

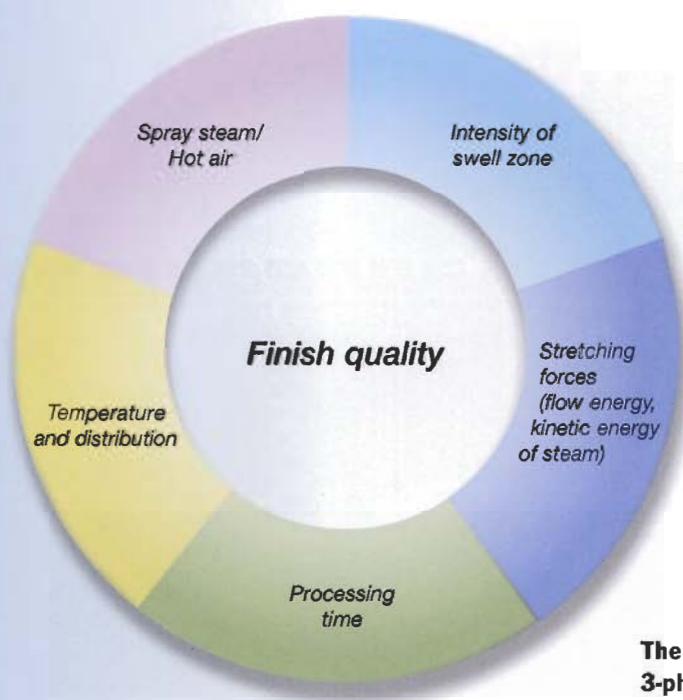
Tunnelfinisher *EuroStar: Series SM-T*

3-Phase-Finish

Kannegiesser[®]

PARTNER IN LAUNDRY TECHNOLOGY





The decisive factors for finish quality

The fibres are first made to swell up by applying steam, and then smoothed out to eliminate tension.

The fabric structure is smoothed by means of heat and stretching forces evenly applied from top to bottom.

Smoothing and drying cross over in the finishing process, so that moisture remains in the fibres almost until the end of the process, thereby preventing over-drying, creasing and colour changes.

The technical layout: 3-phase finish

In the first phase, the articles are heated up and treated intensively with saturated steam.

In the second phase; a highperformance mixture of spray steam/ hot air is applied to the articles.

Drying using hot air takes place in a third, relatively short phase, particularly in critical areas such as pockets and seams.

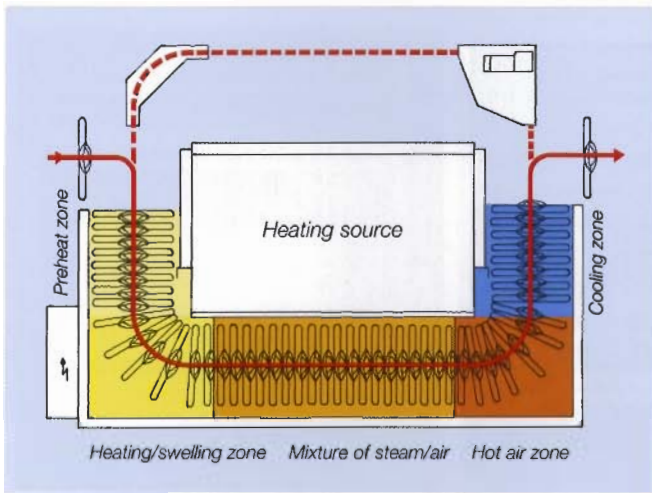
The result

Consistent, reliable finish quality in which the uniformity of the surface smoothness is far superior to conventional methods.

The specific mixture of spray steam and hot air in the 3 finish phases means that the system can adapt to a wide variety of fabrics as well as creased items.

3-phase finish in conjunction with direct air flow and insulated climatic chamber result in optimum performance: energy consumption and technical effort are favourably balanced against the quality and performance achieved.

Basic Structure



Particularly good accessibility means that the system can be installed with the longitudinal side against a wall, or in a corner

Division into 3 phases

The central climatic chamber has a chamber at either end arranged at an angle of 90 degrees. The incoming articles are pre-heated. The saturated steam is sprayed onto the article from nozzles positioned in the lower part of the chamber.

In the subsequent second phase the steam is injected from above at high pressure and greater kinetic energy through precisely defined nozzle diameters into the flow of hot air.

The steam gives off its heat more quickly to the articles than the hot air, resulting in a high level of treatment intensity.

