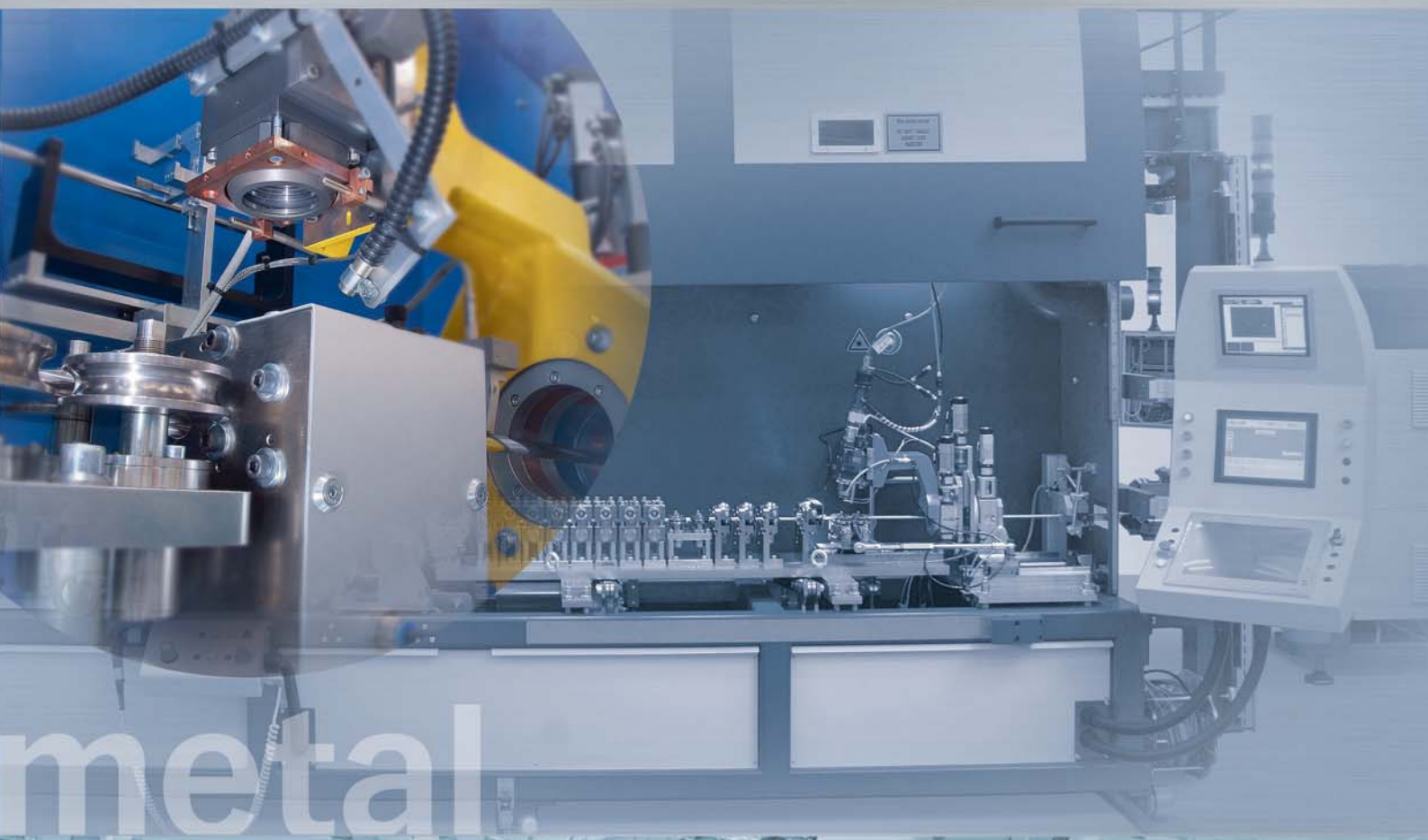
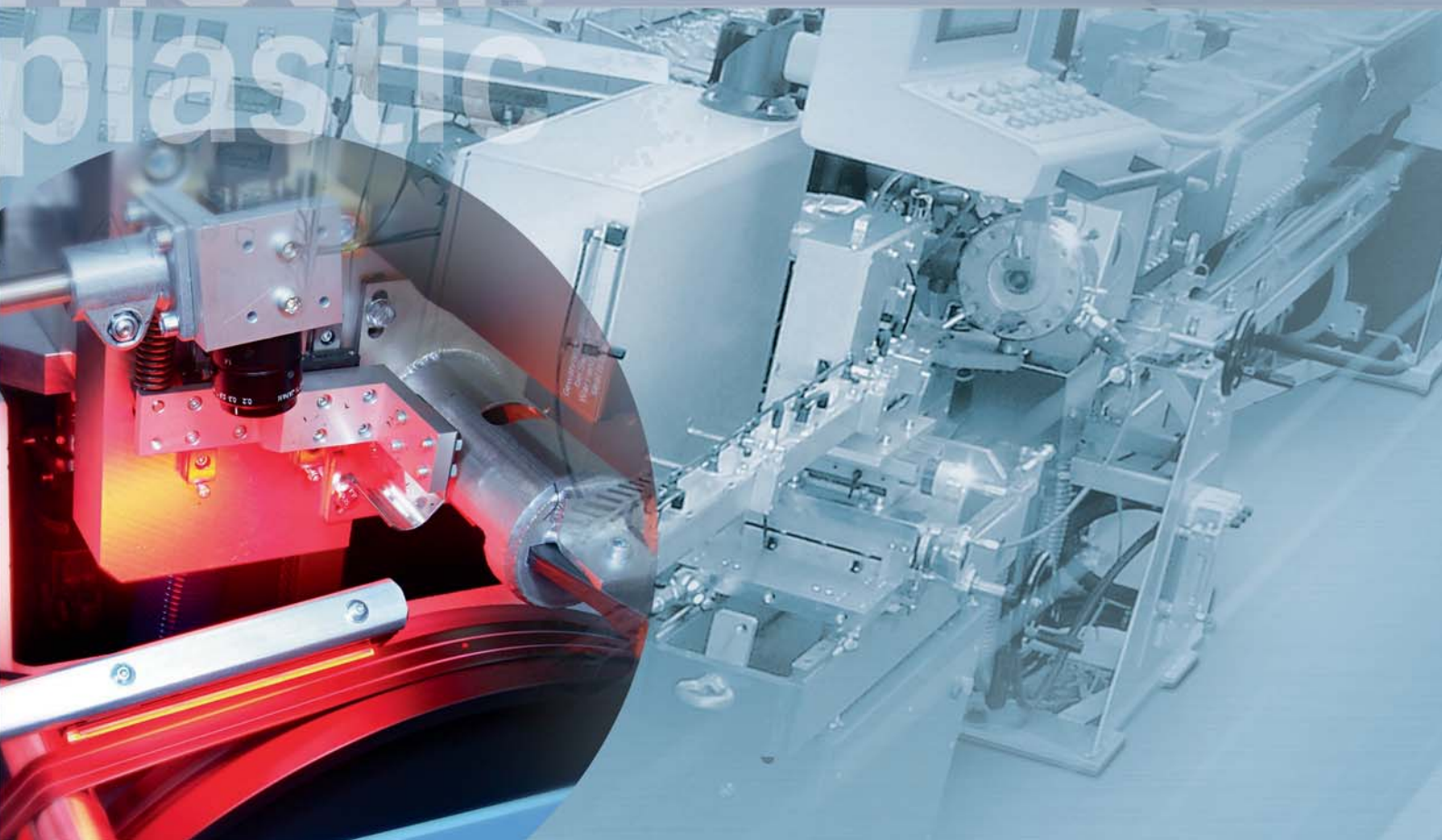
T.H.E. MACHINES

