

TVP3



SUPERBA S.A.S HISTORY & DEVELOPMENT :

SUPERBA is the largest and most experienced manufacturer of high-tech heat-setting machinery. The Company develops and produces integrated heat-setting lines for the processing of yarns which are predominantly, but not only, used in the carpet manufacturing industry. The pioneering status of the Company as well as their innovation leadership in heat-setting are well reflected in the Company name being widely used synonymously to describe a crucial production process step in the carpet-industry.

With their headquarters in Mulhouse, France,

two other strategic locations overseas and a comprehensive network of over 50 independent agents, the Company is a highly focused global leader in their niche market. Superior technology with clear advantages over competitive products allows Superba's customer to process a large variety of different types of yarns enabling greatest product flexibility at highest quality. Since 2015 SUPERBA has joined the VANDEWIELE family of companies: VandeWiele and Superba, two historic and famous names in the carpet technology, have come together to help

the industry achieve new heights of innovation, quality and profitability. The integration of SUPERBA presents a complementary extension of the VandeWiele range with maximum synergy of markets. The know-how of SUPERBA in the field of yarn technology improve the performance of the weaving, tufting and extrusion machines while the knowledge of these technologies lead to better performing heat-setting lines, all this resulting in new developments and better performing machines for the benefit of the customer.



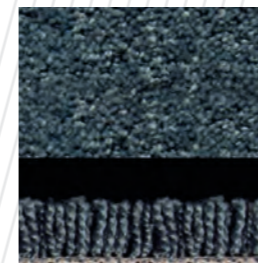
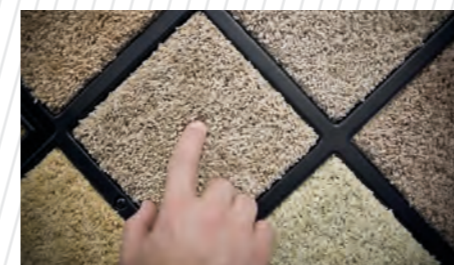
Advanced heat-setting solutions

CARPET MANUFACTURING PROCESS & HEAT-SETTING :

Single or cabled yarns (BCF or Spun) are very often used to manufacture woven carpets and rugs or tufted wall-to-wall carpets. 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.



<p>1</p> <p>EXTRUSION</p>	<p>2</p> <p>TWISTING / CABLING</p>	<p>3</p> <p>HEAT-SETTING</p> <p>SUPERBA</p>	<p>4</p> <p>WEAVING / TUFTING</p>



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.

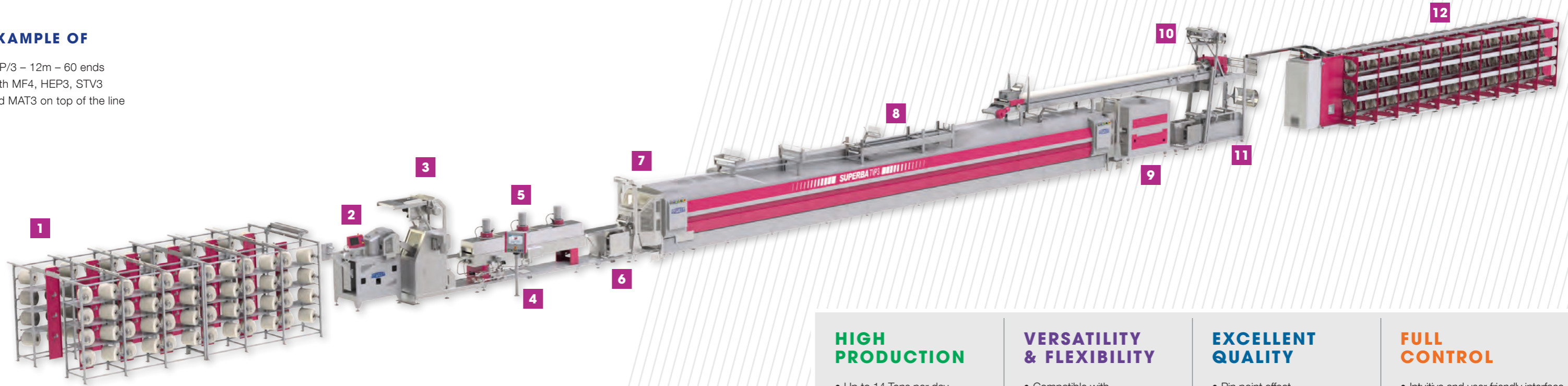
SUPERBA's heat-setting line is environment-friendly by using lower energy consumptions and provides sustainable solutions with machines engineered to last for decades.



