

# COATING & TECHNICAL TEXTILES

BREATHING LIFE INTO  
CUSTOM-MADE  
INDUSTRIAL FABRICS



For Textile Processing Machines

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# *i*ngineering

## *i*nnovative engineering

*i*ngineering (**Innovative engineering**) is a customer-centric approach that enables Yamuna Machine Works to truly enrich and empower its customers in India and abroad with cutting-edge solutions. This unique brand of smart engineering had helped Yamuna build business and relationships on the very foundation of customer satisfaction. No wonder, Yamuna has carved a special niche for itself among the leading manufacturers for textile processing, finishing and allied industries.

### **DESIGN. DEVELOP. DELIVER**

At Yamuna, we design, develop and deliver an extraordinary line-up of state-of-the-art textile machinery including Hot Air Stenters, Denim Finishing Range, Hydraulic Jiggers, Coating Lines, Singeing Machines, Polymerisers, Thermobonding Lines, Dye Pedders, Drying Range, Shrinking Range, Rope Scouring, Washing Range and Dipping Lines-all manufactured to global standards of excellence.

### **TECHNOLOGY THAT'S TESTED AND TRUSTED FOR 25+ YEARS**

There's trust in every thread and our customers count on it! Some of the biggest brands in fashion fabrics, furnishing and industrial textiles emerge from the womb of Yamuna Machine Works, displaying in full glory their quality and character-be it the soft n smooth luxurious feel of chiffon, the angry ruggedness of denim, the rich texture of the carpet, the durability of the corduroy or the heavy-duty outdoor spirit of a canvas tent. With 25+ years of experience, Yamuna has developed a high level of sensibility to the special needs of customers and provides them with the right machine, at the right time and of course, the right pricing!



### **STATE-OF-THE-ART, STRAIGHT-FROM-THE-HEART**

Yamuna's sprawling 10,000 sq mtr. modernised plant is located in the vibrant and energetic industrial town of Vapi (South Gujarat), just 170 km from Mumbai – the financial capital of India. But there's more to textile machinery than just mechanical, electrical and electronic components. The company has dynamic Design and R& D Team which is setting new benchmarks thanks to its inspired efforts to raise the bar of excellence.

Yamuna has its HO in Mumbai and a proactive sales and after-sales service network all over India. They are the real nuts and bolts who build the last mile bonding with our customers.

### **TEAM YAMUNA... BEST IN CLASS**

Here is a team of talented professionals who bring to the drawing board not just their expertise, but wisdom distilled from years of experience. Where commitment to quality and time frames is dictated not merely by the clauses in the contract, but an intense self-desire to be the best in class. No job is too small and no project too big, simply because there's almost a meditative scientific approach to work. Here, success isn't defined by the bottom line in the balance sheet but measured by the respect and goodwill earned over 25+ years!

### **A GLOBAL RING TO OUR ENGINEERING !**

As India takes giant strides towards becoming an industrial powerhouse, it's defining moment for Yamuna. The Company is perfectly poised to explore and expand beyond geographical boundaries and organically progress in the world stage. Multinational textiles engineering companies and fashion labels will only be eager to collaborate with an Indian partner who brings a global ring to engineering!





## INTRODUCTION TO COATING AND LAMINATION

There is a vast scope of fabric value addition by doing processing on the finished fabric in the form of Coating and Lamination.

Coating is a process done for Changing Fabric Properties to achieve different functionality.

Coating is basically divided in two form i.e Chemical Coating and Film Coating. Film coating is widely also called as Lamination.

### DIFFERENT SEGMENTS OF BUSINESS WHERE COATING AND LAMINATION ARE REQUIRED

• <b>Agrotech</b> -	Shednet, Mulchmat, Antihail Net, Bird Protection Net, Crop Covers, Fish Nets, Pondliners, Nonwovens
• <b>Buildtech</b> -	Architectural Membrane, Canvas Tarpauline, HDPE Tarpauline, Awinings, Canopy, Floor And Wall Covering, Scaffolding Nets, Construction Grids
• <b>Clothtech</b> -	Shoelace, Bedsheets, Garments Fabric, Interlinings, Zipfastners, Elastic Narrow Fabric, Nonwovens.
• <b>Geotech</b> -	Geotextiles, Geonets, Geogrids, Geopipes, Geocomposites, Prefabricated Vertical Drain, Geotubes.
• <b>Homotech</b> -	Fiberfills, Carpet Backing Cloth, Stuffed Toy, Mattresses, Flock Fabric, Curtain Fabric, Furnishing Fabric, Blackout, Blinds, Carpets.
• <b>Indutech</b> -	Conveyer Belts, Bolting Cloths, Battery Seprator, Backing Cloth For Coated Abbresive, Glass Fiber Fabric, Drive Belts, Industrial Garments, Tyrecord Fabric
• <b>Meditech</b> -	Antimicrobial Fabric, Bedsheets, Nonwovens, Surgical Dressing Fabric, Surgical Fabric, Sanitary Fabric, Sanitary Ware (Pads And Daipers).
• <b>Mobiltech</b> -	Seatbelts, Seat covers, Automotive Interiors, Carpets, Headliners, Tyrecord Fabric, Airline Disposable.
• <b>Oeko Tech</b> -	Fabric Manufactured From Ecological Protection Textiles
• <b>Protech</b> -	Raffia, Soft luggage, Hessian Cloth, Sack.
• <b>Packtech</b> -	Uniform Fabric, Fr / Fp, Bulletproof Fabric, Jackets, Chemical Retardant Fabric, NBC (Nuclear, Biological And Chemical) Suits. Hazmat Suits, High Visibility Clothing, High Altitude Clothing, Industrial Gloves
• <b>Sportech</b> -	Sports Composites, Parachutes Fabric, Ballooning Fabric, Sleeping Bags, Sports Nets, Shoes Composites, Tent Fabric

## DIFFERENT TYPES OF COATING AND LAMINATION PROCESSES AND ITS APPLICATION AREAS:

- Knife Over Air
- Knife Over Roll
- Dip Coating
- Lick Coating
- Rotary Screen Coating
- Gravure Coating
- Spray Coating
- Hot Melt Coating
- Scatter Coating
- Dot Coating
- Adhesive Lamination with different substrates like (Film to Film, Film to Fabric, Fabric to Fabric, Fabric to Paper etc.)

## DIFFERENT PROPERTIES ACHIEVABLE THRU COATING :

Water Proof, Water Repellent, Single Sided Dyeing, Fire/ Flame Retardant Finish, Anti Stain Finish, Soil Repellence, Abrasion Resistance, Breathable, Hydrophilic/ Hydrophobic Coating, Thermo Sensitive Effect., Wax Touch, Rubber Touch, Soft Feel, Glossy Look, Glitter Look, Indigo Colour Fixation, Stiffness, Colour Application for mix shade, to enhance yarn character in garment.