ADVANCED EXTRUSION & WELDING TECHNOLOGIES

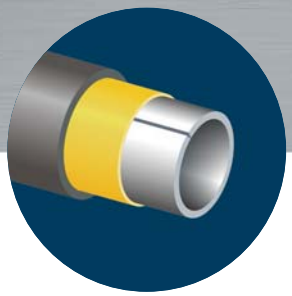


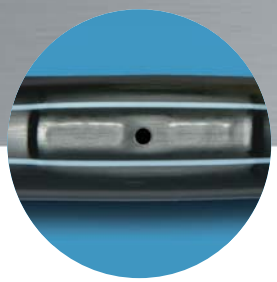
metal



plastic

Company history





Founded in the 80's as Thomas Machines in Couvet to produce printed circuit boards according to customer's specification and later special equipment for the cable and pipe industry.

Due to a drastic change in the product portfolio the name of the company was adapted early 2000 as THE Machines Yvonand SA.

The company diversified into production solutions for the Drip irrigation industry, production equipment for Multi-layer pipes, forming and laser welding of thin wall precision pipes up to 150 mm diameter, sheath and strip laser welding equipment and production equipment for the cable industry.

In this period more than 15 international patents were filed.

Currently more than 60 highly qualified engineers work at the company and machines are supplied worldwide.

Content

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- Test equipment, quality assurance for drip irrigation pipes 6
- Turn-key plants for irrigation pipes 7
- Manufacturing engineering system, Production management system Quality management, Cost management, Traceability 8
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- Multi-purpose precision pipe production plants 12
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T.H.E. MACHINES

Irrigation pipe production solutions

Pipe production plants, Dripper production, Winding, Coiling packaging, Quality assurance systems

TAPE PRODUCTION EQUIPMENT

LIT

For surface and subsurface irrigation products

pipe ø 12 to 32 mm

Wall thickness up to 0.63 mm

Production speed up to 350 m/min

Spacing down to 5 cm

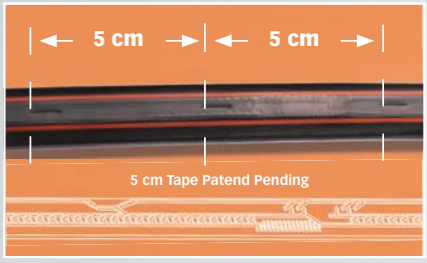
COMPENSATED DRIP TAPE PRODUCTION EQUIPMENT

LIT

For tube ø 16 to 32 mm

Wall thickness from 0.15 to 0.63 mm

Production speed up to 200 m/min



FLAT DRIPPER PRODUCTION EQUIPMENT

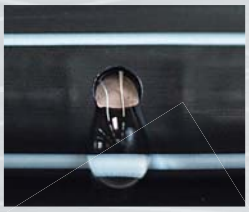
LIR

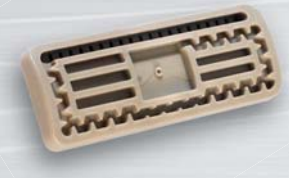
For tube ø 12 to 36 mm

Production speed up to 300 m/min

Max. 2000 drippers/min

Dripper with water basin and Laser punched holes





SLIT FLAT DRIPPER EQUIPMENT

LIS

For tube ø 16 to 36 mm

Wall thickness up to 0.63 mm

Production speed up to 300 m/min and 2000 drippers with anti-syphon features

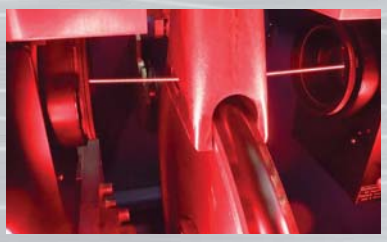
Dual slit flat dripper

CYLINDRICAL DRIPPER PIPE EQUIPMENT

MIR

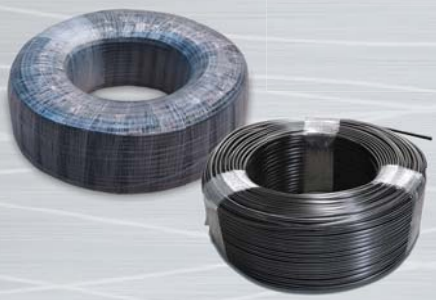
Production speed 180 m/min

500 drippers/min



IRRIGATION TUBE WINDING/COILING

Coiling with wrapping

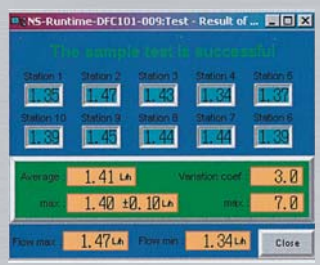


Spool packaging

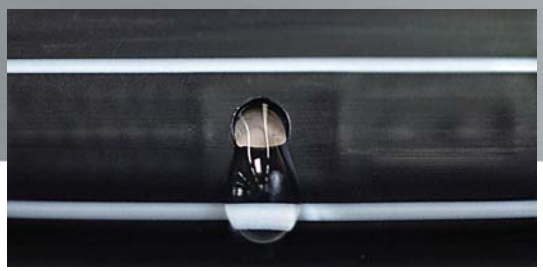
High speed automatic coilers

HIGH SPEED LASER PRINTING ON THE FLY

QUALITY CONTROL SYSTEM



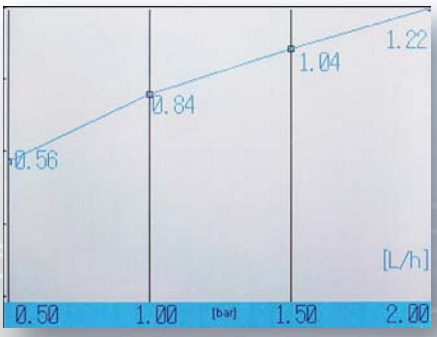
Test equipment, quality assurance for drip irrigation pipes



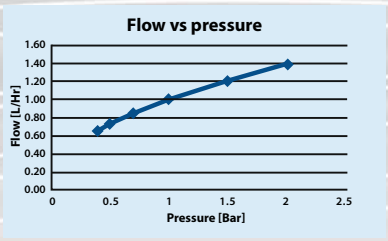
During production, all measurable production parameters are monitored and controlled in-line. Dimensional check and water flow control are additional parameters to be checked constantly.

