



# Machinery for Technical Textiles

**TRÜTZSCHLER**

**TRÜTZSCHLER**  
NONWOVENS



**KARL MAYER**  
GROUP



**Luwa**



**STALAM**



ecoaxis



Technical textiles are engineered textiles with definite functionalities. The demand for technical textiles is growing exponentially the world over due to the wide ranging end user applications of these textiles.



Technical textiles is undoubtedly a sun rise sector today, presenting a huge, yet untapped potential for the Indian textile industry.

A.T.E. has been building on its capabilities to help the Indian textile industry to exploit the emerging opportunities in this segment. A.T.E. now has deep domain knowledge in this specialised field and has the capability to offer a wide spectrum of machinery solutions from leaders across the world.

## A snapshot of the machinery solutions

Process	Machinery	Principals
Spinning	OPTIMA concept for IDY	Trützschler Man-made fibers, Switzerland
Warp knitting	Warp knitting and weft insertion systems Warp knitting for composite manufacturing Warp knitting for nettings	KARL MAYER, Germany
Warp preparation and wovens	Sectional warpers Sizing, direct warping & assembly machine Creels Customised yarn tensioners Beaming machines	KARL MAYER, Germany
	Rapier weaving machines	SMIT, Italy
Nonwovens	Spunlace, needlepunch, air-through and thermal bonding solutions	Trützschler Nonwovens, Germany
	Roller card clothing	Trützschler Card Clothing (TCC), Germany
	Spunbond, meltblown and composite solutions	Ramina Srl, Italy
	Machinery and upgrades for manufacturing of diapers, pads, and masks	W+D BICMA, Germany
Coating, drying, heat treatment, and curing	Multipurpose coating machines	Monforts, Germany and Zimmer, Austria
	Drying, heat treatment, and curing machines	Monforts, Germany and Stalam, Italy
Calendering	Calenders	Guarneri Technology, Italy
Process control	Process, quality, weight monitoring, and control systems	Mahlo, Germany
Metal detection	TE/SLD metal detectors	CEIA, Italy
Air engineering	Comprehensive conditioning and filtration systems	Luwa, India
Cutting	Cutting room solutions	Morgan Tecnica, Italy
Textile warehouses	Automated storage system	Craftman, India
Static control, surface inspection	Static charging, elimination systems Surface inspection systems	AxisValence, India
IoT	SuperAxis™ , Industry 4.0	EcoAxis, India
Wastewater treatment	Effluent treatment plants	A.T.E. HUBER Envirotech, India



## Spinning of yarn for technical textiles

### Man-made fibers, Switzerland OPTIMA concept for Industrial yarn (IDY):

The new TEC-O40 with 4 ends per position and TEC-O80 with 8 ends per position are designed to react immediately to the ever-changing market demands and requirements.

The enormous flexibility resides in the wide range of yarn counts and applications that can be processed on the same system.

Each member of the TEC system family features a modular built draw frame with 3 to 5 duos of heated godets. The end product's requirements on yarn tenacity determine the number of duos implemented.

