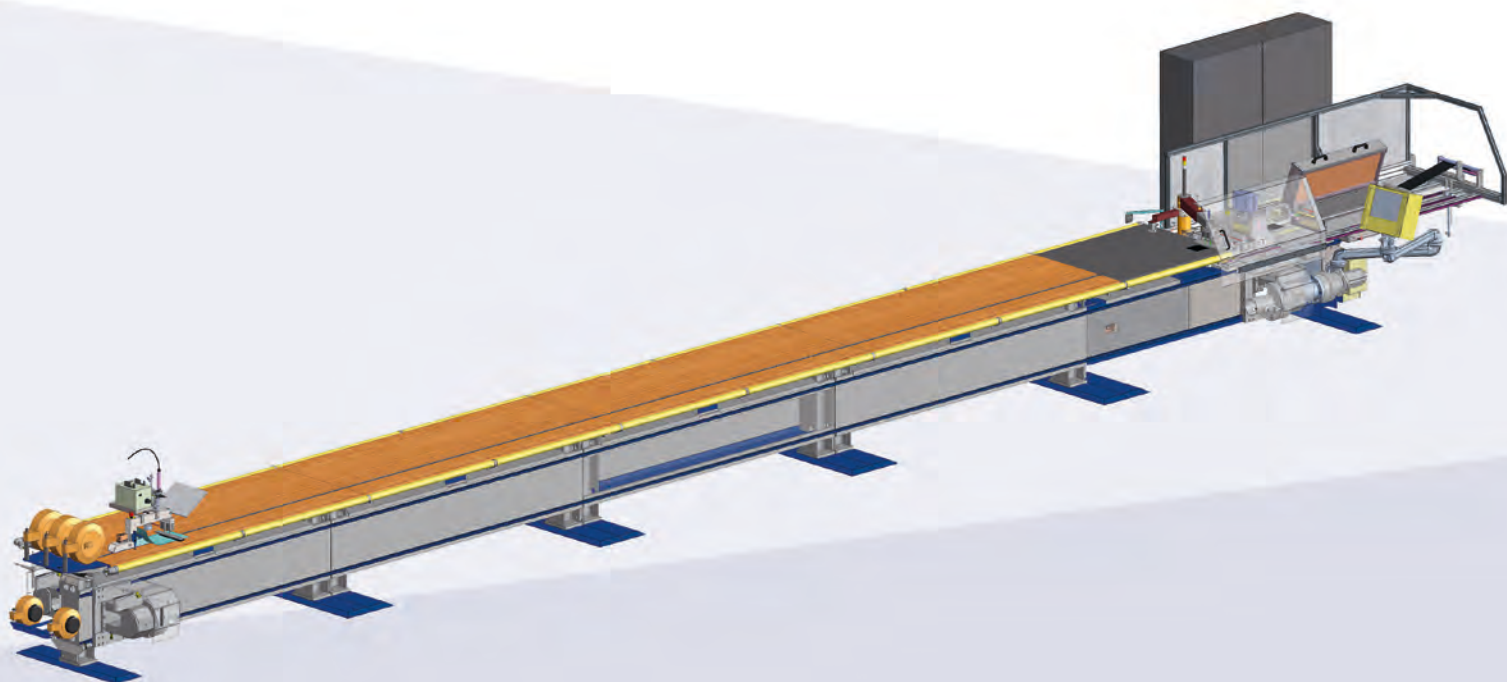


# *Filling Table*



Machine programme

The performance range of our special purpose machines covers all production steps from the manufacturing of spirals over the jointing and filling to the thermosetting, cutting and welding of screens. By connecting the individual machines to a closed production unit, an efficient and effective manufacturing is made possible.

Our special purpose machines can be subdivided into following production areas:

Machine type	Production Areas
Spiral machines	Production of individual spirals (left/right) from various monofilaments with various cross sections
Jointing tables	Joining and connecting individual spirals (up to 64 at the same time) for the production of spiral sleeves
Filling tables	Filling fixed and unfixed spiral sleeves with cored wire (up to 32 at the same time) with various cross sections
Calender	Heat setting
Cutting and welding machines	Marking, cutting edges, welding edges. Can be used for both felts and sleeves
Coiling system for nonwoven products	Production of non-woven products as standalone machine unit or expansion of existing calender unit

You will achieve top quality production with our specialty machines!