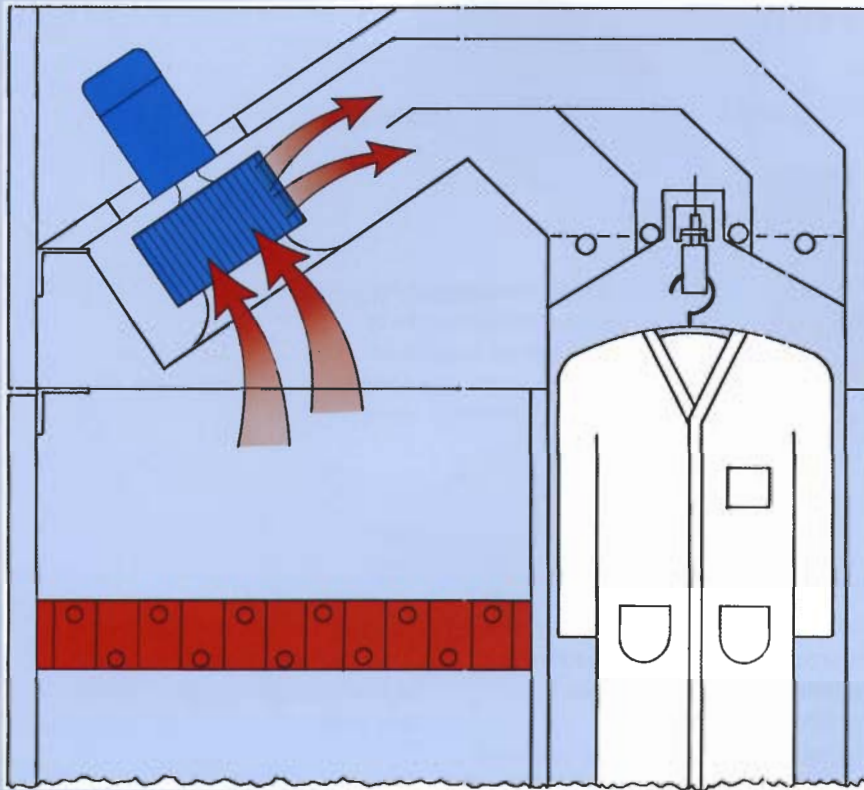
The permanent availability of a controlled mixture of steam and hot air causes the articles to heat up quickly without ever allowing them to become over-dry. The protection of the fabric and avoidance of creased seams are taken for granted.

In the very short third phase hot air is simply applied to the articles before the final chamber begins the cooling down phase.



The modular design in 4 models means that the treatment zones grow proportionally, so that the optimum performance is guaranteed in each model.

Direct Air Flow



The fans are located at the top of the machine. Due to the very short path of the air to the processing chamber, hardly any flow loss can occur, enabling full use of the kinetic energy in the air flow to smooth the article.

Direct Air Flow

The technical layout of the air ducting has a decisive influence on finishing quality, performance and efficiency.

For this reason, with the EuroStar model S-MT, the well known direct air flow principle was again substantially improved. In each module, two smaller fans work side by side, replacing the large, central fan. They generate a very even and intensive air flow over the entire cross section of the processing chamber.

Incorporating the fan wheels directly into the hot air hood allowed the shortest possible air paths, thus contributing to a considerable reduction in flow loss. The result is greater efficiency and full use of the flow energy in the processing chamber, leading to improved finishing quality and performance.

High stretching forces and even heat distribution provide the key to efficient smoothing, especially in the case of difficult fabrics.

Insulated Climatic Chamber

The reliable preservation of the set tunnel climate is vital for finishing quality, performance and efficiency. The tunnel climate must remain constant under all set spray steam pressures so that hot air does not escape in an uncontrolled manner, and allow cold air to flow in.

Due to their construction and additional technical elements, the pre- and post-chambers arranged at the suction and exhaust ends which are offset at 90°, guarantee the stability of the processing climate.

Negative influences on the finishing process due to uncontrolled incoming and outgoing air flows are effectively eliminated.

The fans integrated into the chambers mean that extraction in the suction and exhaust areas can be separately controlled.

Special Features



Modular Design

All important functional components on one machine side are clearly laid out and particularly easy to access.

Turbo-Jets

Where predominantly workwear is processed, the optional design with turbo-jets is particularly appropriate. The extremely high air speeds and the combination of direct and indirect spray steam, permit an excellent finishing quality and drying performance to be achieved even in the case of heavy fabrics.



Cleaning Device

The robust cleaning bar moves across the filter, pushing the lint pad and any articles lying on the filter into one of two collectors, without interrupting the operation.

