

SML

EXTRUSION LINES – ENGINEERED TO PERFORM ►

100%
eXtrusion
SPINNING LINES

AUSTROFIL -
FDY, MDY, POY MULTIFILAMENT

LINES FOR FDY, MDY AND POY YARNS



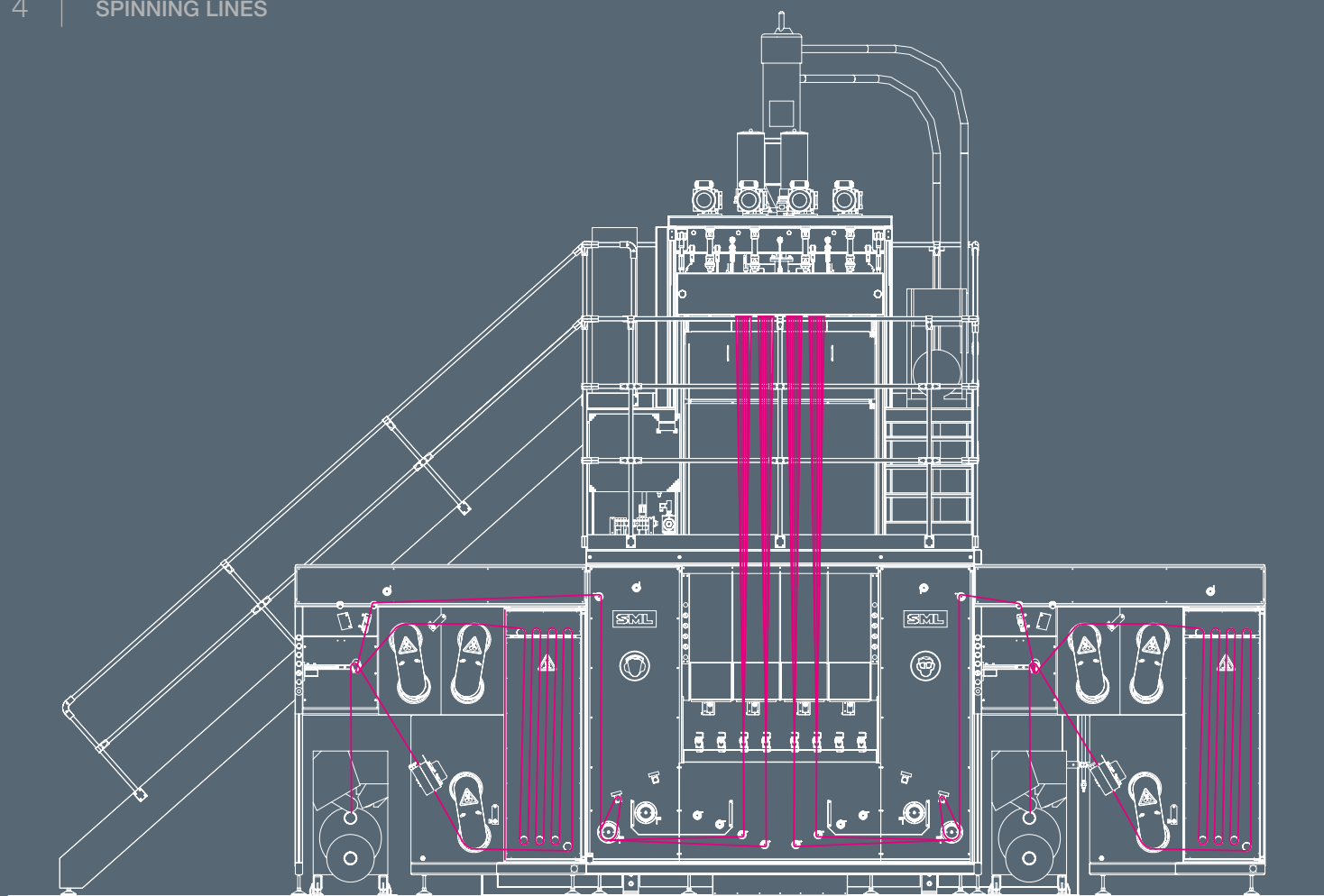


AUSTROFIL HT 4x2

INTRODUCTION

The production of yarns for various technical and textile applications with the highest possible efficiency and flexibility requires well planned production lines. SML's innovative detail engineering and the steady improvement and development of core components have resulted in spinning plants that enable customers to position themselves successfully in the highly specialised continuous filament market.