EFFICIENTLY, PRECISELY AND RELIABLY

Filling Table

With our filling table, you will be able to process all common spiral screens. Innovation has always been a very important factor in our company. The modular structure of the filling table makes it possible to keep pace with your new developments by simply replacing individual components.

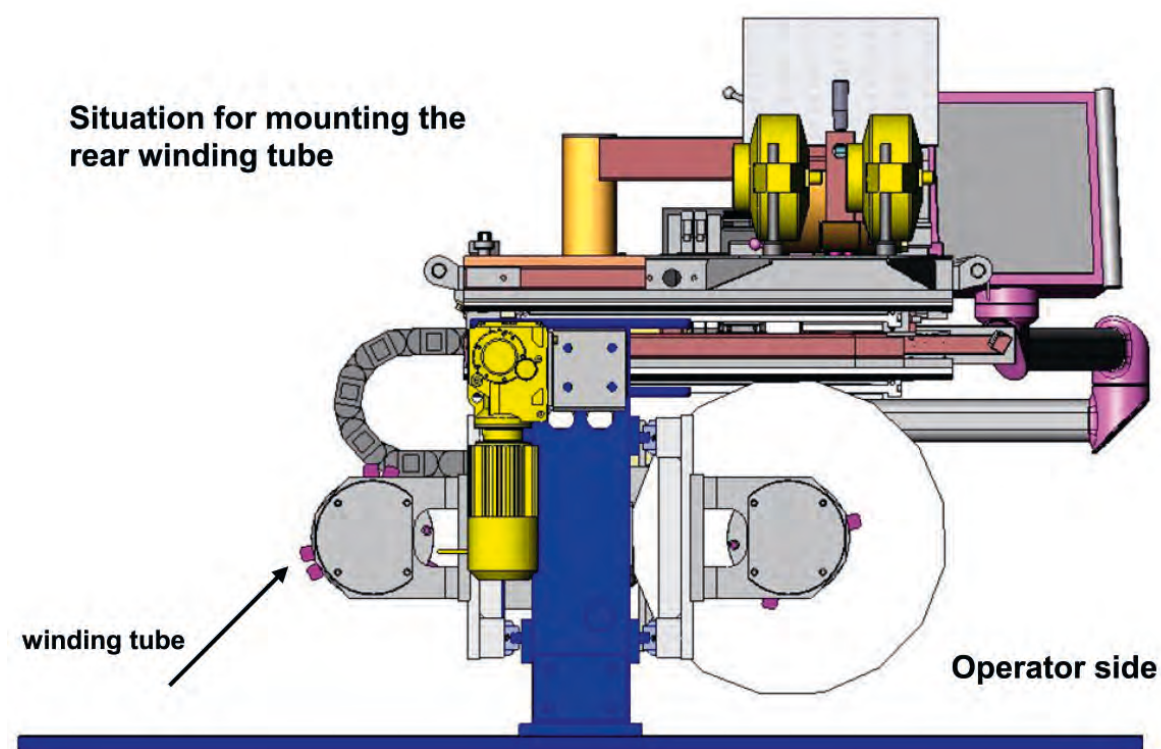
With our filling table you will be able to:

- » fill spiral screens with spiral sizes of all kind
- » process most different filler-wire profiles, such as round wires and flattened wires
- » fill up to 32 spirals at the same time
- » process screens with a width of up to 11,45 m
- » fill unfixed and fixed spiral screens

