400 m/min or 1.310 ft/min
Product Range: 10 to 160 gsm or 0.3 to 5 oz/yd2
Single or Double Beam lines available

Fabric Tearing & Fiber Recycling

Working Width: Up to 2.5 meter (100 Inch)
Capacity: Up to 1500 Kg/Hr (3.300 Lb/Hr)
Number of Tearing Drums: Up to 6
Diameter of Tearing Drums: 1.000 mm (40 Inch)

Powder & Granulate Scatter Coating

Powder Applicator Single
Double Through Granulate Applicator

IR Pre Heater Systems