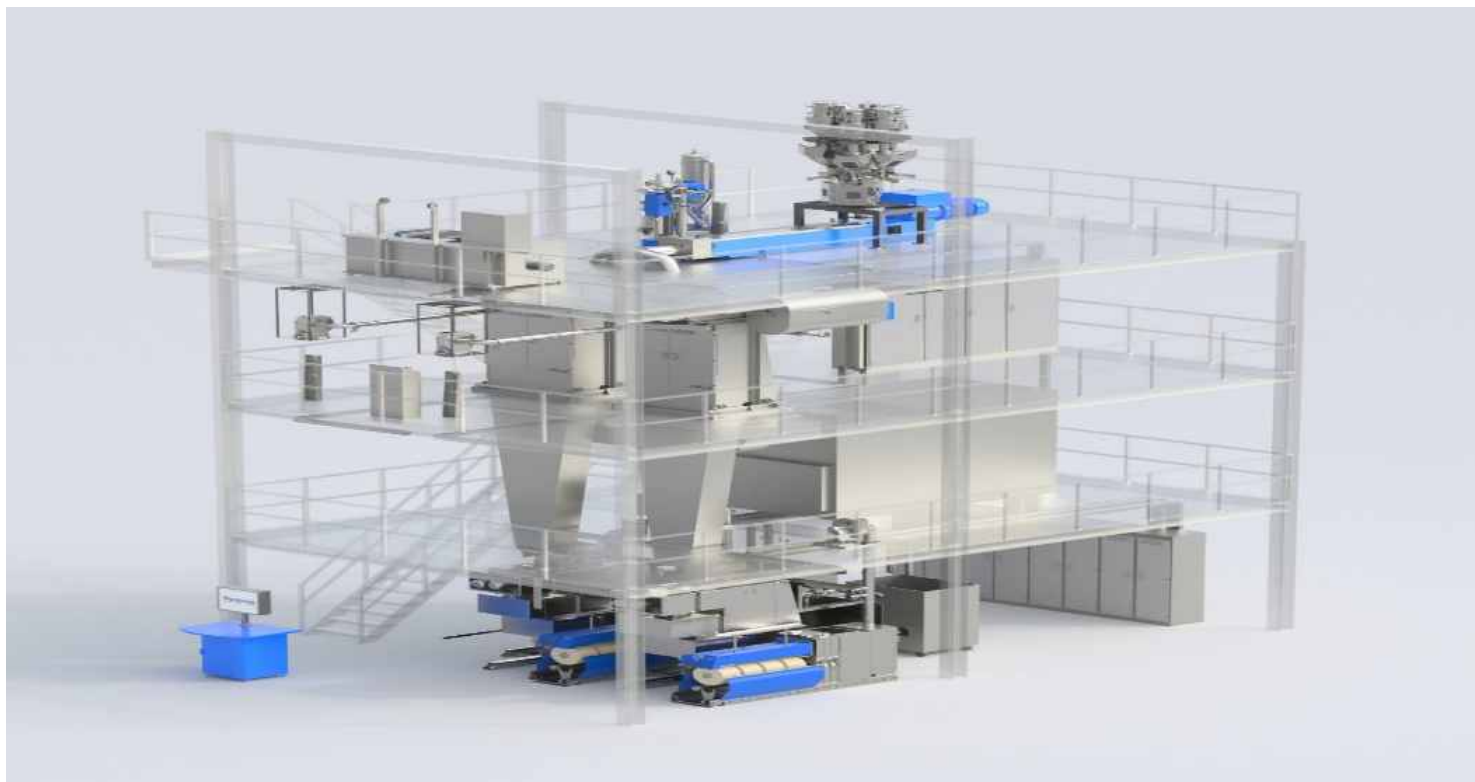
#### Features

- Extended yarn count range 200-6000 den
- Compact design with short melt pipes
- Multi polymer Extruder screw for PP, PET, PA6
- Vapour heated spinning system for highest temperature accuracy
- Integrated HTM boiler for low energy consumption
- Inverter driven flaps and individual monomer exhaust
- Symmetric yarn path with gentle yarn treatment
- Double shell draw roll for uniform heat profile

**TRÜTZSCHLER**  
MAN-MADE FIBERS

#### Applications

- Tire cord
- Airbag fabrics
- Yarn webbings
- Ropes and braided cords
- Geotextiles
- Safety belts
- Fishing nets
- Industrial and filter fabrics
- PVC hose pipes inner layer
- Slings
- Geogrids
- Ballistic cloths
- Parachutes



## Warp knitting and preparation of technical textiles

### Warp knitting with weft insertion

KARL MAYER Wefttronic II G is a high-performance warp knitting machine with course-oriented weft-insertion for the production of grid structures



**KARL MAYER**  
GROUP

Machine Type	Application Areas
WEFTRONIC II HKS AND TM WEFT	Interlinings, coating substrates, curtains, surgical bandages, furnishing fabrics, adhesive tapes, outerwear
WEFTRONIC II RS	Advertising banners, abrasives, tarpaulins, protective textiles, printing substrates, plaster bases, awnings, supporting frameworks
RS MSUS-G	Geogrids, protective textiles, tarpaulins, waterproof sheeting, facade insulations, plaster bases, coating substrates
RS MSUS-V	Geogrids and geocomposites, coating substrates, secondary carpet backings, construction textiles, agricultural and greenhouse textiles Textile Reinforced Concrete (TRC)

### Warp knitting for composites

KARL MAYER's BIASTRONIC® II is a high-performance warp-knitting machine to produce biaxial non-crimp fabrics (NCF), used in the manufacturing of composites and windmill blade fabrics.