This unit can serve several production lines and checks the following parameters :

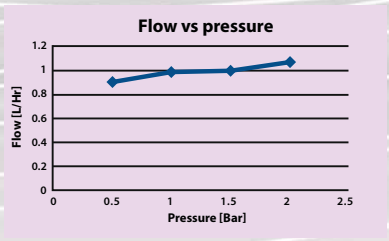
- Water flow rate per hole
- Water flow rate in function of the pressure
- Pressure resistance
- Burst pressure

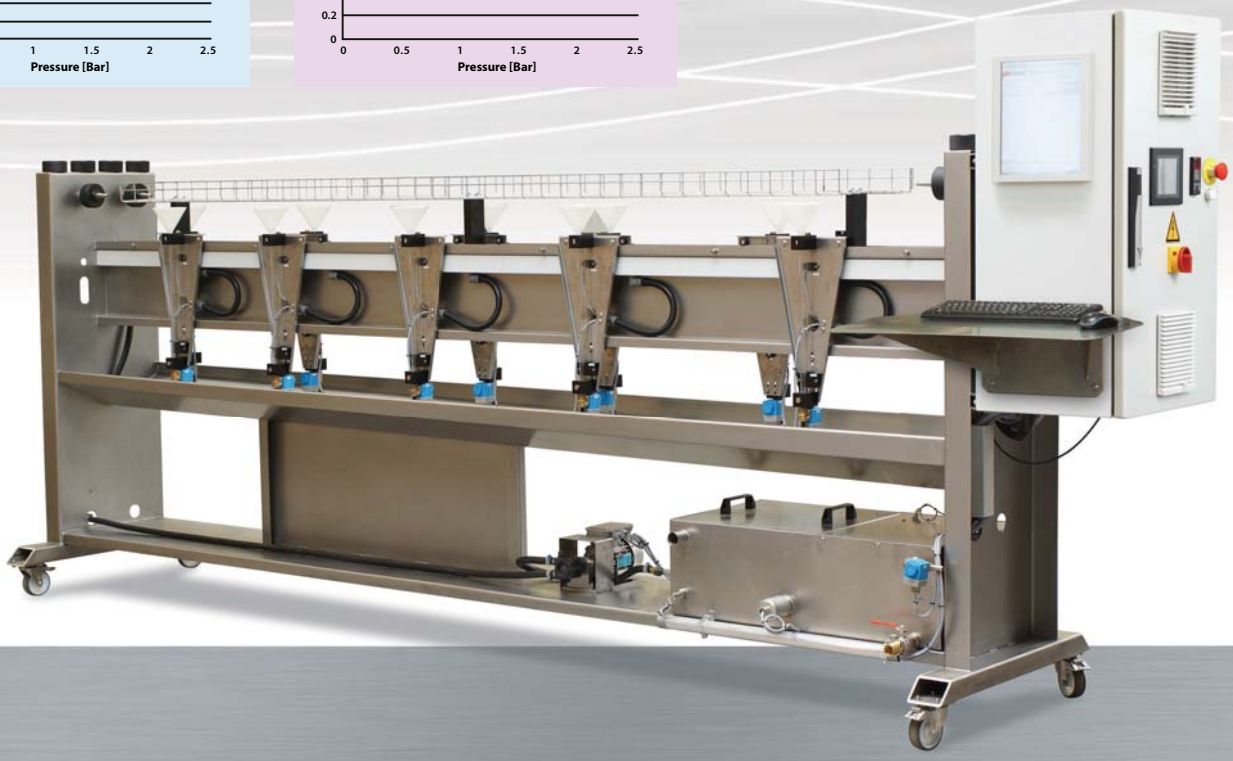


Non pressure compensated graph:



Pressure compensated graph:





Turn-key equipment for irrigation pipes

INJECTION MOULDING MACHINES

- First-class machines and systems
- Expert knowledge and consulting
- Highly efficient systems/solutions
- Fast cycle times / Repeatability
- Quality and durability
- Comprehensive service range

PROTOOL

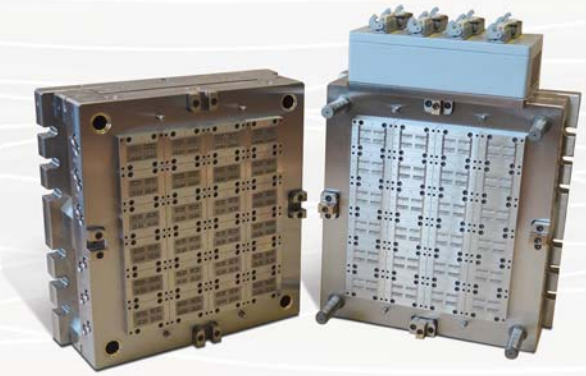
PROTOOL
WWW.PROTOOL-LTD.CH

High cavity, high precision full hotrunner for:
- drip irrigation parts
- medical parts
- technical parts

Patented Hotrunner System

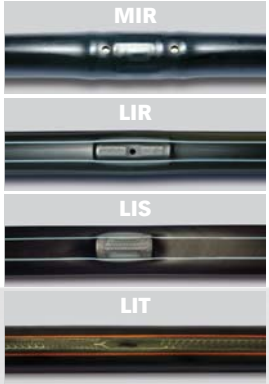
Engineering, manufacturing assembling, sampling, production in house

Pro Tool AG, Bernstrasse 52, CH-4923 Wynau
Switzerland, www.protool-ltd.ch, info@protool-ltd.ch