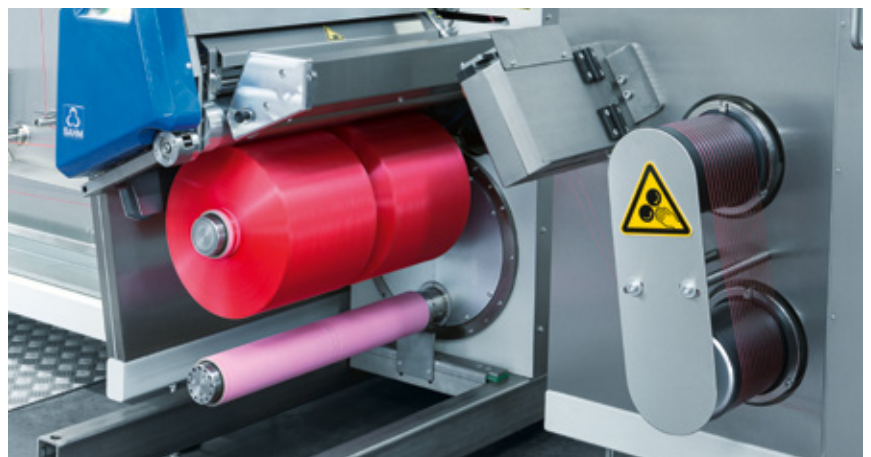
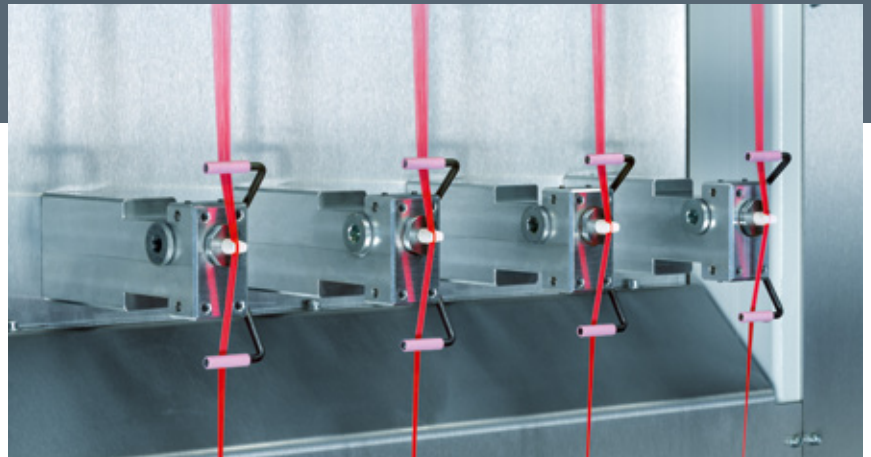
Austrofil stands for Austrian quality and four different plant designs that meet a vast range of differing customer requirements. The proven line concept allows producers to operate SML lines with a minimum of manpower at maximum efficiency.



CONTENTS

AUSTROFIL HT 2x2/4 E/ 75	6
AUSTROFIL HT 4x2/4/ 75	8
AUSTROFIL MT/POY 2x8	10
AUSTROFIL MT/POY "LINE BY LINE" 1x8	12
Line Description	14
Component Description	16

SPINNING LINES FOR TECHNICAL AND TEXTILE PP YARNS





AUSTROFIL HT 2x2/4 E/ 75

SML's "Compact" spinning line is custom-designed for the production of small yarn lots with the highest levels of efficiency and flexibility. With a maximum output of 110 kg/h on the winder this line is equipped with one extruder and only two stretching sections.

Two spinnerets per yarn provide perfect cooling conditions, which result in high output and excellent yarn quality.

The line can be extended to a HT 4x2/4 version with 8 or 16 ends and a maximum output of 160 kg/h through the subsequent addition of two stretching and winding modules.

The extruder and the spinning section of the compact line are already designed to handle the full output of an extended machine.

Moreover, as with all SML spinning lines, the electronics are protected and conditioned inside an e-container.

- ▶ **MAXIMUM EFFICIENCY AND FLEXIBILITY**
- ▶ **EXTENDABLE TO HT 4x2/4**
- ▶ **WIDE TITER RANGE**
- ▶ **HIGHEST TENACITY**

PERFORMANCE LEVEL

HT 2x2/4 E/ 75, 4/8 ends	
Polymer	Polypropylene, MFR 10 - 35
Titer range	165 - 4,400dtex
Output capacity	110 kg/h, 2.64 t/d
Extruder capacity	160 kg/h

LINE CONFIGURATION

Dosing system	Volumetric dosing with 2 additives
Extruder Inverter controlled AC motor	1 unit 75/28D Incl. static mixer
Feeding section	Water cooled, closed circuit
Spinning beam	Electrically heated
Spinning pumps	4 pcs. each with 2 outlets
Spinnerets	8 pcs., Ø 110mm
Godets	Ø 160mm, inductive heated, lifetime lubricated bearings
Intermingling	Heberlein, PolyJet

CONNECTED LOAD AND AIR CONSUMPTION

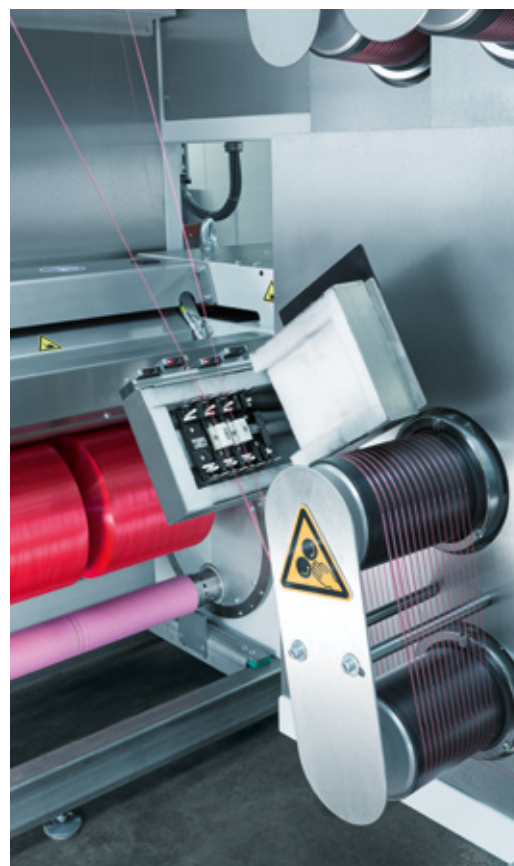
Connected load	247kW
Average power consumption	Approx. 94kW
Peak compressed air consumption	700 Nm³/h
Average compressed air consumption	280 Nm³/h
Compressor pressure	7.5bar
Chiller cooling capacity	63,000 kcal/h

