NONWOVENS LINES

AUTEFA Solutions leads the way
AUTEFA SOLUTIONS –
Experience, Know-How and Competence in Nonwoven Technology

AUTEFA Solutions leads the way

As a system supplier, AUTEFA Solutions represents companies with a long tradition and a history of years of successful participation in the market. Combining the experience of the companies AUTEFA, Fehrer, FOR and Strahm the company stands for high quality, durability and performance made in Europe.

AUTEFA Solutions creates innovative technological concepts for nonwoven products by utilizing the skills and practical experience of its employees. The customers benefit from the dynamic flexibility and specialist know-how of AUTEFA Solutions key technology sites in Germany, Austria, Italy and Switzerland.

FIBER PREPARATION
- fiber opening and blending

WEB FORMING
- carding
- aerodynamic web forming
- crosslapping
- web forming aircup
- aerodynamic web forming airlaid

WEB BONDING
- needling
- chemical bonding
- thermobonding
- hydro-entanglement
- web bonding

WEB FINISHING
- drying
- impregnating/coating
- embossing/perforating
- scattering
- web finishing

WEB HANDLING
- winding
- cutting
- stacking
- festooning

AUTEFA Solutions is part of China Hi-Tech Group Corporation (CHTC).
AUTEFA Solutions – Turn-Key Nonwovens Lines
Our technologies for your success

AUTEFA Solutions is a leading solution provider for turn-key nonwovens lines and machines for carded- crosslapped needlepunching lines, spunlace lines and thermobonding lines.

The mayor nonwovens industry trends of high productivity paired with low maintenance costs and high flexibility for various nonwovens products increase the demand for top quality machines from AUTEFA Solutions. All process steps base on well-known and worldwide approved technologies. Besides the complete equipment, AUTEFA Solutions scope of supply comprises comprehensive engineering services, including start-up and production support, as well as guarantees for quality and capacity. The main characteristic of AUTEFA Solutions production lines is the outstanding flexibility, which enables the nonwovens producers the manufacturing of a wide variety of products and truly unique fabrics.

With the Nonwovens Competence Center we offer our customers unique possibilities for improving and refining new products, processes, components and machines.

ADVANTAGES

- Increased productivity
- High flexibility
- Constant web quality, excellent uniformity
- Considerable raw material savings
- Easy cleaning and maintenance
Applications and Products

NEEDLE PUNCHED PRODUCTS
- Geotextiles
- Roofing felts
- Automotive headliners
- Automotive velour
- Artificial leather/coating substrates
- Automotive substrates
- Carpets (structured & flat)
- Hometex
- Technical felts (filtration)
- Wipes

SPUNLACED PRODUCTS
- Wipes (hygienic, medical, cleaning)
- Coating substrates

THERMOBONDED PRODUCTS
- Coverstock
- Interlinings
- Waddings
- Home furnishing
- Automotive substrates
- Insulation felts

FIBER APPLICATIONS
- All kinds of fibers (PP, PES, PA, PAN, PTF, CV, glass, natural fibers, shoddy etc.)
- For fibers up to 120 mm fiber length for capacities up to 2000 kg/h
Nonwovens Competence Center Linz
Advanced multiple web forming and bonding technologies

The AUTEFA Solutions Nonwovens Competence Center offers multiple web forming and bonding technologies in industrial scale to cover all our customer’s requirements for application oriented product optimization.

- Evaluation of fibers, fiber blends, wires and needles
- Process developments for special applications
- Recommendations for machine and line
- Performance and quality optimization
- Provision of samples for customers
- Individual training programs

All trials are documented by detailed reports with the guaranteed confidentiality of all activities and results.

- Fiber Preparation Plant feeding three lines
- Carding Line with Crosslapper and Needle Looms for mechanical bonding
- Aerodynamic Web Forming Line (Airlay) with Needle Loom and/or Thermobonding Oven
- High Speed Carding Line with Injection Card for Hydroentanglement
Opening & Blending
Superior fiber treatment right from the start

AUTEFA Solutions offers complete lines, starting from bale opening up to finished products. All process steps base on approved and economic technologies which are integrated in turnkey solutions. A huge range of opening and blending equipment is available, starting from bale openers, storage of fibers, up to fine opening and card feeding, according to the different fiber properties, final product specifications and customers’ requirements. AUTEFA Solutions reliable equipment focusses on an easy maintenance and high flexibility for fully automatic processes.
Carding

Highest speeds, proven quality and reliability

The card is the key machine in the drylaid process for manufacturing a quality web. Based on the proven F.O.R. carding technology, AUTEFA Solutions offers different carding models, each machine is designed for specific applications. A modular machine design allows various specifications based on functions. All cards distinguish themselves by flexibility, high production speeds and process efficiency.

ADVANTAGES

- Improved web evenness
- Improved web quality
- Optimized productivity
- Minimized maintenance

Web Master FUTURA

The Web Master FUTURA card is developed and designed for high production speeds with a special focus to improve the cost factor of maintenance. The different modules of the card, means feeding group, main cylinder, transfer group and doffers, are each placed on a separate carriage. The carriages are connected to each other and form a “train” which allows easy and full access for cleaning and maintenance.

