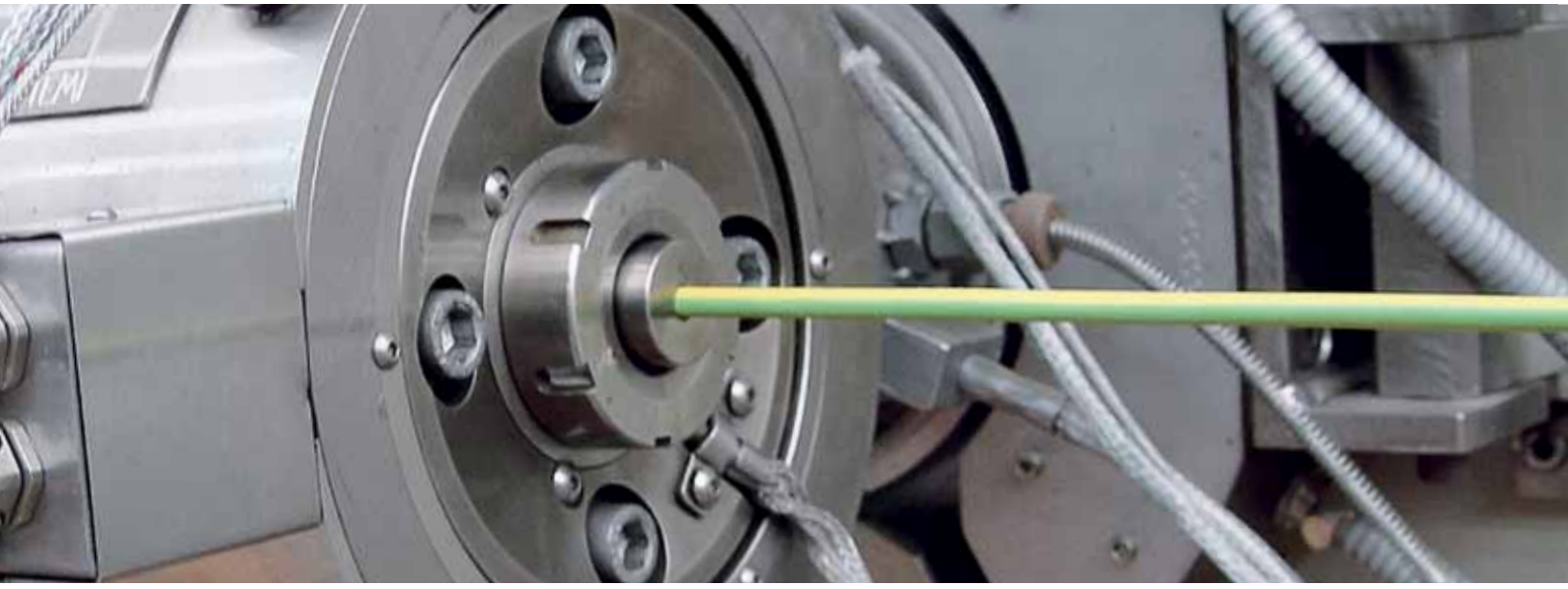
SAMPSISTEMI

1936 - 2016



Cable extrusion

SAMPSISTEMI

Let your production soar

Sampsistemi supplies a complete range of machines and equipment for the wire and cable production. Manufacturing solutions are characterised by top linear speeds and guarantee minimal energy dispersion. The outstanding versatility is based on an extensive range of extruders, designed to process different types of materials including thermoplastic, cross link polyethylene, halogen-free and fluoridated products.
The highly innovative extrusion solutions feature:

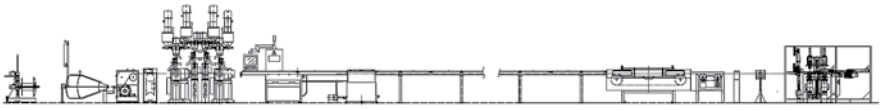
+ *Chameleon* technology
+ G screw for PVC – PE and HFFR/HL0S
+ quick colour change system
+ cross linking with catalyst or liquid silane or CV tube;
+ chemical and physical expansion processes for polyethylene, polypropylene or fluoropolymer

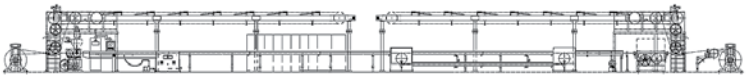
Systems are personalised to meet specific requirements. All our solutions can be easily integrated into your existing production line and control system. Our engineering team is at your disposal to provide you with innovative, highly productive manufacturing solutions.

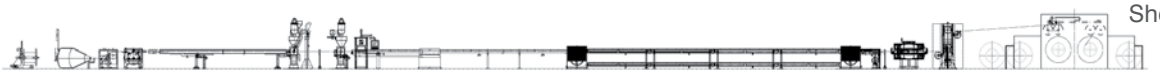
at a glance

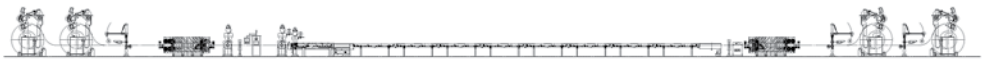
+ Non-stop production during cable type changeover
+ High production speed
+ Energy consumption savings
+ Production savings through optimised process solutions
+ Minimum distance between extruder and extrusion head
+ Extrusion group with heating/ cooling systems and drives suitable for all main insulation materials
+ Long-lasting extrusion barrels and screws made by anti-wear material, ensuring top-quality end products
+ Material saving solutions
+ Different versions of auxiliary extruders
+ Quick and easy reel changeover solutions
+ Fast PLC network line management
+ Line supervisor featuring specific software
+ User-friendly HMI (Human Machine Interface)
+ Integration of all main cable quality control instruments
+ Integration of all main cable markers and labellers

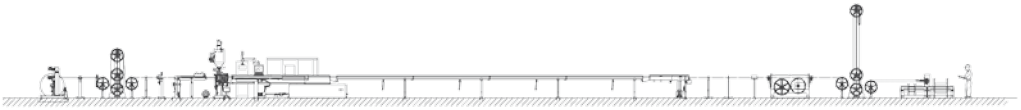
Extrusion lines

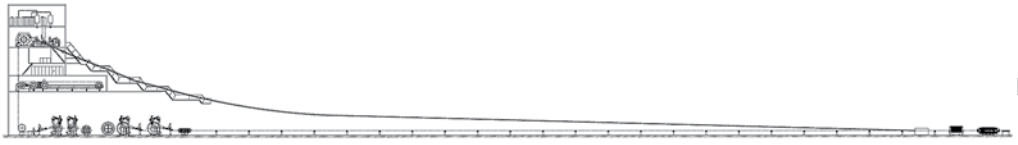




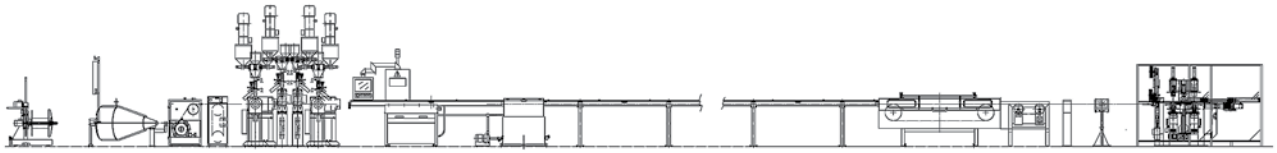








Automotive wire insulation lines



Pay offs	Hysteresis brake	Extruders	Extrusion heads	Vulcanization group	Cooling troughs	Wire dryers	Take-ups	Coiler	System supervisors
SV 630 CD	FR 300 I	SAMP 35-25	TX 6 D	TU 5 VO	VR 7 C	WD 7	AV 560 D	MD 330	SU L
SV 800 CD		SAMP 45-25	TX 6 V		VR 7 TC	WD 12	AV 630 D		SU P
SV E 800 DM		SAMP 60-25	TX 6 V2						
		SAMP 80-25	TX 6 DL						
		SAMP 80-25 L	TX 6 VL						

High-speed automotive wire insulation lines engineered to produce low voltage automotive cables.
It is possible to insulate T3 classification standards using thermoplastic materials and cross linked flame-retardant polyethylene (XLPE and HFFR).

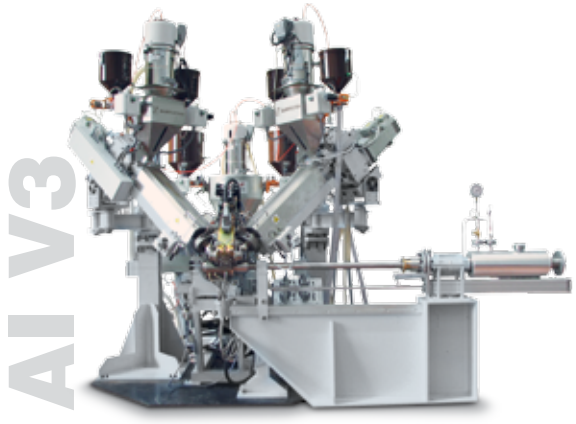
Automatic colour change of insulation, skin and stripe with minimum scrap and at the maximum production speed, without slowdown.