### TECHNICAL SPECIFICATION :

Available in different web width ranging from 1600 mm to 6000 mm

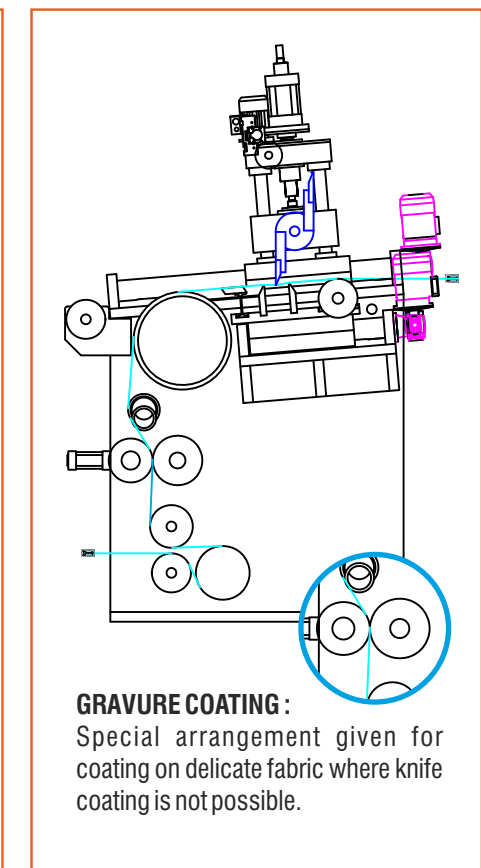
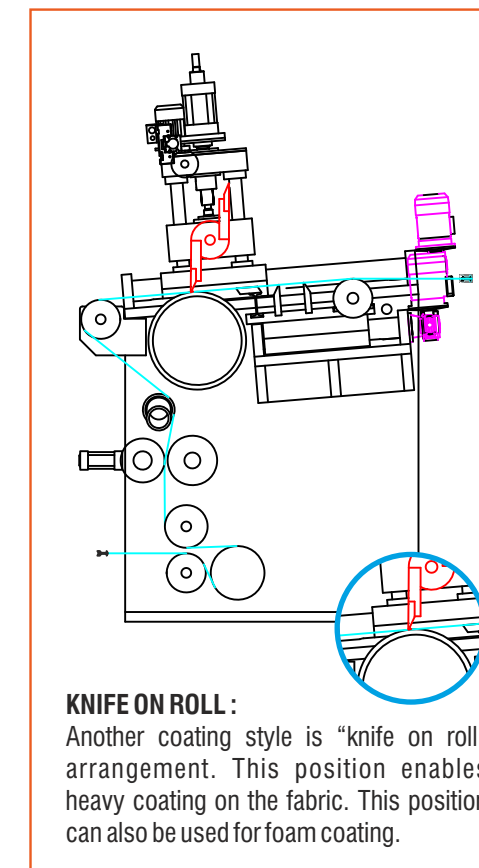
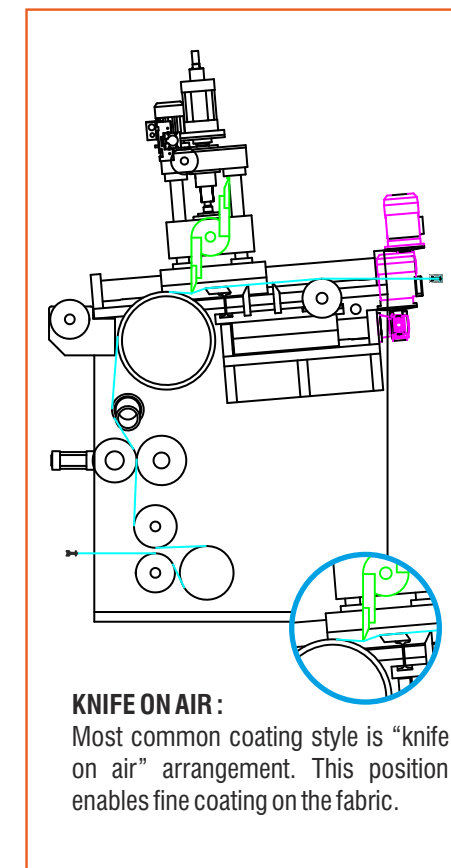
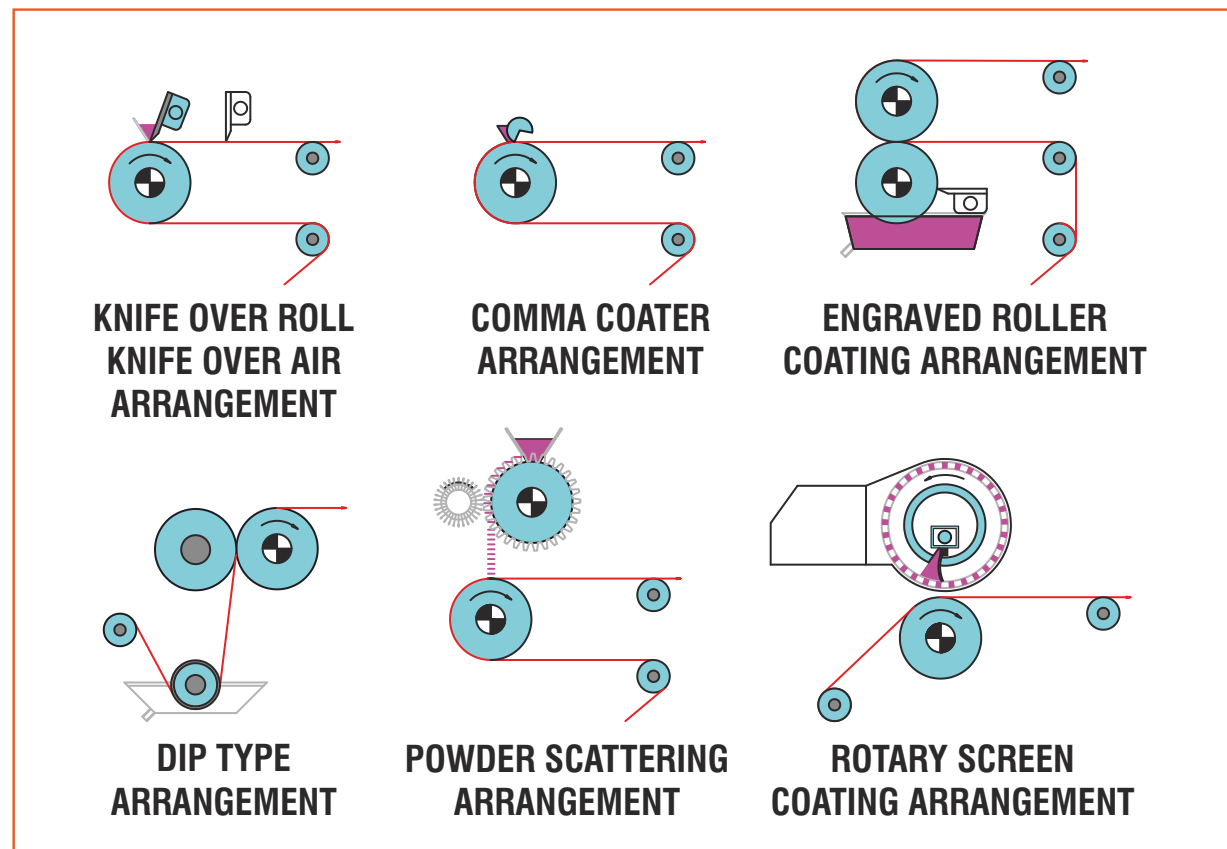
Machine speed ranging from 2 mtr / min to 100 mtr / min

Coating range from 3 gsm to 1500 gsm.

Heating arrangements: Thermic Oil Radiators, Steam Radiators, IR Heaters, Gas Fired Burners, IR Burners.