Modular Design

In addition to the advantages of the direct air flow, the arrangement of the fans at the top of the hot air channel also provides ideal conditions for the placing of functional components.

The heater battery covers the entire area of the suction chamber. The large, flat construction provides high performance, minimum flow loss, and, due to the relatively large spacing between the fins, low susceptibility to lint accumulation.

The large, precisely closing doors to the inlet chamber provide excellent access to the heater batteries and the condensate traps.

The double fans located above the doors are directly accessible behind easily removable sheet panelling.

This construction and the resulting easy access thus provide the best possible protection against a gradual drop in performance, finishing quality and thermal efficiency.

Air System

Air flow and distribution in the processing chamber have a decisive influence on the quality and performance of the finishing process.

The well known processing technique of injecting live steam by jets directly into the hot air stream flowing through slotted sheet metal has proved its worth in a wide area of applications over many years.

As an option, the EuroStar S-MT can be equipped with turbo-jets. The funnel shaped construction favours an extremely high air speed which, combined with direct and indirect steam sprays, guarantees an excellent finishing quality and drying performance even in the case of heavy fabrics.

Filter and Waste Disposal System

The tunnel finisher is a continuously operating high performance machine which is required to function constantly and reliably throughout the whole working day. Depending on the type of articles, a thick lint pad often builds up on the floor filter after only one or two hours, restricting the air flow in the system, or even blocking it completely. As a result, drying and finishing quality are impaired. For this reason, the EuroStar is fitted with an automatic lint cleaning system as standard which cleans the floor-level filter automatically at pre-selected intervals while the machine is in operation. A motor-driven bar with a rubber blade moves across the floor filter rolling up the lint pad as it goes, right up to the end zone of the in-feed and extraction chambers, where the lint is deposited in a collector and finally removed.

The particularly robust design of the cleaning bar also enables the removal of any articles which may have fallen down and hinder the air throughput by lying on the filter. A monitoring device recognises this obstruction which is immediately removed by the rubber blade and deposited in the collector.

Environment Protection System



The inner walls are covered with 120 mm of insulation (top and sides)

Environment Protection System

Working conditions are becoming an increasingly important criteria judging the quality of our workplaces. This is why the EuroStar is equipped with a protection system to prevent heat and noise emissions.

Direct air flow technology reduces the build-up of noise and radiation of heat because most air ducts are avoided.

Chambers at either end of the system with thermal air locks and curtain seals in conjunction with specific climatic controls in the treatment chamber prevent hot air from escaping.

The machine is additionally protected against heat loss by means of a 12 centimetre insulating cladding on all sides.

The fans are specially designed to minimise noise, something that is further helped by their integration in the machine's insulated cladding.

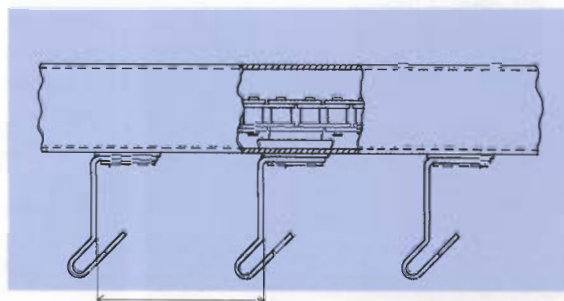
Transport system

Functional reliability during routine operations is largely dependent on the construction of the transport system. The EuroStar tunnel finisher has succeeded in uniting the advantages of optimum finishing process technology with an unusually, secure, robust and maintenance free conveying system.

The system is totally enclosed consisting of a conveyor chain in a C profile layout. The conveyor chain is equipped with specially designed transport hooks that ensure that the hanger sits securely and correctly in it and cannot become twisted. The system can deal with all types and qualities of hanger efficiently.

Unlike conventional systems, such as screw conveyors, the conveyor chain with the hooks has a decisive advantage when it comes to operating safety, namely that each hook retains a clearly defined position throughout conveying. So that it is impossible for the hooks to cross over, thereby keeping the distance constant between each hanger. This is important when it comes to reliability of conveying and finish quality. It is also crucial for conveyor systems with integrated destination control and precise monitoring of articles.

The conveying system consists of a stainless steel conveyor chain in a profile layout. The design enables each hook to maintain its clearly defined position - essential for integrated controlling.



The flexibility of the conveyor system is unchallenged in terms of incorporation in complete system procedures and external transport systems. Depending on the organisational and space requirements control can be from any direction, irrespective of the position of the hook (pointing left or right).



