TECHNICAL DATA SHEET

SK1TFPM

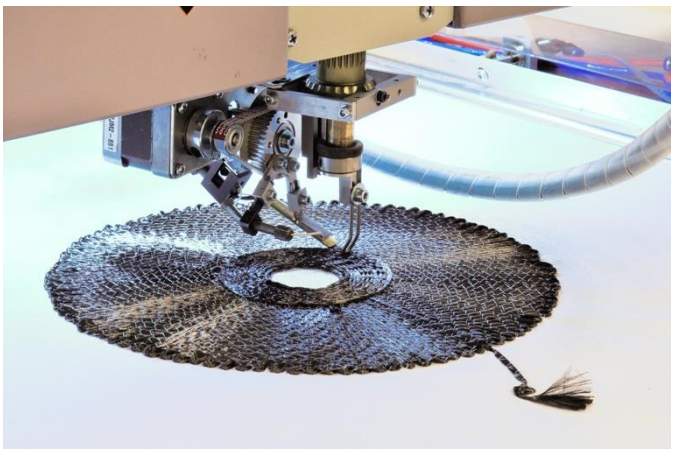
Laying machines for fibers and wires

► DESCRIPTION

The Technical fiber placement Systems of “ZSK Stickmaschinen” GmbH enables with the use of new and innovative techniques the laying and fixing of different media on textile and/or flexible carrier material.

The laying with ZSK embroidery machines, meaning the fixing through embroidering is one of the most accurate and efficient production methods.

Media like wires and any kind of fibers, tubes and optical fibers can be layed flexible and will be fixed secure and strongly through embroidery techniques like the ZigZag stitch. Materials with different conditions like Polyamid, Polyester, PPS or Aramid are available as a yarn. For products with special load requirements yarns with a steel core can be used if applicable.



► ADVANTAGE

1. Superior Flexibility

The outstanding and essential difference between the processes of ZSK‘s Technical Embroidery Systems and techniques like weaving, knitting or even braiding consists into the absolutely free and flexible laying of the media at the 2-dimensional level of the carrier material. The laying is limited only by the physical characteristic of the media.

2. High Level of Automation

A significant higher efficiency can be achieved at the production of technical textiles by using our advanced automation techniques. Quality, production output and labour costs will benefit on a high level from the options which are available for any machine of ZSK‘s Technical Embroidery Systems.

► APPLICATION OF LAYING WIRES

The laying of wire is an essential part in the production of many products from all spheres of life today. Laying wire with ZSK‘s Technical Embroidery Systems is cost efficient, more reliable and environmentally friendly.

One of today's most innovative fields of activity is the embrodering of antennas (RFID) and sensors on textiles. Without any damage of the textiles characteristic signals like fill level, movement or temperature can be measured and relayed.

Laying wire with ZSK's Technical Embroidery Systems can be found at many other fields of application.

- heated working- or outdoor clothing,
- luminous textiles to improve security or comfort,
- heated steering wheels,
- heated car seats,
- embroidered circuits, to integrate electrical functions into clothing,
- infrared heating systems,
- protective systems for safes
- electromagnetic shielding for tap-proof chambers

► APPLICATION OF LAYING FIBRES

A radically new technology to built up reinforcement fabrics is the free orientation, placing and fixing of reinforcement materials through an embroidery machine.

It can be used in applications where the production of components or textile structures requires the stitching of variable-geometry ply stacks, where fabrics need to be reinforced locally, or where fabrics must be assembled.

Various materials like carbon-, glass- and aramid fibres, wires etc. can be processed. Single layed rovings are fixed to the base material by stitching.

During the process, the base material is moved by the pantograph, enabling to lay rovings in any direction and quantity.

TFP - Tailored Fiber Placement

Another major advantage of this new process is to be able to lay the rovings according to the distribution of forces within a structural component.

100% reproducibility speaks for itself and is accomplished by the following:

- automatic preform production
- high dimensional accuracy

- low mass tolerance
- reliable identical laying roving

This cost-effective process is driven by high stitching speed on one hand and multiple laying heads on a machine.

In comparison to other textile technologies the expensive loss of materials is kept to a minimum. Accordingly, the problem of waste disposal is very little.