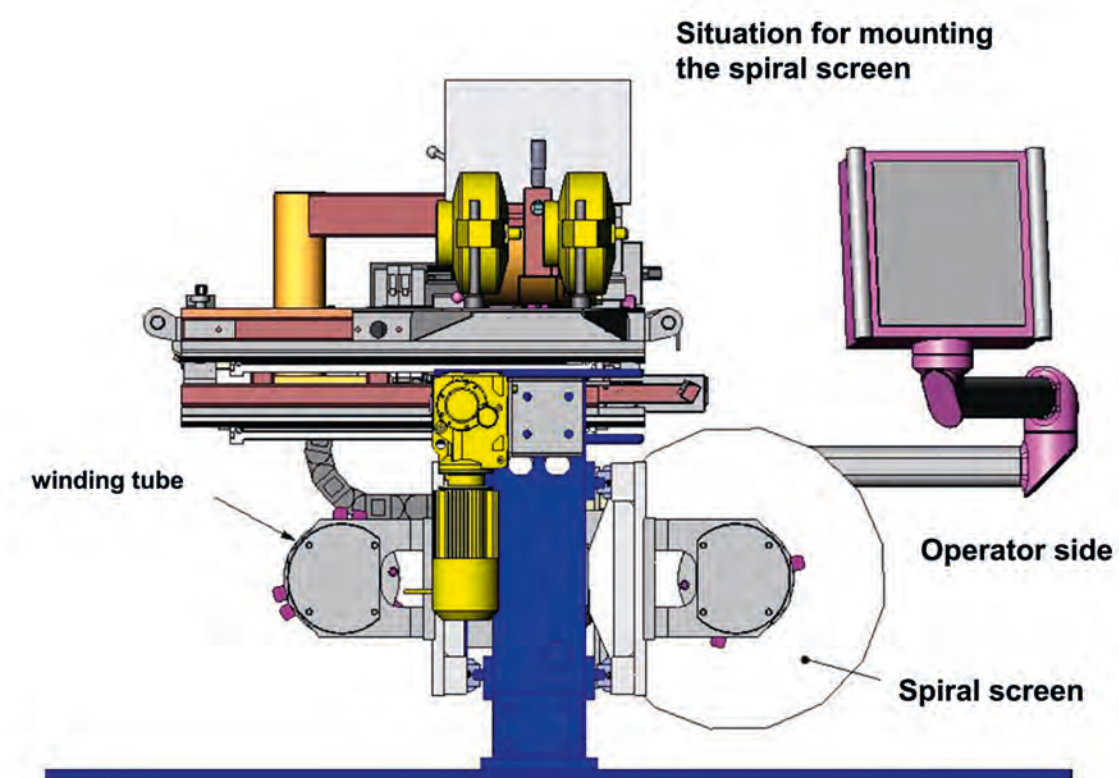
## 1. Insertion of winding tubes and alignment of screen fabrics

### *Functional Characteristics*

For the insertion of the rear winding tube, the table plate is moved forward towards the operator side. In this position, the rear winding tube can be mounted or removed.



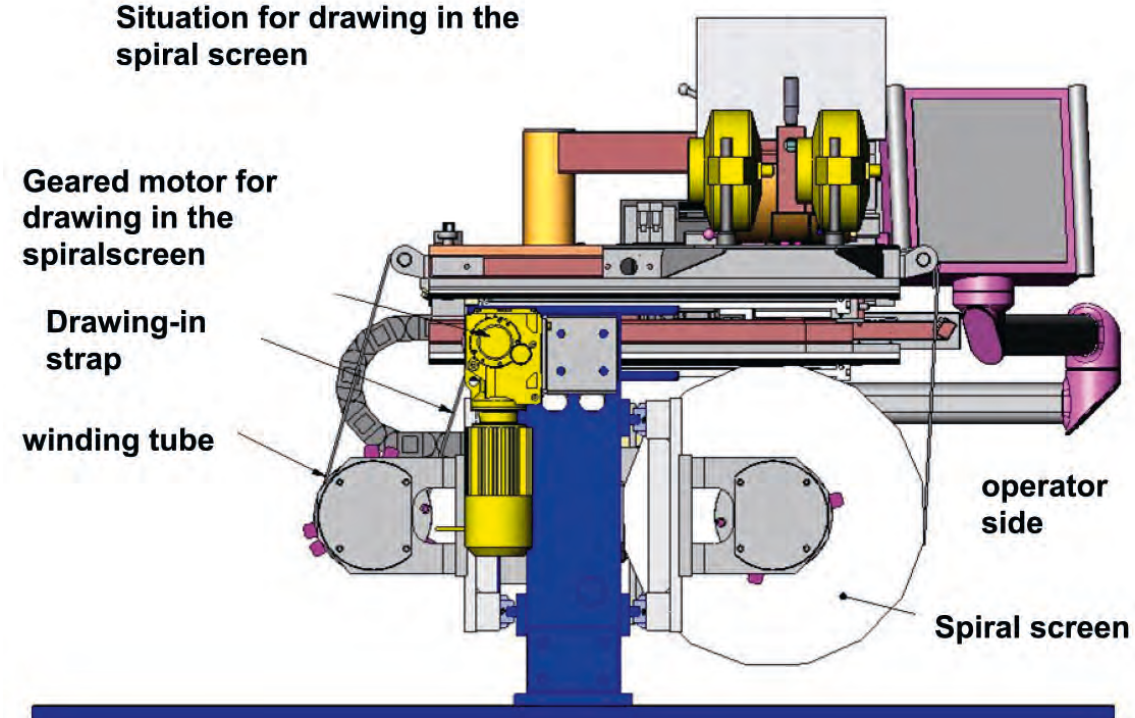
After retracting the table plate, the spiral screen to be filled which is wound up on a winding tube is inserted on the operator side.