LINE DESCRIPTION :

EXAMPLE OF

TVP/3 – 12m – 60 ends
With MF4, HEP3, STV3
and MAT3 on top of the line



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

1 RAT/3

Ergonomic creel for up to 72 feeding bobbins - with yarn breakage detection

2 MF4 OR MF400

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 MAT/3

Yarn accumulator to ensure a continuous treatment of the yarn

11 CAR/3

Taking-up backframe with photocell to control the bundle take-up speed

12 B401

Automatic doffing winder up to 72 bobbins



YARN LAYING & TEXTURISATION UNITS :

ALL TYPES OF YARN, ALL TYPES OF EFFECTS

YOU CAN USE EITHER:

- THE DAV3 FOR STRAIGHT-SET YARN
- THE MF4 (OR MF400) FOR FRIEZE YARN



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 7 KVA~
consumption 3 KW/h



Up to 72 ends



Up to 690 m/min

Dimension : H 217 x L 176 x W 60 cms
Weight : 440 Kgs



MF4/400 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 9KVA
~ consumption 2KW/h



Up to 72 ends



Up to 600 m/min

Dimension : H 150 x L 112 x W 102 cms
Weight : 580 Kgs

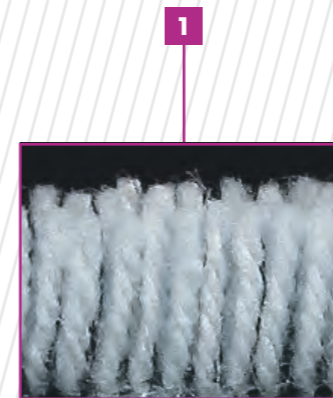


15 m³/h
Air supply: 6 bars



Steam: 25Kgs/h

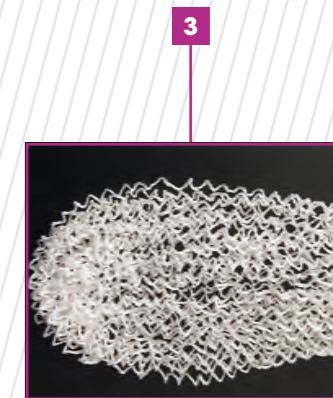
Please, refer to separate MF400 leaflet for more detailed information



STRAIGHT SET YARN



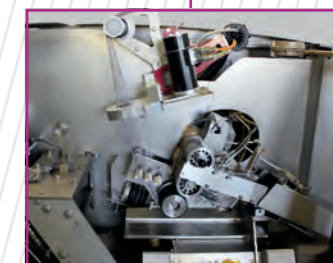
FRIEZE YARN



DAV/3



MF/4 FALSE TWIST

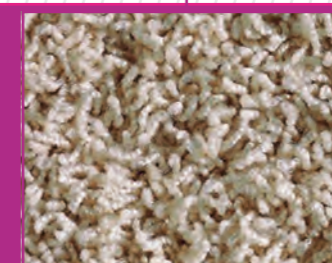


MF/400



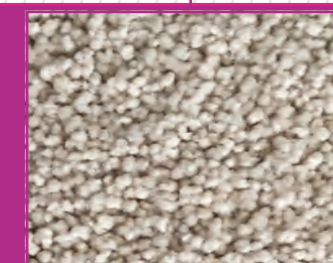
STRAIGHT-SET

- High tip definition (pin point effect)
- Soft hand
- Sustainability



MF/4 FRIEZE

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



MF/400 FRIEZE

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



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

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



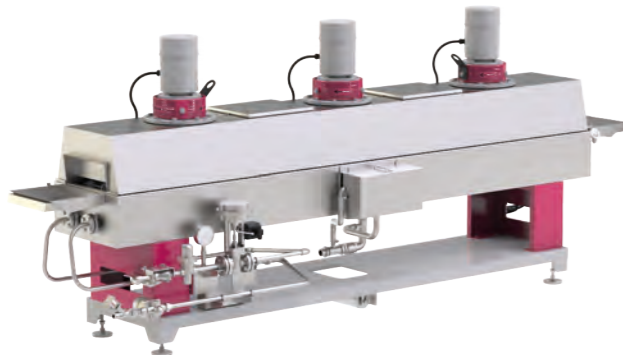
36 to 72 ends
 in-line or side-by-side (module of 12 bob.)