WINDING

Winder	Automatic turret winder
Mechanical winding speed	1,000 - 3,500 m/min
Bobbin diameter	Max. 320mm

SPACE REQUIREMENT

Length	8,100mm
Width	7,200mm
Height	Approx. 6,000mm (depending on dosing unit)





AUSTROFIL HT 4x2/4/ 75

Following SML's decision to manufacture machinery for the spinning of technical and textile yarns, this machine type, which is equipped with four stretching and winding modules, has become the most successful model in the company's portfolio.

Over 200 lines have been sold worldwide and have thereby established a new benchmark for PP high- and medium-tenacity yarns.

Owing to the well designed hot air chamber in the stretching section, SML can achieve superior tenacities especially at high speeds and for high yarn titers.

Together with excellent operation stability this is the main reason why SML has become the market leader in the field of compact spinning lines for technical PP yarns.

- ▶ HIGH- AND MEDIUM-TENACITY YARNS
- ▶ SUPERIOR TENACITIES AT HIGH SPEEDS EVEN FOR HIGH YARN TITERS
- ▶ EXCELLENT OPERATION STABILITY

PERFORMANCE LEVEL

HT 4x2/4/ 75, 8/16 ends	
Polymer	Polypropylene, MFR 10 - 35
Titer range	165 - 4,400dtex
Output capacity	160 kg/h, 3.84 t/d

LINE CONFIGURATION

Dosing system	Volumetric dosing with 2 additives
Extruder Inverter controlled AC motor	1 unit 75/28D Incl. static mixer
Feeding section	Water cooled, closed circuit
Spinning beam	Electrically heated
Spinning pumps	4 pcs. each with 2 outlets
Spinnerets	8 pcs., Ø 110mm
Godets	Ø 160mm, inductive heated, lifetime lubricated bearings
Intermingling	Heberlein, PolyJet

CONNECTED LOAD AND AIR CONSUMPTION

Connected load	400kW
Average power consumption	Approx. 154kW
Peak compressed air consumption	1,000 Nm ³ /h
Average compressed air consumption	550 Nm ³ /h
Compressor pressure	7.5bar
Chiller cooling capacity	63,000 kcal/h

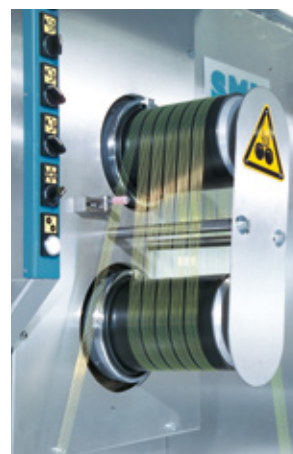
WINDING

Winder	Automatic turret winder
Mechanical winding speed	1,000 - 3,500 m/min
Bobbin diameter	Max. 320mm

SPACE REQUIREMENT

Length	11,000mm
Width	7,200mm
Height	Approx. 6,000mm (depending on dosing unit)





AUSTROFIL MT/POY 2x8

Apart from machines for technical yarns, the name Austrofil has also become a synonym for lines producing top quality, pre-oriented, medium-tenacity PP yarns. Today, SML spinning lines for textile yarns are well known and widely used all over the world.

MT and POY yarns are utilised for a variety of textile applications, such as chenille yarns for upholstery, mattresses, knitted and woven fabrics, and both exclusive sportswear and automotive interior products.

- ▶ HIGHEST TEXTILE YARN QUALITY
- ▶ BEST COLOUR UNIFORMITY
- ▶ WIDE TITER AND DPF RANGE
- ▶ PERFECT BOBBIN SHAPE EVEN AT HIGH YARN ELONGATION

This line can be employed for a wide titer and denier per filament (dpf) range. As colour uniformity is always a major issue for these products, a very accurate but nonetheless simple, integrated dosing unit is employed.

The MT/POY line can produce a total of sixteen yarns in the low and eight yarns in the high titer range.

Efficient pre-intermingling and two stretching stages represent the key to high textile yarn quality, while specially designed winders with a feeding roll ensure a perfect bobbin shape, even with coloured yarns and high elongations.