As a drawing-in help, draw-in straps located on a reel at the rear side of the table are placed on the table and fixed to the screen fabric by means of a spiral seam. Now, the screen is transported to its filling position with the help of the reel and winding motor. Then, the screen fabric can be installed on the machine until the beginning of the screen has reached the height of the filling matrix. After having adhered the screen on the winding tube, the draw-in straps are removed from the screen and wound up on the reel again.

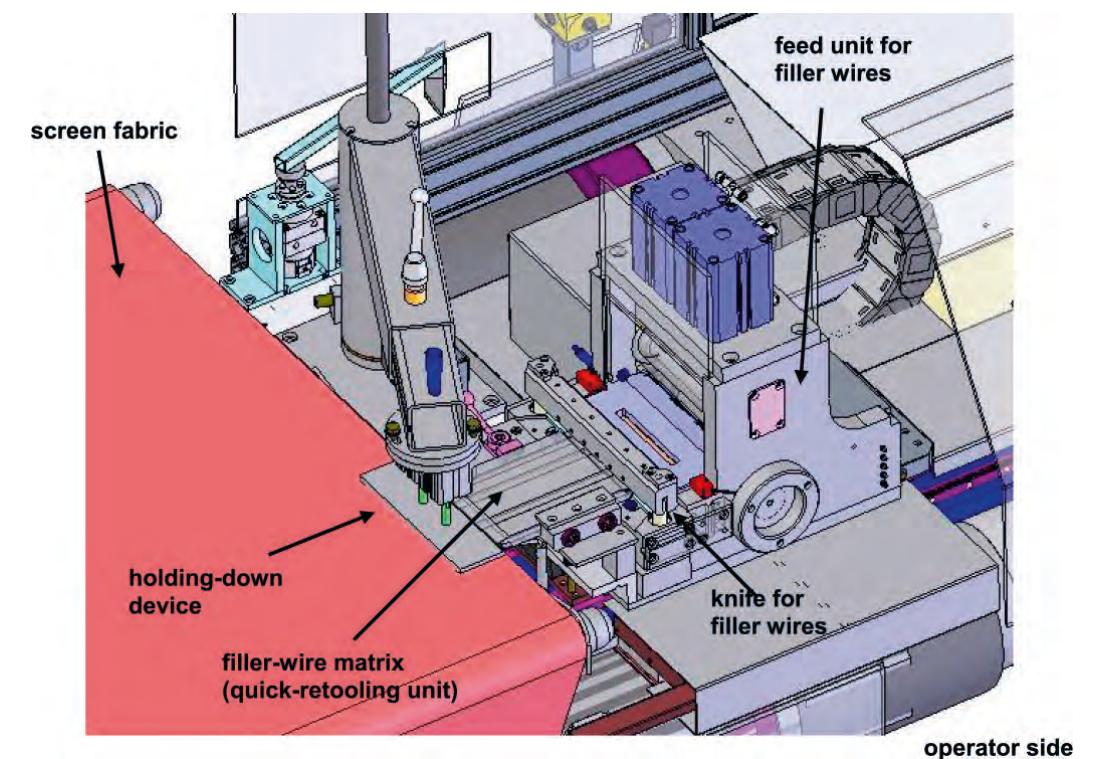
**Situation for drawing in the spiral screen**



Before the semi-automatic filling process starts, the rear and front winding drive are positioned via the manual control in such a way that the right screen edge (seen from the operator side) is aligned with the table edge.

During the filling process controlled via the semi-automatic menu, the screen edges are detected automatically with the help of sensors. While the carriages are positioned at the winding drives, the edge is controlled in such a way that it is always led optimally alongside the filling matrix. It is important for the filling process that the fabric is constantly under tension. For this purpose, the speed and the torque of the servomotors moving the winding tubes can be controlled continuously and independently from each other over a potentiometer from the control panel in right and left direction. Due to the additional diameter recognition of the coil it is

possible to guarantee a constant tensioning of the screen fabric during the entire filling process.