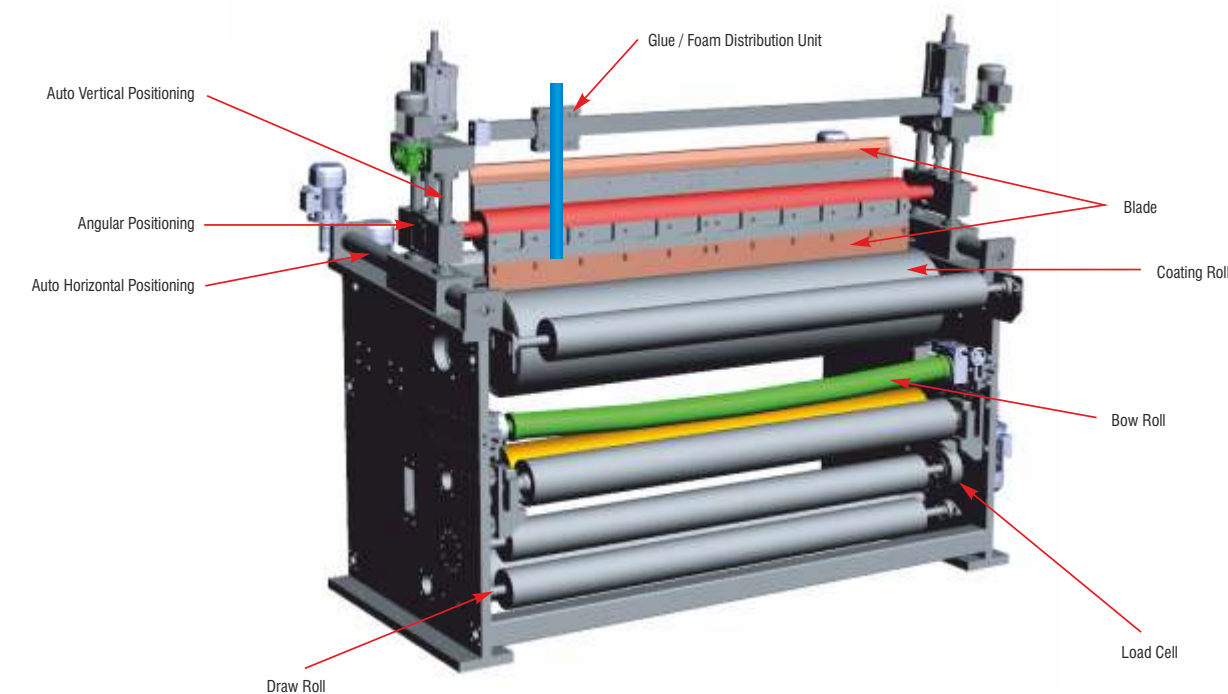
### DIFFERENT TYPES OF MACHINES :

1. Pu - Pvc Coating Line Single Station as well as Two Station
2. Paper Release Line
3. Finishing Line for Spunlace Fabric
4. Foam Coating Line for Needle Punch as well as Spunlace Nonwoven.
5. Dyeing and Printing Line for Spunlace Nonwoven
6. Thermo Bonding Line for Nonwoven
7. Calendar Machine for Needle Punch Nonwoven
8. Powder Scattering Line
9. Dot Coating Line
10. Padding and Finishing Line for Wovens, Nonwovens
11. Lick Coating Line for Carpets
12. Back Coating Line for Woven, Tufted and Nonwoven Carpets
13. Back Coating Line with Lamination for Carpets
14. Dipping Line for Tyre Cord Fabric
15. Coating Line for Geogrid
16. Dipping Line for Geogrid
17. Coating Line for Shoe Insole
18. Heat Setting Line for Shade Net
19. Coating Line for Glass Fiber Fabric
20. Coating Line for Knitted Fabric
21. Owening Printing Line
22. Single and Double Dot Coating Line for Fuseable Interlinings
23. Coating Line for Abreisve Fabric
24. Coating Line for Blackout Fabric
25. Wax Coating Line
26. Primer Coating Line for Digital Printing
27. Universal Lamination Machine
28. Thermo Bonding Line for Medical Textiles
29. Customised Solutions for Your Unique Needs



**TECHNICAL SPECIFICATION :**

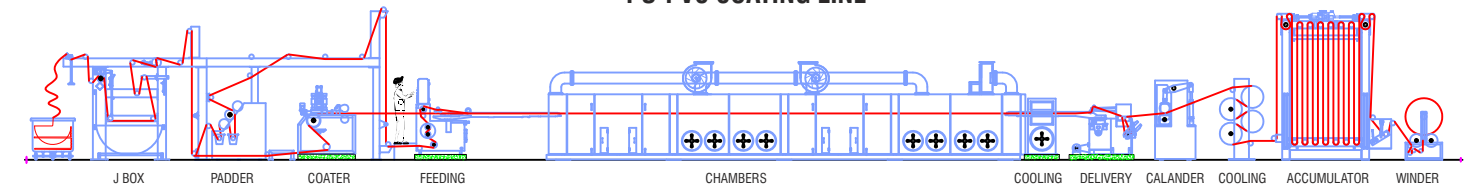
- Equipped with multiple coating configurations like “knife on air”, “knife on roll” and “gravure coating”. Rotary screen arrangements can also be provided upon request.
- High precision holder can be adjusted at any position for accurate coating on the fabric, comes with two coating blades of different profiles of customer’s choice to avoid time consuming change overs.
- Manual paste guard for coating width adjustment, option for automated paste guard also available upon request.
- Micro adjustment of coating head, horizontal as well as vertical is on ac motor, angular adjustment thru hand wheel.
- Be it a paste coating or foam coating both are possible on single coating head.
- Available in different web width ranging from 1600 mm to 6000 mm.
- Hard chrome plated main coating roller driven by ac motor with VFD, synchronized with down line machines.
- Position of the head is displayed on the screen and recipe can be saved for future use.
- Pneumatic cylinders are provided for quick release of the blade during operation in case of emergency.
- Special design to maintain even tensions on the fabric throughout the process.
- Machine speed ranging from 2 mtr / min to 100 mtr / min
- Coating range from 3 gsm to 1500 gsm.
- Heating arrangements: Thermic Oil Radiators, Steam Radiators, IR Heaters, Gas Fired Burners, IR Burners.
- Versatile and Modular Coating System to produce a wide range of products.
- Electronic scales for all axis. display of all setting / positions on digital displays.
- Screen Printing single screen with pneumatic squeezing system can be integrated in the same system.
- Engraving roller based coating systems.
- Application system by pipes, try or traversing type applicator with auto dosing system with pump.
- Foam generators with foam feeding system can be provided.
- Embossing / Glossy Finish / Matt Finish device Hard Chrome Plated Roller with Hydraulic Pressure to a Rubber Roller to achieve desired final finish on the coated material.