Machine Type	Segments	Application Areas
▪ BIASTRONIC	Ship building	Yachts, lifeboats, patrolling boats, passenger ships
▪ COP BIA 2	Power engineering	Rotor blades for wind power plants, wind channel blowers
▪ MAX 4	Sports and leisure	Skis, tennis rackets, snowboards, surf boats
▪ MAX 5	Automotive	Car body parts, bumpers, reinforcement parts, leaf/coil springs
	Airplane construction	Tail plane parts, fuselage, wings, tanks, brake discs
	Machine building	Fast moving parts
	Plant engineering	Pumping and piping systems, container building
	Aerospace industry	Antennas, pressure vessels, satellite structures
	Medical sector	Prostheses for arms and legs, orthopedical applications, medical appliances
	Pultrusion	I beams, H beams, underground chemical and water tanks

### Warp knitting for nettings



Machine Type	Application Areas
Raschel machines:	<ul style="list-style-type: none"> <li>▪ Shade nets</li> <li>▪ Wind breaker and hail nets</li> <li>▪ Bird protection nets for vineyards, fruit and vegetable culturing</li> <li>▪ Bale wrapping and palette nets</li> <li>▪ Harvesting and cultivation nets</li> <li>▪ Packaging nets</li> <li>▪ Protection nets, safety nets and sports nets</li> <li>▪ Fishing nets</li> </ul>
<ul style="list-style-type: none"> <li>▪ RS 2 EL-F</li> <li>▪ RS 4 N-F</li> <li>▪ RS 6 N-F</li> <li>▪ RSFS 8 EL</li> <li>▪ RS FL 8EL</li> </ul>	

## Warp preparation and wovens

**KARL MAYER**  
GROUP

### Warp preparation for woven technical textiles



Warp preparation is important process to achieve the good quality fabrics and higher percentage of the fresh fabrics. KARL MAYER have various tension control solutions for fine yarns to coarser counts to have uniform tension-controlled warp beams across the length and width. This helps to achieve the required parameters of the warp beams with various applications.

Machine Type	Features	Application Areas
Sectional warper	"Proactive warping", self-learning software to ensure top warp quality	Filter fabric, flame retardant fabric, industrial fabric, automotive seat, sportswear, insect net, sail cloth
Sizing, direct warping & assembly machine	Suitable for glass and filament warp. All functions are governed by precise process control	Circuit boards, air bag fabric, flame retardant fabrics, industrial fabrics, parachute fabric
Creel	Creels structures such as GD-swivel type, GW-trolley type, GM-magazine type, GN-fixed type standard creel and unwinding creels with suitable yarn tensioners	Unwinding of wires, monofilament yarns, tapes and technical yarns which are not allowed to get any additional twist by overhead draw-off
Multitens tensioners	Motor-powered yarn tension systems with individual-yarn control	Most suitable for the wide range of tension requirement for technical textiles
KFD-AIR tensioners	Self compensating yarn tensioner	For a large number of applications and yarn tension ranges
Megatens tensioners		Yarn tensioners for coarse and technical yarns
Isotens tensioners		Yarn tensioners most suitable for fine medium yarns
Beaming machines	For the production of full warp beams directly from the creel for various applications.	Most suitable yarn tensioner is offered for fine to coarse yarns

Based on the application, KARL MAYER can offer an appropriate tensioner from its range which can handle 0 cN to 300 cN

## Rapier weaving machines

### SMIT ONE



SMIT Mono-rapier free flight weft insertion system and various improvements in mechanic and electronic sets high standards in the woven fabrics. Proven best for the fashion fabrics and complicated weft such as carbon and other technical yarns. As no transfer of the weft at the centre makes the product more reliable, energy saving and efficient. SMIT-ONE is emerging as a preferred choice for weavers around the world. Thanks to the dynamically controlled flexible tape rapier, that ensures excellent performance in all reed width range – from 140 up to 220 cm – ONE shows evidence of extreme versatility.