Injection Card

In the Injection Card, the traditional mechanical carding principle, using workers and strippers, has been replaced by an aerodynamic concept. In this highly innovative design, the fibers are injected against the following worker roller by the stream of air produced by the rotation of the main cylinder, and taken off the worker rollers by an aerodynamic effect generated by specifically shaped devices. This avoids considerable mechanical stress on the fibers. The Injection Card has been specifically designed to provide a high throughput and the highest performances.
WebMax
Web profile control technology

AUTEFA Solutions WebMax produces a counter weight profile to avoid the smile effect. This is the key to product quality. WebMax ensures that the carded web weight is already being altered at the crosslapper infeed. Via the layering carriage control, the carded web is deposited on the layering belt in a way that the lapped web weight is controllably lighter in the edge areas compared to the center areas. This concave weight profile therefore compensates the weight changes due to material shrinkage and leads to the highest possible weight evenness in the final product.

With the improvement of the lapped web profile WebMax also leads to a proportional reduction of raw material consumption. A special advantage of this system is that it relates exclusively to the crosslapper Topliner. The WebMax does not require any separate space, and can be retrofitted with a lapper of the Topliner-series. WebMax can be delivered for card web working widths of 2.0 - 4.0 m.

ADVANTAGES

- Highest possible weight evenness in the final product
- Considerable reduction of raw material consumption
- Compensation of the smile effect caused by material shrinkage
- Two independently controllable drafting zones create a counterweight profile on the delivery apron
- Can be switched off at any time by lifting the pressure rollers

NONWOVEN LINE WITH INTEGRATED WEBMAX SYSTEM

![Diagram of a nonwoven line with integrated WebMax system]
Crosslapping

Maximum weight accuracy

Weight accuracy in the bonded lapped web is the most important quality feature for a nonwoven installation. The crosslappers of the Topliner series are characterized by high infeed speeds and precise weight distribution. Crosslappers take up the carded web coming from the carding machine with constant speed and gently bring it to the delivery belt. The crosslappers Topliner increase both web homogeneity and throughput speed and thus eliminate any bottlenecks. The uniform web laydown in conjunction with the WebMax and CLOSED LOOP system helps to save fibre costs.

ADVANTAGES

- Highest lapping speeds up to 200 m/min at constant web quality thanks to a short web path
- Full productivity potential and precise laying behavior on all working widths due to the use of composite components
- Further reduction of energy consumption (kWh per kg) by utilization of latest drive technology with energy recovery
- User-friendly concept with excellent accessibility and easy maintenance
- Flexible installation variations due to modular machine design and apron guidance
- Fast and easy service support through remote maintenance by means of remote access
Web Drafting
High infeed speeds and precise weight distribution

The Web Drafter WD will be installed between the crosslapper and the first needle loom. With up to 8 drafting trios, the Web Drafter drafts the crosslapped web in material direction (MD). This results into a web optimization in regards of tensile strength and elongation. When processing lightweight products, the Web Drafter increases the web uniformity.

ADVANTAGES

- Production increase special for lower gsm fabrics
- Draft and re-orientation
- Adjustment of MD/CD ratio
Needle Punching
High-Performance level

AUTEFA Solutions STYLUS Needle Punching Technology is based on a modular design system which represents the idea of dividing the needle beam and the needle board across their entire length into smaller units. AUTEFA Solutions single, multi-board and structuring needle punching machines all contain the operational experience gathered from well over 3000 machines running worldwide.

ADVANTAGES

- Modular design system with fully sealed eccentric drives
- Vibration-free running
- Working widths up to a maximum of 16 m
- In-house developed needle distributions for special patterns and mark-free penetration
- The only system allowing highest stroke frequencies in continuous operation and cost-saving service intervals of several thousand hours
- Possibility to choose elliptical needling (Varilliptic) or pure vertical needling
Aerodynamic Web Forming (Airlay)

Total randomization

The aerodynamic web forming machines from AUTEFA Solutions utilize the aerodynamic principle which results in three-dimensional fiber orientation and total randomization, enabling isotropic web properties. Airlay line solutions distinguish itself through maximum product quality, economical production and reliability. The aerodynamic web forming process with AUTEFA Solutions Airlay K 12 stands for an improved MD:CD ratio and a three-dimensional web structure.

The Airlay FUTURA design enables easy opening and quick access for cleaning and maintenance. The various line components are mounted on a linear guiding system. Due to the modular structure of the individual components, it allows a modular configuration of the machine, tailored to customer requirements.