PERFORMANCE LEVEL

MT/POY 2x8, 16 ends	
Polymer	Polypropylene, MFR 10 - 35
Titer range	110 - 1,100dtex
Output capacity	110 kg/h, 2.64 t/d

LINE CONFIGURATION

Dosing system	Volumetric dosing with 2 additives
Extruder Inverter controlled AC motor	1 unit 75/28D Incl. static mixer
Feeding section	Water cooled, closed circuit
Spinning beam	Electrically heated
Spinning pumps	4 pcs. each with 2 outlets
Spinnerets	8 pcs., Ø 110mm
Pre-intermingling	Heberlein, Migra-Jet
Godets	Ø 160mm, inductive heated, bearing lifetime lubricated
Intermingling	Heberlein, PolyJet

CONNECTED LOAD AND AIR CONSUMPTION

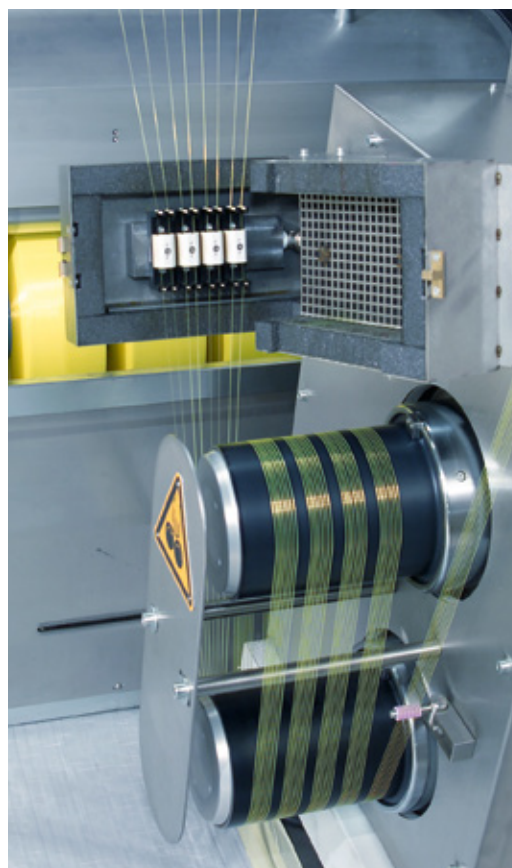
Connected load	228kW
Average power consumption	Approx. 87kW
Peak compressed air consumption	500 Nm ³ /h
Average compressed air consumption	200 Nm ³ /h
Compressor pressure	7.5bar
Chiller cooling capacity	55,000 kcal/h

WINDING

Winder	Automatic turret winder
Mechanical winding speed	2,500 - 3,500 m/min
Bobbin diameter	Max. 420mm

SPACE REQUIREMENT

Length	6,100mm
Width	7,400mm
Height	Approx. 6,000mm (depending on dosing unit)





AUSTROFIL MT/POY "LINE BY LINE" 1x8

The "LINE BY LINE" MT/POY concept ensures a high level of production flexibility. A complete spinning unit with eight threads constitutes one single line module.

The basic module includes the control unit, which can deal with up to five additional modules, each with a maximum output of 20 kg/h. The design configuration has been targeted on small production lots and fast product changes. The short melt distribution length and the small extruder allow extremely fast colour changes, resulting in less waste.

- ▶ **COMPACT AND MODULAR LINE DESIGN**
- ▶ **BEST COLOUR UNIFORMITY (USTER)**
- ▶ **FAST COLOUR AND PRODUCT CHANGES**
- ▶ **SMALL FOOTPRINT**
- ▶ **DIFFERENT PRODUCTION ON EACH MODULE**

Apart from excellent yarn quality, the compact design with extrusion, spinning section, quenching, spinline, pre-inter-mingling, stretching modules with heated godets, and special high-speed winders guarantees a small machine footprint.

Yarns manufactured on SML Austrofil MT/POY spinning lines are known for their excellent uniformity (Uster). Moreover, special characteristics such as yarn elongation, tenacity and uniform spin finish distribution optimise the subsequent texturing, knitting or weaving process.

PERFORMANCE LEVEL

MT/POY "LINE BY LINE" 1x8, 8 ends	
Polymer	Polypropylene, MFR 25 - 35
Titer range	78 - 167dtex
Output capacity	20 kg/h, 0.48 t/d

LINE CONFIGURATION

Dosing system	Volumetric dosing with 2 additives
Extruder Inverter controlled AC motor	1 unit 30/28D Incl. static mixer
Feeding section	Water cooled, closed circuit
Spinning beam	Electrically heated
Spinning pump	1 pc. with 8 outlets
Spinnerets	8 pcs., Ø 56mm
Pre-intermingling	Heberlein, Migra-Jet
Godets	Ø 160mm, inductive heated, lifetime lubricated bearings
Intermingling	Heberlein, PolyJet

CONNECTED LOAD AND AIR CONSUMPTION

Connected load	40kW
Average power consumption	Approx. 25kW
Peak compressed air consumption	325 Nm³/h
Average compressed air consumption	200 Nm³/h
Compressor pressure	7.5bar
Chiller cooling capacity	35,000 kcal/h