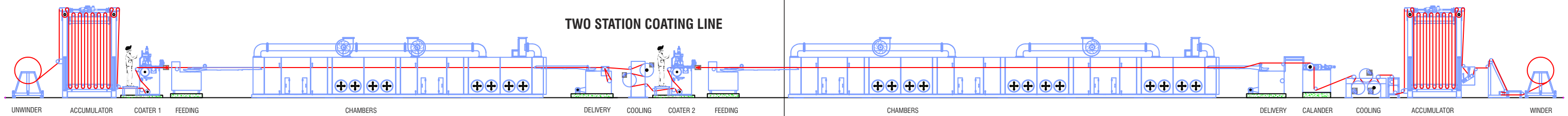




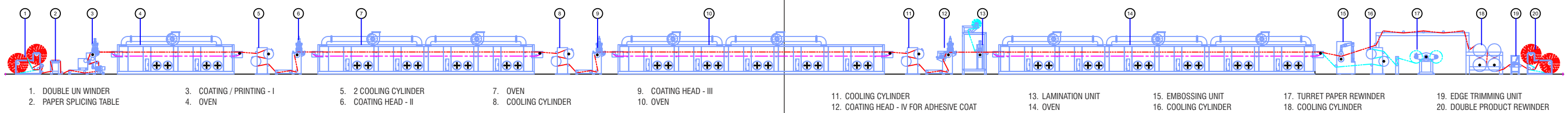
PU-PVC COATING LINE



TWO STATION COATING LINE



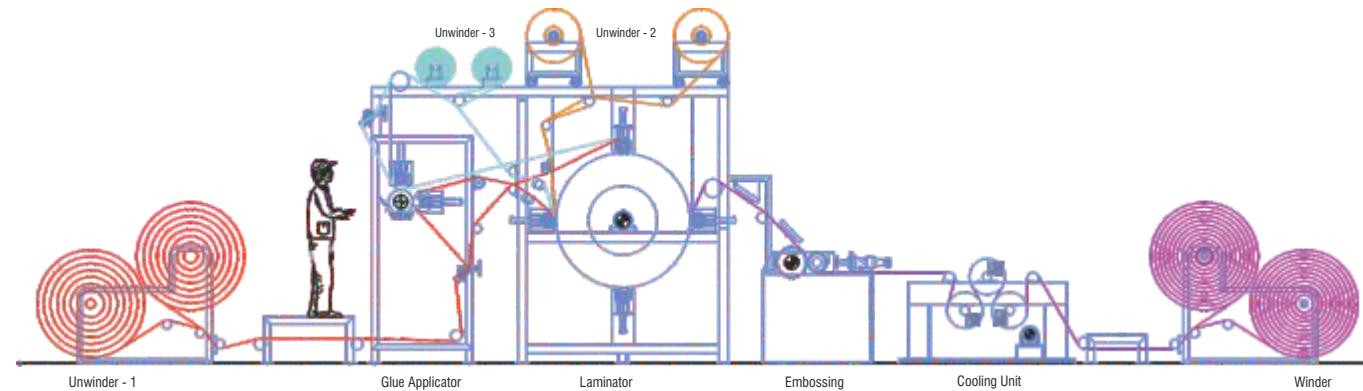
4 COAT PAPER LINE





Lamination of Fabric to PVC film, membranes, fabric, Nonwovens etc is possible. Machine comprise of a glue applicator (gravure type) followed by laminating of fabric to fabric, curing on a heated drum, smoothening calender, cooling trimming and winding unit.

## Universal Lamination Machine



### DIFFERENT TYPES OF LAMINATION :

Fabric to Fabric	Fabric to Films	Nonwoven to Nonwoven
Fabric to Membrane	Fabric to Nonwoven	Fabric to Foam

The machine is suitable with ADHESIVES / POLYMERS SUCH AS PE (LDPE, HDPE), PP, PES, PA, EVA, PU, PUR.

Working Width available from 1.6 mtrs to 2 mtrs. Higher Lamination units can be designed upon specific application of the customer.

### BASIC LAMINATION PROCESS :

The Basic Process involves two or more substrates that are fused together through the use of heat, adhesives, or pressure onto a fabric to improve some aspect of the fabric.

Different functionality can be achieved thru Lamination such as Water Proof Property, Breathability, Thermo Sensitive Effect, Soft Feel, Glitter Look, Stiffness, Blackout, Double Color Effect by fusing different Textured Fabrics.

Heating Arrangement is thru Thermic Oil which ensure even heating throughout the surface of the Heating Drum which helps Cure the Adhesive / Hotmelt Film to achieve proper bond strength on the composite fabric.

### APPLICATIONS :

- PROTECTIVE CLOTHING:** Film/Textile Laminates for water and wind resistant clothing for Sports and Leisure wear, Laminates for Military Clothing, Special Clothes for other demanding professional Environments
- MEDICAL END PRODUCTS:** Film /Textile laminates for operation theatres, Laminates of 3 or more layers for mattress coverings, special wound dressings.
- AUTOMOBILES:** Laminates for Seats, Roofing, and Door coverings.
- HOME TEXTILES:** Laminates for Furniture, Floor Coverings, Anti Slip Coatings, Cleaning Wipes for House Hold use, Blackouts, Blinds and Carpet Back Coating etc.
- CLOTINGS:** Shoe Laminates, Pull over & Jackets, Interlining, Lingerie, Baby underlay and mattress protectors.
- BUILDING MATERIALS:** Roof coverings, Insulation materials And many more custom application

## INTRODUCTION TO NONWOVENS

### APPLICATIONS OF NONWOVENS

Nonwovens find numerous applications ranging from baby diapers to industrial high performance textiles. Some of the important areas where nonwovens are treated as primary alternative for traditional textiles as Geotextiles, materials for building, thermal and sound insulating materials, hygienic and health care textiles and automotive industries. Nonwovens are also used in cover stocks, agriculture, aerospace, home furnishings etc. Although it is not possible to list all the applications of nonwovens, some of the important applications are listed below.

### FEATURES AND SPECIFICATION OF DRYER

- Variable air flow for top and bottom on fabric.
- Hot air penetration and convection with high heat efficiency
- Heating methods: steam, oil, gas & electrical
- Product width : 2,200mm to 4,200mm or according to customers' requirements.
- Product specification: 40 - 400gsm

### NONWOVENS PRODUCTS :

- Agriculture and Landscaping
- Automotive
- Clothing
- Construction
- Geotextiles
- Home Furnishings
- Health Care
- Household
- Industrial/Military
- Leisure, Travel
- Personal Care and Hygiene
- School, Office