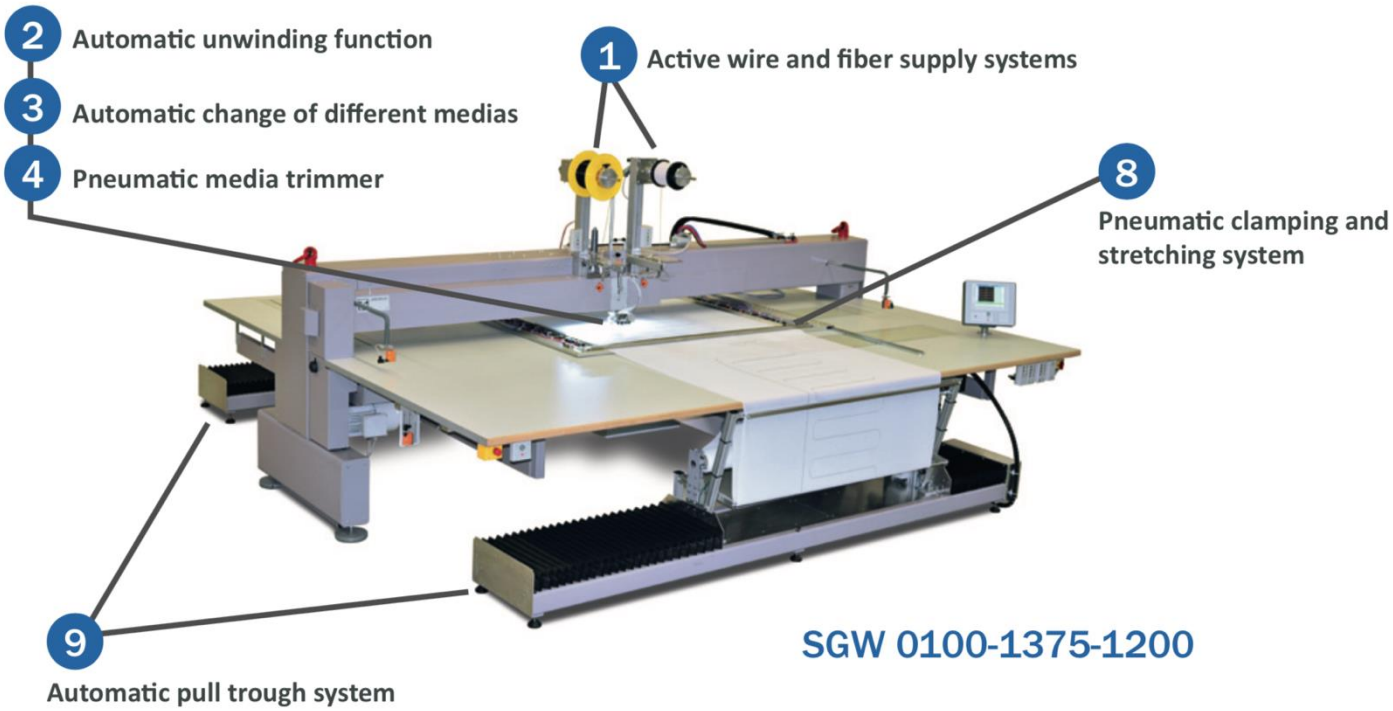
► OVERVIEW

Machine models and laying sizes for technical embroidery machines.

	JCW 0100-500-700	SGW 0100-1375-1200	ZCW 0400-1800-1500
No of laying heads	1	1	4
Head distance	n.a.	n.a.	1800 mm
Fabric feeding direction	1 x back to front	1 x back to front	left to right
Fabric feeding system	automatic	automatic	semi-automatic
Max laying depth	600 mm - multiple	1100 mm - multiple	1200 mm
Max laying width	450 mm	1200 mm	4 x 1800 mm
Max fabric width	620 mm	1400 mm	1400 mm
Max frame travelling l/r	450 mm	1375 mm	2150 mm
Machine net size l/w	1600 mm x 1800 mm	4100 mm x 3800 mm	13000 mm x 3500 mm

ZCW 0800-900D (1500)