#### Features

- Weft insertion system based on one rapier only, therefore without weft transfer in the centre of the shed, allows the use of the widest range of yarns
- Single gripper allows a reduction of the warp shed amplitude, thereby increasing the efficiency
- Unparalleled simplicity in changing articles
- Available in working width from 1400 mm to 2200 mm
- Minimum maintenance costs

#### Applications

- Glass fabrics
- Carbon fabrics
- Safety applications
- Filter fabrics
- Sportswear
- Complicated yarn



## SMIT 2FAST



SMIT - 2FAST - Free flight rapier weaving machine with self-controlled flying ribbons without guided hooks helps to process fine filaments to coarser technical yarns up-till 3800mm working width. Designed and manufactured at ITALY. SMIT - Rapier weaving machine included various technical fabrics, ranking from the heaviest to the finest, with extreme variation of material, count, and type of yarn and able to handle all of them, from metallic to glass, from carbon to aramid or synthetic as well as natural fibres. SMIT weaving machines are specialized as per the applications and consisting of deep know-how, which helped them to continuously improvised as per the market needs.

### Features

- Free flight rapier technology: self-controlled flying ribbons without guide blocks
- Designed and manufactured in Italy
- Versatility in yarn type
- Spun yarns: 5 - 1,000 tex
- Filament yarns: 3 - 6,600 den
- Glass fibre: 10,800 den/1200 tex
- Great weaving results with perfect control system
- Available in working width from 1700 mm to 3800 mm

### Applications

- Conveyor belts
- Glass fabrics
- Carbon fabrics
- Aramid fabrics
- Agro textiles
- Automotive textiles
- Air bags
- Tire cords

## Nonwoven of technical textiles

### Spunlace, chemical and thermal bonding solutions



Truetzschler Nonwovens offers spunlace, needlepunch and air-through bonding and thermal bonding solutions. Together with Voith Papers, Germany, Truetzschler Nonwovens can now supply complete lines and solutions for wetlaid nonwovens Voith Paper, the pioneer in and leading partner to the paper industry.

Truetzschler can also offer specialised preparatory solutions for bleached cotton and its converted products such as cotton balls, ear buds, zig zag cotton, cotton rolls, etc.



### Applications

- Baby and flushable wipes
- Hygiene like top and back sheet, ADL for diapers
- Cosmetic pads, femcare and medical textiles
- Filter media, automotive headliner, carpets, wipes, geotextiles, filter media and technical felts



### Roller card clothing



Roller cards in nonwoven lines as well as flat-top cards depend on the quality of the clothing to ensure top-class products. Wires differ in terms of tooth contour and profile cross section, structure, and surface treatment. Truetzschler supply tailored clothing for each roll. These are based on the roll type, the raw material, the production speed, and other processing parameters.

### Spunbond, meltblown and composite solutions



Ramina provides the best solutions for the nonwovens industry professionals. From turn-key plants to single machines, Ramina is a strategic partner for its customers. The core business of Ramina is the production of a comprehensive range of turn-key plants for the nonwovens industry. The expertise used to create Leonardo 1.0 leads the way for the future development of the technology in spunbond, meltblown and composite lines with lines like S, SS, SMS, SMMS the raw material that can be processed PP, PE, PA, PBT, PET, PLA, BICO, PBS etc.. The beating heart of Ramina is its R&D Department, where the latest and most innovative pilot SMS Line "Leonardo 1.0" has been created.