### THERMO BONDING OVEN

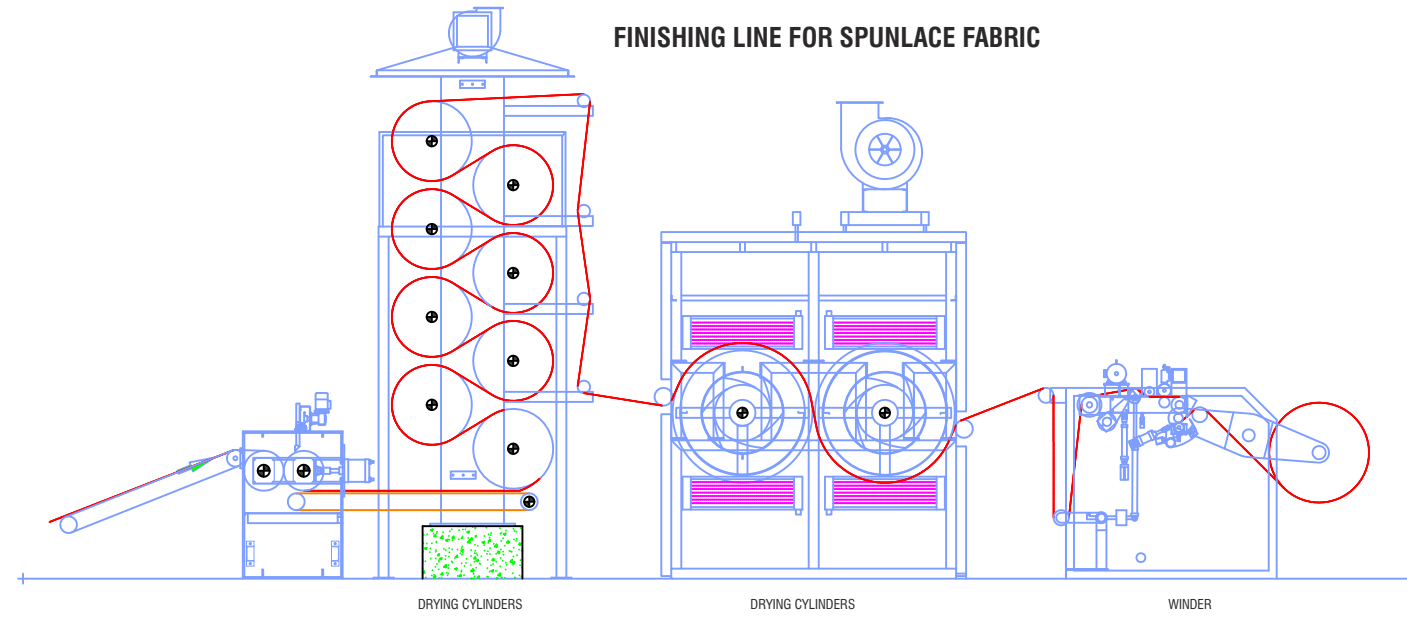


### CALENDER

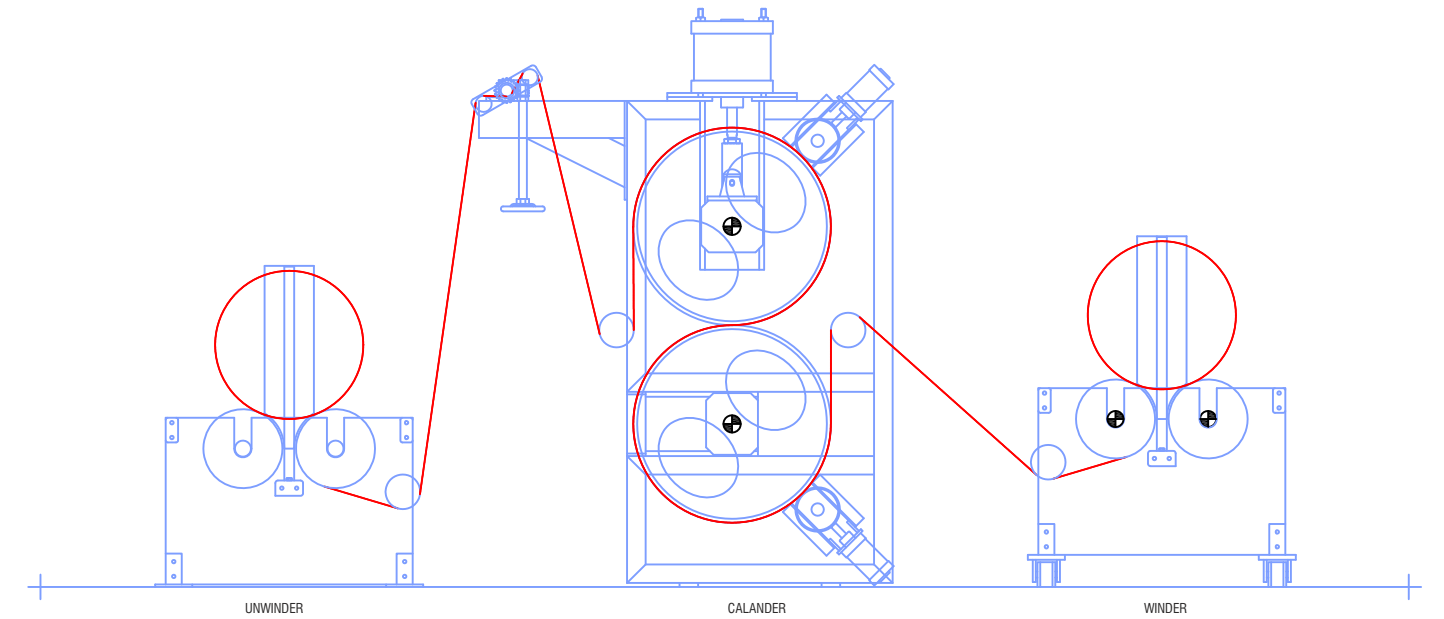




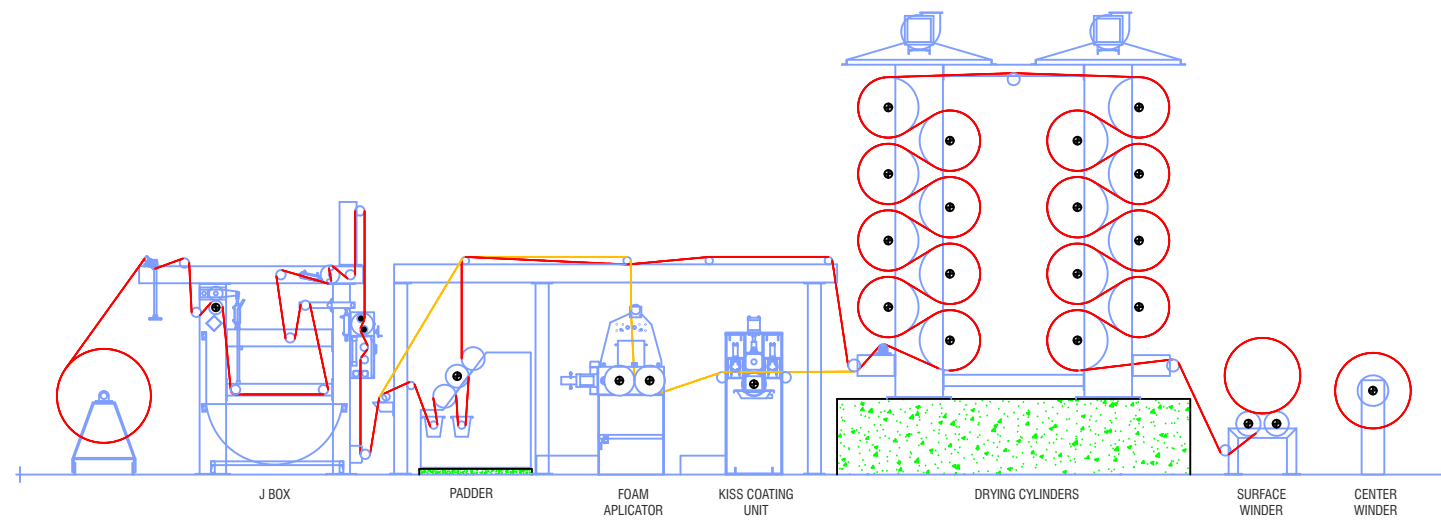
### FINISHING LINE FOR SPUNLACE FABRIC



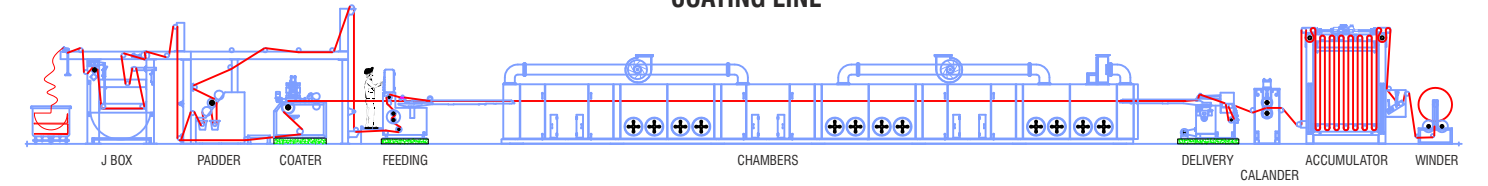
### CALENDER MACHINE



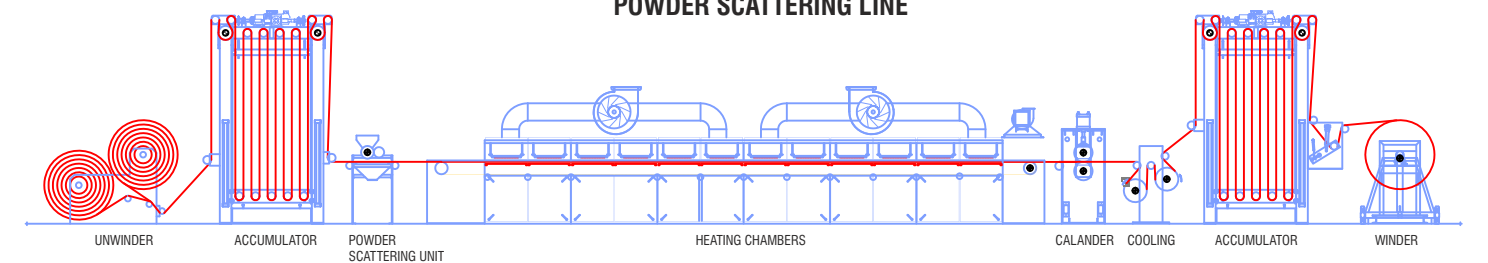
### PADDING / FINISHING / FOAM APPLICATOR LINE FOR NEEDLE PUNCH FABRIC



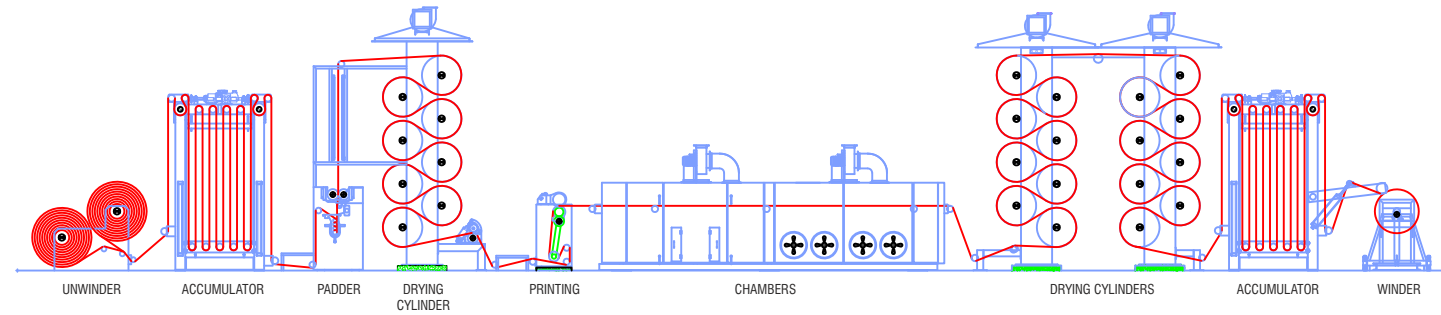
### COATING LINE



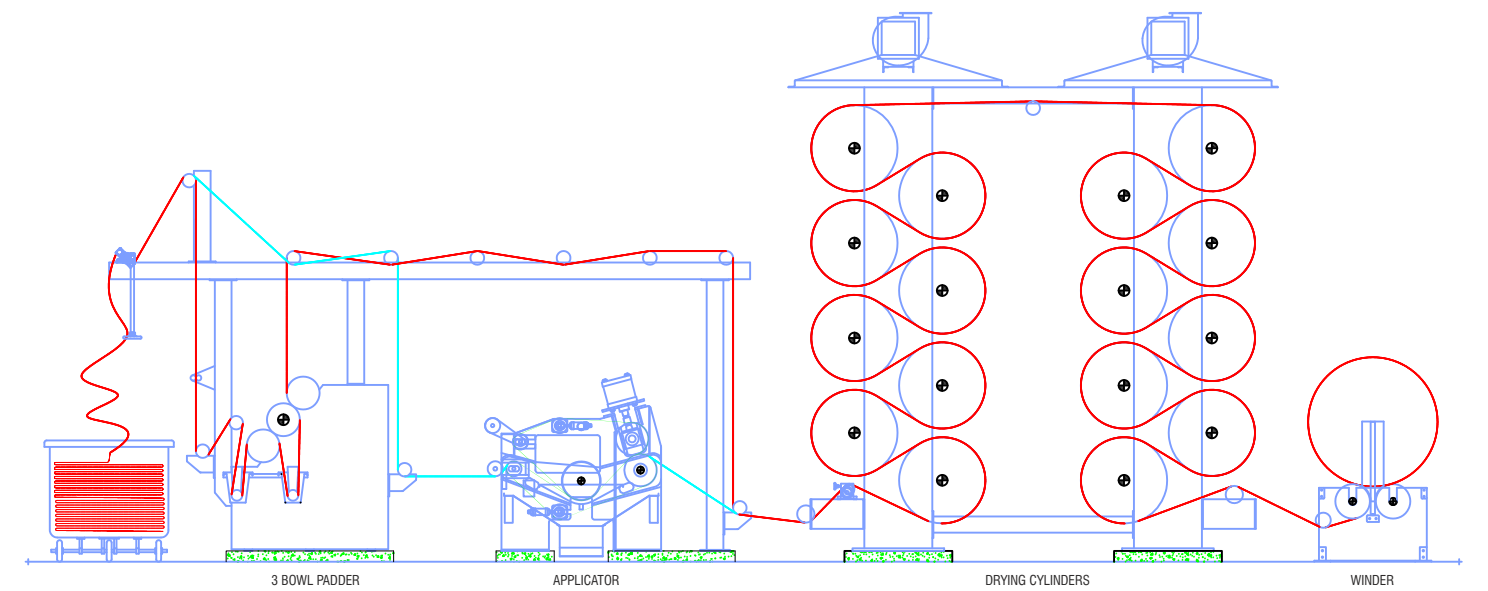
### POWDER SCATTERING LINE



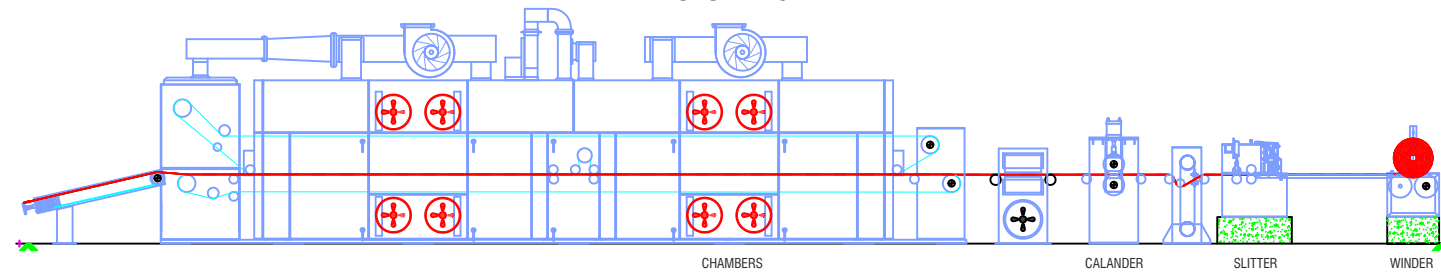
### DYEING & PRINTING LINE FOR SPUNLACE FABRIC



### SATURATOR / FINISHING / PADDING LINE FOR NON WOVENS



### THERMOBONDING