Line types

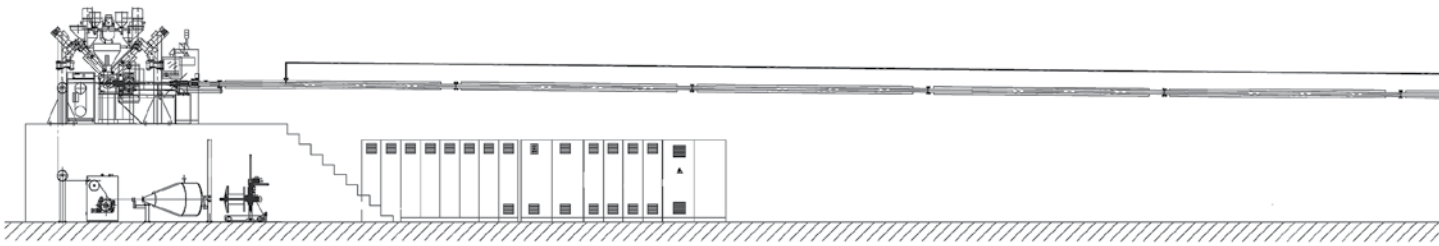
AI A1: with 2 extruders, for stripe/skin process
AI A3: with 3 extruders, for stripe/skin quick colour change
AI A4: with 4 extruders, for stripe/skin and insulation quick colour change
AI V1: horizontal vulcanization with 2 extruders
AI V3: horizontal vulcanization with stripe/skin quick colour change

at a glance

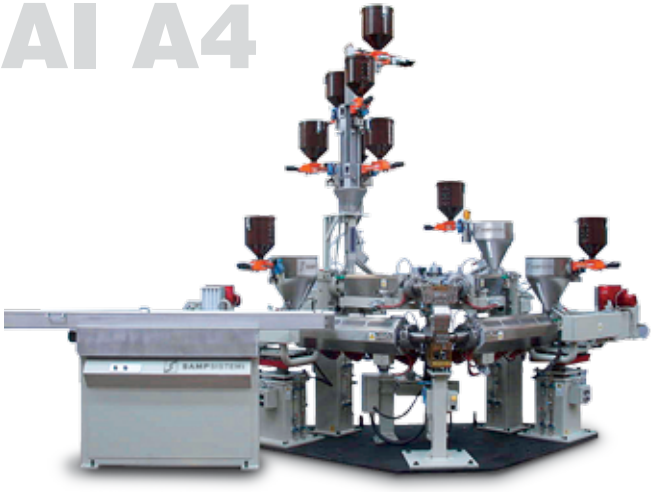
+ *Chameleon* technology: Non-stop production during cable type changeover
+ Quick colour change process without scrap
+ Easy and quick extruder group feeding
+ High production quality by extruder group optimization
+ In-line coiling (MD 330) without production speed reduction



Extrusion group for vulcanization line with automatic stripe colour change system



AI A4

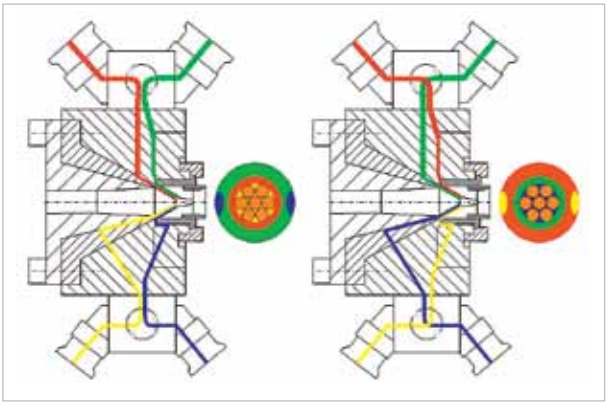


Horizontal extrusion group

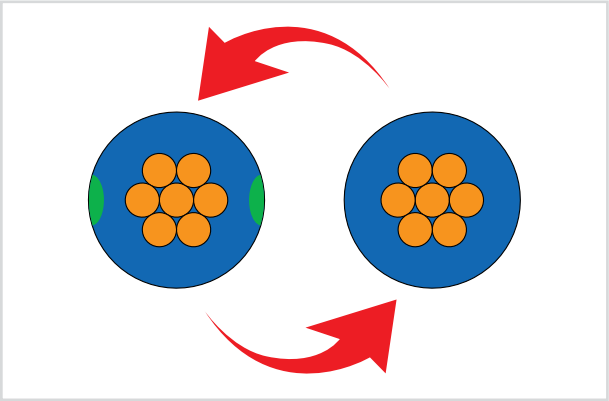
TX 6 V2

Cross-head with 2 X-Flow systems

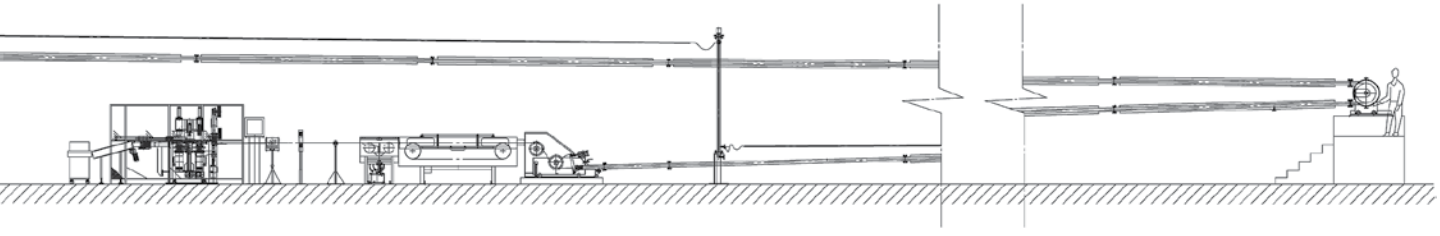
Conductor	Conductor section	Wire Ø, max.	Insulation	Speed, max.
Bunched (Class 5)	0.13 - 7.0 mm²	5 mm	PVC, PE, XLPE, HFFR, PP, PPE, TPE	1500 m/min



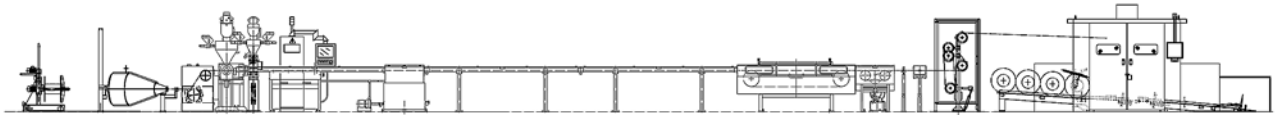
Quick colour change process



Chameleon technology: product changeover at max speed without line stop



Electronic and Building wire insulation lines



Pay-offs	Braking systems	Rod break-down machine	Extruders troughs	Cooling troughs	Wire dryers	Pulling element	Take-ups	System supervisors
SV L	FR300 I	RB 400 C	SAMP 35-25	VR 7 C	WD 7	MC 600	AV 800	SU L
SV 800	FR 500 I		SAMP 45-25	VR 7 TC	WD 12		AV 1250	SU P
SV 1250	FR 500 M	Annealers	SAMP 60-25	VR 12		Accumulator	AV 560 D	
SV E 800 DM		AN 450	SAMP 80-25	VR 12 T		AC 400 V	AV 630 D	
SV 800 CD		RC 500	SAMP 100-25	VR 12 C		AC 600 H	AV 800 D	
SV 1000 CD		RC 600	SAMP 120-25	VR 12 TC			AV 1000 D	
SV 1250 CD							AV 1250 D	

Engineered to insulate low-voltage wire with various thermoplastic materials including flameretardants such as reticulated polyethylene and halogen-free compounds.

The range is completed by THHN cable manufacturing equipment where cables are jacketed with nylon.

Line types

Electronic
WI A1: 1 and 2 extruders for skin/stripe process
WI A2: engineered for HFFR materials
WI A3: 3 extruders for stripe/skin quick colour change
Building
BI A1: 1 and 2 extruders for skin/stripe process
BI A2: 2 extruders, high productivity
BI A3: 3 extruders for stripe/skin quick colour change
BI A4: THHN wire insulation and sheathing
BI A4-HS: THHN wire insulation and sheathing in line with rod break-down machine

WI A1

Extrusion group for wire production at 1500 m/min with line supervisor touch panel model SU L

at a glance

+ High productivity line:
  - *Chameleon* technology: Non-stop production during cable type changeover
  - No production speed reduction during reel changeover
  - One extrusion screew for many materials
  - “0” scrap with quick stripe/skin colour change system
+ Flexibility with wide insulation material range
+ Compact design
+ Material saving thanks to accurate dosing process
+ No foundations required
+ One step solution with In-line drawing machine
+ High production quality by extruders group optimization
+ Wide reel range
+ Line compact design

SV 800 CD

Dual flyer pay-off

RB 400 C

Rod breakdown machine
Drawing capstans

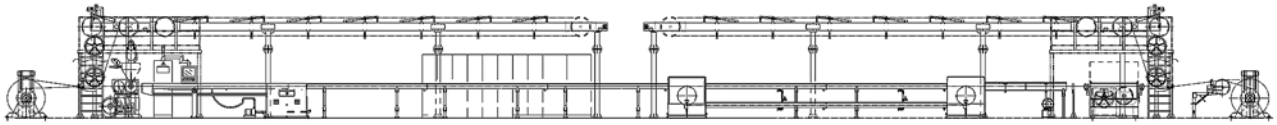
AV 630 D

Dual automatic take-up with gravity chute

Conductor	Conductor section	Wire Ø, max.	Insulation	Jacketing	Speed, max.
Solid (Class 1), Stranded (Class 2), Bunched (Class 5)	Electronic: 0.35 - 6.0 mm² Building: 0.5 - 35.0 mm²	Electronic: 5 mm Building: 12 mm	PVC, PE, XLPE, XLPE Liquid Silane, PP, HFFR, PUR, TPE	PA	Electronic: 1500 m/min Building: 2400 m/min*