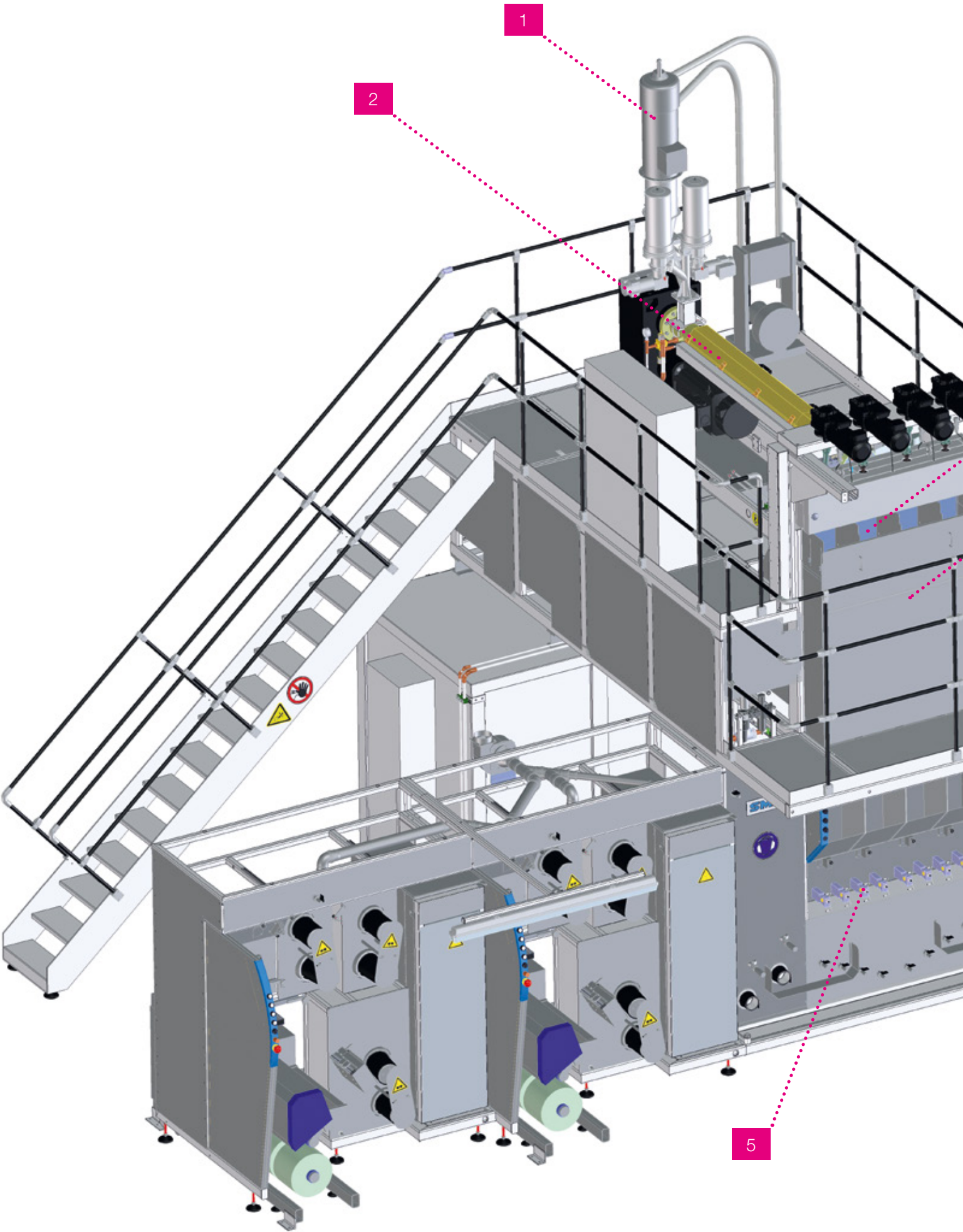
WINDING

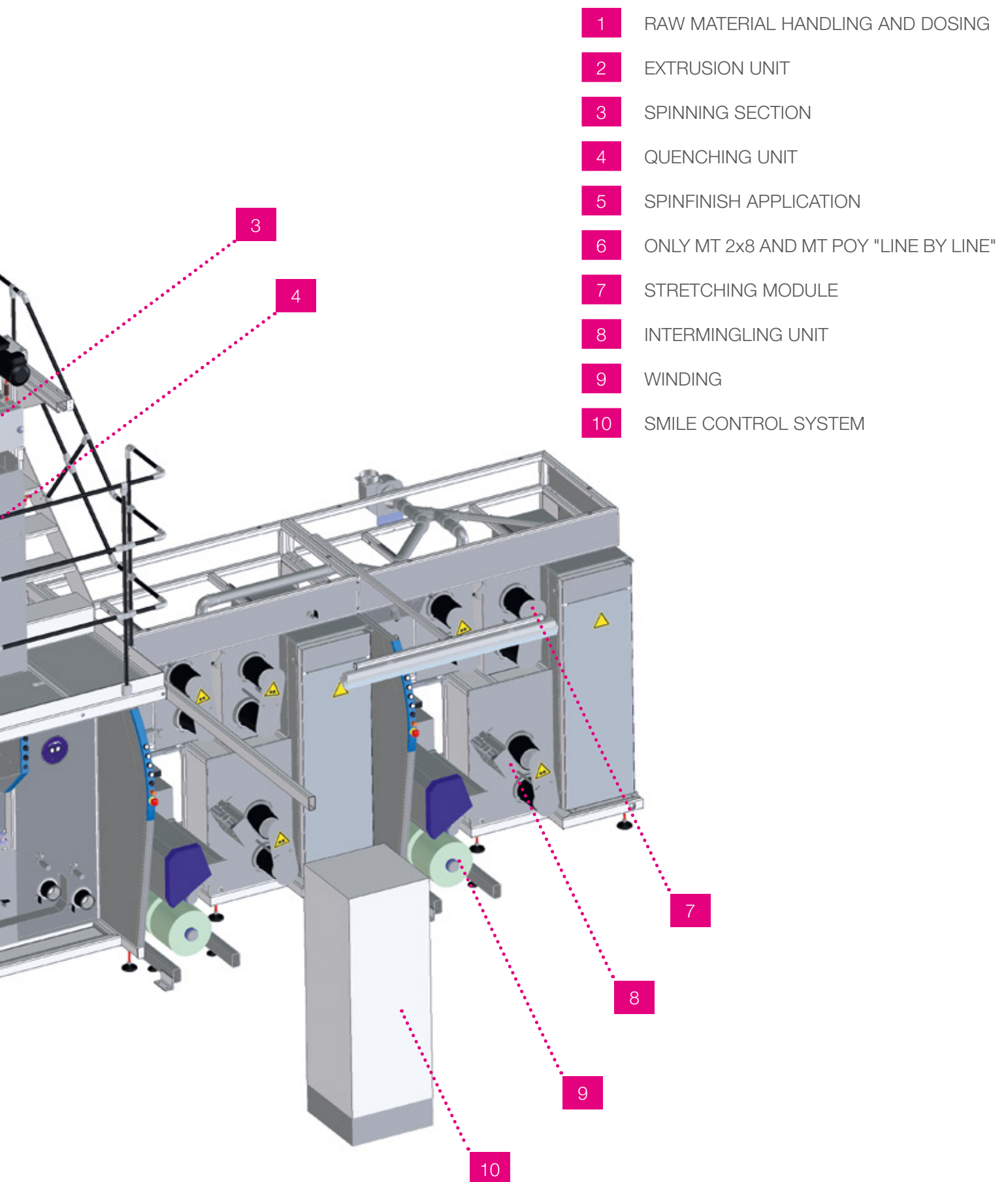
Winder	Automatic turret winder
Mechanical winding speed	2,500 - 3,500 m/min
Bobbin diameter	Max. 420mm