LINE





### AFTER TUFTING OR WEAVING OF CARPET, IT IS MUST TO DO COATING FOR FOLLOWING REASONS

- To get better dimension stability.
- To obtain tuft lock strength.
- Avoid damaging the carpet during installation and transportation.
- To impart a better finish and look.
- To get value addition in terms of possibility of applying various coating eg: Gel backing, felt backing, action backing etc.

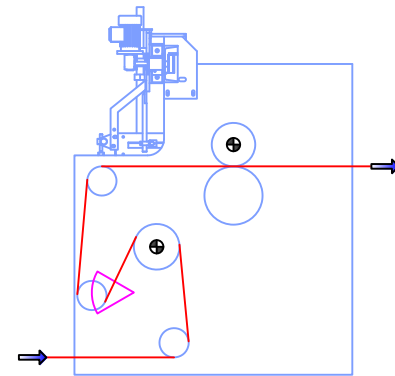
### TYPES OF COATING

- Gel backing
- Pre coating
- Two shot gel backing
- Felt/ action backing

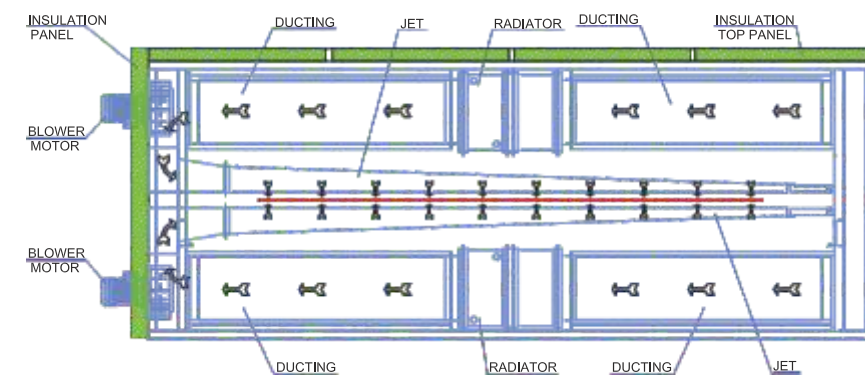
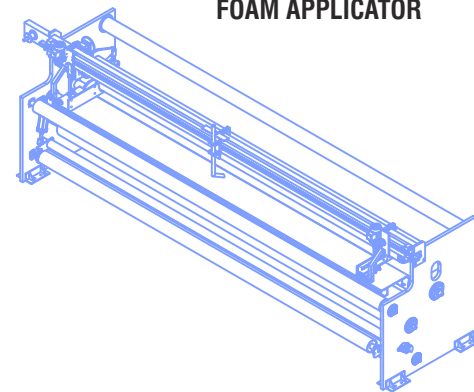
### TYPES OF CHEMICALS CAN BE USED/ PROCESSED ON OUR MACHINES

