**Example of**

TVP/3 – 12m – 60 ends
With MF/4, HEP/3, STV/3
and MAT/3 on top of the line

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**High Production**
- Up to 14 Tons per day
- Very high productivity & efficiency

**Versatility & Flexibility**
- Compatible with all types of yarn
- All types of effects

**Excellent Quality**
- Pin point effect – high tip definition
- Very high resistance to wear

**Full Control**
- Intuitive and user-friendly interface
- Connection to remote and Supervision system

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1. **RAT/3**
   - Ergonomic creel for up to 72 feeding bobbins - with yarn breakage detection

2. **MF/4 or MF/400**
   - Texturisation device for producing frieze yarn (option)

3. **DAV/3**
   - Prefeeding and coiler head for producing straight-set yarn (laying device)

4. **HMI**
   - Line control : 15” color touch screen - Intuitive user friendly interface

5. **HEP/3**
   - Pre-steamer for yarn bulking at 100°C (atmospheric pressure)

6. **RTV/3**
   - High efficiency cooling fan (one second RTV/3 at exit)

7. **TEP/3**
   - Tightening heads of the heat-setting tunnel : pneumatic technology

8. **TVP/3**
   - Heat-setting tunnel with saturated steam under pressure 110-145°C / 0.5 – 4.5 bars

9. **STV/3**
   - High efficiency dryer : to eliminate residual moisture

10. **CAR/3**
    - Taking-up backframe with photocell to control the bundle take-up speed

11. **MAT/3**
    - Yarn accumulator to ensure a continuous treatment of the yarn

12. **B401**
    - Automatic doffing winder up to 72 bobbins

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**High Production**

**Versatility & Flexibility**

**Excellent Quality**

**Full Control**
A heat-set yarn is a guarantee that the carpet aspect will last. It reinforces its resistance to wear (resilience), its dyeing affinity, its dimensional stability and its design.

These yarn properties bring to the carpet a very soft hand, a high tip definition as well as a long durability.

SUPERBA’s carpet yarn continuous heat-setting equipment sets all kinds of materials used to manufacture carpets and rugs: synthetics (polypropylene, polyamide, polyester, acrylic...), natural fibre (wool) and blends.

The TVP/3 line is able to heatset a bundle of 72 yarns (and more, depending on the yarn count) with saturated steam under pressure and a temperature regulation within +/- 0.3°C in steady state, due to decades of experience in the field. This stability is the guarantee to produce a very high level of quality and to avoid streaks in the carpet.

Saturated steam also enables to set the yarn at lower temperature than other processes because of its higher heat exchange capacity (1160 W/m².K° against 392 W/m².K° for overheated steam), thus avoiding yarn yellowing and dehydration.

SUPERBA’s heat-setting line is environment-friendly by using lower energy consumptions and provides sustainable solutions with machines engineered to last for decades.

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**CARPET MANUFACTURING PROCESS & HEAT-SETTING:**

1. **EXTRUSION**
2. **TWISTING / CABLING**
3. **HEAT-SETTING**
4. **WEAVING / TUFTING**

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Heat-setting the yarn is one of the 4 major steps in the carpet manufacturing process:

After the extrusion of BCF yarns (1), twisting or cabling (2), the yarn is heat-set (3) to develop the bulk, a perfect pin point effect and ensures a permanent setting of the twist, before being woven or tufted (4) to obtain high quality carpets.
YARN LAYING & TEXTURIZATION UNITS:
ALL TYPES OF YARN, ALL TYPES OF EFFECTS

DAV/3 - LAYING UNIT:
INCLUDED

PRE-FEEDING & COILER
- Yarn tension equalization
- Inverter controlled
- Tilting coiler head for an easy switch from straight to frieze (MF4/400)
- Reversible prefeeders (for right or left line configuration)

TENSION CONTROL
EASY THREADING
REDUCED MAINTENANCE
INVERTER DRIVEN

Installed power 9KVA - consumption 2KW/h
Up to 72 ends
Up to 690 m/min
Dimension: H 217 x L 176 x W 60 cms
Weight: 440 Kgs

MF/4-MF/400 FRIEZE UNIT:
OPTIONAL

TEXTURATION DEVICE
- from light to strong frieze effects
- Knit-deknit effect imitation
- PLC control for a perfect repeatability
- Exist in two versions: MF4 and MF400