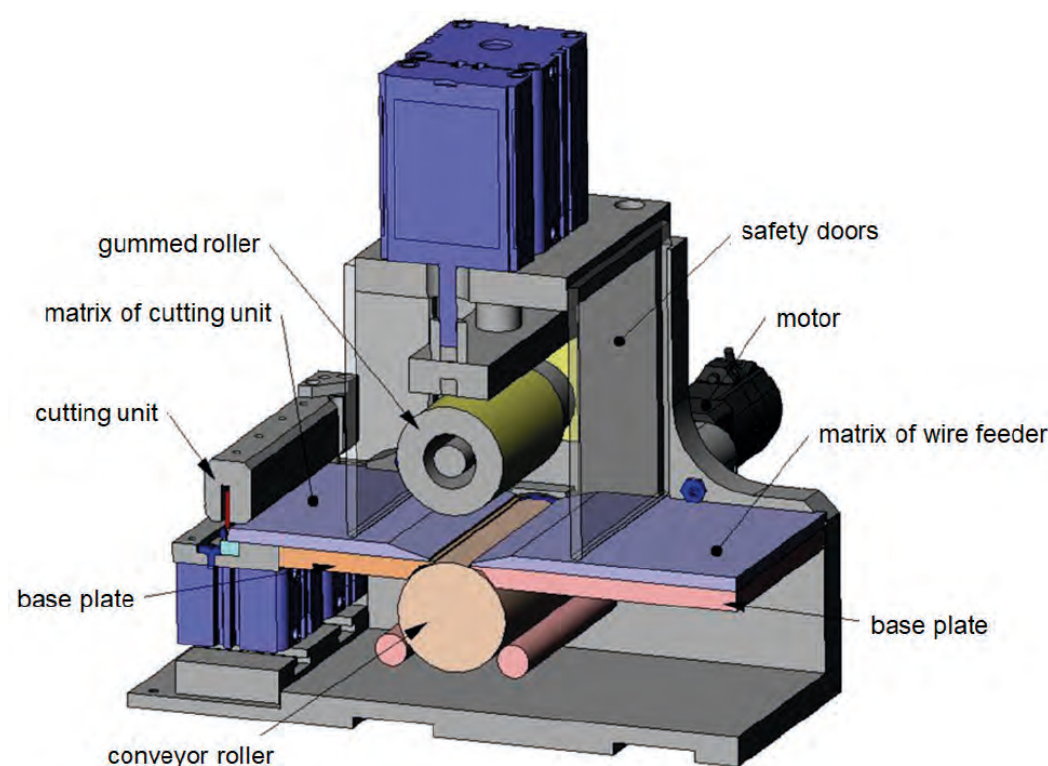


## 2. Setting the Wire-Feeding Unit to the required filler-wire type

### Wire feeding unit

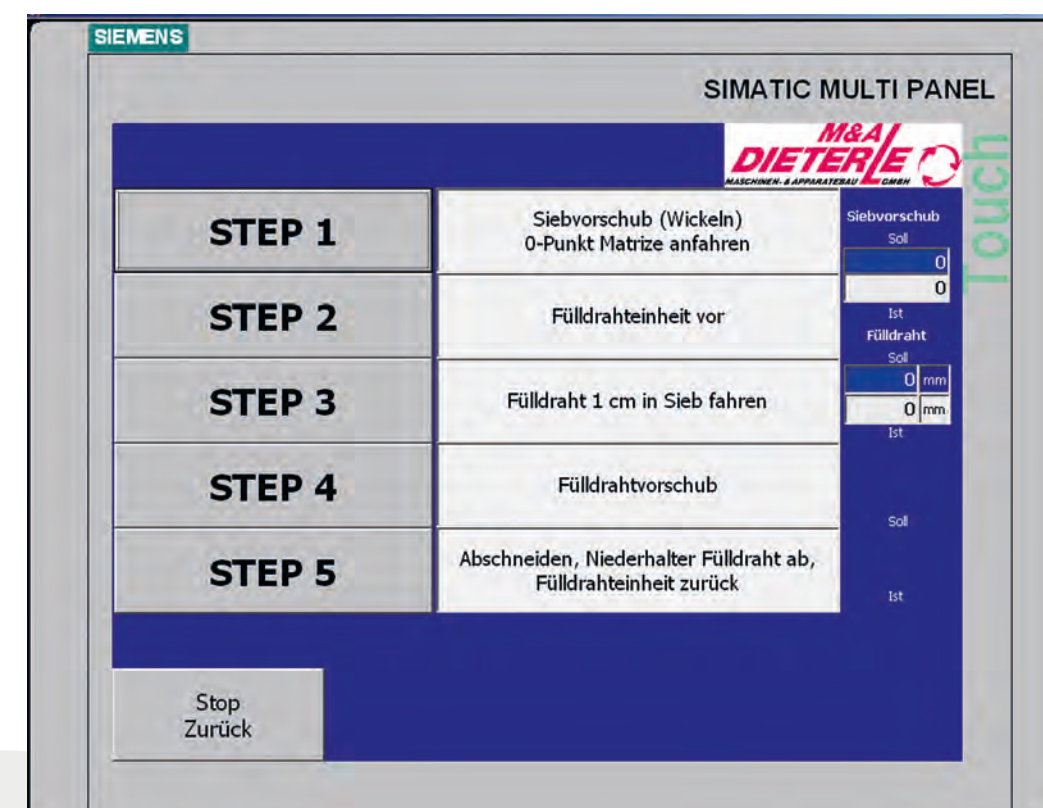
The matrices in the wire-feeding unit and the filler-wire matrix at the quickretooling system are selected according to the wire type used.