The conveyor hooks ensure that the hanger sits securely and correctly irrespective of the position of the hook, making for a smooth transition to the next transport stage.



The operating terminal enables all required operating functions to be handled; as well as programming and fault finding mode.

Control and Operator Terminal

A control unit with programmable memory is used to control and monitor the machine functions and processing sequences. The three main finishing parameters: transport speed (performance), temperature and steam spray pressure are constantly shown on the operator terminal display. All program and machine parameters are freely programmable and can be stored according to program numbers. Operational interruptions and faults are shown in the display and can thus be easily located.

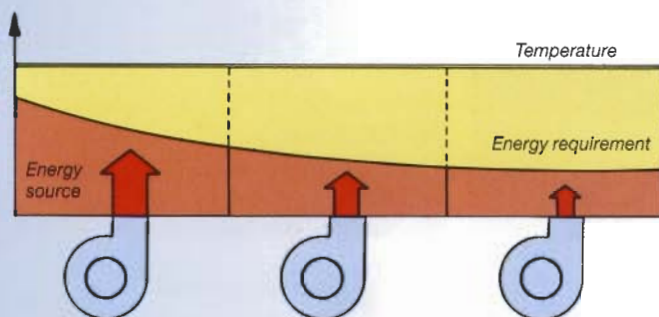
Extended functionality is offered by the optional IBT operating terminal. This design provides diagnostic and fault finding in clear text, together with additional MIS functions.



Pre- and post-chambers offset at 90°, with thermal air locks and integrated, individually controllable air throughput fans guarantee a stable processing climate in the tunnel and protect the environment against hot air and steam immissions.

S-MT Series – with gas heating

The varying energy requirement of the individual treatment zones is covered by the modular designed arrangement and the individual control of each gas burner. The result is a constant temperature throughout the treatment area.



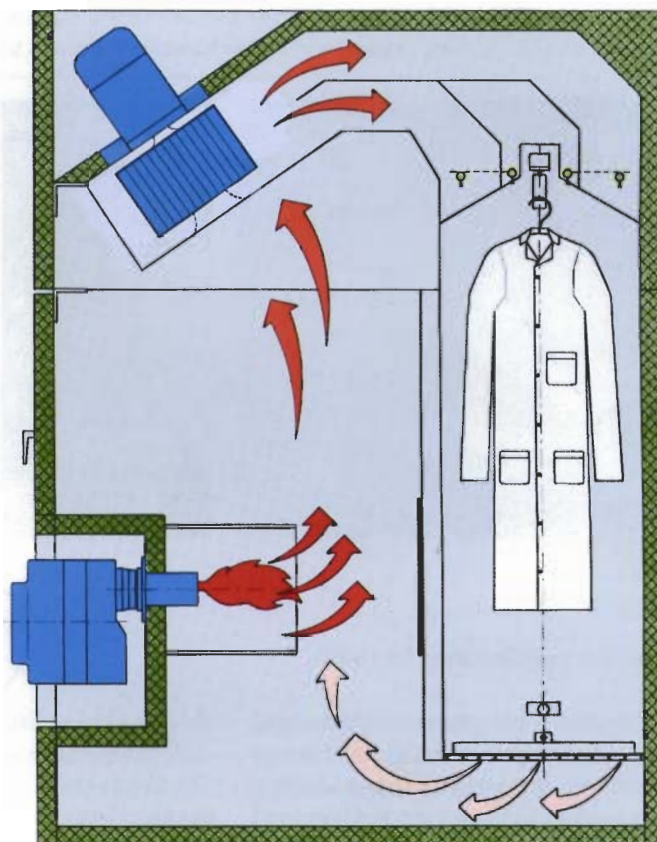
Gas heating system

As with the steam heated version, the modular principle has been applied in the gas-heated version. That is why each module is fitted with a compact gas burner with module control - an industrial product with a high level of operating reliability.

The decisive advantage over machines with a central burner is the demand-related supply of energy to each module. The amount of energy at the start of the treatment process is much higher than at the end due to the necessity to heat up the cold, damp articles. This is reflected in the excellent modular arrangement of the individual gas burners with separate controls. The result is a uniformly consistent temperature in all treatment zones, an avoidance of overdrying and a prevention of overheating at the end of the finishing process - something that could damage fabrics.

The gas-fired version also features very consistent performance and quality with minimum maintenance and low-level energy consumption thanks to the direct heating method used.

If required the high safety levels of the standard version can be further enhanced by adding an integrated sprinkler system.



The external gas burners integrated in the machine housing are easily accessible for adjustment and maintenance tasks. The direct heating of the ambient air flow with the gas flame means that an optimum heat transfer can be achieved.