* Tandem with rod breakdown machine

Building wire sheathing lines



Pay offs	Extruders	Cooling troughs	Wire dryer	Pulling elements	Accumulators	Take-ups	System supervisors
SV 1250	SAMP 35-25	VR 30	WD 30	MC 800	AC 600 H	AV 1250	SU L
SV E 1600 DM	SAMP 45-25	VR 30 T		TR 800 C	AC 800 H	AV 1600	SU P
PT 2240	SAMP 60-25			TR 1200 C	AC 1000 H	AV 1600 D	
PT 3000	SAMP 80-25					PT 2240	
	SAMP 100-25					PT 3000	
	SAMP 120-25						

Process types

Single-layer: application of sheathing with one extruder
Co-extrusion: simultaneous application of:
filling and sheathing or
filling, sheathing and skin
Tandem extrusion: two extrusion groups, one for filling and one for sheathing

BS A1

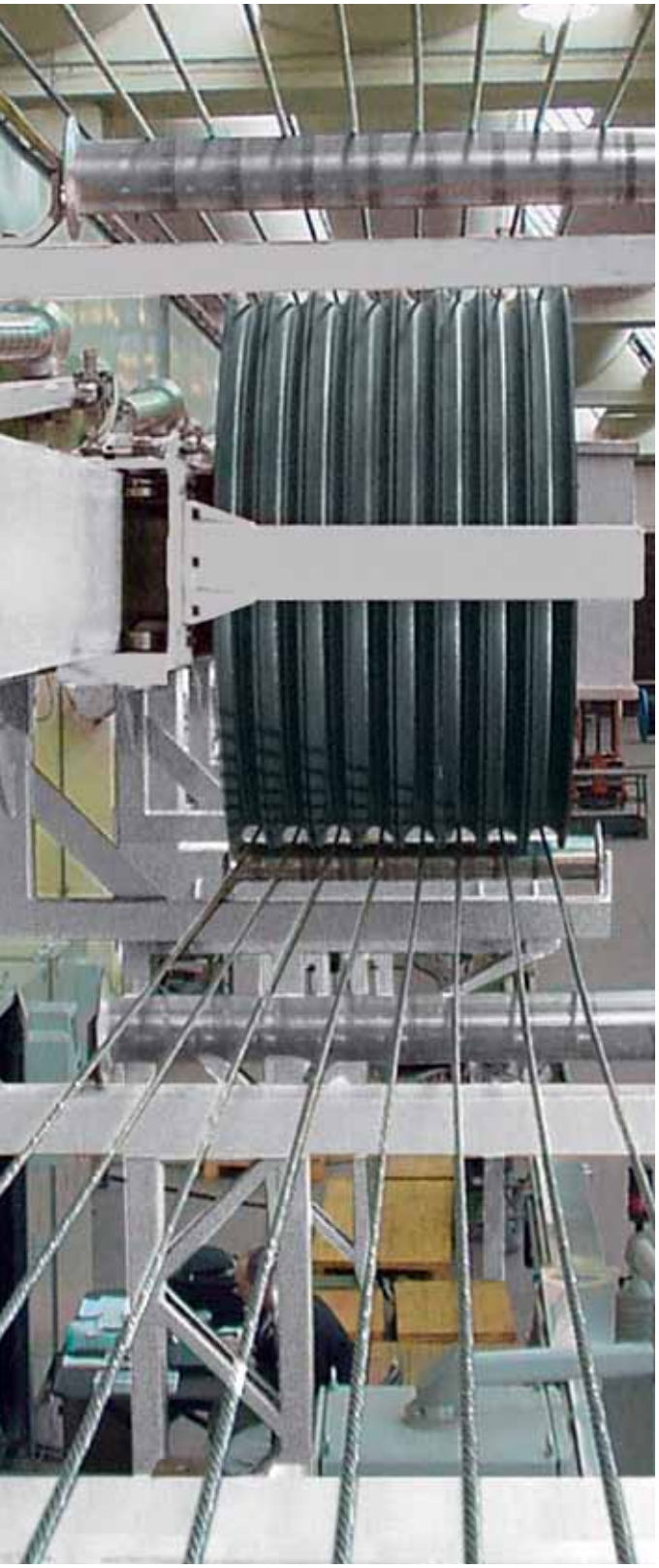
Extruder and cross-head with automatic by-pass

Line types

BS A1: 1 extrusion group with simple layer process
BS A2: 2 extrusion groups for filling and sheathing

at a glance

+ Wide production range
+ Wide range of insulation materials
+ Production flexibility with different reels sizes
+ Continuous working without line stop during reel changeover



PT 2240

PT 2240 portal pay-off/take-up (10 tons)

Conductor	Cable Ø, max.	Sheathing	Speed, max.
Assembled cables	30 mm	PVC, PE, XLPE, HFFR, PP, TPE	500 m/min

Caterpillar
4000 N at 170 m/min

TR 800 C

Building wire sheathing lines with SZ process

Pay offs	SZ Groups	Extruders	Cooling troughs	Pulling elements	Accumulators	Take-ups	System supervisors
SV 800	SZ 16	SAMP 35-25	VR 30	MC 600	AC 600 H	AV 1250	SU L
SV 1250		SAMP 45-25	VR 30 T	MC 800	AC 800 H	AV 1600	SU P
SV E 1600 DM		SAMP 100-25	VR 30 CA	TR 800 C		AV 1600 D	
SV 800 CD		SAMP 120-25				PT 2240	
SV 1000 CD		SAMP 160-25	Wire dryer				
SV 1250 CD			WD 30				

Sampsistemi has patented a system for the high speed manufacture of flexible cables. Designed with a dedicated extrusion group, cables are practically stranded at the point of extrusion. Conductors and filler are then separated by a fine layer of plastic material, meaning that traditional talc powdering stations are no longer required, with all the obvious environmental advantages that this entails. A submerged torsion locker caterpillar keeps the cabling in place as the plastic sheath cools immediately after the extrusion group.
It is therefore possible to keep the pitch and still produce at surprisingly high speed.

Process types

Co-extrusion: simultaneously filling and sheathing
Tandem extrusion: two extrusion groups, one for filling and one for sheathing

Line types

BS B1: SZ group, co-extrusion filling/sheathing system
BS B2: SZ group, 2 tandem extruders for tandem filling/sheathing and filling/sheathing/skin
BS B3: SZ group with patented system and 2 tandem filling/sheathing extruders

at a glance

+ One step production solution (laying-up and sheathing)
+ Flexible wire stranded SZ line at high speed
+ Flexibility in production that allows the use of different materials
+ Full production speed during reel changeover
+ Wide reel range

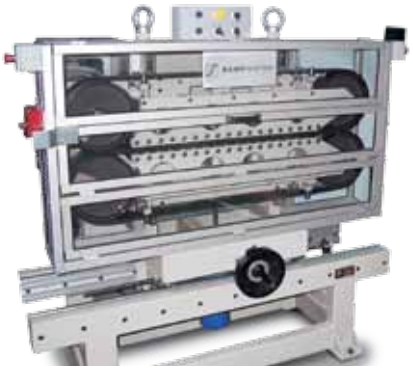
BS B3

Extrusion group with Sampsistemi patented SZ process

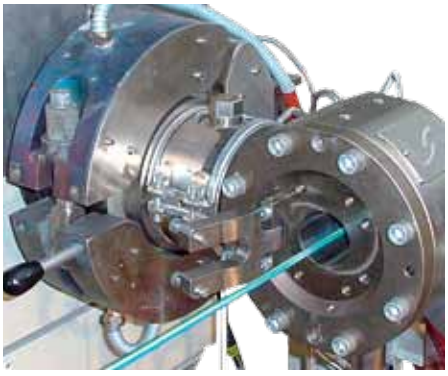
Nose of SZ stranding unit

PATENTED

Filling cross-head
Stranding at the point of extrusion



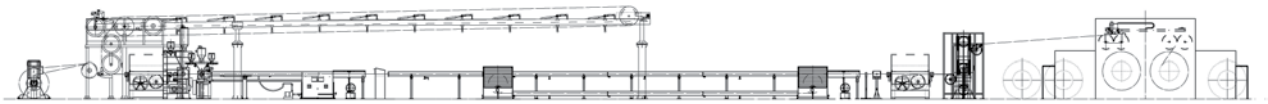
Mobile caterpillar for wire torsion
locker for SZ process



Sheathing cross-head
with tool guide

Conductor	Conductor section	Wire Ø, max.	No. of wires, max.	Filling	Sheathing	Speed, max.
Solid (Class 1), Stranded (Class 2), Bunched (Class 5)	0.5 - 16.0 mm^2	30 mm	7 x 6 mm^2 5 x 16 mm^2	EPDM, PVC, HFFR	PVC, PE, HFFR	400 m/min

Power cable insulation lines



Pay-offs	Extruders	Cooling troughs	Wire dryer	Pulling elements	Accumulators	Take-ups	System supervisors
SV 1250	SAMP 35-25	VR 30	WD 30	MC 800	AC 600 H	AV 1250	SU L
SV E 1600 DM	SAMP 45-25	VR 30 T		TR 800 C	AC 800 H	AV 1600	SU P
PT 2240	SAMP 60-25			TR 1200 C	AC 1000 H	AV 1600 D	
PT 3000	SAMP 80-25					PT 2240	
	SAMP 100-25					PT 3000	
	SAMP 120-25						
	SAMP 120-32						
	SAMP 160-32						

Engineered for high-speed insulation of power cables. Depending on line composition it is possible to insulate cables with traditional thermoplastic materials, flame-retardant halogen-free compounds or liquid silanes.