### Applications

- Hygiene
- Medical
- Packaging
- Agricultural
- Construction
- Automotive

W+D BICMA supplies machines for manufacturing baby diapers, feminine care products, adult diapers, bladder control pads for incontinence, bed under pads, meat pads, pet pads and other specialised products such as surgical face masks and FFP2/N95 masks. Its portfolio comprises of a full range of compact high-speed multi-functional machines for high-capacity production and economical, medium-speed machines for start-up businesses.



#### Applications

- Baby and adult diapers machine Series 1128-HW
- Femcare products machine Series 1300-FEM
- Light incontinence machine Series 1300-LI
- Heavy incontinence machine Series 1128-AD
- Pads machine Series 1400
- Upgrades modernization of existing machines

## Processing of technical textiles

### Multipurpose coating machines



Zimmer offers high quality multipurpose coating machines and lines for technical textile applications such as full surface coating, dot coating, impregnation, and printing of aqueous, paste-type and foamed substances.

#### TRIPLEXCOAT coating machines



- With universal take-up system for KNIFE coating, MAGNOJET foam coating and ROTARY SCREEN printing/coating
- Integration possible into any existing coating line or as an integral part of a custom-made coating line
- KNIFE and MAGNOJET working widths: 500 - 3400 mm
- Screen coating with blade squeegee: maximum 2000 mm

#### MAGNOROLL multipurpose coating machines



- MAGNOROLL is a compact and robust modular system for universal applications. Zimmer's MAGNET SYSTEM PLUS, with up to 3 magnet bars per screen, guarantees 100% uniform application of any kind of coating
- Single or double screen coating: equipped with magnet roll rods or magnet blade squeegee, in working widths from 500 to 3200 mm
- MAGNOROLL coating technologies: installed either as magnetic low-add-on or magnetic direct roll coating system, in working widths from 500 to 5600 mm
- MAGNOKNIFE over-roll or over-air coating: reversible high precision knife holder, equipped with two knives in working widths from 500 to 5600 mm

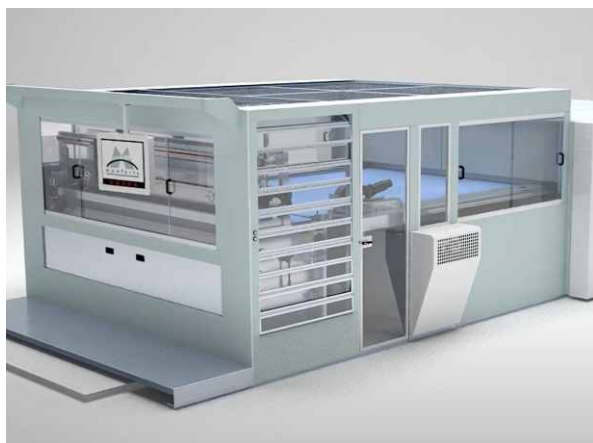


## MAGNOJET coating plants



- Closed coating system with controlled application:
  - For paste with a constant substance feeding pump with an inline flow meter unit
  - For foam with a foam mixing unit with software-controlled weight measuring system
- Increased productivity of the MAGNOJET foam application machine due to automatic inline washing unit
- Working widths: 500 – 5600 mm

## Montex Allround



The patented modular Montex Allround offers a great deal of flexibility in coating and finishing. The Allround is a quick-change device that allows the necessary auxiliary modules to be docked to a basic module, thus enabling users to react quickly to new requirements.

- For coating applications using solvents, a compact housing for the Montex Allround allows inexpensive and reliable extraction
- The volume of air to be extracted is approx. 60% less than the conventional solutions
- Available working widths: 1800 - 3200 mm
- Standard working speeds: 2.5 - 50 m/min
- Magnetic roller coating allows a wide range of coatings and finishes
- Magnetic roller technology provides textile finishers with an expanded range of options due to the fully-adjustable positioning of the magnet within the roller
- With four different magnet positions possible, the roller can be set to operate both as a direct coating system and as an indirect coater

## Technical textile stenters



The new Monforts Montex technical textile stenter provides the highest product quality with uniform drying.