- » The individual filler wires are drawn in through the feeding reed and the fixing box for filler wires where they are straightened thermally, through the matrices and the conveyor roller until reaching the quick-tensioning matrix.
- » The wires transported to this position are then cut and pointed at the cutting unit integrated in the wire-feeding device with an adequate excess length. The operation of the conveyor roller and cutting frame is made by pressing key fields on the touch screen or via the control dial of the control panel.



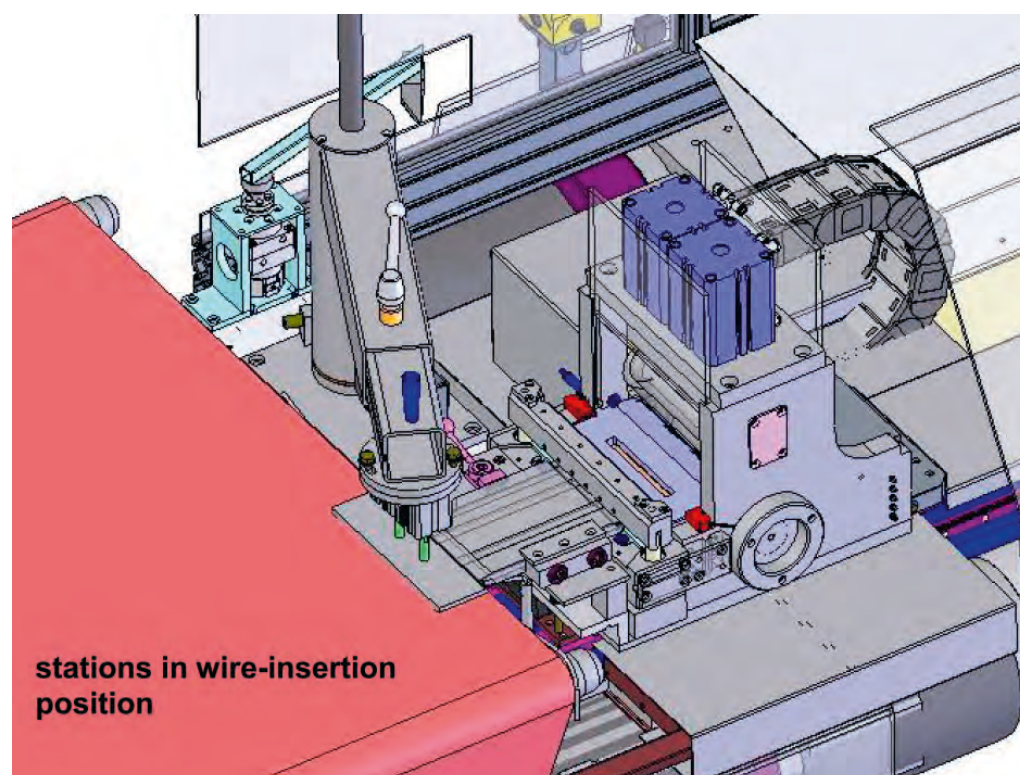
## 3. Filling process

- » At the table edge near the quick-retooling matrix, two laser feelers are installed for the correct screen forward feed for fixed and unfixed screens.
- » With smaller spiral sizes, up to max. 32 filler wires can be inserted simultaneously into the spiral screen.
- » In diverse menus all required parameters can be set and all table functions can be controlled manually.
- » The number of revolutions of the conveyor roller and the resulting filler-wire speed can be selected continuously via control dials or parameters.
- » As soon as all wires are inserted into the screen, the speed of the filler wires can be increased. All settings needed for this purpose and the indication of the required process parameters (speed / heating temperature) are made/displayed on the control panel.
- » For the initiation of the semi-automatic filling process, all stations are brought to their initial position. Then, the menu for the semi-automatic process is started. In this menu, only step by step (1 – 5) can be worked off.