SPACE REQUIREMENT

Length	6,100mm
Width	7,400mm
Height	Approx. 6,000mm (depending on dosing unit)









Extrusion unit

1 RAW MATERIAL HANDLING AND DOSING

In the standard configuration very accurate volumetric dosing systems are integrated into SML's multifilament lines for exact and reproducible colour effects.

In addition, apart from the main component, as a rule two ancillary components for additives such as colour masterbatch or UV stabilisers are installed. Depending on the application gravimetric systems are also available as an option.

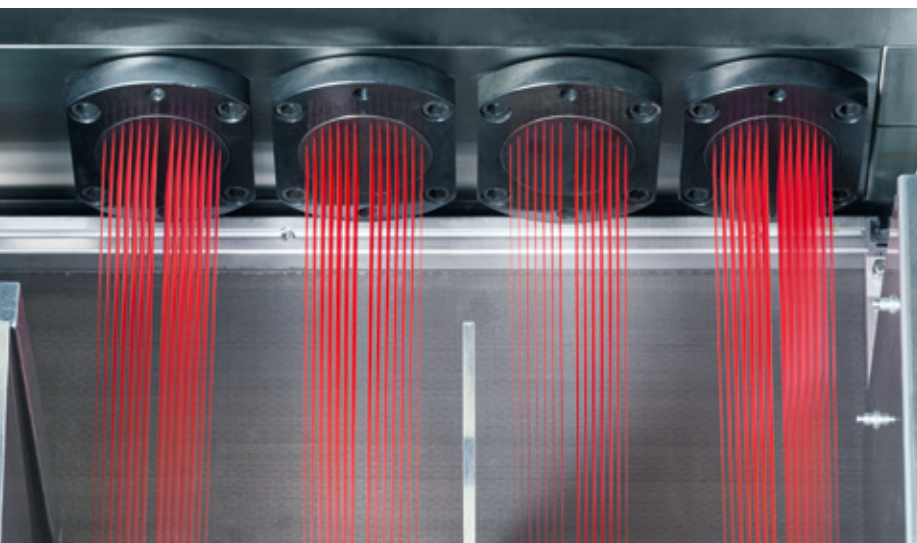
2 EXTRUSION UNIT

SML spinning lines are equipped with highly efficient, single screw extruders with a 75mm screw diameter (MT/POY "LINE BY LINE" 30mm) and an L/D ratio of 28. High output, barrier screw design and a subsequent static melt mixer in the adapter pipe ensure top melt quality and colour distribution.

An air-cooled AC motor, coupled to a water-cooled gearbox drives the extruder. Continuous melt filters are available as an option.



► EASY ACCESS TO EXTRUSION UNIT AT ELEVATED PLATFORM



Spinning section

3 SPINNING SECTION

A spinning beam with electrical plate heaters is used for stable operation and easy maintenance. All the spinning pumps have two outlets and supply the melt stream to eight spinpacks with a 110mm diameter. Equal residence time is secured for each melt stream and this results in uniform yarn quality. Moreover, an absolutely vertical yarn path ensures excellent spinning quality and smooth production.