- Finishing of technical textiles from 100 to 5500 g/m<sup>2</sup> with a thickness of 0.5 to 22 mm
- Large widths
- Padder/coating head
- Stretcher with a force of up to 10,000 N in longitudinal direction
- Special round and split nozzles
- High temperature (up to 320°C)
- Independent control of temperature for top/bottom nozzles
- Efficient cooling system
- Belt conveyor
- Explosion-proof
- Lamination
- Drying, fixing and coating in a single operating process

## Curing ranges



- Perfectly designed for curing of technical textiles
- Large widths
- Modular chamber construction
- Short distance between top and bottom guide rollers
- Each curing chamber is built with 'CAD stream slit nozzle' air circulation system, along with air volume control via circulation throttles with manual control

## RF dryers

**STALAM**



Stalam's RF equipment are the de-facto standard for the rapid and efficient drying of glass fibres, natural latex and SBR foams, medical PU foams, felts and other non-wovens. Stalam has also developed specific RF equipment to carry out innovative thermal processes such as the ribbonisation of glass fibres and the vulcanisation of latex foams.

Stalam technical textile dryers have unique design and construction features that helps users obtain the maximum benefit from their machines, in terms of quality of the dried product, reduced operating cost, high production flexibility and performance reliability.

Stalam's RF equipment works on the dielectric principle which is more efficient and economical in terms of energy savings compared to conventional heating equipment.

Stalam provides RF dryers for the following applications:

- Fishnets and cords
- Glass fibre
- Polymer vulcanising and drying
- Felt and non-wovens
- Basalt fibre roving and derived products
- PU foam after wet casting for medical use
- Drying of short-cut, high-porosity reinforcement fibres
- Washed and hydro-extracted thread waste and rags

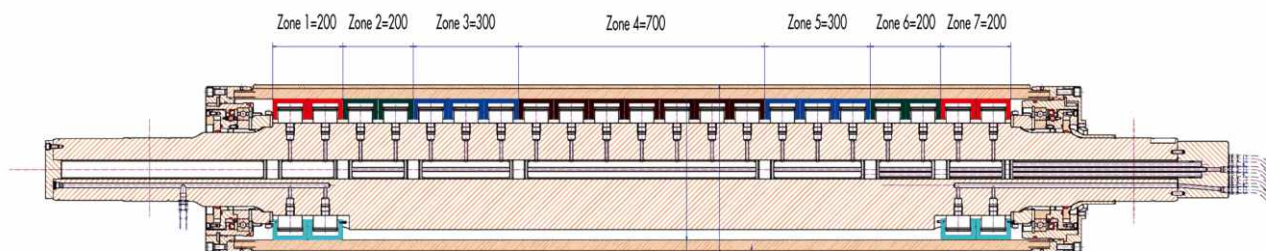
## Calendar NIPCO® HT



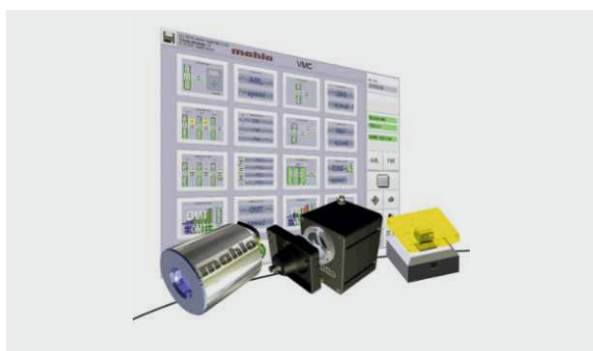
Designed in conjunction with Voith Paper - the renowned calender manufacturer, the NIPCO® HT (high technology) applies pressure where it is required, zone controlled and individually adjusted according to the material demands.

The pressure is set across the width for finishing of technical textiles with the special NIPCO® bowl. The air permeability can also be controlled in the required areas of the fabric, a feature that is widely used in the filter and parachute fabric industries.