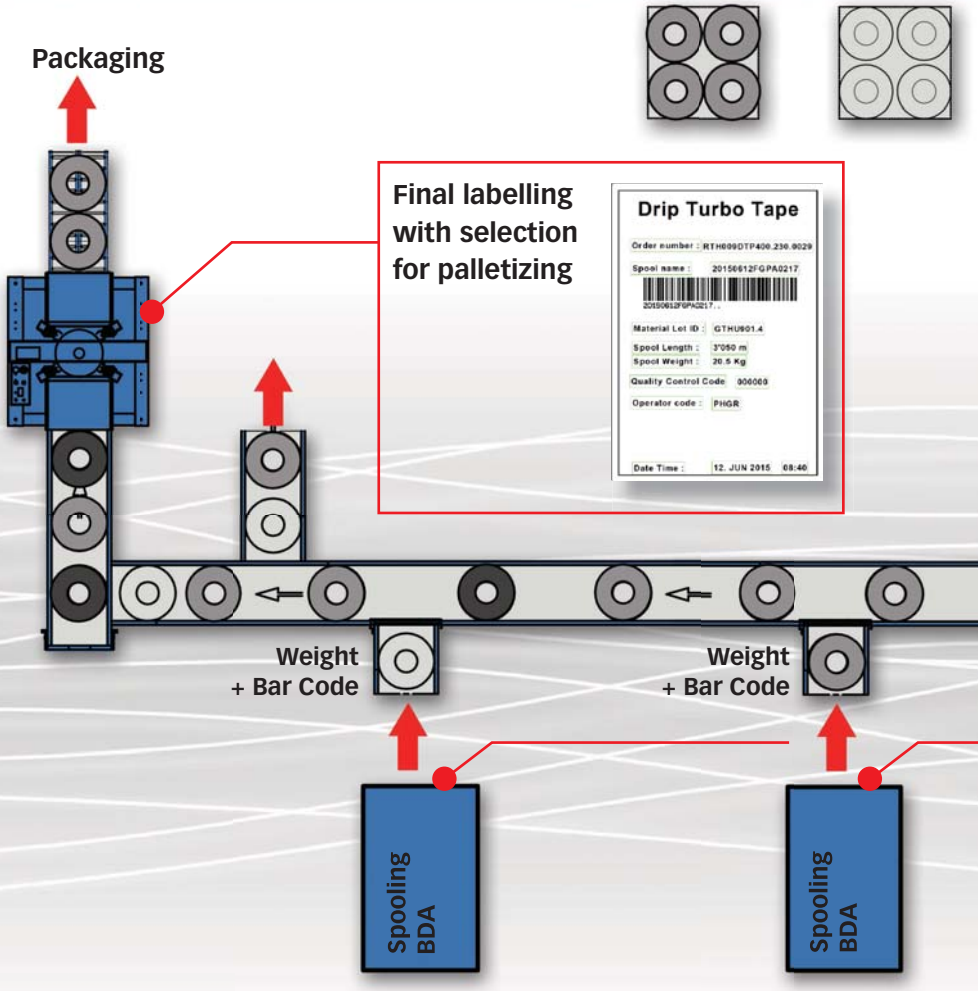
THE Machines Yvonand SA

T.H.E. MACHINES
EXCELLENCE IN PRODUCTION TECHNOLOGY

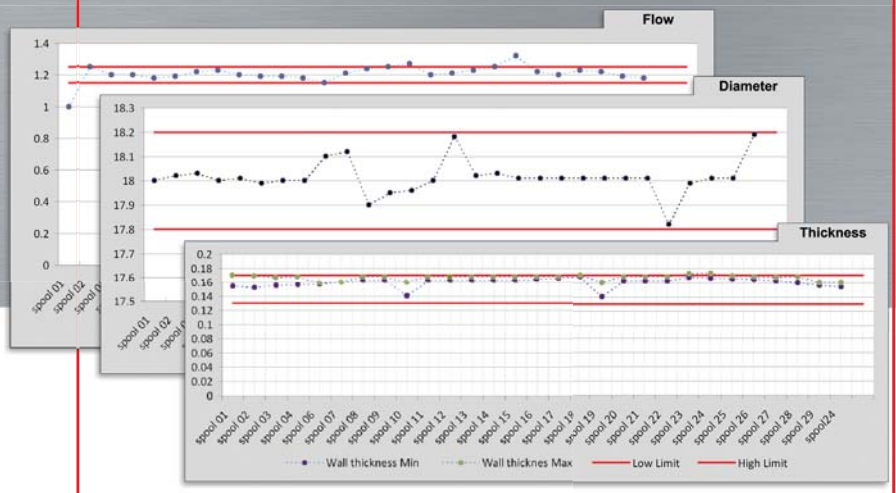


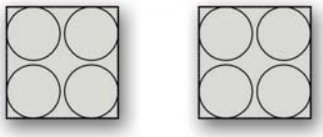
Manufacturing engineering system
Production management system
Quality management
Cost management, Traceability

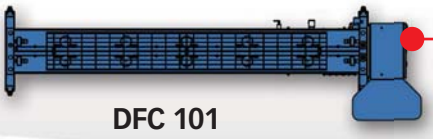
Spool wrapping machines and conveying systems (ARO)
Detailed production data is captured for traceability