Line types

PI A1: high-speed insulation line for conductors up to 120 mm²
PI A2: high-speed insulation line using HFFR for conductors up to 120 mm²
PI B1: insulation line for conductors up to 800 mm²
PI B2: insulation line using liquid silanes

PI A1

Extrusion group: 500m/min

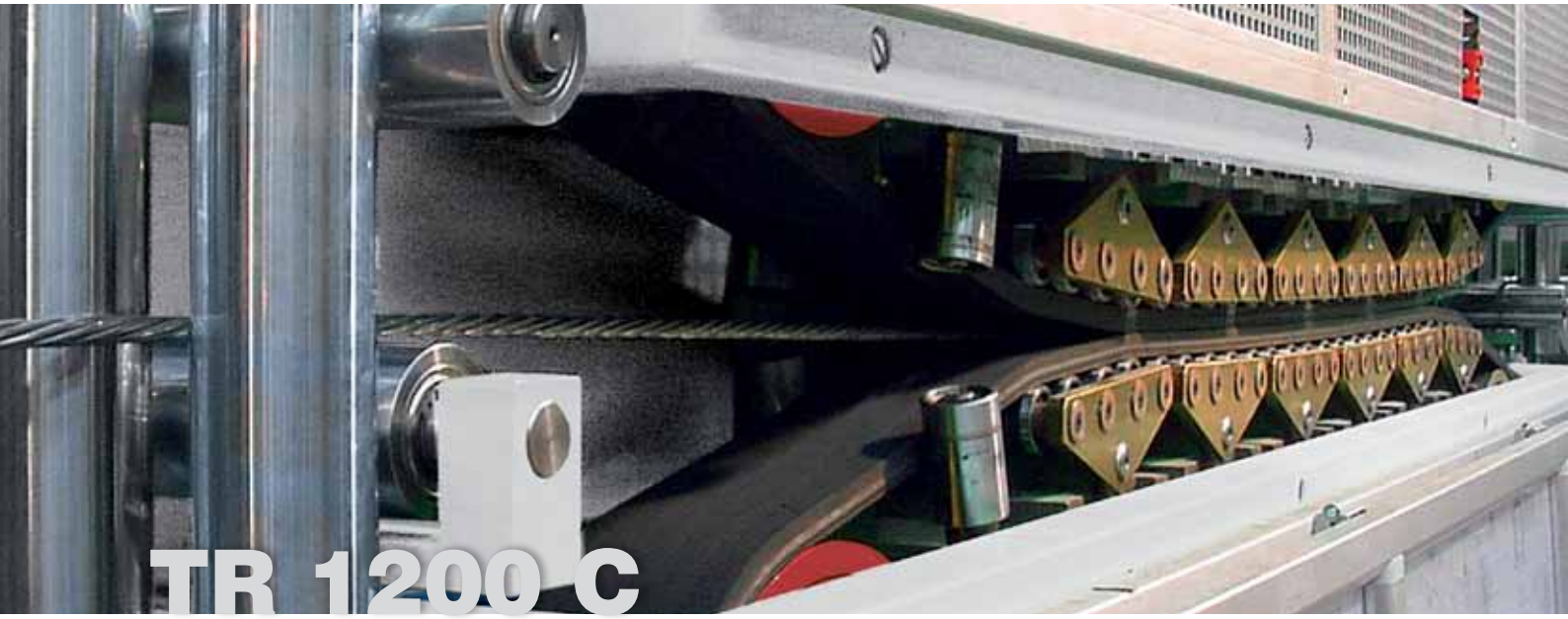
at a glance

+ High production line
  - Non-stop production
  - High production speed
  - Full line speed during reel changeover thanks to Dual Automatic Take-up for reels diameter up to 1600 mm
+ Wide cable manufacturing range
+ Top quality final products
+ Operator friendly line
+ Excellent wire pulling units

PI B1

Conductor	Conductor section	Wire Ø, max.	Insulation	Speed, max.
Solid (Class 1), Stranded (Class 2), Bunched (Class 5)	1 - 800 mm²	50 mm	PVC, PE, XLPE, XLPE Liquid Silane, HFFR, PP, PUR, TPE	500 m/min

Caterpillar
unit 10000 N
at 135 m/min



TR 1200 C

Power cable sheathing lines

Pay-offs	Extruders	Cooling troughs	Wire dryers	Pulling elements	Accumulators	Take-ups	System supervisors
PT 2240	SAMP 45-25	VR 50	WD 50	TR 1200 C	AC 600 H	PT 2240	SU L
PT 3000	SAMP 60-25	VR 50 T	WD 150	TR 1800 C	AC 800 H	PT 3000	SU P
PT 4500	SAMP 80-25	VR 100		TR 2800 C	AC 1000 H	PT 4500	
PT 5000	SAMP 100-25	VR 100 T			Ac 1200 H	PT 5000	
	SAMP 120-25	VR 150					
	SAMP 160-25	VR 150 T					

Engineered to apply sheath on round and flat assembled cables with various thermoplastic materials.

The biggest line is engineered for HV cable sheathing also and it suitable for working in tandem with different type of protecting cable solutions like to tape applicator, lead extruder and bitumen applicator.

Process types

Single-layer: sheathing application with one extruder
Co-extrusion: tandem filling and sheathing
Tandem extrusion: two extrusion groups, one for filling and one for sheathing

Line types

PS A1: Basic sheathing line up to 60 mm
PS A2: Filling/sheathing line up to 60 mm
PS B1: Basic sheathing line up to 200 mm
PS B2: Filling/sheathing line up to 200 mm

at a glance

+ Tandemized solutions for
  - Tape application (smooth & corrugated type)
  - Lead application
  - Bitumen application
+ High flexibility line
+ Wide cable manufacturing range
+ Continuous working during cutting process
+ High production speed

PS B1

Extruder SAMP 160-25
for 1600 Kg/h of HFFR

PT5000-50t

TR 2800 C

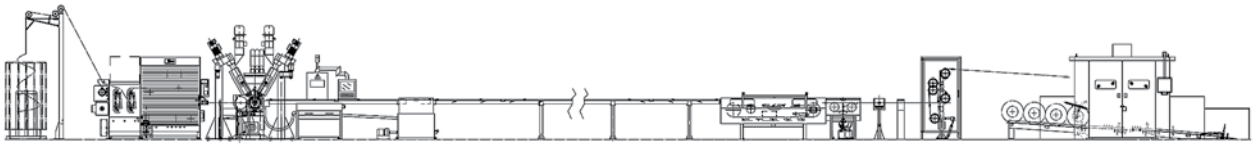
Caterpillar unit
30000 N at 47 m/min

PT 4500

Portal take-up drive wheel
Max reel weight 40 tons

Conductor type	Cable Ø, max.	Filling	Sheathing	Speed, max.
Assembled cables	200 mm	PVC, HFFR, EPDM	PVC, PE, HFFR, PP, PUR, TPE	300 m/min

LAN & telephone wire insulation lines

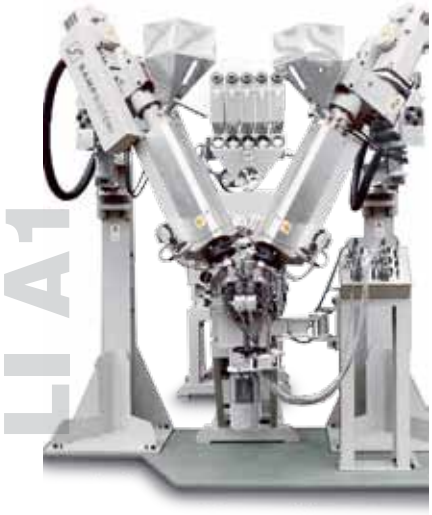


Pay-offs	Drawing machines with integrated annealers	Extruders	Cooling troughs	Wire dryer	Take-ups	System supervisors
SV F SV R SV 630 CD SV 800 CD	MT 250 RC 4AP MT 250 RC 6AP Skin-pass module SP 250	SAMP 35-25 SAMP 45-25 SAMP 60-25 SAMP 60-32 SAMP 80-25 SAMP 35-25 F SAMP 45-32 F SAMP 60-32 F SAMP 80-32	VR 7 C VR 7 TC	WD 7	AV 560D AV 630 D	SU L SU P

LAN & telephone cable producers know the importance of process stability and repeatability very well. With Sampsistemi lines, the setting-up is fast and rejects are minimal due to standardised and harmonised line components; indeed, drawing, annealing and pre-heating are part of an avant-garde global system which includes the extrusion group, ergonomic cooling troughs and reliable dual spoolers.
Moreover, customers also benefit from having a single supplier and a single team of engineers who can flexibly work on the whole line during commissioning and service.