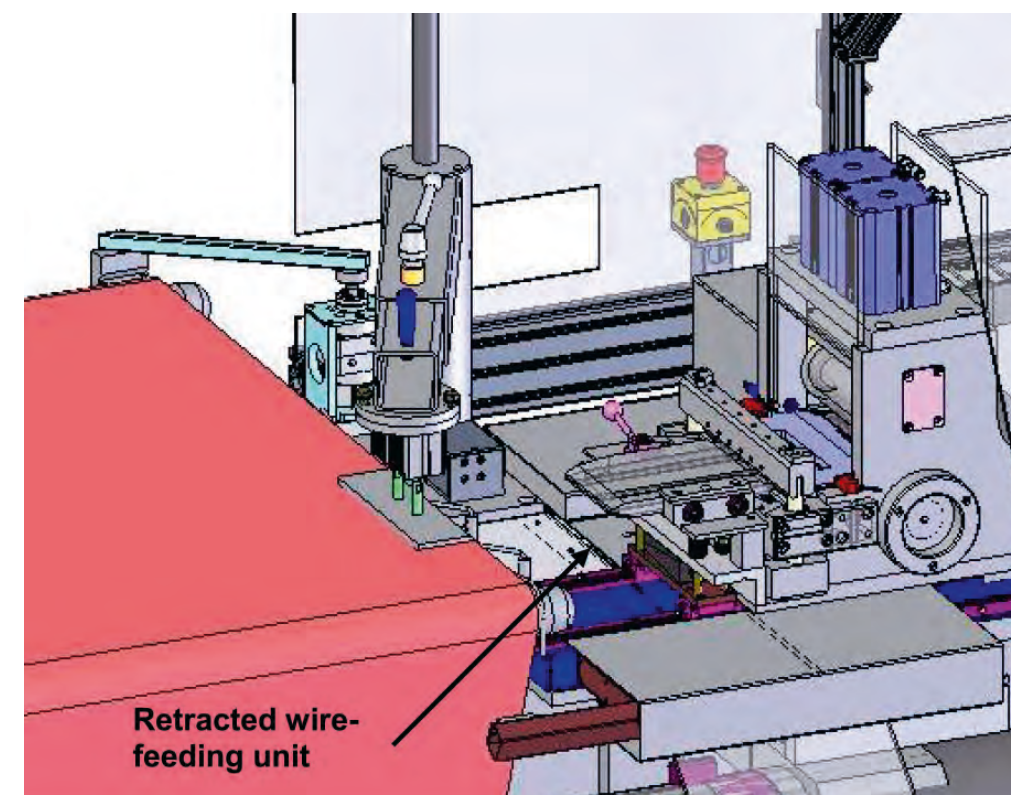




- » By pressing the key field, a corresponding operation is initiated in the correct sequence. This procedure has the advantage that after each step a manual intervention is possible for a correction, if needed. By deselecting the automatic process, a change to the manual mode is possible again.
- » After all steps have been worked off, the menu begins again with step 1, and a new filling cycle is initiated.
- » The filler-wire length is user-definable and is set via parameter input in such a way that the filler wires – according to the shrinkage of the used filler wire - juts out a bit over the screen end.
- » The cutting of the filler wire is made automatically after having reached the filler-wire length.
- » After the cutting of the filler wire, the holding-down device moves down the screen end to retain the filler wires.