Laser marking unit type MTL
laser marked tube

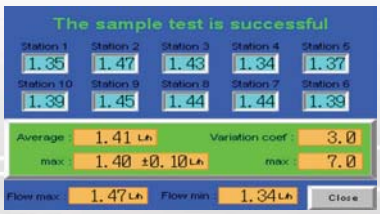


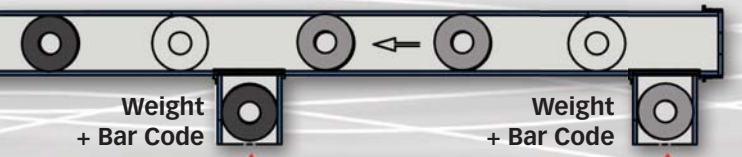




DFC 101

Measure and test control





Weight
+ Bar Code

Weight
+ Bar Code

Spooling BDA

Spooling BDA

ATV

ATV

TMP CAR

TMP CAR

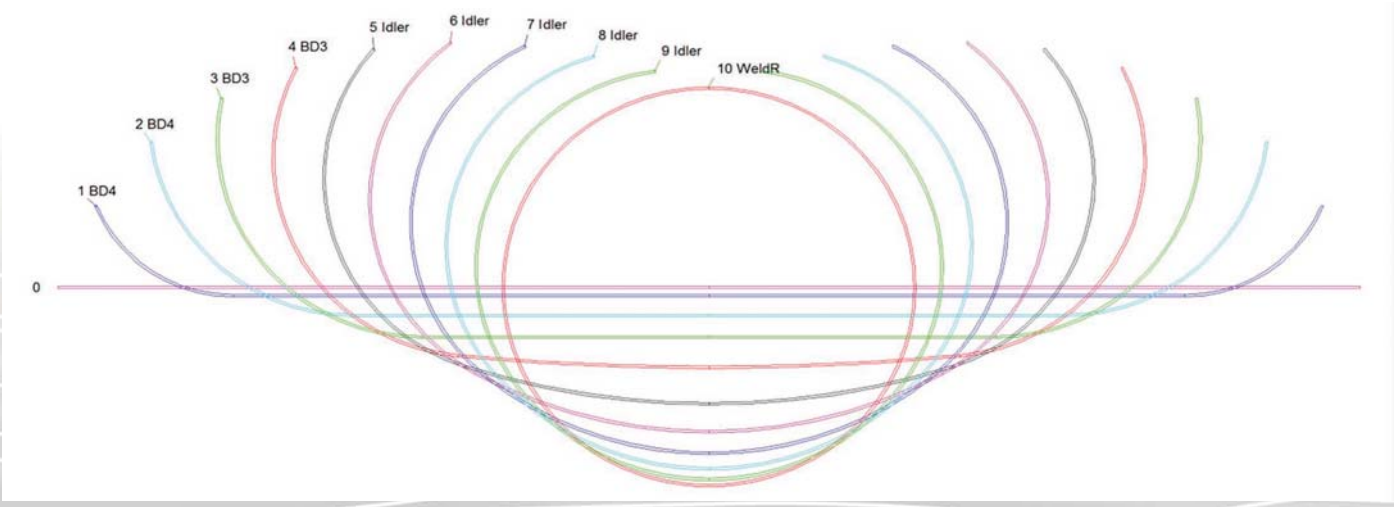
MTL 100

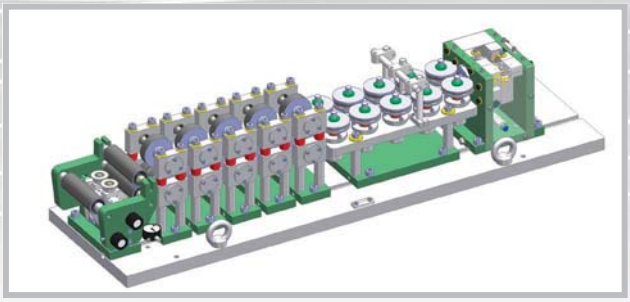
MTL 100

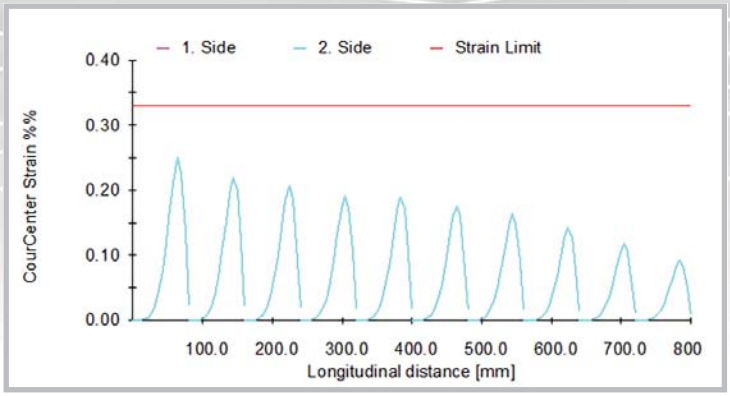
Bar code labelling
with production data

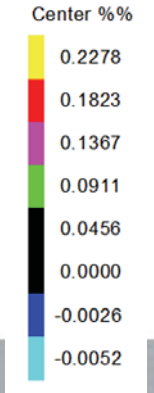
Metal pipe forming bench calculations

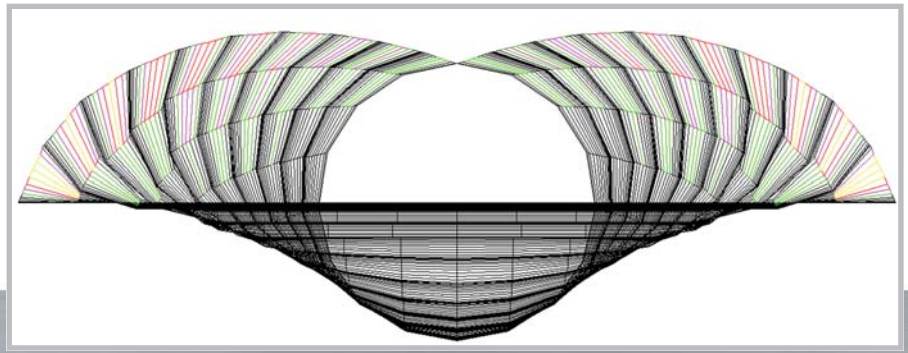
Forming flower example and diagram
ø D12 x 0.1 – 1.4404







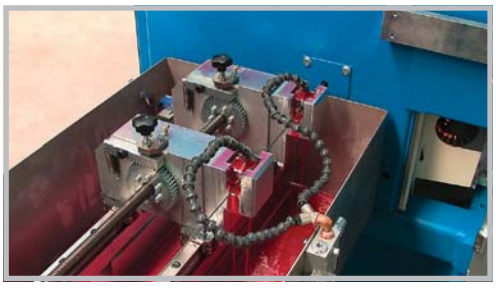




Thin wall precision pipe plants for diameters starting from 1.0 mm and wall thickness of 0.05 mm

Production lines for ultra precision laser welded alloy and micro tubes for heat exchangers, medical applications and aircraft industry

In-line annealing



In-line drawing and calibration

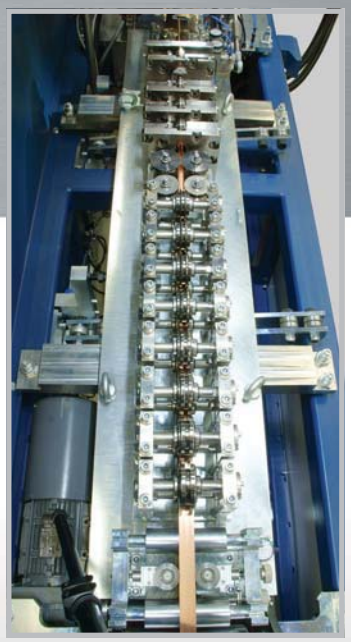
Multi-Purpose precision pipe production plants

Copper submarine cable pipe welding line

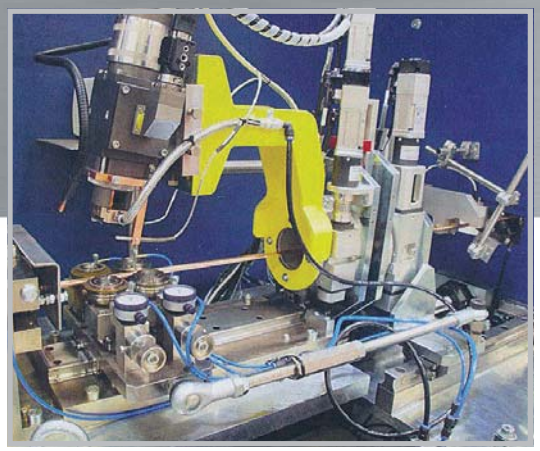
Pay-off and cross welding section

Strip accumulator with 200 m accumulation capacity

Edge cutting and chopping system

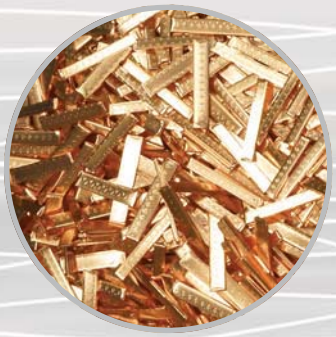


Forming bench



"Scrap less welding" STOP & GO Automatic system

Edge cutting results



Pressure steel pipe production equipment for pipes up to ø 110 x 0.5 mm

Universal laser crosswelding machine for coated and uncoated thin wall metal tapes

SLT cross welder for inline utilisation movable version

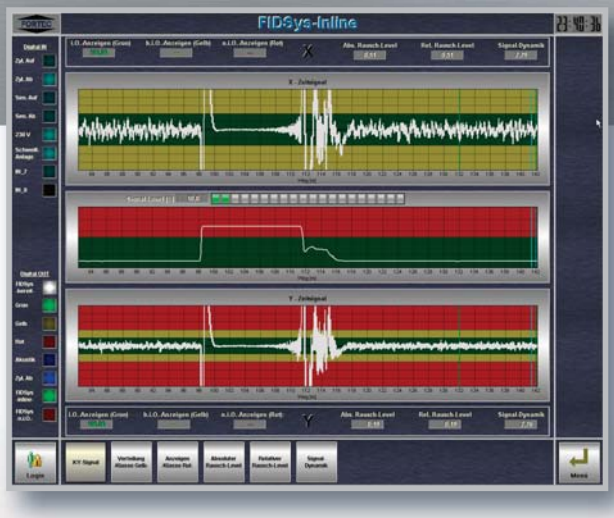
Type*	SLT 80	SLT 150	SLT 300	SLT 500	SLT 750
Tape width	5 - 80 mm	8 - 150 mm	8 - 300 mm	8 - 500 mm	8 - 750 mm
Tape materials blank or copolymer coated on one or both sides	Steel, Stainless Steel, Aluminium and Aluminium alloys, Cr and Ni alloys, Copper, Composites, Titanium				
Laser power	up to 500 W (1 kW optional)				
Tape thickness	Steel: 0.05 up to 1.0 mm				
	Aluminium and Copper: 0.08 mm up to 0.60 mm (1,2 mm)				