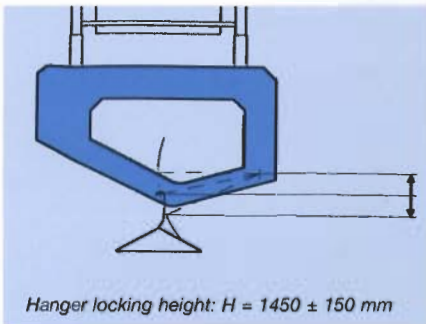
Construction features

- One gas burner per module
- Integrated in the housing yet freely accessible from outside
- Compact burner with module control
- Integrated blower
- Performance range 35 -100 kW
- Individual performance adjustment for each module
- Constant temperature throughout the treatment area
- Gas fittings housed in a compact unit
- High safety standard
- Optional sprinkler system

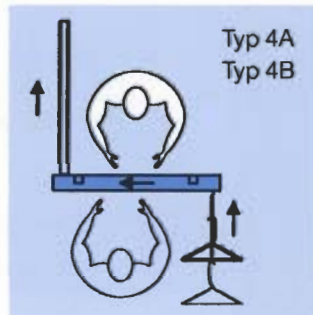
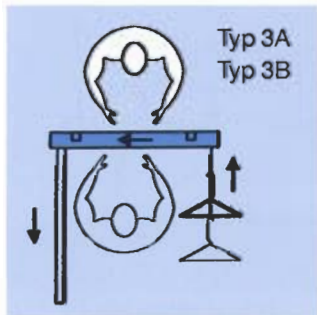
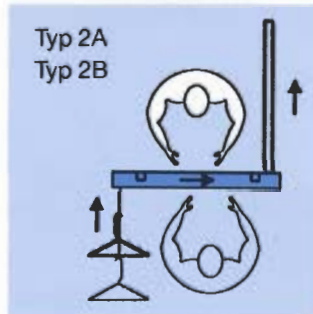
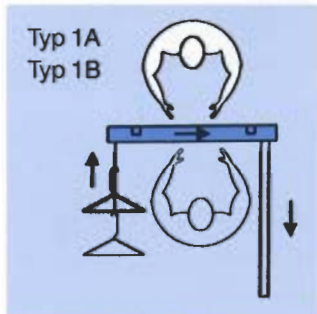
Advantages

- Consistent performance and quality
- Minimum maintenance
- Heater batteries do not get dirty
- No build-up of lint
- Economical energy consumption

Feeding height can be adjusted to the perfect ergonomic feeding height



The loading station on the rapid loader



Different versions of the empty hanger storage rail

Variations

There are many different versions of the rapid loader module, enabling it to cater for a wide variation of requirements in feeding technology.

The principle of the rapid loader

The empty hangers are held in a storage magazine. A hanger moves into the loading position as soon as the preceding hanger has been loaded with an article to be finished and has received the start command. The hanger is clamped in the loading position. As soon as the operator has issued the command, the clamp opens and the hanger with the garment enters the buffer storage area or the loading rail before the finisher.

The mechanism of the rapid loader is timed to activate every 2 seconds in order to optimise loading performance. In practice, hourly performance rates of between 400 and 500 items per rapid loader station can be achieved depending on the capacity of the operator and the handling required.

- For hourly performance rates of between 300 and 500 garments
- Suitable for all one way and re-usable hangers, as well as special hangers
- Can be operated from both sides for open and closed folds
- Feeding height can be adjusted to an ergonomic loading position
- Convenient and simple control unit
- The suspended design leaves the floor area free
- Compact design

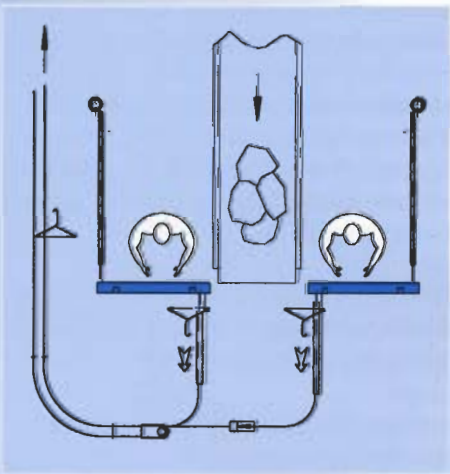
Direct feed systems to the tunnel finishers

Basic points

1, 2 or 3 rapid loaders are used, depending on the performance of the tunnel finisher. If several rapid loaders are required, then care is taken to ensure that the operators can feed items into the system independently. The independently fed stations are open onto the same loading rail. To avoid waiting time and collisions, each rapid loader is followed by a buffer rail. The items in this buffer lane are called up onto the main loader of the tunnel finisher by means of co-ordinated control unit, so that continuous work is guaranteed.