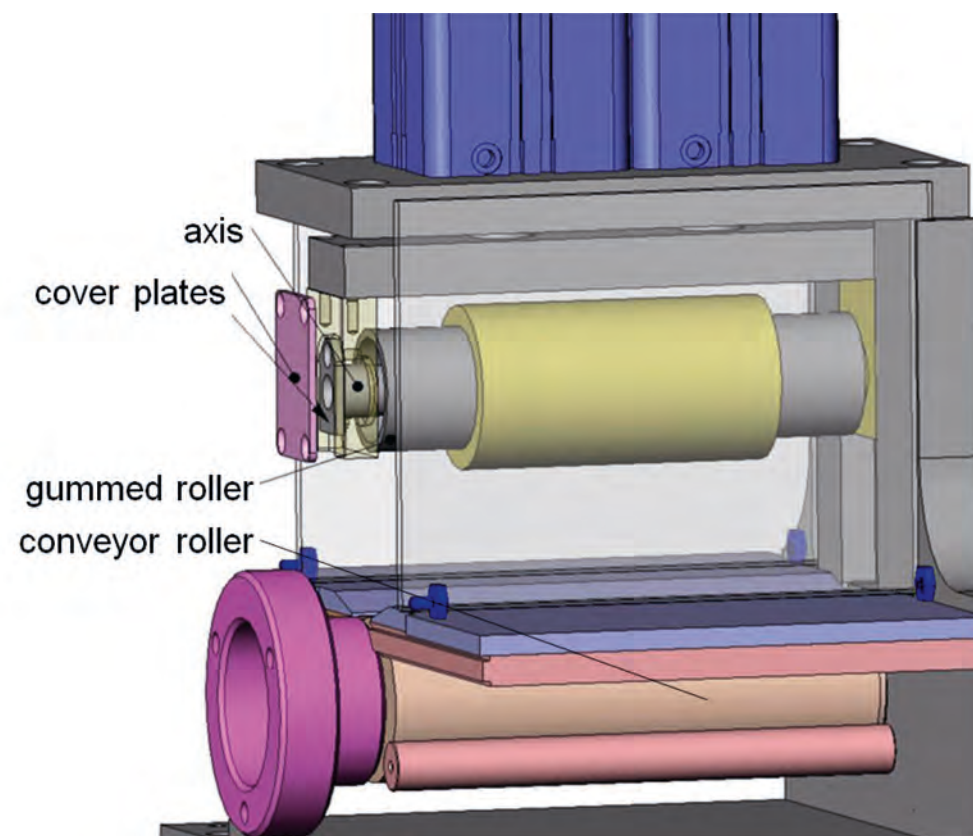


- » Then, the wire-feeding unit is retracted.
- » Now, the screen fabric is advanced automatically by the number of the entered forward feeds. The automatic mechanism scans the already filled spirals and positions the first empty spiral before the first wire-intake channel of the quick-tensioning matrix.



## Maintenance

- » The pneumatic components used are maintenance-free.
- » The electric components must be subjected to a regular visual control. If they are defective, they must be replaced.
- » The linear motors used must be maintained according to the maintenance plan of the manufacturer.
- » In case the pressure roller (see picture below) must be replaced, the procedure is very simple:
  - Unscrew the screws of the cover plates.
  - Remove the arbor on one side.
  - Take out the roller from the casing.



For making screen production even easier for you, we have further increased the quality of our filling machine. Due to this, we can now offer you

- » Faster retooling to other spiral-screen sizes / filler wires due to our quick-retooling system.
- » By changing the process parameters via the menu control, the machine can be controlled universally.
- » Due to the work-off of predefined steps and the application of the most recent control technique, a high process safety is guaranteed.
- » 25% saving of time possible by filling unfixed spiral screens



**Specifications:**

Electrical connection	3 x 400V +/- 10%, 50Hz +/-10%, 16A Power consumption: Max. 16.5kW (with heating switched on) Normal mode: approx. 4kW
Motors	Table adjustment: pneumatically Spindle motor: Servomotors Reel motor: Three-phase motor
Control System	Siemens: Simatic Multipanel Touch (24V DC)
Compressed-air supply	6 bar
Table lengths	customized
Heating (Fixing box)	Infrared radiator: max. 180°C Temperature is adjusted via temperature sensors
Filler wires	Round and flattened wires with profiles of all kind
Spiral sizes	From 4.50 x 2.50mm to 14.80 x 8.00mm
Capacity	32 filler wires per insertion. With a spiral size of 6.75 x 2.90mm and flattened filler wires of 3.45 x 0.85mm approx. up to 30 m <sup>2</sup> /h
Space required	Length: approx. 6.00m + required table length Width: approx. 2.70m

**TECHNOLOGY FOR YOUR BENEFIT**» **Advice**» **Partnership**» **Quality**» **Service**» **Customer satisfaction****M&A DIETERLE GMBH - Machine and apparatus engineering**Neuhofstraße 26  
D-73113 Ottenbach/GermanyTelefon +49 7165 201-0  
Mobil +49 170 22 40 260info@ma-dieterle.de  
www.ma-dieterle.de