- Natural Rubber
- Acrylic Base Compound
- All other water based and synthetic compounds
- Styrene Butadiene Rubber Latex
- EVA Compound

Capable of developing customised and multipurpose coating lines for any type of carpets, mats and rugs SPECIAL DESIGN OF STENTER OVEN for back coating carpets/rug with temperature sensitive yarn. Separate heating source for top and bottom side air flow. This enables to regulate temperature separately in top and bottom side of the oven which enables the carpet to be finished with different temperatures of front (pile side) and back (coating side).



FOAM APPLICATOR



### FOR STENTER CROSS SECTION

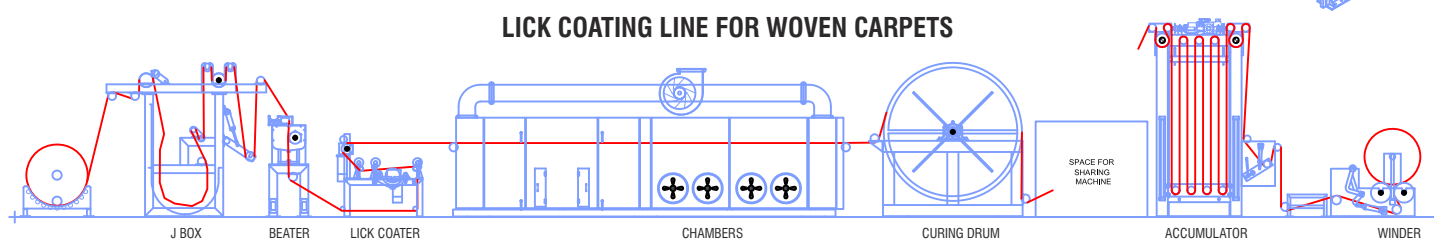
Separate heating source for top and bottom side of carpets.

Temperature can be controlled individually for pile side and coated side of carpet.

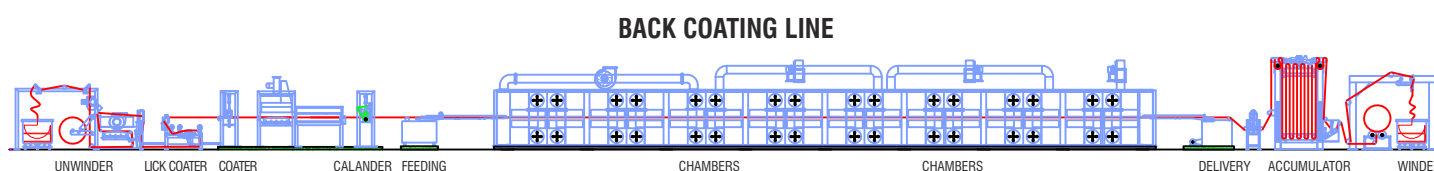
Essential feature for back coating temperature sensitive yarn carpets, nylon, acrylic etc.

Heating can be with Thermic oil heating or direct gas fired burners.

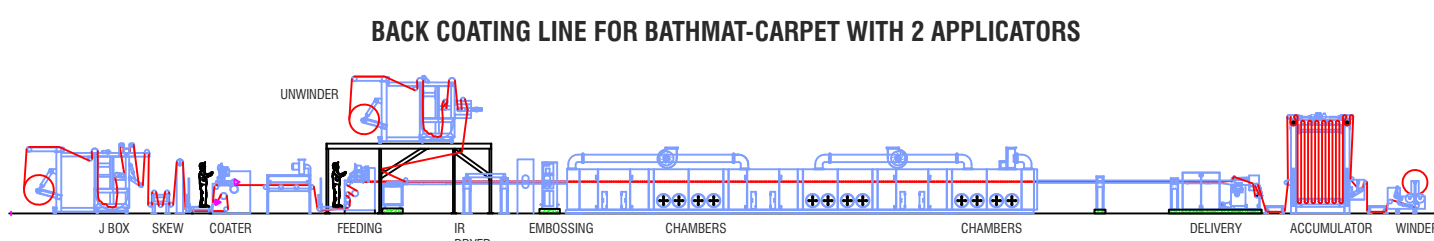
Chains with pins and conveyor support system is also available for handling heavy carpets while coating.