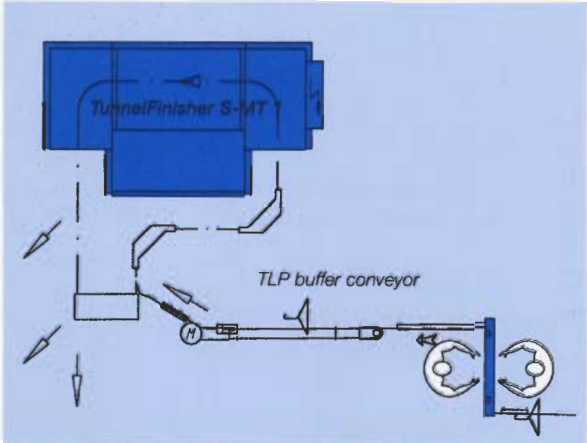
Special features – Batch feeding

As the example shows, it is possible to have a single batch processed by all the operators at the same time. This is often necessary for the subsequent sorting procedure according to buildings and wards, or according to routes, customers and wearers.

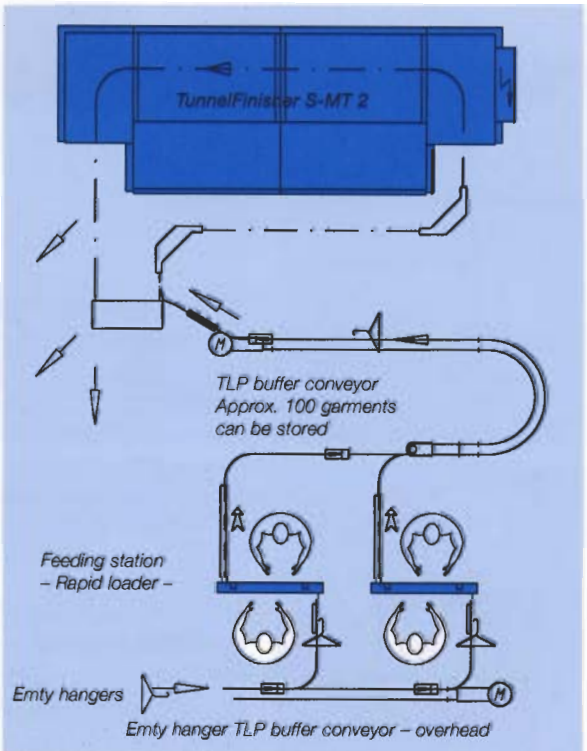


Sample layouts

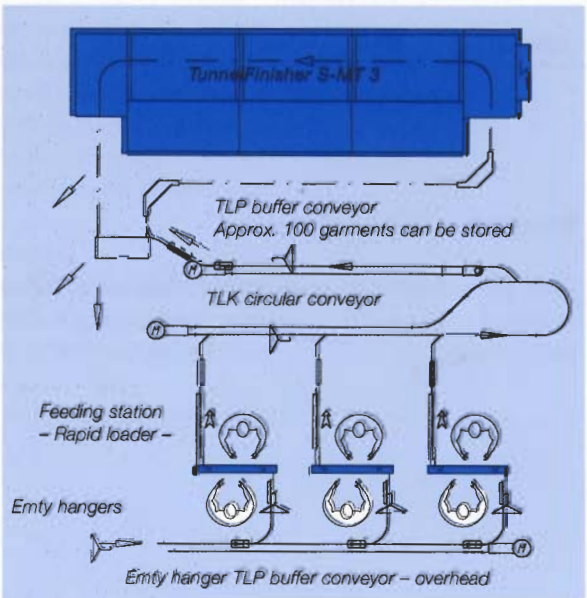
Performance of up to 500 garments per hour