MODULAR & ERGONOMIC

CONFIGURABLE & COMPACT

YARN BREAKAGE DETECTION

EASY THREADING



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

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



Steam :
 ~ 30Kgs/h



Installed power 7 KVA~
 consumption 1.5 KW/h

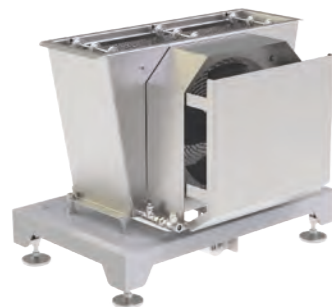


Water :
 ~ 25liters/h

PERFECT YARN BULK

ADJUSTABLE TURBINE SPEED

EASY CLEANING



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)

Dimension : H 79 x L 98 x W 60 cms
Weight : 95 Kgs



Installed power 0.8 KVA
 ~ consumption 0.3 KW/h

HIGH COOLING CAPACITY

LOW ENERGY CONSUMPTION

UNIFORM TREATMENT

TVP/3

HEAT-SETTING TUNNEL

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.

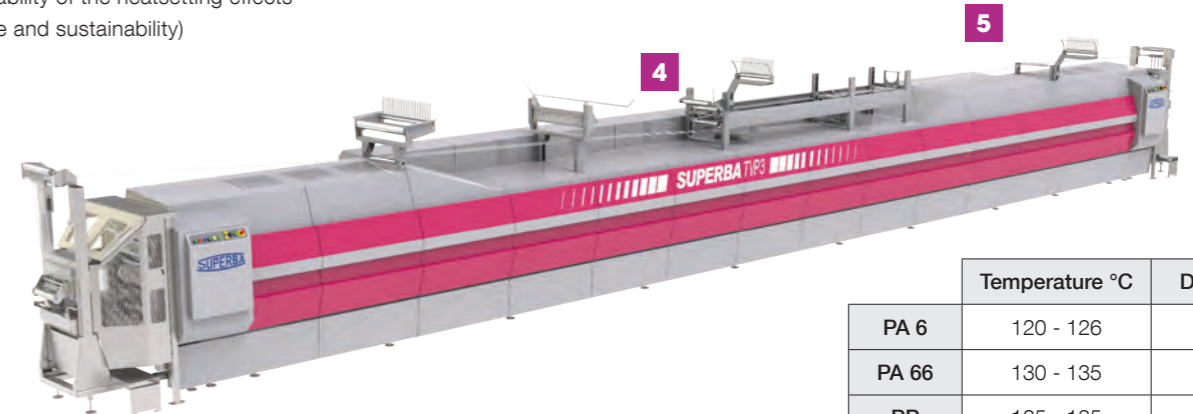
CONFIGURATIONS

9m — 36 to 48 ends **15m** — 36 to 72 ends
12m — 36 to 60 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



	Temperature °C	Dwell time (s)
PA 6	120 - 126	30 – 60
PA 66	130 - 135	30 – 60
PP	125 - 135	30 – 60
PET	140 - 145	35 – 90
WOOL	110 - 120	70 – 90
PAN	98 - 108	45 – 60

TECHNICAL INFORMATION



Installed power 15 KVA
 ~ consumption 5 KW/h (belt+CBS/1xTCC)
 (add 1.5KW/h if entrance TCC)



Steam: ~ 80 - 110Kgs/h



100 -115 Nm³/h
 Air supply: 6 bars



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

VERY HIGH PRODUCTION

- Up to 14 tons/day & more

COMPLETE QUALITY & LINE CONTROL

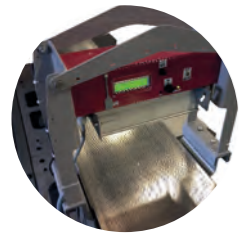
- User friendly & Easy to use

VERSATILITY & FLEXIBILITY

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

LOW ENERGY CONSUMPTION

- Environment friendly



CP4 fully digital electronic photo-cell (option)



CAR/3 REAR BACKFRAME

TAKING-UP

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

PERFECT YARN SEPARATION

SMOOTH TAKING-UP

AUTOMATIC 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

HIGH DRYING CAPACITY

MODULARITY CAPABILITIES

TEMPERATURE REGULATION



Steam :
~ 35Kgs/h

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

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%.