* Other dimensions on demand

Large cross welder for Rolling Mills or large metal sheath processors

SLT cross welder for stamping and automotive industry with in-line quality control

Total quality control for highest demands



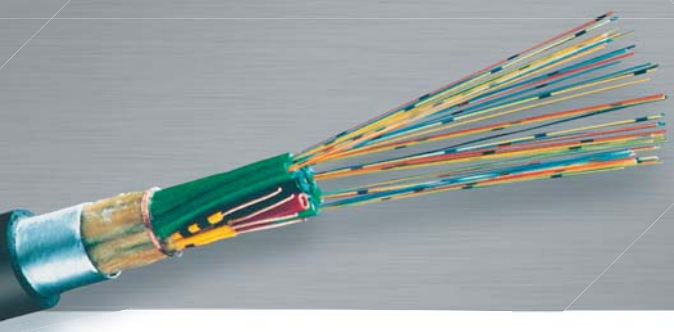
- Detection of weld beam inhomogeneity
- 100%-control during production
- 100%-documentation of test results
- Improvement of process control
- Optimization of process parameters
- Stabilization of production terms

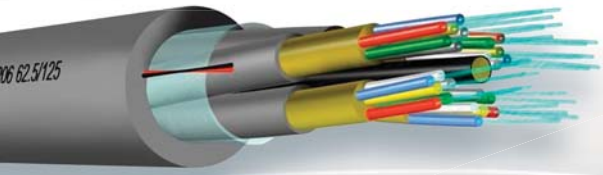
Examples:

Heat exchanger

Micro tubes
used for medical,
-automotive,
-aircraft industry

Fibre optic cables production equipment





Ribbon line

Colouring lines

Tight coating lines

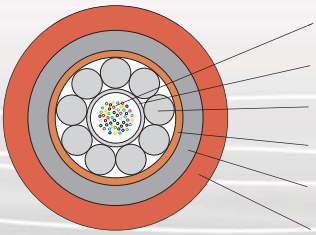
High fibre count secondary coating lines

High speed binder

High speed dual binder for SZ stranders

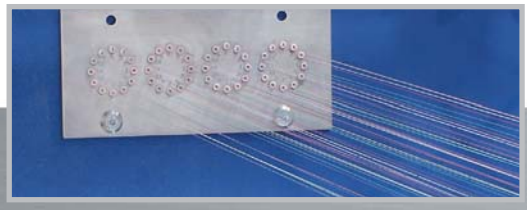
Sheathing lines with reinforcement elements

OPGW, submarine cable and fibre/metal core production equipment



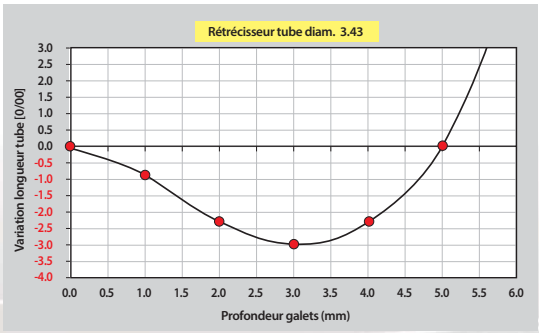
OPGW cable core production equipment

Pay-off section for 48 fibres



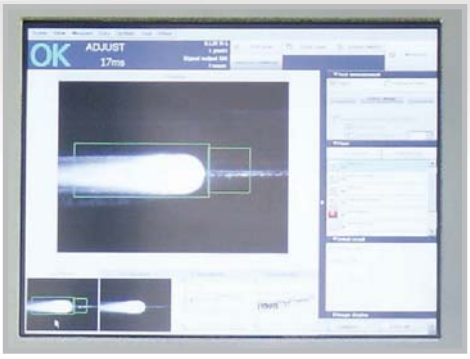
Edge winder

Overlength generator (EFL)



Tube production diagram

Drawing station



Welding monitor

Welding seam monitor

Extrusion solutions

EXU 60-36 with EXU 20-25

High performance extruders for engineering polymers

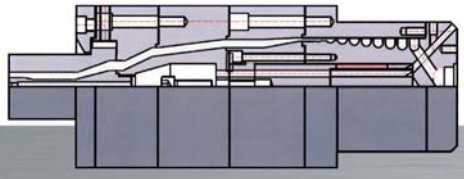
Type of machine	Drive Power (KW)	Back Pressure (Bar)	Processing Material	output* (Kg/h)
EXU 20-25	3.5	800	1	10 to 12
EXL 30-30	13.2	800	2	28 to 33
EXL 38-30	20.3	800	2	45 to 53
EXU 30-30	20.3	800	1	37 to 42
EXU 38-36	47	800	1	150 to 180
EXU 45-36	69	800	1	220 to 250
EXU 60-36	134	800	1	380 to 430

Material: 1 EXL = Adhesive and shear sensitive materials
Matreial: 2 EXU = Polyolefines, PA, PBT, PS, etc.

Longitudinal spiral extrusion heads
for high output up to 3 layers

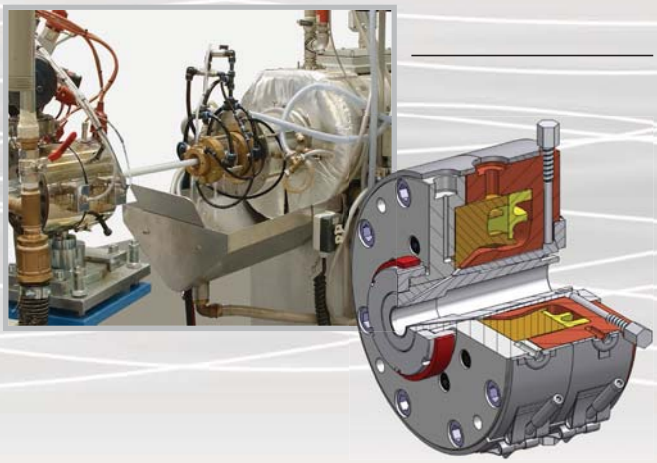
Extrusions heads

Head Type	**Diameter range**	**Output HD-PE**	**Melt pressure**
SLH32	6 up to 32 mm	max. 300 kg/h	max. 300 bar
SLH63	6 up to 63 mm	max. 500 kg/h	max. 300 bar
SLH125	6 up to 125 mm	max. 600 kg/h	max. 300 bar
SLH200	6 up to 200 mm	max. 700 kg/h	max. 300 bar



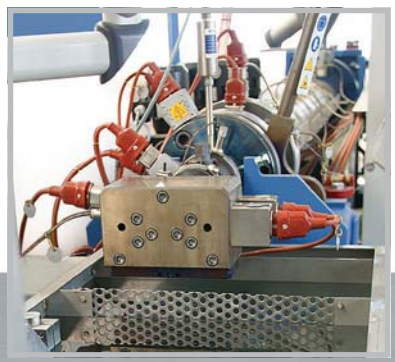
Universal cross heads for single, dual triple layer and stripe marking