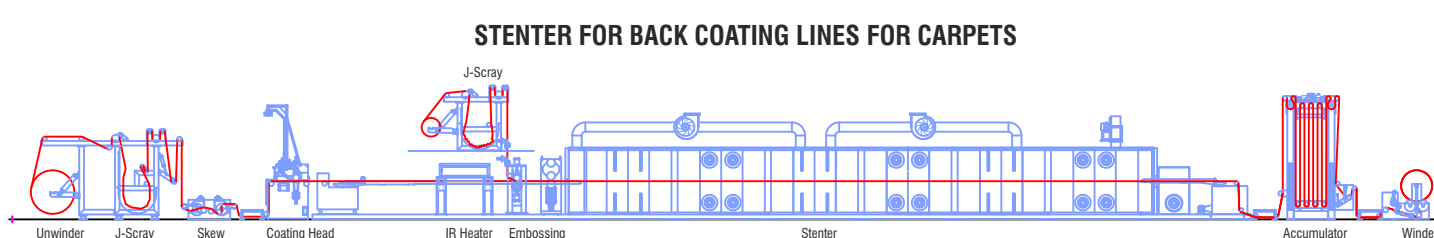
LICK COATING LINE FOR WOVEN CARPETS



BACK COATING LINE



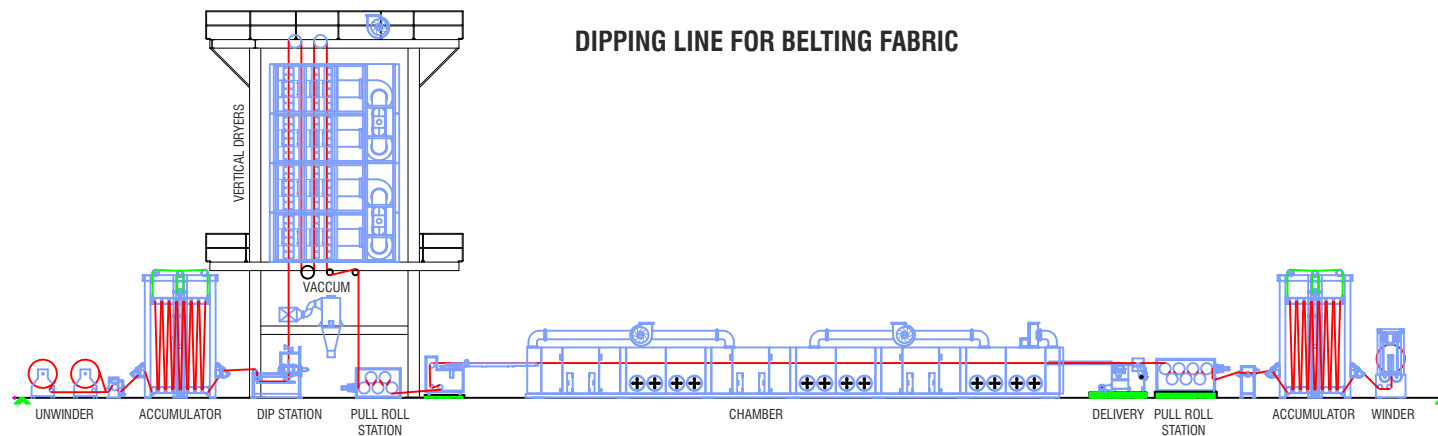
BACK COATING LINE FOR BATHMAT-CARPET WITH 2 APPLICATORS



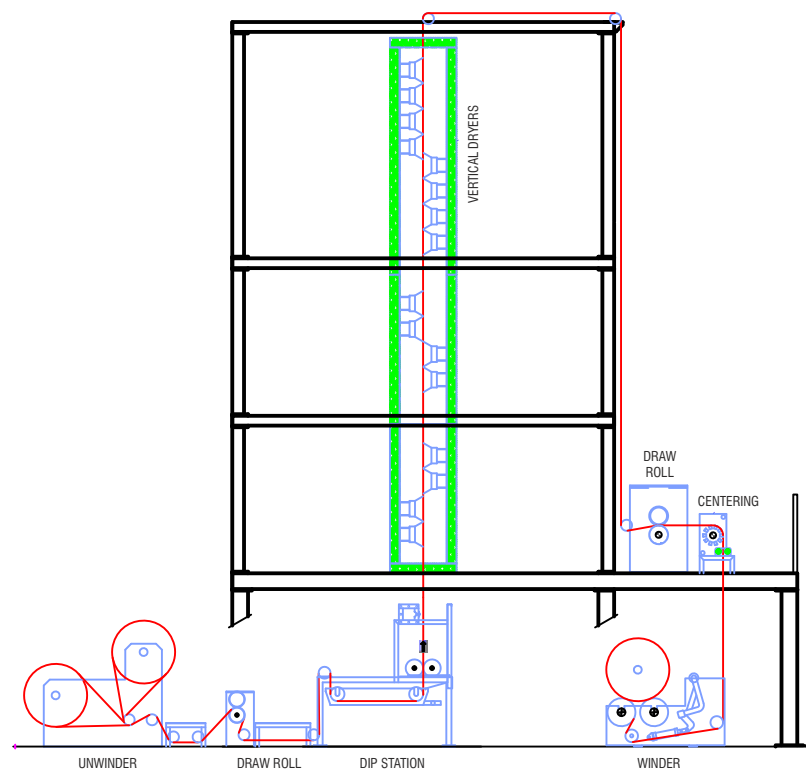
STENTER FOR BACK COATING LINES FOR CARPETS



**DIPPING LINE FOR BELTING FABRIC**



**DIPPING LINE FOR GLASS FIBER FABRIC**

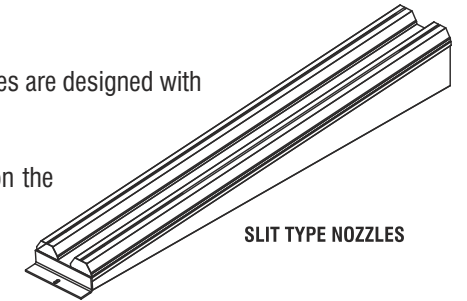


**TECHNICAL SPECIFICATION :**

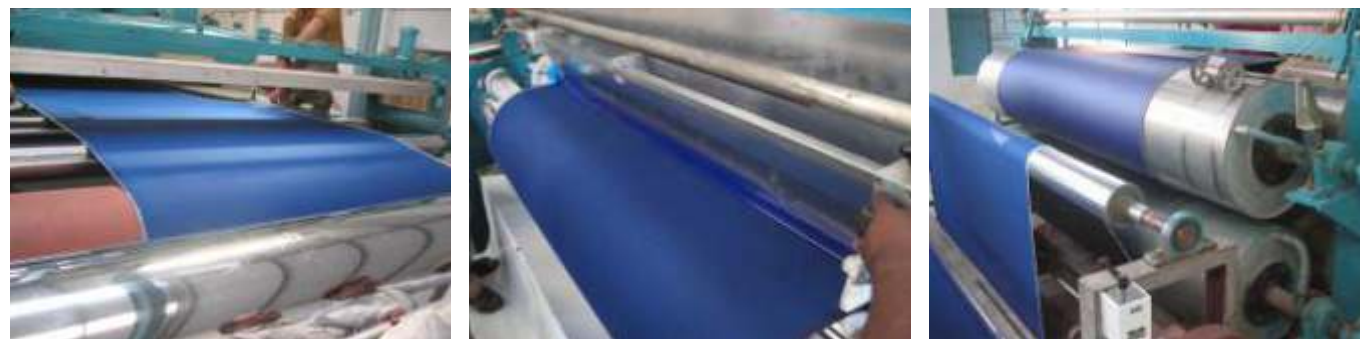
- All the rollers in Dipping unit are positive driven.
- All the rollers in dryer are positive driven.
- Pyrometers are used for all chambers for moisture controlling.
- The chamber blowers can be in LEFT & RIGHT direction or one side depend on application.
- PROXIMITY SWITCH control to fire the burner on exhaust system.
- Load cell or measuring device is installed for tension control.
- All the rollers in accumulator (top & bottom) are positive driven for sensitive fabric.
- Normal servo motor is used for center winder drive.
- Heating methods: Steam, Oil, Gas & Electrical
- Product width : 2,200mm to 4,200mm or according to customers' requirements.

**VERTICAL DRYER - DIPPING MACHINE**

- Dipping lines for nylon and polyester fabrics for tyre cord, belting, canvas and glass fibres are designed with understanding of the specific requirements and configured for customised solutions.
- Uniwinders with positive drive and load cell control units.
- Accumulators with positively driven rollers and servo control are offered depending on the necessity
- Pull Roll stations with heavy construction for taking very heavy tension and pull are designed with cooling arrangements and geared drive. These system with load cell controls enables to operate the machine in either pull mode or in tension control mode.
- Dip stations - positively driven Dip squeeze rollers ensure uniform pickup as well as controlled pickup during resin addition. Trough level is controlled by load cell with auto dosing depending on the consumption. Different trough designs are used depending on the dwell time and process.
- Vacuum system with air nozzles are used to remove superficial resin and recover the same for reuse.
- Vertical dryers with 2 pass / 4 pass are used depending on the dwell time for drying, heat setting and stretching requirement. Air impingement in the dryer is on both sides in first pass and one one side in subsequent passes.
- Slit type high pressure nozzles for uniform air distribution and temperature.
- Heating can be with oil or gas fired. Central exhaust system is provided through the vertical dryer which can also be used for quick cooling. Rollers on top of dryer are positively driven and water cooled.
- For processing glass fibre fabrics, vertical infra red heater dryers are used for high temperature applications.
- Belting configurations have Stenter in line after predrying for stretching and stabilising the resin padded fabrics. Clips with high stretching capacity are installed on the stenter.
- Winders can be axial winders or surface winders depending on the fabric and permissible tensions while winding.
- Automation with load cell controls, pyrometers, moisture and humidity controllers, pick counters is incorporated with a central panel for complete range.







Hot Air Stenter



Jigger



Coating Head



Singeing Machine



Drying Range



Polymeriser / Curing



Dye Pedder



Drum Dryer



Thermobonding Line



Relax Dryer



Shrinking Range



Merceriser



Denim Finishing Range



Pad Steam / Washing Range



Dipping Line & Technical Textiles