HIGH EFFICIENCY IMPROVEMENT

REDUCED MAINTENANCE

VERY HIGH CAPACITY

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



The MAT/3 can also be installed on top of the TVP/3 for floor-space saving

LINE CONTROL :

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, ...

WIRELESS

Stay connected with your local line (OPTION)



REMOTE ACCESS

Get the support of SUPERBA through internet (OPTION)



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

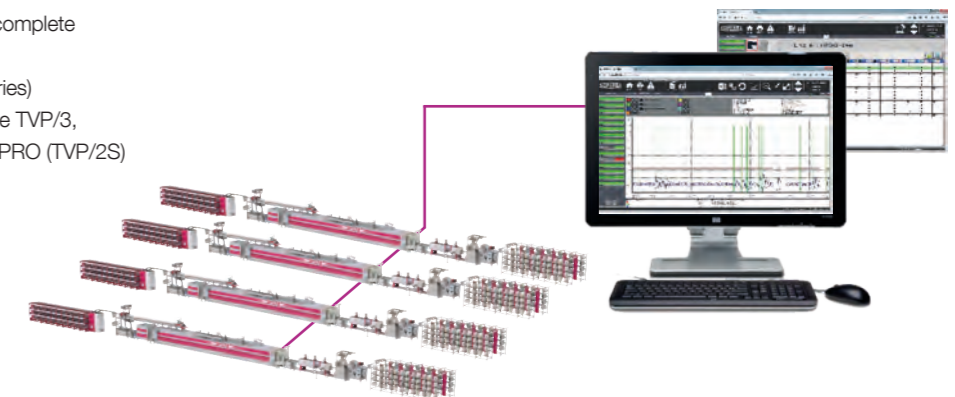
The SUPERVISION software allows a total control of a complete factory from one central desk.

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

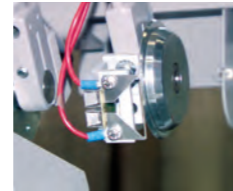


HIGH PERFORMANCES

- 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)



- Security light curtain for the operator's safety
- Electronic individual yarn breakage sensor ramp



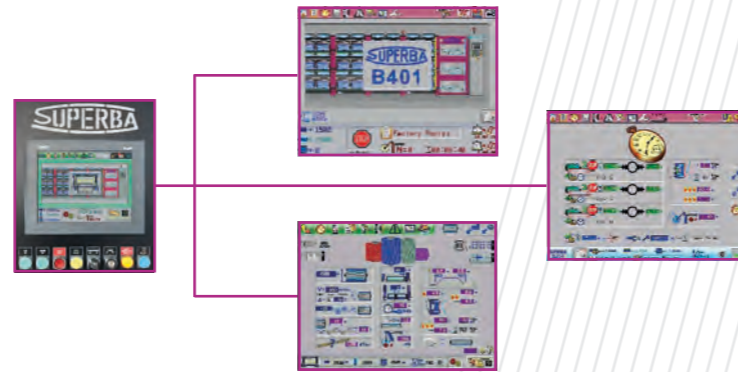
'Hot-wires' for yarn cutting with electronic control & extended life-time



Speed control of the pre-feeding rollers to adjust the yarn layer tension

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

	TVP/3			LV/3 (line for Acrylic)		
Nb. of spindles	36	48	60	72	84	96
Length (m)	7.80	9.75	11.70	13.60	15.50	17.40
Installed KVA	25	25	35	35	35	35
Consumption KW/h	12	16	20	24	28	32

TECHNICAL INFORMATION



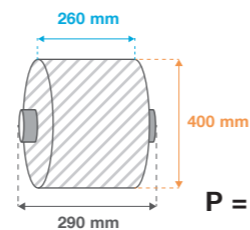
0.2 Nm³/h - air pressure supply 6 bars



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



Winding speed up to 700 m/min



P = 7 to 12 Kgs

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

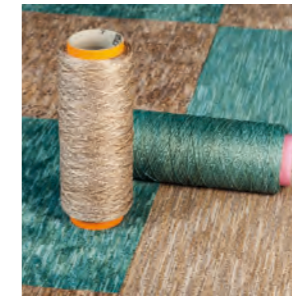
- Intuitive HMI
- Connection to Supervisor (option)

FULL CONTROL

- Inverter driven
- CANBUS

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

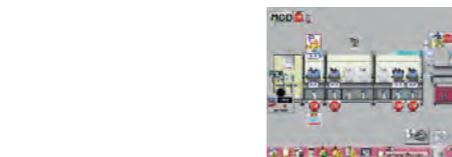
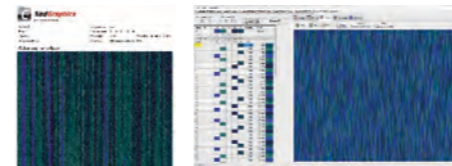
A pre-steaming device DSC/3 is installed at the space-dyeing machine exit to PRE-SET the dyestuff.