EXCEPTION:

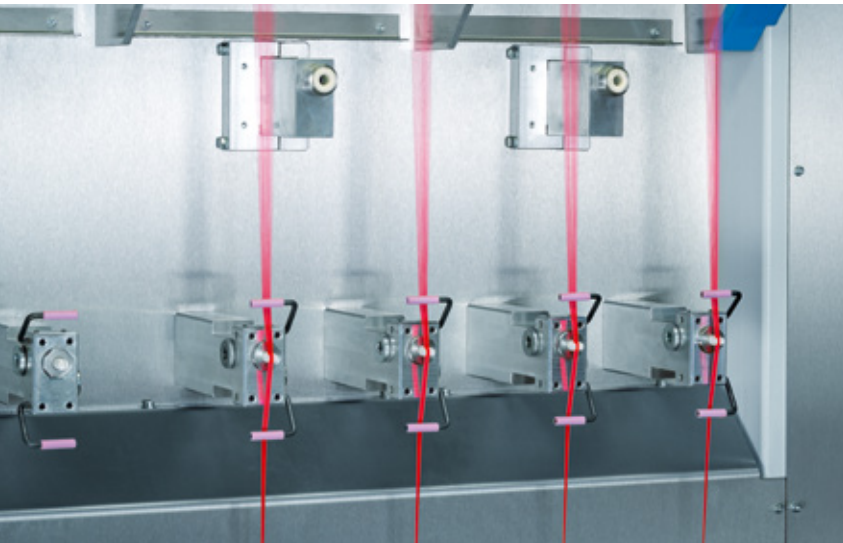
The MT/POY "LINE BY LINE" version consists of a spinning pump with 8 outlets which feeds 8 spinnerets each with 56mm diameter.

4 QUENCHING UNIT

Efficient quenching units supply cooling air at a defined temperature and speed to the filaments for uniform cooling.

The HT lines are designed with three individually adjustable horizontal zones to secure the correct air speed profile for top quality cooling.

- ▶ VERTICAL YARN PATH FOR EXCELLENT SPINNING QUALITY AND SMOOTH PRODUCTION
- ▶ EFFICIENT QUENCHING UNITS FOR UNIFORM COOLING
- ▶ THREE INDIVIDUALLY ADJUSTABLE HORIZONTAL QUENCHING ZONES ON HT LINES



Spinline
application

5 SPINFINISH APPLICATION

Spinline oil is supplied very accurately to the ceramic applicator nozzles by means of precision metering gear pumps.

A single pump outlet for each yarn ensures that an exact and equal amount of oil is applied. The spinline tank is equipped with a level sensor and a filter prevents supply system blockages.

6 PRE-INTERMINGLING

ONLY MT 2x8 AND MT/POY "LINE BY LINE"

The single yarns are compacted in the pre-intermingling station by means of air jets. This provides enhanced processing performance throughout the entire line.

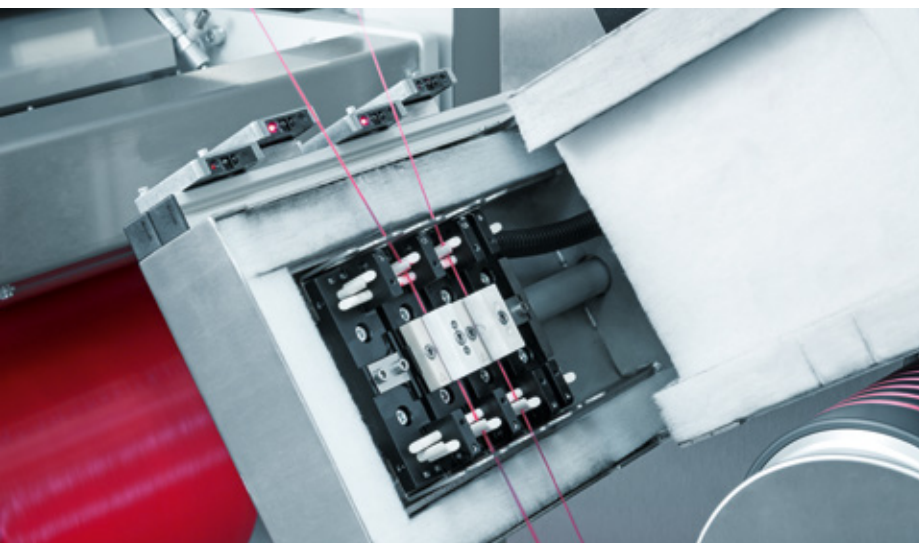
7 STRETCHING UNIT

High yarn tenacity is achieved by a sophisticated stretching system in which the yarn is treated in a highly protective manner.

Owing to the well designed yarn path in the special hot air chamber (only HT lines) high tenacity values are achieved even at high speeds and with coarse yarns. Successful yarn production with lower quality resins is also possible.

Three pairs of stretching rolls facilitate stretching ratios of up to 1:8, while the positioning of the hot air chamber in the second stretching section ensures excellent yarn tenacity.

► HIGHEST TENACITY ACHIEVED BY HOT AIR CHAMBER



Intermingling unit

8 INTERMINGLING UNIT

First class ceramic intermingling jets are used and only two different sets are needed to cover the whole titer range. The jets are mounted in a sound-insulated box made of stainless steel. Air pressure is employed to control the number of intermingling knots (compacted zones of the yarn).

9 WINDING

SML lines are available with fully automatic turret winders. Excellent class winding quality at top speeds delivers perfect yarn bobbins.