WIDE RANGE OF FRIEZE EFFECTS
PLC CONTROL
200 RECIPES
HIGH CARPET COVERAGE

Installed power 7KVA - consumption 3 KW/h
Up to 72 ends
Up to 600 m/min
Dimension: H 150 x L 112 x W 102 cms
Weight: 580 Kgs

15 m3/h Air supply: 6 bars
Steam: 25Kgs/h

Please, refer to separate MF400 leaflet for more detailed information
YOU CAN USE EITHER:
• THE DAV3 FOR STRAIGHT-SET YARN
• THE MF4 (OR MF400) FOR FRIEZE YARN

STRAIGHT-SET YARN

DAV/3

HIGH tip definition
(pin point effect)
Soft hand
Sustainability

MF/4 FRIEZE

HIGH coverage
Knit-deknit imitation
Wide range of frieze
High reproducibility

HIGHLY even waves
Adjustable frieze effect from light to strong
Laser anti roll-up detection

MF/400 FRIEZE

FRIEZE YARN

MF/4 FALSE TWIST

MICROFIBER
RAT/3

**FEEDING CREEL**
- 4 levels of bobbins diameter
  300mm to 400mm
- Floor space saving
- Yarn anti-snagging disc
- Electronic yarn breakage detection
- Adjustable yarn tensioner
  for constant yarn tension

36 to 72 ends
in-line or side-by-side (module of 12 bob.)

Dimension for one module (12 Bob) : H 191 x L 269 x W 82 cms
Weight for one module : 210 Kgs

HEP/3

**OPTIONAL**

**PRE-STEAMER**
- Develops the bulk of the yarn
- Processing at atmospheric pressure (100°C) for Polyester
  and Polyamide yarns
- Improves the treatment homogeneity of the yarns

Steam : ~ 30Kgs/h
Water : ~ 25liters/h

Installed power 7 KVA –
consumption 1.5 KW/h

Dimension : H 145 x L 300 x W 84 cms
Weight : 600 Kgs

RTV/3

**COOLING FAN**
- Efficient cooling of the yarn layer
- One RTV/3 is installed at the entrance after the HEP/3 (if used)
- One RTV/3 is installed after the exit head (always)

Installed power 0.8 KVA –
consumption 0.3 KW/h

Dimension : H 79 x L 98 x W 60 cms
Weight : 95 Kgs
SUPERBA’s TVP/3 offers the greatest performances of its category: best productivity, full quality control, low operational costs, low resource consumptions, low waste levels, easy to use, are parts of the benefits offered by this heat-setting line configured according to your needs and specific requests.

**CONFIGURATIONS**

- 9m — 36 to 48 ends
- 12m — 36 to 60 ends
- 15m — 36 to 72 ends
- 18m — 36 to 72 ends

**ADVANTAGES OF SUPERBA PROCESS**

**HEAT-SETTING WITH SATURATED STEAM UNDER PRESSURE**

- Low energy consumption
- No fume rejection
- High tip definition (pin point effect)
- High durability of the heatsetting effects (resilience and sustainability)
- Streak free carpets
- Higher dye affinity (PA only)
- No fiber yellowing or oxidation

**TECHNICAL INFORMATION**

- Installed power 15 KVA
- Consumption 5 KW/h (belt+CBS/1xTCC) (add 1.5KW/h if entrance TCC)
- 100 -115 Nm³/h
- Air supply: 6 bars
- Steam: ~ 80 - 110Kgs/h
- Water: ~ 3 M³/h: no water consumption if recycled water but equivalency of 12-15KW/h for water cooling

**Dimension**: H 155 x L 1634 (9m tunnel) x W 153 cms

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Dwell time (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA 6</td>
<td>120 - 126</td>
</tr>
<tr>
<td>PA 66</td>
<td>130 - 135</td>
</tr>
<tr>
<td>PP</td>
<td>125 - 135</td>
</tr>
<tr>
<td>PET</td>
<td>140 - 145</td>
</tr>
<tr>
<td>WOOL</td>
<td>110 - 120</td>
</tr>
<tr>
<td>PAN</td>
<td>98 - 108</td>
</tr>
</tbody>
</table>