ADVANTAGES

- High production capacity
- Intensive fiber opening
- Total random 3D web structure and isotropic strength values
- Increased resilience of the web
- Production of top quality webs in the 80 - 6000 g/m² weight range
- Processing of both natural and synthetic fibers
- Random webs of up to 80 % greater volume, by increasing the vertical fiber orientation with the “High-Loft” device
- Suitable for all kinds of bonding processes such as thermal-, chemical- or needle-bonding
Thermobonding
Uniform airflow and precise temperature distribution

AUTEFA Solutions Thermobonding oven HiPerTherm distinguishes itself by an approved accuracy airflow system with high production speeds. Used as single or double belt oven the AUTEFA HiPerTherm Thermobonding oven with its double nozzle system is still the machine of choice when it comes to thermally bond materials from airlay lines and card-crosslapping lines using almost any kind of fiber as well as lines for manufacturing hygiene products such as ADL or topsheets. The double nozzle system ensures a uniform product treatment.

The key strengths of the AUTEFA Solutions belt dryers are highest uniform airflow, the precisely adjustable temperature distribution and the ability to maintain loft. The manufacturing of top sheets and ADL demands utmost accuracy.

ADVANTAGES

- Flexible and high capacity
- Perfect temperature profiling
- Uniform airflow
- Energy efficient with EnRec systems
Hydroentanglement Machine V-Jet FUTURA
Advanced and unique energy saving technology

AUTEFA Solutions offers complete lines for the production of Spunlace Nonwovens products, either in a direct or crosslapped configuration. The web forming process, consisting of the unique Injection Card and Crosslapper Topliner, is the key for high and consistent nonwoven fabric quality. With the Hydroentanglement Machine V-Jet FUTURA and the Square Drum Dryer SQ-V, AUTEFA Solutions has developed an advanced and unique technology with special focus on energy consumption. AUTEFA Solutions developed and patented the V-Jet Injector. Compared to standard injector systems the V-Jet Injector decreases the distance between nozzle and injector bottom. Thus energy losses by friction with air, air turbulences and jet expansion can be reduced to a minimum. This technology offers a significant reduction of energy consumption compared to any state-of-the-art line.

ADVANTAGES

- Lower energy consumption (kWh/kg)
- Highest productivity
- Best nonwovens fabric quality
- Energy saving V-Jet technology
- EnRec Systems for heat recovery in drying process
Square Drum Dryer SQ-V
Energy saving thanks to efficient hot air circulation

The nozzle system in the Square Drum Dryer SQ-V distributes the airflow in terms of speed and temperature uniform throughout the whole working width, providing best spunlace web and surface quality results. The suction nozzle design ensures a 100% surface vacuum behind the conveyor belt, while the blowing nozzle design ensures impingement air jet for high heat transfer and high evaporation capacity. A constant measurement of the exhaust humidity controls the maximum circulation air humidity. The reproducible drying performance guarantees a production with constant quality and residual product moisture. Compared to conventional drum dryers the Square Drum Dryer SQ-V consumes around 30% less thermal energy for the drying process.
Process Control System
Complete plant monitoring

The operation of the complete plant is monitored by a process control system. Workstations are located at key points, from fiber opening to winding, in order to allow the simple and clear supervision of the respective plant sections. Special displays and operating surfaces are employed, which show the most important data and operational elements, while the data exchange between the various plant sections takes place via bus links.

The control system uses images for every machine and their related functions, as well as symbols that illustrate the status of drives and sensors and a value variance comparison. The differing operational modes are also visualised. Service functions are available for utilisation during plant startup or maintenance. Drives can be operated separately, sensors tested and adjustments carried out. Production recipes for the complete plant can be stored and called up for the entire plant.

Operational and production reports as well as fault messages are provided on a regular basis and context-sensitive assistance is available to minimise fault detection time.
Design and Engineering
Reliable and efficient line solutions

AUTTEFA Solutions engineering competence is based on more than 60 years of experience in machine and plant design. The information gained during this time has been directly and consequently transferred into our engineering language. AUTTEFA Solutions engineering covers all areas for the formation of the plant, the continuous operation as well as contractual guarantees for the product quality and the performance of the production.

The utilisation of the high functionality of the current data base secures a highly efficient state-of-the-art preparation of the documents.

THE TURNKEY PROJECT MANAGEMENT INCLUDES BASIC AS WELL AS DETAILED ENGINEERING:

- Mechanical engineering
- Process and civil engineering
- Piping and air conditioning
- Measurement and control engineering
- Electrical and instrumentation engineering
Line Configurations

01 GEOTEXTILE LINE

02 AUTOMOTIVE VELOUR

03 ARTIFICIAL LEATHER

04 AUTOMOTIVE HEADLINER
Line Configurations

05 CARPET

06 TECHNICAL FELTS

07 FILTER- INLINE PRODUCTION

08 FILTER- OFFLINE PRODUCTION
Line Configurations

09 WADDINGS / HOME FURNISHING

10 GLASS FIBER MATS

11 AUTOMOTIVE “SUBSTRATES” AND NOISE INSULATION FELTS

12 WADDINGS / HOME FURNISHING AND THERMAL INSULATION
Line Configurations

13 SPUNLACED WIPES

14 SPUNLACED COATING SUBSTRATES

15 ADL PRODUCTION LINE

16 TOP SHEET PRODUCTION LINE