STANDARD WINDER DATA FOR CF LINES	
No. of yarns	2/4
Core diameter	75mm
Traverse length	250/120mm
Bobbin diameter	Max. 320mm
Mechanical winding speed	Max. 3,500 m/min

► PERFECT WINDING QUALITY AT LOW AND HIGH ELONGATION





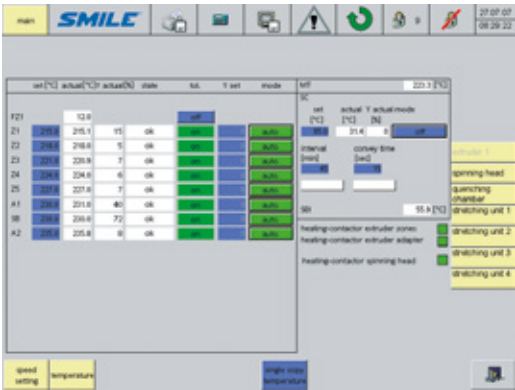
E-container

10 SMILE CONTROL SYSTEM

An operator-friendly HMI (human-machine interface) with two touch screens, one for the spinning line and one for the winder, provides all the functions needed by operators and maintenance personnel to handle the complete line. Everything, from the input of the proportion of each raw material to the parameters of the winder, can be dealt with from these terminals.

Different access levels and features such as alarm management, recipe administration and remote service via ethernet/internet are standard. For extended trend analysis and quality documentation, data can be transferred to a data logging system on a separate PC or existing data collection systems.

The electrical equipment is installed in an e-container. Customised solutions are supplied completely with electrical engineering, wiring and air-conditioning equipment. Naturally, only first choice and proven components are used for each device.



Control panel

- ▶ CENTRAL CONTROL OF ALL PRODUCTION PARAMETERS
- ▶ REMOTE MAINTENANCE FEATURES

	HT 2x2/4 E/ 75 4/8 ENDS	HT 4x2/4/ 75 8/16 ENDS	MT/POY 2x8 16 ENDS	MT/POY "LINE BY LINE" 1x8 8 ENDS
GENERAL TECHNICAL DATA				
Polymer	Polypropylene, MFR 10 - 35			Polypropylene, MFR 25 - 35
Titer range	165 - 4,400dtex	165 - 4,400dtex	110 - 1,100dtex	78 - 167dtex
Output capacity	110 kg/h 2.64 t/d	160 kg/h 3.84 t/d	110 kg/h 2.64 t/d	20 kg/h 0.48 t/d
Dosing unit	Volumetric dosing system with 2 additives (alternatives as option)			
Extruder [mm] L/D	75/28	75/28	75/28	30/28
Spinning beam	Electrically heated with plate heaters	Electrically heated with plate heaters	Electrically heated with plate heaters	Electrically heated with cartridge heaters
Spinning pumps	4 pcs. each 2 outlets	4 pcs. each 2 outlets	4 pcs. each 2 outlets	1 pc. 8 outlets
Spinnerets	8 pcs., Ø 110mm	8 pcs., Ø 110mm	8 pcs., Ø 110mm	8 pcs., Ø 56mm
Pre-intermingling	no	no	Heberlein, Migra-Jet	Heberlein, Migra-Jet
Godets	Ø 160mm, induction heated, lifetime lubricated bearings			
Intermingling	Heberlein, PolyJet			
Winder Winding speed Bobbin diameter	Automatic turret winder 1,000 - 3,500 m/min 320mm	Automatic turret winder 1,000 - 3,500 m/min 320mm	Automatic turret winder 2,500 - 3,500 m/min 420mm	Automatic turret winder 2,500 - 3,500 m/min 420mm

MAIN DIMENSIONS				
Length	8,100mm	11,000mm	6,100mm	6,100mm
Width	7,200mm	7,200mm	7,400mm	7,400mm
Height with standard dosing unit	6,000mm	6,000mm	6,000mm	6,000mm

NOTES:



EXTRUSION LINES – ENGINEERED TO PERFORM ►

SML - Head Office

Bundesstrasse 1a
A-4860 Lenzing, Austria
Phone: +43-7672-912-0
Fax: +43-7672-912-9
E-mail: sml@sml.at
www.sml.at

SML - Machinery Far East Sdn Bhd

(1029958-P)
1201 Block B, Menara Amcorp
No.18 Jalan Persiaran Barat
46050 Petaling Jaya
Selangor Darul Ehsan,
Selangor, Malaysia
Phone: +60-3-7955-9098
Fax: +60-3-7955-9981
E-mail: yen@sml.at

SML - Moscow Office

Ogorodny proezd, 5
Building 6, office 504
127254 Moscow
Russia
Phone: +7 495 618 8007
Fax: +7 495 619 5961
E-mail: kna@sml.at

SML - Beijing Office

Unit 1410, Landmark Tower
No. 8 North Dongsanhuan Road
Chaoyang District
100004 Beijing, P.R. of China
Phone: +86-10-6590-0946
Fax: +86-10-6590-0949
E-mail: sml@sml.bj.cn

100%
eXtrusion
SPINNING LINES

ANALYSES | DEVELOPMENT

PRE-TESTED PERFORMANCE | DELIVERY ON TIME

SERVICE SUPPORT | CUSTOMER SATISFACTION

www.sml.at

The contents of this brochure are only intended for informational purposes.
They are not to be considered as an offer with legal effect.
FDY/MDY/POY-1015-01-B-E