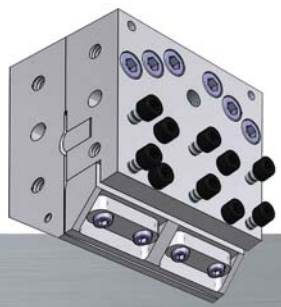
SRX Series product diameter before insulation 10 - 20 - 40 - 63 - 120 mm in single, dual and triple layer execution with or without stripe marking



RRX Series product diameter before sheathing 40 - 63 - 120 mm for pipe production in single layer and dual layer execution with or without stripe marking

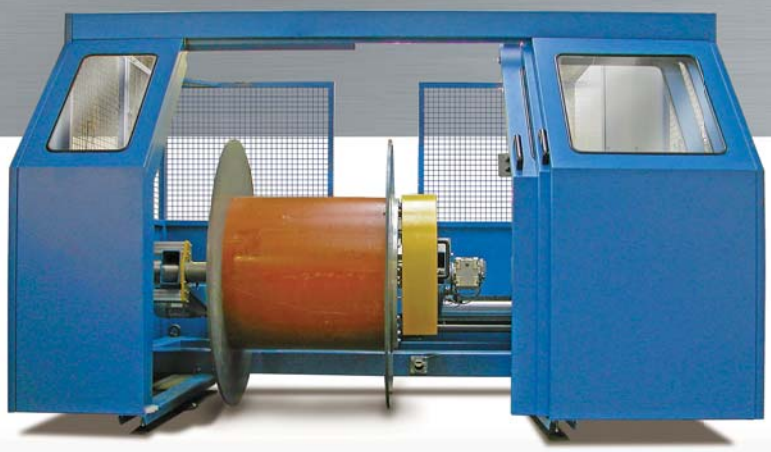
RRU Series universal cross heads for adhesive and thin wall down to 0.04 mm. Free passage diameter 65, 125, 165 mm.





TPT Series special flat die heads for strips. Flat dies 40 - 90 - 130 - 320 - 450 mm.

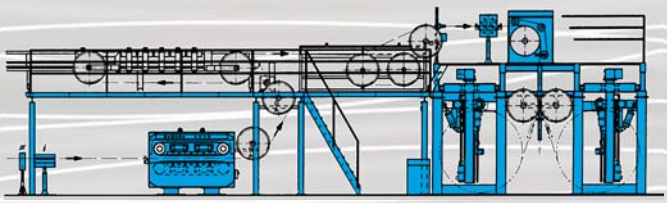
Winding and packaging solutions



Single Take-ups and Pay-offs for large spools

BAT/DAT	Spool ø
800	800
1250	1250
1600	1600

Portal Take-ups with hanging pintles



BS/DS	Spool ø
1600	DIN 1600
2200	DIN 2200
2500	DIN 2500
2800	DIN 2800

Automatic Dual Take-ups

Automatic dual take-ups	BDA 612	BDA 812*	BDA 613	BDA 614
Automatic products change over	YES	YES	YES	YES
Automatic spool extraction	NO	NO	YES	YES
Automatic spool change	NO	NO	NO	YES

* for thin and thick wall tube ø 800 mm

BDA 612

BDA 613

Dual or single ring coilers
for metal pipes **(DHA)**

Automatic coilers (ADC)
with Integrated Wrapping

Coil with stretch film wrap
as strapping (up to 5 straps)

Or fully wrapped coil
with stretch film

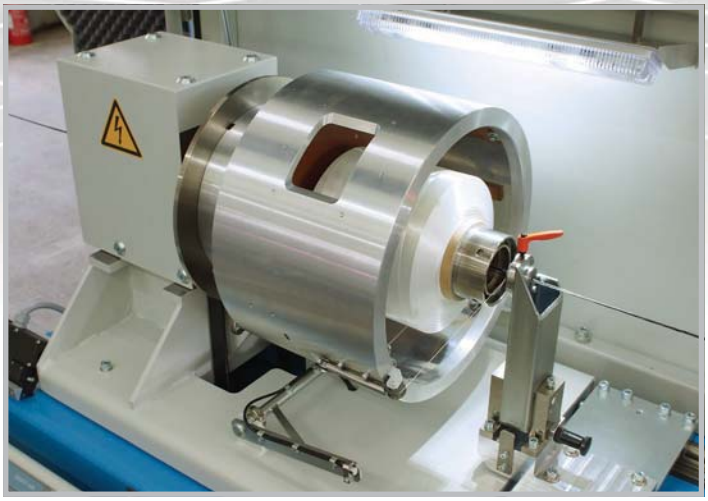
Rotating machines

SZ Stranding lines for fibre optic and special cables

SZ-Lay plate stranders
in configuration 1 + 6 + 12
or in tandem configuration

Central binding heads for threads or tapes

Central binding heads for SZ stranders in forward/backward or execution X utilisation with common binding point. Spinning heads for small tapes of polyester, high temperature materials or performance metals such as silver for high performance coaxial cables.



Type		GPR9	GPR12	GPR24	GPR24	GPR36	GPR48	GPR72	GPR96
Numbers of spools	(mm)	9	12	18	24	36	48	72	96
Max. cop diameter	(mm)	280	280	280	280	280	280	280	280
Max. cop width	(mm)	290	290	290	290	290	290	290	290
Max. cop weight	(kg)	25	25	25	25	25	25	25	25
Min. cop centre bore dia.	(mm)	42	42	42	42	42	42	42	42
Yarn tension ajust. Min.	(N)	3	3	3	3	3	3	3	3
Yarn tension ajust. Max.	(N)	30	30	30	30	30	30	30	30
Yarn tension tolerances	(N) +/-	1	1	1	1	1	1	1	1
Max. tube diameter	(mm)	150	150	150	150	150	150	150	150
Drive power	(KW)	8	8	9	16	2x9	2x16	2x20	2x20
Max. rotative speed	(rpm)	350	350	350	350	300	300	300	300
Dimensions A	(mm)	1960	1960	2100	2100	2100	2100	2100	2100
Dimensions B	(mm)	1840	1840	2100	2100	2100	2100	2100	2100
Dimensions C	(mm)	1840	1840	2100	2xGPR12	2xGPR18	2xGPR24	4xGPR18	4xGPR24
Weight	(kg)	1400	1600	1800	3200	3600	6400	7200	12800

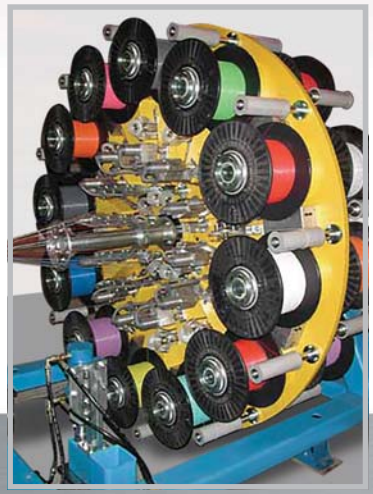
Reinforcement armouring machines for tapes and threads

Armouring machines used for application of threads or tapes to reinforce pipes and cables for up to 96 cops in left, right or X configuration

48 cops units for lay flat pipes

36 cops aramid armouring machine
for fiber optic cables

Motorized tension controlled rotating pay-off
for fibre optic cables

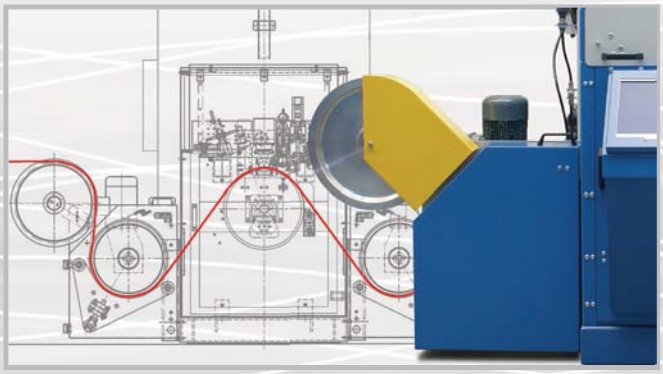


Pulling units

Caterpillars

2 belt type caterpillars **CHT 200 - 400 - 800**
precision caterpillars for fragile products.