Line types

TI A1: for telephone cables with solid PVC, solid PE and chemical PE foam
LI A1: for LAN cables with solid PE or physical PE foam
LI B1: for LAN cables with solid FEP or physical FEP foam and solid PE or physical PE foam



LI A1

at a glance

+ Top cable specification with single step production process (drawing, annealing and insulation)
+ Reduced set-up time
+ Low scrap material during start-up
+ Excellent wire surface quality with conical drawing cones
+ Self-centering extrusion cross-head with by-passes
+ Line centralised control with SU P supervisor
+ All line components are modularly engineered with the same Sampsistemi criteria
+ Highly reliable dual automatic take-up with wire wraps protection during reel change-over
+ Wide range of take-up solutions
+ Easy maintenance

Solid PE / Chemical foam PE / Physical foam PE Insulation comparison

Copper	0.51 mm	0.51 mm	0.51 mm
Capacitance	218 pf/m	218 pf/m	218 pf/m
Insulation process	Solid PE + skin	Chemical foam + skin	Skin + Physical foam + skin
O D	0.915 mm	0.828 mm	0.780 mm
Foaming ratio	0	35%	60%
	 Skin thick. 0.05mm	 Skin thick. 0.05 mm	 Inner layer thick. 0.005 mm Skin thick. 0.05 mm
Production speed m/min	2,500	1,850	2,200
PE weight kg/km	2.01	1.04	0.596

MT 250 RC 4AP

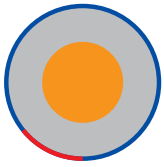
TI A1

Foam/Skin process with chemical expansion

LI A1 - LI B1

Foam/Skin and Skin/Foam/Skin processes
with physical foam expansion
Striping capability
Special pre-heating up to 200° C (LI B1)
Skin pass module for the production of data cable
Extruder screw designed to reduce and keep melt pressure constant at the gas injection point
Stable automated extrusion process with limited fluctuations in capacitance and diameter
Nitrogen injection unit controlled by line supervisor
Self-centering extrusion head,
with fine-tuning device for the best wire concentricity

Production sample with Sampsistemi line

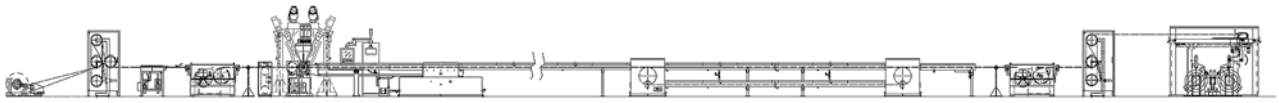


LAN cable (Cat 6) with FEP

Process	Foam/Skin + Stripe
Cu Ø	0.51 mm
O.D Ø	0.88 mm
Expansion	50 %
Line speed	500 m/min

	LAN	Telephone
Cores insulation	Cat 5 e, 6, 7 and higher	Std. Telecom
Conductor material	Copper	Copper
Ø Inlet wire (soft/hard)	3.0 / 2.7 mm	3.0 / 2.7 mm
Ø conductor	0.32 - 0.90 mm	0.32 - 0.90 mm
Cable Ø, max.	3.0 mm	3.0 mm
Insulation materials	PE, PP, FEP	PVC, PE
Process	Solid and Physical Foam	Solid and Chemical
Expansion level, max.	50% FEP 70% PE	50% PE
Line speed, max.	3000 m/min	3000 m/min
Ø Tolerance	± 0.01 mm (for insulation thickness < 0.3 mm) ± 1% (for insualtion thickness > 0.3mm)	± 0.01 mm (for insulation thickness < 0.3 mm) ± 1% (for insualtion thickness > 0.3mm)
Eccentricity tolerance	F>0.96	F>0.95

Coaxial cable insulation lines



Pay-offs	Calibrating trough	Extruders	Cooling trough	Pulling element	Take-ups	System supervisors
SV E 500 DM	VT	SAMP 35-25	VR 7 TC	MC 600	AV 560 D	SU L
SV E 630 DM		SAMP 45-25	VR 7 TCA		AV 630 D	SU P
SV E 800 DM		SAMP 60-32	VR 12 T		AV 800	
		SAMP 35-25 F			AV 800 D	
		SAMP 45-32 F		Wire dryer		
		SAMP 60-32 F		WD 12		
		SAMP 80-32				

Mini and micro-coaxial cable insulation lines: Foam/skin & Skin/Foam/Skin processes

Line types

CI A0: insulation line for micro-coax cables with FEP and PE
CI A1: insulation line for mini-coax cables with SRL frequency up to 1 GHz
CI A2: insulation line for mini-coax cables with SRL frequency up to 3 GHz

at a glance

+ High productivity line
+ Top cable quality (surface, expansion level and concentricity)
+ Fast line set-up
+ Low scrap material during start-up
+ Striping capability
+ Extruder screw designed to reduce and keep melting pressure constant at the gas injection point
+ Stable automated extrusion
+ Self-centering extrusion cross-head with fine-tuning device and by-passes
+ All line components are modularly engineered with the same Sampsistemi criteria
+ Line centralised control with SU P supervisor
+ Wide range of take-up solutions
+ Highly reliable dual automatic take-up with wire wraps protection during reel change-over
+ Easy maintenance

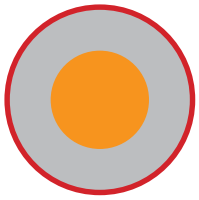
Cl A0

Cables insulated with fluoropolymers are traditionally used in aerospace, military and nuclear applications, where a high level of fire resistance, good electrical properties and exceptional chemical resistance are a priority.
Extrusion process parameters and the extremely high cost of fluoropolymers have been an obstacle to their use in cable insulation. With longstanding experience in fluoropolymer technology, Sampsistemi has engineered a special extrusion process which includes gas injection foaming. With this system insulating wire with fluoropolymers is no more difficult than polyethylene insulation.

at a glance

+ Flexibility with FEP and PE insulation
+ Accurate melt temperature control
+ Extrusion heads made from anti-wear materials

Production sample with Sampsistemi line



Micro-Coax cable (7x0.18 mm) with FEP

Process	Foam/Skin
Skin thickness	0.05 mm
Cu Ø	0.54 mm
O.D Ø	2.08 mm
CAPAC	58 pF/m
Expansion	54 %
Line speed	220 m/min

Cl A1 - Cl A2

Mini-coax cables, CATV cables and radio-frequency cables are primarily characterised by their electrical impedance and the speed with which signals are propagated. The common denominator of both signal propagation and dielectric constants is the cable insulation material.
Nowadays, market demand requires very low dielectric constants which can only be achieved by physical foaming extrusion processes. With a wealth of experience in physical foaming by nitrogen injection, Sampsistemi lines can obtain a dielectric constant of 1.2, which corresponds to a polyethylene foaming degree of 81%.
Other important cable parameters, such as low attenuation and structural return loss, require extremely high precision from all extrusion line components, since it is necessary to achieve a line speed stability of 1/10000 without extruder output pulsing: no problem for Sampsistemi lines!

at a glance

+ Structural return lost frequency up to 3 GHz
+ Wire calibrating device
+ Cable tension accuracy
+ Accurate melt flow control

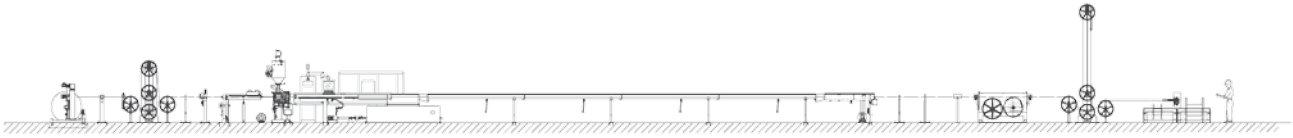
Production sample with Sampsistemi line

Coax cable RG 59 with PE

Process	Skin/Foam/Skin
Cu Ø	0.816 mm
O.D Ø	3.59 mm
CAPAC	52 pF/m
Expansion	70 %
Impedance	75 Ohms

	Cl A0	Cl A1 - Cl A2
Conductor	Soft copper Copper clad aluminium Copper clad steel	Soft copper Copper clad aluminium Copper clad steel
Conductor Ø	0.2 - 3.1 mm	0.64 - 2.9 mm
Cable Ø, max.	7 mm	12 mm
Insulation material	FEP, PE, PP	PE, PP
Expansion level, max.	75% PE 55 % FEP	81 % PE
Line speed, max.	700 m/min	300 m/min
Ø Tolerance	± 0.01 mm (for insulation thickness < 0.3 mm) ± 1.0 % (for insualtion thickness > 0.3 mm)	± 2.0 % (for insulation thickness < 5 mm) ± 1.5 % (for insualtion thickness > 5 mm)
Eccentricity tolerance	F>0.95	F>0.94

High Temperature insulation lines



Pay-off	Wire pre-heater	Extruder	Cooling Trough	Wire Dryer	Pulling element	Accumulator	Take-up	Line supervisor
SV 630 DM	PH-W	SAMP 35-25F	VR 7	WD 12	MC 600	AC 400 V	AV 2x630	SU L
SV 800 DM		SAMP 45-25F	VR 30	WD 30	MC 800	AC 600 V	AV 2x800	SU P
SV 1250 DM		SAMP 60-25F				AC 800 V	AV 2x1000	
PT 1250 PT 1600		SAMP 80-25F					AV 2x1250	
							AV 2x1600	

Automotive, Aerospace and Submergible pump cable applications require insulation materials with temperature resistance of more than 200 °C (approx. 400 °F).
The Sampsistemi Extruders are particularly suitable for these materials and allow you to improve your production capacity guaranteeing the highest quality level of your final product.
A homogenized insulation with the repeatability of electrical and mechanical cable performance is guaranteed by an accurate line temperature control system that manages the several thermo-regulated zones present in the line as much as the insulation adhesion on conductor.