Performance of up to 1000 garments per hour

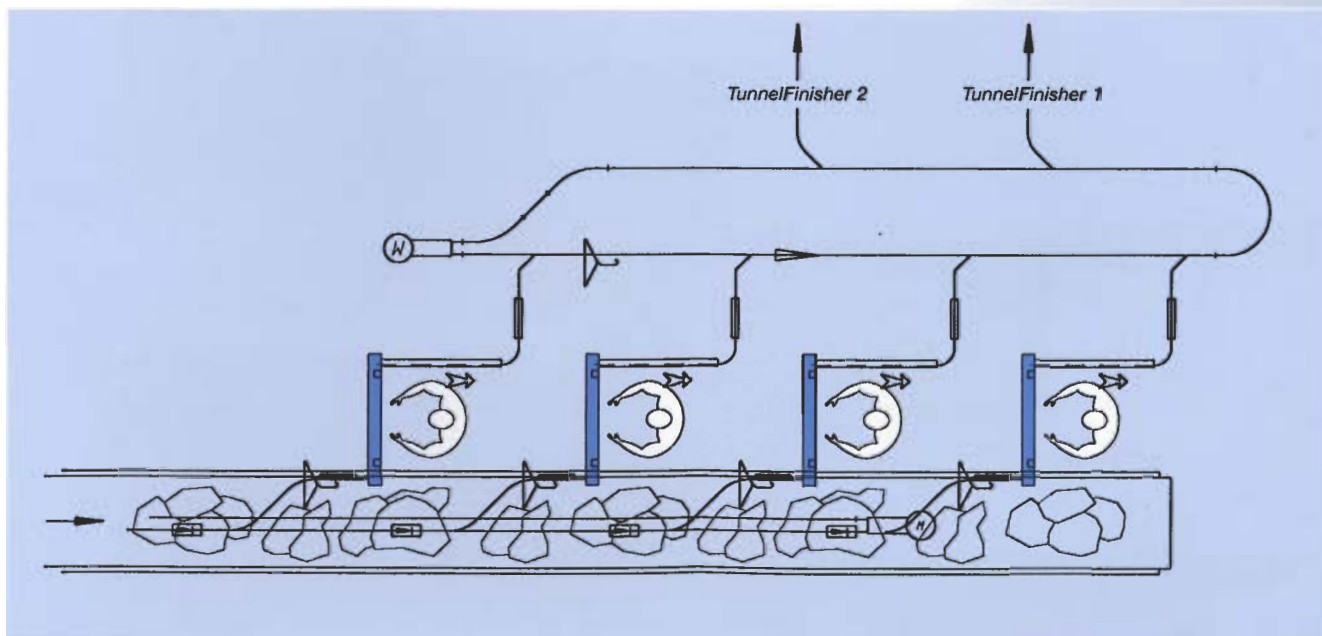


Performance of up to 1500 garments per hour



Decentralised feeding systems to the tunnel finishers

Sample Layouts



Garments arriving at the Rapidloaders by conveyor belt

Basic points

The use of flexible conveyor technology means that the feeding system can be situated in a completely separate location from the tunnel finisher, so that several tunnel finishers can be fed without problem from a feeding system consisting of several stations. The feeding of the individual finishers can be programmed as required, resulting in a definite, flexible organisation that reliably takes account of organisational issues, such as the continuous and maximum use of the feeding stations and tunnel finishers.