- Independent zone controlled pressure setting is possible (up to 50-400 N/mm)
- Pre-selection of required pressured line profile
- Reacting on edge elongation by zone controlled pressure reduction
- Motorised variation of feed angle to the nip; pre-heating of materials prior to the calendar nip
- Easy exchange of sleeves, Thermoplast, Duroplast, or steel, depending on the customers' requirements
- Full automation of all calender operational settings (on request)



## Process control systems



- Process control in stenter
- Optimises drying or fixing processes as well as coating applications
- System measures, logs and controls critical process parameters over the entire working width of 5400 mm
- Measurement of thread density up to 270 threads/cm
- Ideal for technical textiles, glass fabrics and woven or tufted carpets

## Qualiscan quality control systems

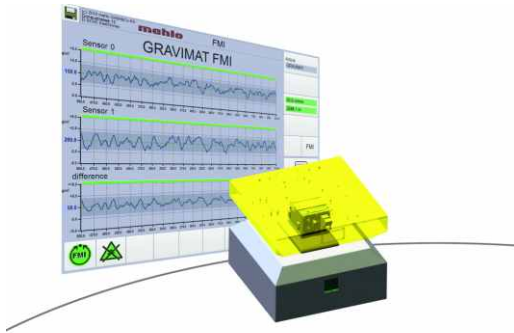


The quality of a finished technical textile product depends on the application of the coating.

Mahlo's Qualiscan QMS-12 is a modular system for measuring, logging and controlling critical process parameters over the entire process including coating weight, moisture and layer thickness.

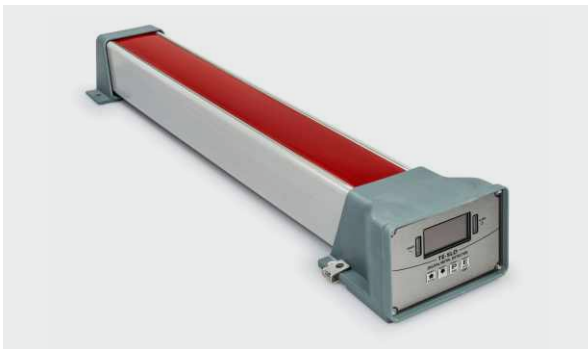


## Gravimat weight monitoring and control systems



Mahlo's Gravimat measures the weight continuously, without contact, destruction-free and on moving products. The measurement is based on the attenuation of rays from a radioactive isotope through the substrate located in the measuring gap. This attenuation in intensity is an indication of the weight of the product.

## TE/SLD metal detectors



CEIA's TE/SLD is a highly sensitive bar metal detector. This device is ideal for protecting production lines against accidental damage caused by pieces of metal.

The TE/SLD digital metal detector's digital signal analysis allows users to optimise detection with respect to the product's speed of passage and the metals to be intercepted, thus obtaining the best possible immunity to any external interference. CEIA's TE/SLD metal detector is tested to conform to electrical safety and electromagnetic compatibility standards.



## Utilities and auxiliary equipment

### Comprehensive conditioning and filtration systems



LUWA conditioning and filtration systems ensure ideal conditions for the processing of technical textiles including:

- Constant climate
- Precisely regulated supply of treated air
- Optimally placed exhaust air openings
- Efficient cleaning of the air
- Reliable control and regulation of temperature and humidity

**Luwa**



## Cutting room solution Ply1



Morgan's Ply 1 is a high speed single layer cutting solution for custom production for apparel, home textiles and technical textiles. Ply1 offers high flexibility for customisation, fast production of small and irregular lots, and high performance.

### Features

- Cuts a wide range of materials – all textile types, carpet fabric, and even special materials of different composition and dimensions
- Works with different cutting windows and conveyor extensions
- Can be equipped with the Vision Scan system, to monitor, scan and manage the detection and proper matching of stripes, plaids and repeated prints
- Fully customizable through different optional modules

## Automated storage system



Established in 1986 and headquartered in Coimbatore, India, with factories in seven locations across India, Craftsman Automation is a diversified engineering company with vertically integrated manufacturing capabilities. They are particularly well-known in the automotive sector as an OEM supplier of automotive components such as engine blocks, cylinder heads, and the like. They have diversified into many segments and have products for varied industries.