PIEZO-ELECTRIC TECHNOLOGY (PATENTED)

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

Unequaled 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



Short-space Tone-on-tone Long-space

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

TECHNICAL INFORMATION



up to 500 m/min



Installed power 35 KVA ~ consumption 22 KW/h



200 liters (for washing only)



150 Nm³/h - air pressure supply 6 bars



up to 72 ends



Steam : ~ 30Kgs/h for DSC3

Dimension : H 240 x L 915 x W 181 cms

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

TECHNICAL SPECIFICATIONS

TVP/3 ENERGY THEORETICAL CONSUMPTION DATA

HEAT-SETTING	MACHINE	Electricity (KVA & KW/h)		Steam (Kgs/h)				Air (Nm³/h)				Water (m³/h)			
		installed KVA	Average consum.KW/h	accessories				accessories				equiv. KW/h			
				9M	12M	15M	18M	9M	12M	15M	18M				
BASE + MF4	MF/4	9	2	25				15							
	DAV/3+PRE/3	7	3												
	RTV/3	0,8	0,3												
	TVP/3	15	5	80	90	100	110	100 - 115	100	105	110	115	3	13	
	TOTAL BASE	32	10	105 - 135				115 - 130				or 13KW/h equivalency for water cooling			
	TOTAL including cooling		23												
	OPTION 1	EXIT TCC/3	7	1,5											
		MAT/3	5,5	2,5											
		base+opt1		27	105 - 135				115 - 130						
	OPTION 2	HEP/3	7,5	2	30										
2 nd RTV/3		0,8	0,3												
base+opt1+2			29	135 - 165				115 - 135							
OPTION 3	STV/3			35											
TOTAL heat-set (base+opt 1-2-3)		53	29	170 - 200				115 - 135							
WINDING	B401	(36-48/60-96)	Nb. of ends	36	48	60	72	84	96						
		25/35	KW/h	12	16	20	24	28	32	0,2					
DYEING	OPTION	MCD/3	35	22	30				150						
EXAMPLES			Electricity		Steam				Air						
	9M - 48 ends	base, mf4, mat3	63 KVA	42 KW/h	105 Kgs/h				115 Nm³/h						
recycled water winding included	15M - 72 ends	complete config.	88 KVA	53 KW/h	190 Kgs/h				125 Nm³/h				no contractual values		

TVP/3 PRODUCTION DATA (CALCULATION EXAMPLES)

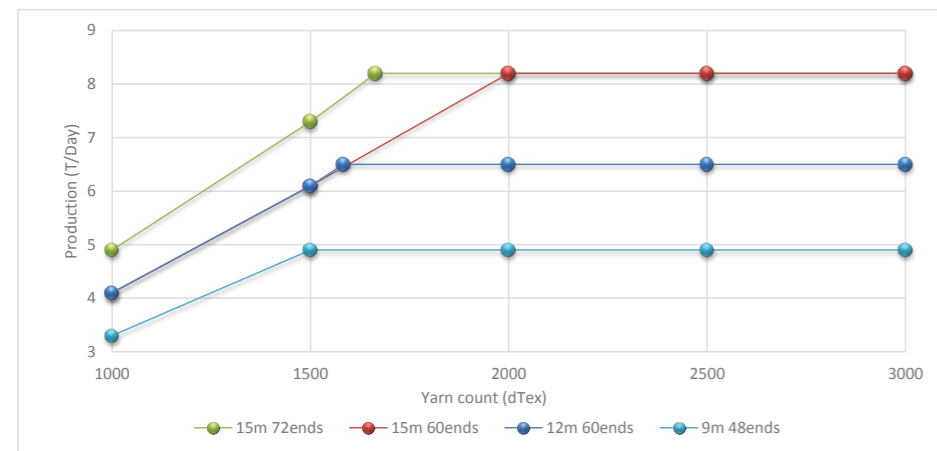
$belt\ speed\ (m/min) = tunnel\ length\ (m) \times 60 / heat\ setting\ time\ (sec.)$