**COUNTER BELTS**

Guiding system for counter-belts or tapes holding the yarn on the conveyor belt

**TCC/3**

Turbo Cooling Chamber for efficient yarn layer cooling

**LOW ENERGY CONSUMPTION**

- Environment friendly

**VERSATILITY & FLEXIBILITY**

- All types of yarn: PA, PP, PET, Wool, PAN

**COMPLETE QUALITY & LINE CONTROL**

- User friendly & Easy to use

**VERY HIGH PRODUCTION**

- Up to 14 tons/day & more
CAR/3
REAR BACKFRAME

TAKEING-UP
- Adjustable S-Bar yarn tensioner with cooling
- Water cooling selection
- Electronic photocell for yarn taking-up
- Regulation (MAT/3 or winder speed control)

STV/3
OPTIONAL

DRYER
- Steam-heated air drying
- Deflector flaps for immediate drying circuit deviation when the line stops (avoids over-drying)
- Can be installed in series according to the drying capacity requirements

MAT/3
OPTIONAL

YARN ACCUMULATOR
The MAT/3 device enables to accumulate a high quantity of yarn onto its chute between the tunnel and the winder. So when the winder stops for the doffing, it allows a continuous production. Thus, the overall line efficiency can reach 98-99%.

Configuration
Chute length: 7m, 10m, 13m, 16m
Up to 72 ends
Installed power 5.5 KVA
- consumption 2.5 KW/h

Dimension (for ‘on the floor’) H 212 x L 150+chute x W 75 cms
Weight: 335 Kgs + 110 Kgs chute/3m

Dimension: H 145 x L 156 x W 141 cms
Weight: 700 Kgs

Steam: ~ 35Kgs/h
The TVP/3 is fully monitored through a control panel equipped with the latest generation of SIEMENS touch-screen connected to a powerful PLC. All motors are of IE3 standard (low energy) and are driven by inverters. The whole control and regulation system is ETHERNET based, thus enabling the use of the most common connection technologies (Wi-Fi, remote access, remote control, supervision ...). The software has been entirely redesigned to offer the users a powerful, complete and easy-to-use control of the whole line at their fingertips.

**LINE CONTROL**

- 15" color touch-screen
- Ethernet based field bus (Profinet)
- Powerful PLC and inverters
- Superba’s exclusive temperature control algorithms for a very high yarn processing accuracy
- Possible second HMI at the line exit (OPTION)
- Distance remote access (modem or internet) : support of Superba’s hotline, troubleshooting, download of updates, ...

**FULLY REDESIGNED INTERFACE**

- Very intuitive user-friendly & easy-to-use interface
- Textile recipes for the whole line
- Pop-up windows for easy process management
- Detailed reporting : shift report, alarm report, production report
- Regulation parameter setup
- On-line pdf documentation & trouble-shooting instructions
- Trends (graphics for process data)
- Predictive maintenance with spare-part usage reports
- I/O & inverter digital management

**SUPERVISION : PLANT-TRACK OPTION**

The SUPERVISION software allows a total control of a complete factory from one central desk. Multi-site supervision is also possible (i.e. different factories). The Plant-track software is able to supervise not only the TVP/3, but also the B401, MCD/3, MF/4, ARG/MAX and ARG/PRO (TVP/2S).

**SUPERVISION MAIN FEATURES**

- Up to 50 TVP/3 lines can be connected
- Upload/download of recipes
- Shift, lot, alarm & modification reports
- History and real-time trends (100 data/line)
- Lot management
- Remote control to the HMI of the lines
B401: AUTOMATIC WINDER
UP TO 96 BOBBINS (LV/3)

LV/3 CONFIGURATIONS
60 - 72 - 84 - 96 bobbins

TVP/3 CONFIGURATIONS
36 - 48 - 60 - 72 bobbins

HIGH PERFORMANCES
• Packages up to 405mm
• High winding speed: up to 700m/min
• Electronically adjustable crossing angle (19 to 27 deg.) with anti-patterning function
• Quick doffing time (18 to 25 sec.)
• Very high level of fully automatic doffing success
• Electric hot-wire yarn cutters (extended life-time)

HMI AND CONTROL PANEL
• Fully inverter-controlled low-energy IE3 motors
• 10” color touch-screen
• Textile recipes
• Total control & diagnosis of inverters through CANBUS
• Screen hardcopy to USB key
• Possible remote connection