### Features

- Stacker Crane ASRS: for roll storage into single or double deep racks
- Pallet Crane ASRS: recommended for caged pallets of roll storage into single or double deep racks
- Crane Shuttle ASRS: for higher density storage of finished goods (yarn) and garments
- Multi-deep Shuttle ASRS: a revolutionary multi-deep automated storage system for pallets
- VSTORE vertical storage system: high-performance, durable storage solution that ensures optimal space usage and high ease of use

## Electrostatic charging in mask manufacturing



Valstat<sup>®</sup> electrostatic charging systems have been specifically designed for nonwoven mask manufacturing lines.

The filter efficiency of a mask must be high, without compromising the “breathability” factor. AxisValence's Valstat<sup>®</sup> electrostatic charging systems improve the filtration efficiency of the melt blown fabric layer by electrostatically charging it. These electrostatic charges attract dust and other contaminants. A Valstat<sup>®</sup> charging system (VC30 charging bar with PC305 static generators) is used to generate charges during mask manufacturing. The result is that the fibres are charged in a way that ensures that the charges remain intact for a long duration of time, thus improving the filter efficiency of the masks to capture microbes.

## Static charge elimination in nonwoven manufacturing



In a nonwoven manufacturing line, high levels of static charge can result in contamination as the static charges can attract dust, hair, loose fibres etc. This is undesirable as these fabrics often form the base for masks and other hygiene products. Static charges can also lead to web wander, uneven winding and malfunctioning sensors and transducers.

AxisValence' Valstat DC static eliminating systems, with replaceable pins, are suitable for neutralising static charges during nonwoven manufacturing. They are effective over long distances and effectively discharge both positive and negative ions, thus making the fabric static charge-free.

## Surface inspection systems



The DetectAXIS surface inspection system is designed for 100% inspection of plastic film, paper, foil and nonwoven substrates. DetectAXIS will detect defects and track them through the manufacturing process.

Typical defects detected include:

- Improper patterns
- Holes
- Bubbles
- Dents
- Dark spots
- Stains
- Non-uniform colour or shade variation and more

## SuperAxis™, Industry 4.0

ecoaxis

EcoAxis is a pioneer in IoT (Internet of Things) for industry in India. Delivering valuable business insights to top management on manufacturing and sustainability. Enterprise-wide data to decision support and analytics of industrial assets with access to information on any device, anytime, anywhere.



- Industry 4.0, Internet of Things (IoT) enabled, analytics application with built-in business intelligence and to enable artificial intelligence capabilities for deep learning and prediction at a future date
- Single, multi-plant, unified and integrated solutions to improve uptime, performance and life of the utility while helping reduce operations and resource (energy or fuel) utilization
- Support for all utilities in any plant including boilers, chillers, compressors, generators, AHUs, thermopacks, WTP, STP, ETP, etc.



## Effluent treatment plants



Comprehensive, innovative, and cost-effective wastewater treatment and recycling solutions, including zero liquid discharge. The scope covers various breakthrough technologies:

AAA® – reduces the chemical consumption and sludge generation by around 70% with consistent treated effluent quality

RDRO – a unique combination of an ultra-fine gravity filter followed by reverse osmosis recycling about 80-85% of the treated water back to process to achieve zero liquid discharge

EnviroCOLA® – a customised online assistance system designed to provide all the information needed to ensure a healthy performance of the wastewater treatment plant – anytime, anywhere



## A.T.E. ENTERPRISES PRIVATE LIMITED

Bhagwati House, A-19, CTS No. 689, Veera Desai Road, Andheri (West), Mumbai 400 053, India

T: +91-22-6676 6100 E: [teg@ategroup.com](mailto:teg@ategroup.com)

W: [www.ategroup.com](http://www.ategroup.com)

CIN: U51503MH2001PTC132921



### Our network

#### Ahmedabad

T: +91-79-2560 1694

#### Chandigarh

T: +91-172-269 7179

#### Coimbatore

T: +91-422-352 8200

#### Kolkata

T: +91-98311 42100

#### New Delhi

T: +91-11-4555 5000

#### Tirupur

T: +91-97916 00219

#### Dhaka

T: +880-2-58957446