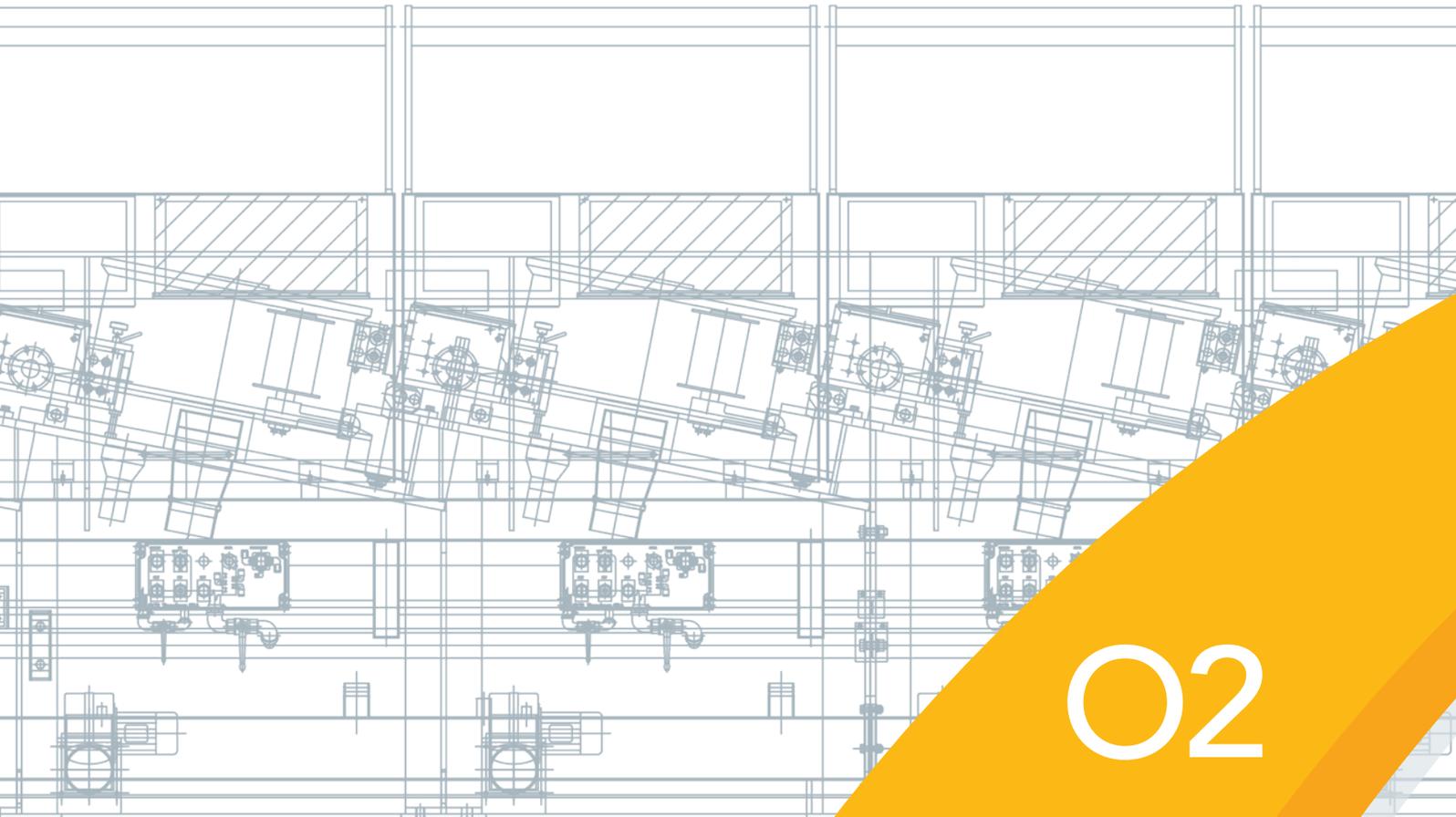


EURODRAW
WIRE EQUIPMENT

DRY DRAWING LINES AND WIRE ROD PREPARATION EQUIPMENT

DRY DRAWING MACHINES, SPOOLERS AND COILERS, WIRE ROD CLEANING LINES



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BATCH PICKLING PLANTS

THE MOST ECONOMICAL SOLUTION FOR QUALITY PRODUCTION

Every modern wire factory starts with a fully automated state-of-the-art wire rod batch pickling plant.