CONFIGURABLE TO YOUR NEEDS
• 36 to 96 bobbins
• Extension capability: modules of 12 spindles can easily be added anytime thanks to its modular design
• Right or left winder configuration
• Right or left side bobbin exit
• Automatic evacuation belt with photocell
• Winders can be placed back-to-back or against a wall
• CYLINDRICAL or CONICAL bobbin type configuration

TECHNICAL INFORMATION

<table>
<thead>
<tr>
<th>TVP/3</th>
<th>LV/3 (line for Acrylic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nb. of spindles</td>
<td>36</td>
</tr>
<tr>
<td>Length (m)</td>
<td>7.80</td>
</tr>
<tr>
<td>Installed KVA</td>
<td>25</td>
</tr>
<tr>
<td>Consumption KW/h</td>
<td>12</td>
</tr>
</tbody>
</table>

Winding speed up to 700 m/min

Dimension: H 198 x W 140 cms – length: see table

DOFFING SUCCESS GUARANTEE
• Fully automatic
• Quick doffing

COMPACT WINDER
• Easy installation
• Multiple configuration

USER FRIENDLY & FLEXIBLE
• Intuitive HMI
• Connection to Supervisor (option)

FULL CONTROL
• Inverter driven
• CANBUS

0.2 Nm³/h - air pressure supply 6 bars

Up to 72 ends (TVP/3) / or 96 ends (LV/3)

P = 7 to 12 Kgs
MCD/3 : SPACE-DYEING MACHINE
UP TO 72 ENDS

**CHOICE OF THE LINE FOR DYESTUFF FIXATION:**

Depending on the type of fibers to dye, possibility to choose either:
- An atmospheric steaming with a DL5 line for PAN, WOOL or PA6-66
  - Light to medium shades
  - 3 to 5 minutes steaming time
  - Up to 400 Kgs/h
- Saturated steam with TVP/3 line for PET, PA6-66, WOOL and blends
  - All shades
  - 30 sec. to 1.5 min heat-setting time
  - Up to 280 Kgs/h

A pre-steaming device DSC/3 is installed at the space-dyeing machine exit to PRE-SET the dyestuff.

**MCD/3 BENEFITS:**

- Yarn dyed in free state for a bulky & round yarn
  - better carpet coverage
- High cost efficiency:
  - no minimum lot sizes
- BCF or SPUN yarns are easy to process
- Environment friendly process:
  - no waste of dyestuff
  - reduced water consumption
  - perfect color fastness
- Clear spot definition, no dyestuff migration
- High pressure spraying technique for an even impregnation of the dyestuff penetrating the heart of the yarn

**CAD SOFTWARE:**

- YARNDRAW: yarn design software for the pattern creation including simulation tools
- Compatible with most of usual carpet CAD, including WEAVELINK, TUFTLINK & NEDGRAPHICS for an easy and cost effective virtual sampling
- PLC control with 10” color touch-screen
  - Patterns & dyeing recipes
  - Automatic washing cycle

**PIEZO-ELECTRIC TECHNOLOGY (PATENTED):**

Ultra-high speed linear actuator
(response time 2mS)

Unequalled range of space-dyeing effects:
- SHORT SPACE: spot length from 20mm
  - Berber effect, knit-deknit imitation
- LONG SPACE
  - Extra high spot length up to 150m
  - Almost unlimited cycle length (1000 m)
- Tone-on-tone effect
- Exclusive Bi-color technology

**TECHNICAL INFORMATION**

- Dimension: H 240 x L 915 x W 181 cms
- Steam: ~ 30Kgs/h for DSC3
- Installed power 35 KVA
- ~ consumption 22 KW/h
- 200 liters (for washing only)
- Up to 72 ends
- 150 Nm3/h - air pressure supply 6 bars
- Steam: ~ 30Kgs/h for DSC3

Please, refer to separate MCD/3 leaflet for more detailed information

**HIGH PRODUCTION**

- 9.5T/day with DL5 line
- 6.5T/day with TVP/3 line

**UNEQUALLED RANGE OF SPOT LENGTH**

- Short-Space: 20mm
- Long-Space: 150m

**EXCLUSIVE PROCESS**

- Very high speed patented linear actuator

**FULL CONTROL**

- Intuitive HMI
- Inverters and PLC on CANBUS
We imagine, build and integrate innovative textile systems for flooring qualities, home linen, fashion fabrics and technical textiles. Sharing inspiration and expertise with our customers worldwide, we shape the textile industry of the future. Creating success for them all, from yarn to finished product.