2 belt type caterpillars **CHT 1500 - 2000**
precision caterpillars for fragile products.



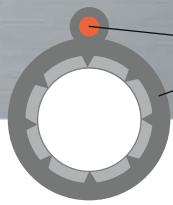
Dual and single wheel capstans
CAR 300 - CAR 301 - CAR 302
CAR 500 - CAR 501 - CAR 502

Flat strip capstans
CBT 100 - CBT 200 - CBT 300 - CBT 400

Flat strip capstans with dancer control **CBP 400 - CBP 500**

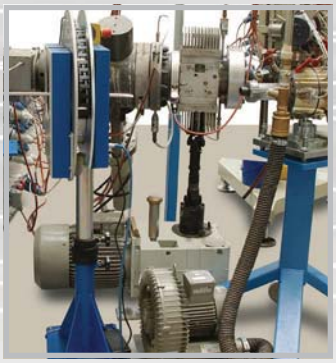
CBT 500 - CBT 800
Precision double wheel capstans

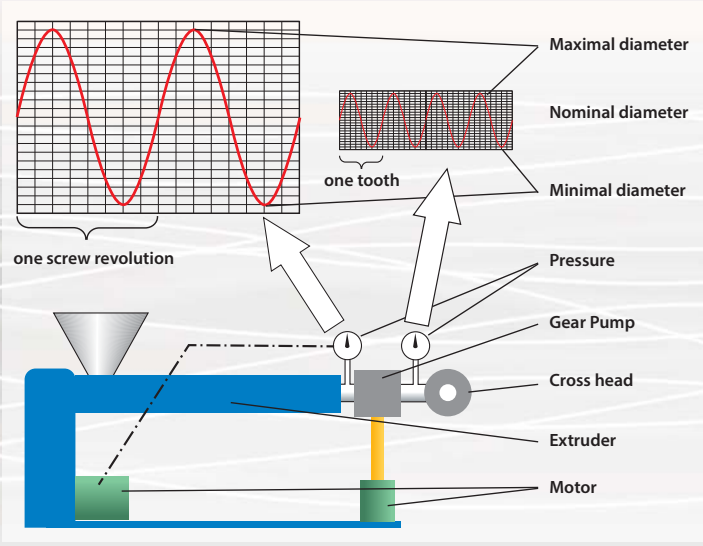
Special equipment



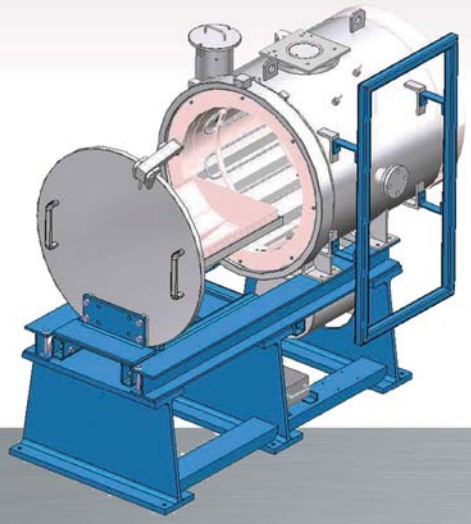
TCM Series rotating cross heads for spiral and low slip profiles used in cable ducts and similar for up to 3 layers and stripe marking.

Gear pump systems for high precision extrusion systems used for cable pipe and profile production.





VCR cleaning equipment for extrusion heads and tools

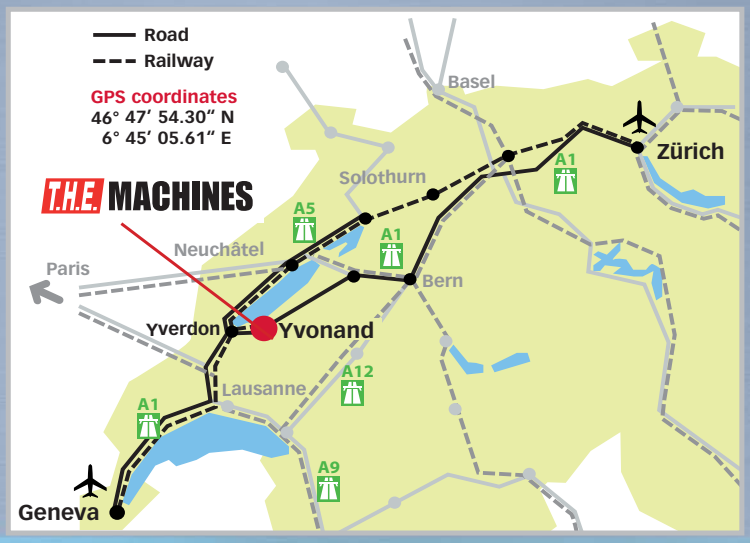


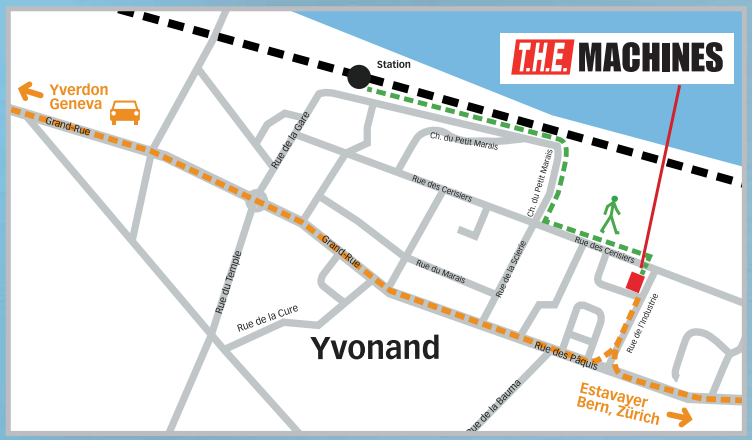
Where are we ?

THE Machines Yvonand SA is located in the village of Yvonand, Switzerland on the shores of lake Neuchatel, midway between Bern and Geneva.

Easily accessed via the international airports and with excellent rail and road connections.

Technology center for metal production equipment





Technology center for plastic machinery

Notice: the values presented in this publication are typical indicative values and are not to be interpreted as product specifications.

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