Line types

HT A1: for max cable dia. 6 mm
HT B1: for max cable dia. 18 mm

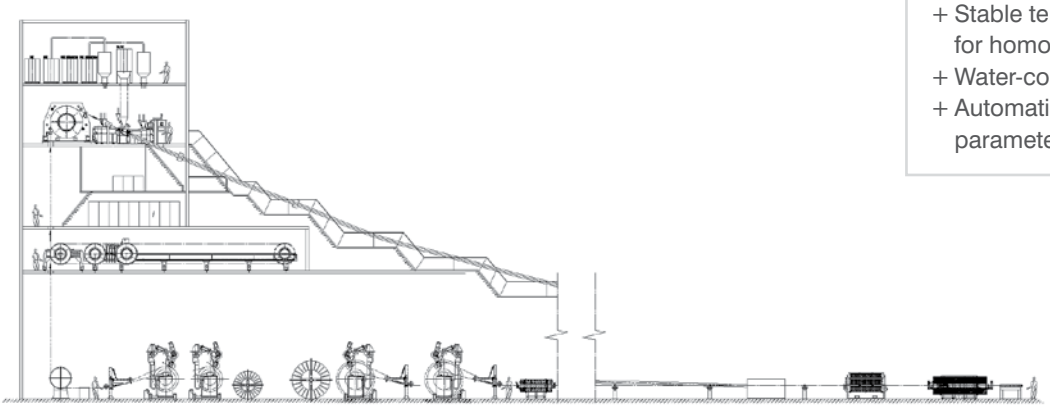
at a glance

+ Excellent final product quality
+ Concentricity more than 95%
+ Insulation integrity
+ Surface homogeneity
+ Easy line set-up
+ Low material scrap
+ Non-stop production during reel changeover
+ Centralized data process control with accurate manage of all production information

Conductor type	Conductor section	Wire Ø Max	Insulation (material)	Speed max
Tinned – Cu Silver – Cu, Nickel – Cu	30 AWG (0.05 mm²) to 4/0 AWG (107 mm²)	18 mm	TPE, PEEK, FEP, ETFE, X-ETFE, PFA, MFA	150 m/min

Medium & high voltage power cable insulation lines

The SAMP MHV line is designed for the continuous production of XLPE (optionally EPR) insulations on medium voltage cable cores.



MHV lines at a glance

+ High, constant line speed
+ Layer thickness, diameter and concentricity control
+ Cable quality control during ramp-up and ramp-down
+ Stable temperature control for homogenuous melt
+ Water-cooled extruders
+ Automatic production parameters set-up

Pay-offs	Accumulators	Master capstan	Extruders	Extrusion heads	Cross-linking tube	Cable twister	Pulling elements	Take-ups
PT 2240	AC 1200 H	MC 1800 MHV	MHV 80-20	TX 50 MHV	TU 50 MHV	CT 1200 MHV	TR 1200 C	PT 2240
PT 3000	AC 1600 H	MC 2600 MHV	MHV 100-20	TX 70 MHV	TU 100 MHV		TR 1800 C	PT 3000
PT 4500			MHV 160-25	TX 90 MHV			TR 2800 C	PT 4500
PT 5000		Pre-heater	MHV 200-25					PT 5000
		100 kW						

Well-proven triple-layer crosshead

The insulation process is executed by a well-proven, triple layer crosshead equipped with an independent centering unit for each material flow channel distributors

The three water cooled extruders, MHV type (see page 27), are designed to process sensitive polymer and elastomeric materials at a low melt temperature.

Each heating/cooling zone is equipped with a separate heating and cooling element, directly applied to the barrel. Proportional valves connect directly to the PID control guaranteeing very tight and stable melt temperature tolerances.

Controlled temperature stability at any time

Cross-linking of the insulation materials is done by an inert gas (Nitrogen) pressurized within a catenary tube and heated-up by 8 independent zones.

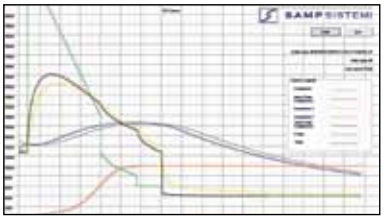
The production parameters set-up is automatically adjusted and homogenised by the SAMP MHV-CAL software to reach maximum production speed while maintaining a constant insulation thickness.

The cable is cooled by a water circulation system, optionally also by gas if completely dry processing is required.

Powerpack™ Extruder Drives made by SAMP.

MHV CAL

MHV SYS



+ SAMP MHV CAL software to set-up production parameters

+ SAMP MHV SYS line supervision software for the complete line control and consistent quality results.

Highly stable processing for non-stop production.

To guarantee the continuous production flow, from the payoff on, the conductor is stored in an entry accumulator with an integrated dancer to assure a constant cable tension before entering the Master Capstan.
This unit is the line speed Master and guarantees the line speed stability. A capacitive position sensor controls the speed of the "exit" Caterpillar.
A third Helper Caterpillar with a controlled torque is located before the takeup station, maintaining the cable within the pulley and its support rim.

The complete extrusion process is easily controlled by the SAMP line supervision software MHV-SYS™ with a very user-friendly operator interface, guaranteeing consistent high quality cable production.

Line specification		MHV 36	MHV 66	MHV 220
Cables voltage range	kV	6 - 36	6 - 66	36 - 220
Conductor section (Al and Cu)	mm²	25 - 630	50 - 1200	50 - 1200
Metal tensile strength, max	N/mm²	Cu: 45 Al: 25	Cu: 45 Al: 25	Cu: 45 Al: 25
Cable Ø range	mm	14 - 50	20 - 70	30 - 90
Semicond. Layer (Inner and External)	mm	0.4 - 0.8	0.4 - 1.2	0.4 - 1.2
Insulation layer	mm	2.5 - 8	2.5 - 10	2.5 - 23
Cable weigth, max	kg/m	7	14	18
Insulation material		XLPE, EPR	XLPE	XLPE
Line set-up				
Total line length	m	200	200	220
Extruder platform height	m	15	20	20
Angle at Crosshead	degree	19	25	25
Tension factor		107	160	160
Gearing speed, max.	m/min	50	25	25
Temperature Cable at tube exit, max.*	°C	90	90	90
Temperature Cable at take-up, max.*	°C	50	50	50
Curing method	N_2	Gas	Gas	Gas

* At conductor surface

Extruder technology – the core of extrusion knowhow

A fundamental part of any high performance line, Sampsistemi extruders are born from the longstanding experience and commitment of our expert team of engineers. Our extruders are renowned for their high levels of productivity and flexibility. Sampsistemi extruders answer to any requirement from high speed cable insulation to skin/stripe processes, automatic colour change systems, sheathing lines.

Top output values at low melt temperatures and high back pressures

Excellent output stability is assured by a forced feeding zone and an accurate screw design.
An optimised L/D ratio ensures smooth plasticization of thermoplastic compounds with top output values (up to 1600 kg/h).

Linearity – Perfect output across all screw speed ranges

As output per screw revolution is the same for all screw speed ranges, it suffices to pre-set rpm according to insulation thickness and cable production speed to keep product diameter within tight tolerances, both during acceleration and deceleration.

Reliability
High quality pays off!

We conceive our machines with a view to constantly cutting maintenance costs.
We utilise top quality resistant components. Totally reliable reducers and excellent barrel and screw surface finishes are all absolute musts at Sampsistemi and ensure that you produce efficiently over time.

at a glance

+ Barrels with a forced feeding zone
+ Barrels made from nitrited steel to increase hardness and lower wearing
+ Barrel thermoregulation by means of electrical heaters and fans
+ Screws made from nitrited steel
+ Screw profiles optimised to barrels
+ Stable & accurate thermo-regulation
+ Fast line set-up thanks to reduced preheating time
+ Efficient & quiet barrel cooling
+ Monitored melt pressure to prevent barrel overpressure
+ Automatic crosshead clamping
+ User-friendly process supervision for quick and simple product changes

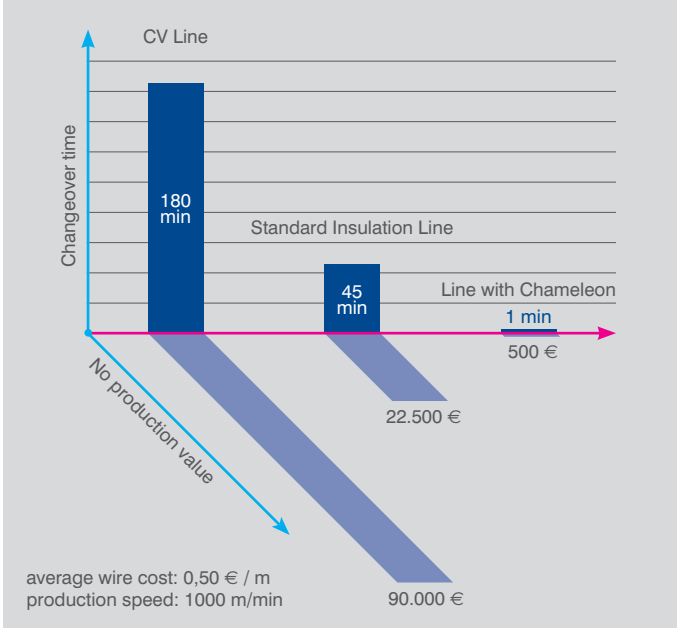
CHAMELEON

Chameleon is a revolutionary solution that allows the cable type changeover from a striped cable to a non-striped one and vice versa in just a few seconds, without stopping the production line and disassembling the extrusion head.