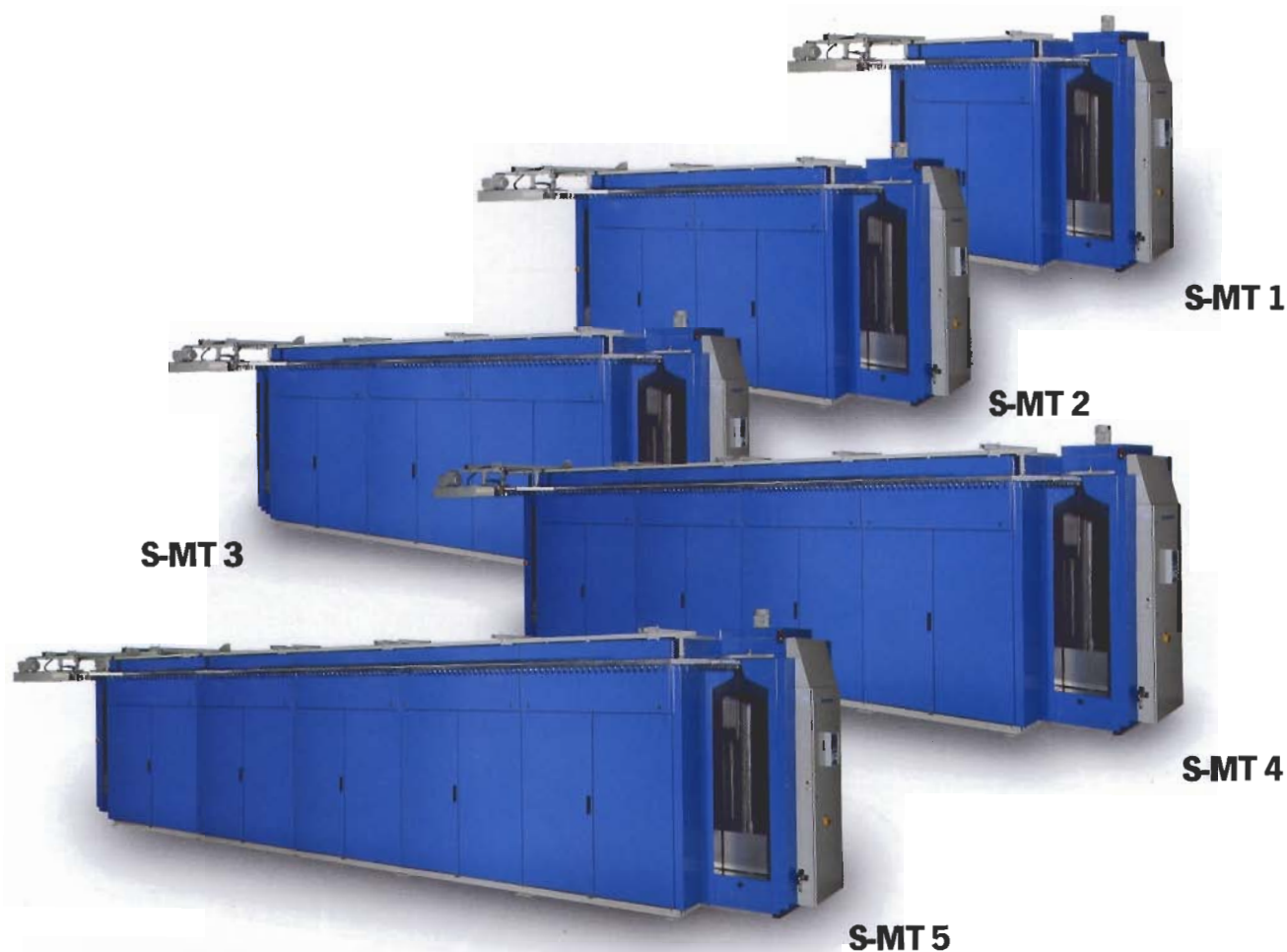
Special features

When the items are delivered in a folded state, the empty hangers can be returned to the system automatically.

The automatic system ensures that the rapid loaders are continuously supplied with empty hangers.



The EuroStar Series



Technical data S-MT steam-heated

Model	Machine			Garment Size mm	Weight kg	Moisture Evaporation l/h	Steam Pressure bar	Steam Consumption* kg/h	Air Pressure bar	Air Consumption l/h	Elec. connection without loading and unloading system kW	Electrical Consumption kWh
	Width mm	Height mm	Length mm									
S-MT-1	1820	2460	3370	1850	2000	70	8-13	160-235	6,5	46	13,5	9,5
S-MT-2	1820	2460	4970	1850	3200	140	8-13	280-420	6,5	65	21,5	15,1
S-MT-3	1820	2460	6570	1850	4380	210	8-13	405-630	6,5	83	29,5	20,7
S-MT-4	1820	2460	8170	1850	5460	260	8-13	490-790	6,5	101	37,5	26,3
S-MT-5	1820	2460	9770	1850	6640	330	8-13	795-950	6,5	120	45,5	31,9

* Depending on garment weight and residual moisture

Technical data S-MT gas-heated

Model	Machine			Garment Size mm	Weight kg	Gas Pressure mbar	Gas Consumption m³/h	Moisture Evaporation l/h	Steam Pressure bar	Steam Consumption kg/h	Air Pressure bar	Air Consumption l/h	Elec. connection loading and unloading system kW	Electrical Consumption kWh
	Width mm	Height mm	Length mm											
S-MT-1	1820	2460	3370	1850	1650	20-200	6,0-8,2	75	6-13	55-130	6,5	35	14,0	9,8
S-MT-2	1820	2460	4970	1850	2655	20-200	10,5-14,0	150	6-13	90-230	6,5	40	22,0	15,4
S-MT-3	1820	2460	6570	1850	3660	20-200	15,0-19,8	225	6-13	170-355	6,5	45	30,5	21,4
S-MT-4	1820	2460	8170	1850	4665	20-200	19,0-25,3	280	6-13	240-450	6,5	50	39,5	27,7
S-MT-5	1820	2460	9770	1850	5670	20-200	25,0-31,0	355	6-13	310-560	6,5	55	47,0	33,0

* Depending on garment weight and residual moisture