$production\ maxi\ (Ton/day) = Yarn\ density\ (g/m) \times belt\ speed\ (m/min) \times 60\ (sec) \times 24\ (h) \times efficiency\ (\%) / 10\ 000\ 000$

$production\ theoretical\ (Ton/day) = nb.\ of\ ends \times yarn\ count\ (dTex) \times laying\ speed\ (m/min) \times 60 \times 24 \times efficiency / 100\ 000\ 000\ 000$

capacity max	4.9T/day	6.5T/day	8.2T/day	8.2T/day
dTex/production	9m 48ends	12m 60 ends	15m 60ends	15m 72ends
1000	3.2	4.1	4.1	4.9
2000	4.9	6.1	8.2	8.2
3000	4.9	6.5	8.2	8.2

example with : Density max = 450 g/m - Efficiency = 95% - Dwell time = 60 sec

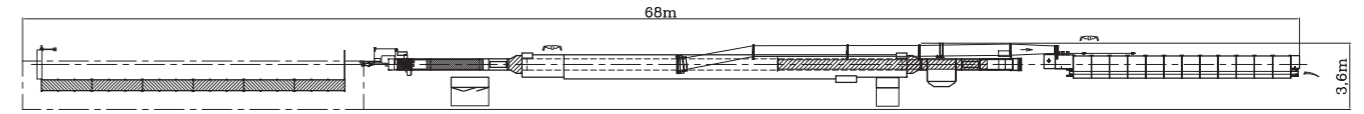


LINE LAYOUT EXAMPLES :

15M (HEATSETTING SECTION) - 72 ENDS - TVP/3

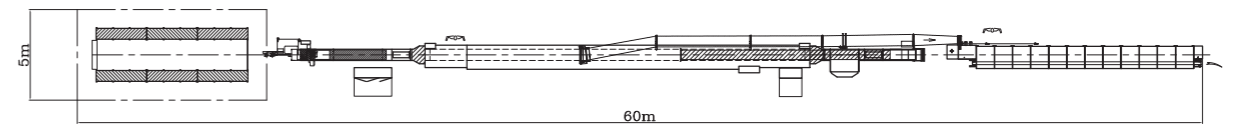
A - ALL IN LINE CONFIGURATION

- Right TVP/3 15m – 72 ends
- Right B401 winder – 72 ends
- With HEP/3 and STV/3
- With MAT/3 on top of the line
- all in line 72 end creel



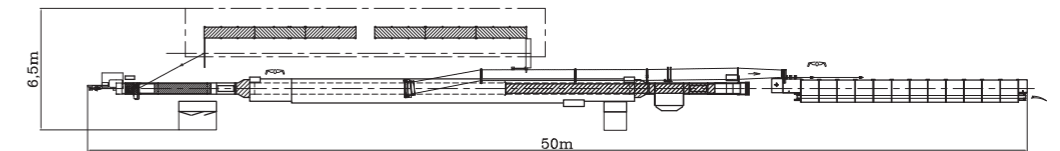
B - IN LINE CONFIGURATION

- Right TVP/3 15m – 72 ends
- Right B401 winder – 72 ends
- With HEP/3 and STV/3
- With MAT/3 on top of the line
- Face to face 72 end creel



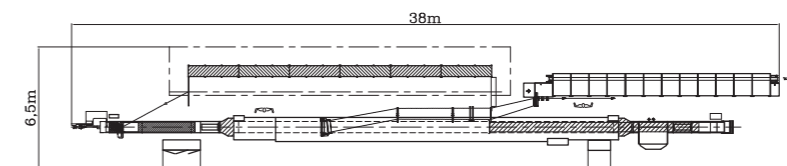
C - CREEL ON THE SIDE CONFIGURATION

- Right TVP/3 15m – 72 ends
- Right B401 winder – 72 ends
- With HEP/3 and STV/3
- With MAT/3 on top of the line
- In line, on the side 72 end creel



D - COMPACT CONFIGURATION

- Right TVP/3 15m – 72 ends
- Left B401 winder – 72 ends, on the side
- With HEP/3 and STV/3
- With MAT/3 on top of the line
- In line, on the side 72 end creel



NOTE

these layouts are only examples. Many other layouts can be setup depending on the line configuration and tunnel length, according to your specific needs and available floor space in your factory.



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