This technology is suitable for all SAMP extrusion heads.

at a glance

+ Non-stop production
+ High quality of the final product
+ Wide application range
+ No maintenance for striping process
+ Less cross-head components (no single layer distributor is needed)

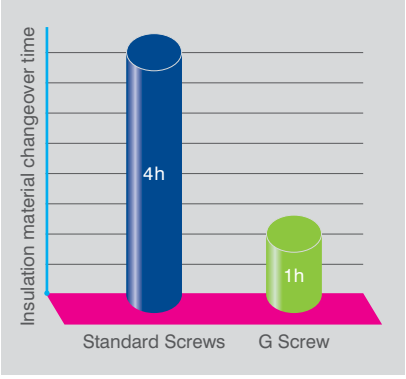


Extrusion modules for maximum flexibility in cable production

SAMP Extruder Dosing Unit

at a glance

+ Virtual “0” scrap material
+ Automatic cleaning process
+ Accurate dosing system
+ Operator friendly
+ Huge viewing panels
+ Complete control from SU P/SU L



G SCREW

at a glance

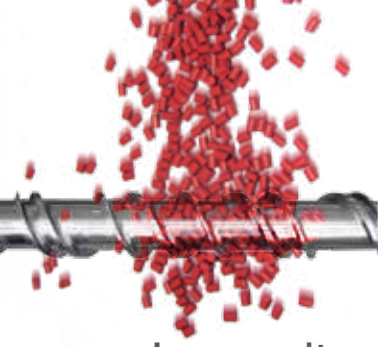
+ Flexibility (many insulation materials with one screw only)
+ High reduction time for insulation material changeover (4 times less than traditional technology)
+ No downtime for screw extraction
+ Only one screw for all materials
+ High productivity (same output compared to dedicated screws)

Work all thermoplastics on a single machine

at a glance

+ A single machine for all thermoplastic materials
+ Liquid silane and HFFR / LS0H materials with the same extruder
+ Maximum fllexiblity in production with less investment
+ Easy installation
+ Fast material changes
+ Future-safe investmens

MULTIFLEX 25



Low voltage and telecom extruders

For thermoplastic compounds

Extruder size	Motor type	Number of thermo-regulated zones	Screw max. rpm
SAMP 35-25	AC	3	220
SAMP 45-25	AC	4	200
SAMP 60-25	AC	4	150
SAMP 80-25	AC	5	120
SAMP 100-25	AC	5	100
SAMP 120-25	AC	5	80
SAMP 160-25	AC	5	60

For liquid silane*

Extruder size	Motor type	Number of thermo-regulated zones	Screw max. rpm
SAMP 120-32	AC	6	80
SAMP 160-32	AC	6	60

* It is possible to extrude liquid silane with 25 Ø extruders by using MULTIFLEX 25

For physical foaming

Extruder size	Motor type	Number of thermo-regulated zones	Screw max. rpm
SAMP 45-32	AC	5	200
SAMP 60-32	AC	5	150
SAMP 80-32	AC	6	120

For fluoropolymer compounds

Extruder size	Motor type	Number of thermo-regulated power(kW)	Screw max. rpm
SAMP 35-25F	AC	3	220
SAMP 45-25F			
SAMP 45-32F	AC	5	200
SAMP 60-32F	AC	5	150
SAMP 60-25F			
SAMP 80-25F	AC	6	120

Barrels, screws and cross-head clamps made of corrosion-resistant materials

Special high-performance ceramic heating elements for barrel temperatures up to 500°C

SAMP 120-25

at a glance

+ From 6% up to 33% more productivity than current technology
+ High performance temperature control resulting on shorter ramp-up time
+ Virtual “0” scrap material
+ Accurate dosing system
+ Automatic cleaning capabilities
+ High torque AC drive: SAMP Powerpack™

for 1200 Kg/h of HFFR

Medium and high voltage extruders

Extruder size	Motor type	Number of thermo-regulated zones	Screw max. rpm
MHV 60-20	AC	4	40
MHV 80-20	Powerpack™	4	30
MHV 100-20	Powerpack™	4	25
MHV 160-25	Powerpack™	5	40
MHV 200-25	Powerpack™	6	25

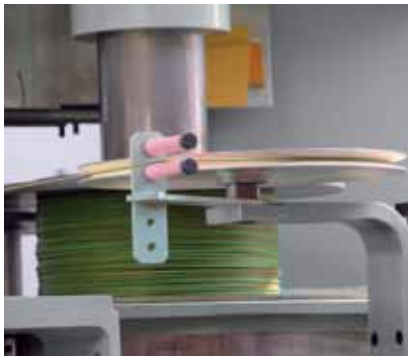
Accessories

at a glance

+ Screw thermoregulation unit
+ Automatic cross-head clamps & by-passes
+ Master-batch colour and catalyst dosing units
+ Gravimetric compound dosing station
+ Compound dryers
+ Various compound loading systems
+ In-line cable quality control systems

All from a single source

Complete your line with Sampsistemi unwinding & winding solutions



MD 330: Automatic Dual Coiler
Max coil dia: 330 mm

Sampsistemi offers a wide range of wire & cable unwinding and winding machines. We design our solutions adapted to the specifics of your product and process.

Our pay-offs and take-ups are designed for maximum rigidity and stability to conveniently employ even large reels reliably. Fastest speeds and easy reel change contribute to the profitability of your extrusion line.

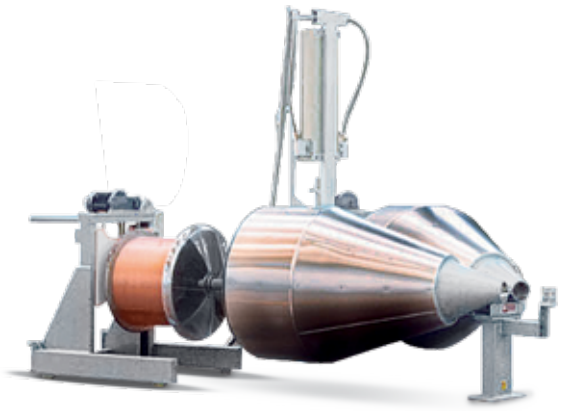
A variety of safety features, supported by thorough testing and strict quality protocols during assembly and run-off, guarantee operator's safety in daily production.

Product range

+ High-speed dual flyer pay-off
+ Dual automatic take-ups for continuous working without reduction speed
+ Self traversing portal pay-offs and take-ups up to 70 tons
+ Single motorised pay-offs and take-ups

Dual flyer pay-offs

max speed
1500 m/min



SV 630 CD

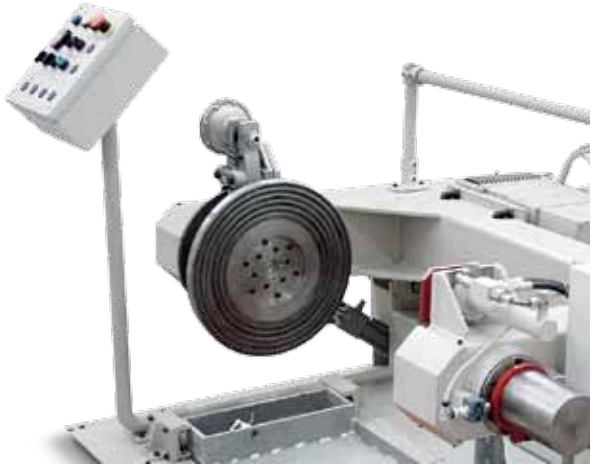
	Reel flange Ø (mm), max.	Reel flange Ø (mm), min.	Reel weight (kg), max.
SV 630 CD	630	400	600
SV 800 CD	800	560	1200
SV 1000 CD	1000	500	2500
SV 1250 CD	1250	630	4500

at a glance

+ High speed unwinding
+ Automatic wire change
+ Welded wire detection
+ Easy handling
+ Easy installation
+ Fine tuning cones
+ On board electrical equipment

Single motorised pay-offs & take-ups

max speed
1000 m/min



SV E 800 DM

Pay-offs	Take-ups	Reel flange Ø (mm), max.	Reel flange Ø (mm), min.	Reel weight (Kg), max.
SV E 500 DM		500	255	450
SV E 630 DM		630	315	650
SV E 800 DM	AV 800	800	450	1200
SV E 1250 DM	AV 1250	1,250	630	2600
SV E 1600 DM	AV 1600	1,600	800	4000

at a glance

+ High speed
+ Quick reel handing
+ Low preventive maintenance
+ Easy installation

Self-traversing portals for pay-off & take-up

PT Series

The new TU and PO series has been designed for a wide range of reels in CV lines, insulation and sheathing extruders, lead extrusion lines, stranding lines as well as rewinding lines.

The sturdy design with telescopic cross beam features high-speed motors. Measuring systems for the winding and unwinding process and the direct motor response guarantee a very precise cable distribution on the reels. The automatic wheel tension control ensures the constant pressure on the reels, independently from surface and material.

Mechanical and optical safety fences guarantee a very safe operation, especially during the loading process. Operators are supported by an intuitive user interface with automated functions.

at a glance

+ Space-saving
+ Minimum setup time
+ Self-centering pintles
+ Wide range of reels
+ Accurate cable distribution
+ Safe operation
+ Easy & intuitive HMI
+ Both Driving Wheel type and Dog Pin type are available
+ Carefree maintenance

		PT 1600	PT 2240	PT 2600	PT 3200	PT 3600	PT 4500	PT 5000-50	PT 5000-70
Flange Ø range	mm	800 - 1600	1000 - 2240	1600 - 2600	1600 - 3200	2000 - 3600	2600 - 4500	3000 - 5000	3000 - 5000
Weight, max	kg	6000	10000	15000	20000	30000	40000	50000	70000
Line speed, max	m/min	400	300	200	200	100	40	20	20

Dual automatic take-ups for continuous flow

Dual automatic take-up
for max 35 mm²

AV 1250 D

at a glance

+ Maximum change-over reliability at full speed
+ Energy consumption saving
+ Easy integration to existing extrusion line
+ Low preventive maintenance
+ Automatic reel loading/unloading system
+ Long inner wire end capability
+ No foundations required

		AV 560 D	AV 630 D	AV 800 D	AV 1000 D	AV 1250 D	AV 1600 D
Flange Ø, max.	mm	560	630	800*	1000**	1250	1600
Flange Ø, min.	mm	400	450	500	560	800	1000
Width, max.	mm	425	475	600	750	950	1180
Weight, max.	kg	200	350	550	1200	2000	4200
Speed, max.	m/min	3000	2500	1200	1500	1500	600

* suitable for 36''
** suitable for 42''

Automatic coiler

at a glance

+ In-line coiling
+ Maximum change-over reliability at full speed
+ No reel for delivery
+ Easy integration with existing extrusion line

Bunched wire section	mm²	0.22 - 4.00
Insulated wire Ø	mm	0.50 - 3.60
Coil Ø, max.	mm	330
Coil inner Ø, min.	mm	100
Coil outer width, max.	mm	100
Linear speed, max.	m/min	1200

MD 330

Automatic coiling machine

Software solutions for easy and fast operation, avoiding non-productive auxiliary times

Integration and control

SAMPSYS Software package controls and integrates all single units into our manufacturing line.