Reference	YCW 0600-1180-1500	ZCW 0800-900D-1500	ZBW 1100-750-1200
No of laying heads	6	8	11
Head distance	1180 mm	900 mm	750 mm
Fabric feeding direction	6 x back to front	left to right	left to right
Fabric feeding system	automatic	semi-automatic	semi-automatic
Max laying depth	1400 mm	1200 mm	900 mm
Max laying width	6 x 700 mm	8 x 900 mm / 4 x 180 mm	11 x 750 mm
Max fabric width	6 x 900 mm	1400 mm	1100 mm
Max frame travelling l/r	700 mm	2150 mm	950 mm
Machine net size l/w	8900 mm x 3600 mm	13000 mm x 3500 mm	12700 mm x 2900 mm



► OPTIONS

The following options are available for all ZSK Technical Embroidery Systems which guarantees a significant degree of automation.

JCW 0100-500 (700)

1. Active wire and fiber supply systems

Two supply systems can be installed on each laying head. Each supply system can take wire or fiber rolls up to 10kg.

2. Automatic unwinding function

The advantage to supply wires and fibers from big rolls bears the disadvantage that the materials has to be guided to the zig-zag layer by pipes and that limits the possible rotation to 360 degrees. Because of this limitation wires could not be laid in spirals for example. ZSK has solved this problem by an automatic unwinding function!

3. Automatic change of different medias

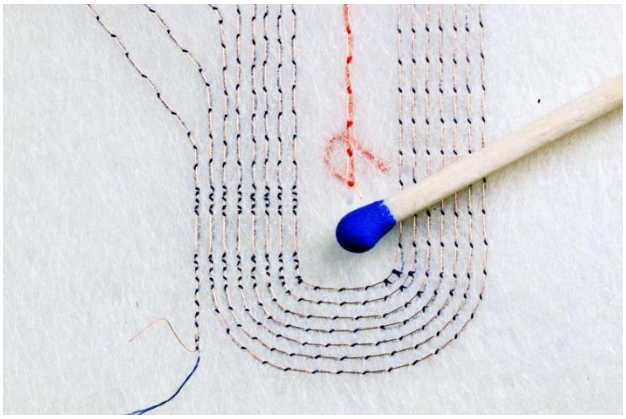
The change between two different medias like two different wires or fibers and wires is fully automatic. (Patent pending.)

4. Pneumatic media trimmer

The pneumatic trimming system cuts all kind of fibers and even stronger wires.

5. Wire hit detection system

If a laid wire is hit by the needle the machine stops and indicates the affected laying head. The defective part can be marked to be sorted out. In many branches like in the production of car seat heating systems this function is obligatory.



6. Fast fiber laying

For large objects a fiber laying speed up to 5m per minute can be reached

7. Carbon protection for the electronics

All electronic devices of a ZSK laying machine are protected against carbon dust.

8. Pneumatic clamping and stretching system

A very flat designed clamping and stretching system for the carrier material.

9. Automatic pull trough system

The carrier material is automatically pulled trough from roll to roll, back to front.

The automatic pull through system is available for all one head laying systems.

YCW 0600-1180 (1500)

- Carrier material (woven, non woven, foils) up to 140cm wide is pulled automatically from back to front.
- The roll and re-roll stands follow the side movement of the pneumatic frame which allows to transport and re-clamp the carrier material in any position of the frame.
- Transporting and re-clamping is possible in back to front and vice versa direction in the middle of a wire laying design.
- The length of a wire laying design is just limited to the length of the carrier material available on the roll.
- The unrestricted changing of the transporting direction of the carrier material allows to have the start and end of a wire for example at one point for easy connection.

10. Semi automatic pull trough system

In case of multi head laying systems (up to 11 laying heads) the carrier material is pulled trough from left to right. In connection with a pneumatic clamping and stretching system and the motor supported roll up the loading time takes less then 2 minutes.

11. Automatic bobbin changer

The pneumatic bobbin changer for the under thread is equipped with a magazine for 7 full and one empty bobbin for up to 8 hours of running time.

► NOTE

Please contact us for more detailed information as well as for system development according to your technical specification.

Standard warranty period: 12 months