Get an overall picture of the line performance by measuring production availability, performance and quality and gaining control of your complete manufacturing process.

Future safety

Our software is modulary built ensuring flexible and fast upgrades of single modules.

System functions

+ Data logging
+ Statistical process control
+ Alarm functions
+ Process parameter memory
+ Scheduler for production timing
+ Reporting with pre-configured templates
+ Monitoring of line status and performance characteristics of each single unit
+ Easy data export
+ Tele-maintenance through phone line and modem for diagnostics upgrades and operational help
+ System recovery
+ Help function
+ User administration matrix
+ Production history
+ Maintenance interval setting and administration

at a glance

SAMPSYS line control concept for quality and production management featuring:

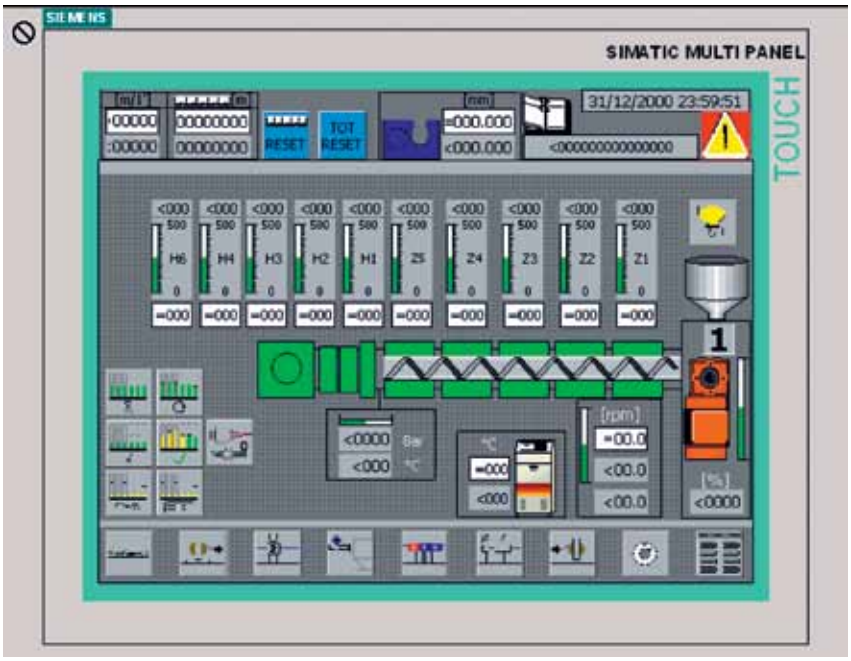
+ Complete line control
+ Process supervision
+ Networking and interfacing with existing lines
+ Wealth of automised process and control functions

Guided user interface for less errors, less downtime and less scrap production

The user-friendly HMI (Human Machine Interface) guides the operator through all necessary steps of the manufacturing process.

All required production and product information is stored by the PLC for future availability. Recalling data becomes child's play.

Networking your machine or line allows for online trouble shooting realising savings on expensive interventions while avoiding machine downtimes whenever possible.



Single extruder page

1

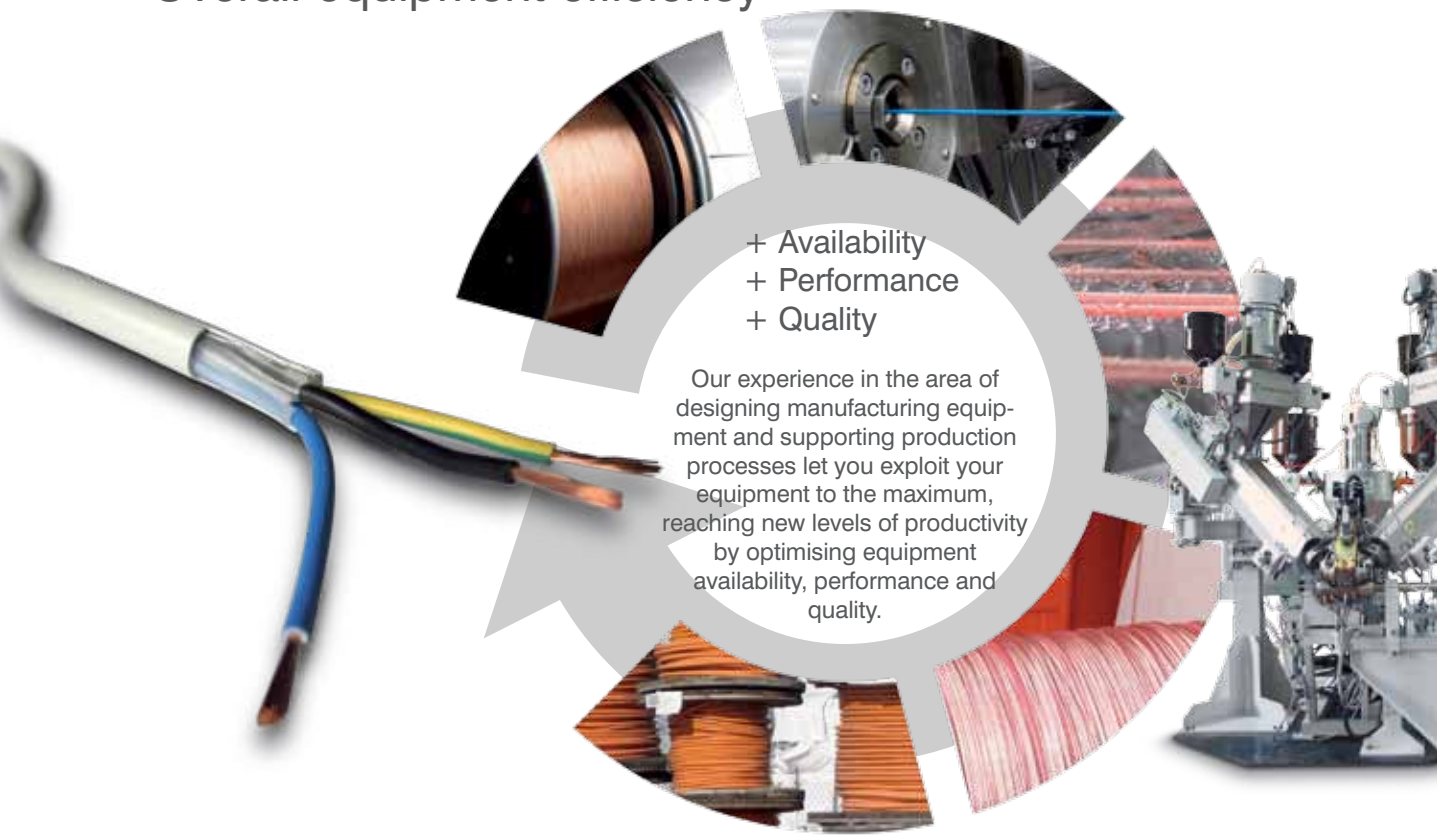
2

3

4

1 - Pay-off status
2 - Complete line page
3 - Production scheduler
4 - Double take-up status

The key to success:
Overall equipment efficiency



Planning and analysis

Sampsistemi analyses your production requirements and recommends solutions for the demanded productivity and quality. Whether you need a single machine or a complete line, we are your one-stop source for your wire and cable manufacturing project.

Service plans

Our scheduled service help you avoid unexpected problems and keep your line productivity and the quality of the finished product at maximum levels.

Technology development programs

When you require specific solutions we listen closely in order to satisfy your needs to even beat your expectations.

Operator training

Trained operators let you exploit your manufacturing lines to the maximum while avoiding down-time and securing carefree manufacturing.

Continuous improvement

Ongoing research and development effect new products but flow also into component design which can enhance existing lines and units.

On-call service

In case of emergencies we stand by to get you back running, if online service is not sufficient.

at a glance

+ Guaranteed OEM quality through the lifecycle of your production equipment
+ Continuous process improvement
+ Complete project responsibility from one supplier

SAMPSISTEMI

Connect to worldwide service

Stay connected with superior productivity. The closest Sampsistemi service centre supports availability, precision, speed and productivity of your manufacturing line.

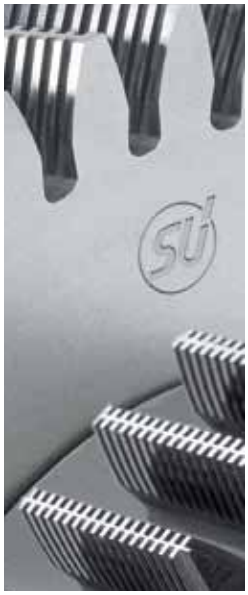
Spare parts

Individual component upgrades

Individual winding, cooling and handling equipment

Software updates and upgrades



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