Eurodraw Wire Equipment, in cooperation with VJL Technologies, builds the most modern, environmental friendly and efficient plants for pickling wire rod with hazardous emissions that are virtually zero.

Plants can be designed for hydrochloric or sulphuric acid pickling, with capacity of 60,000 to 240,000 t/year.

Plant configuration can be either "tunnel" or "open design" and are equipped with acid recovery and regeneration systems, waste water treatment systems, clarifiers, scrubbers and filter presses for phosphate sludge.

The pickling sequences are managed by sophisticated SCADA systems that operate two rigid automatic cranes and optimize coil movements in order to reduce process time to a minimum. Different pickling sequence programs can be selected in order to process wire rod coils of different grades that require different process times.

A state-of-the-art batch pickling plant is the key to successful wire production and is the most economical solution to assure consistent wire quality.



WIRE ROD PREPARATION LINES

IN-LINE DESCALING, PICKLING AND COATING

Before any wire drawing, wire rod must be descaled and/or pickled. In case of low carbon wire rod, it is generally sufficient to use a mechanical descaler and a brushing unit; however, for high carbon wire descaling alone may not be sufficient to assure efficient wire drawing.

For the production of tire steel cord and hose wire in particular, Eurodraw Wire Equipment offers two distinct solutions for wire rod preparation: the first solution includes mechanical descaling, steam pickling or as an alternative, H²SO⁴ electrolytic pickling and hot rinsing; and finishes with borax coating and drying; the second solution uses HCl acid in place of H²SO⁴. This configuration is equipped with water curtains that make the system totally fumeless.

This line can be installed either in-line with a wire drawing machine or can be used as a stand-alone unit where the wire is wound on large capacity spools.

Eurodraw Wire Equipment offers four types of mechanical descaler suitable for low or high carbon rod and for small or large diameter wire rod. Descalers for high carbon, large diameter wire rod, are equipped with descaling rollers that are mounted on a hydraulically operated swiveling support so that threading is very simple. Descalers can be followed

by brushing units. The Eurodraw Wire Equipment orbital brushing unit is available in single or double configuration for high speed brushing.

Brushing of the wire can be done with either our orbital brushing unit or with our sand belt grinding unit. Both machines are available with single head or double head, depending on the travel speed of the wire that is required and, on the material to be processed. The sand belt grinder is generally suitable for the larger wire sizes while the orbital brushing unit is most suited for wire rod sizes from 5.50 to 8.00 mm.

Eurodraw Wire Equipment has designed a unique steam pickling unit. The unit works on the simple principle that if the skin of the wire is heated very quickly, the hard scale present on the surface expands and falls off. The unit uses only overheated steam and is very effective and environmentally friendly.

For wire that is very rusty or with thick layers of scale, Eurodraw Wire Equipment can supply an electrolytic pickling line. The line can be designed for a single wire or even up to five wires and consists of four main parts: A pickling tube in which electrolytic pickling or chemical pickling takes place, an acid recycling tank where the acid is stored and pumped

to the pickling tube, a rinsing unit and an electrical cabinet that contains the rectifiers and drives necessary to perform the electrolytic process and acid circulation. Electrolytic pickling or HCl chemical pickling are the most effective ways to clean rod; they ensure consistent quality of the product and have very low operating costs, comparable to mechanical descaling and brushing.

Prior to wire drawing the rod should be coated to neutralize the surface and facilitate subsequent drawing operations. In-line wire rod preparation usually uses borax or lime. The coating unit consists of an insulated and heated tank where the borax or lime is circulated by a pump. The borax or lime is generally heated by electric resistances; however, steam coils can be used as an alternative if steam is available.

In order to limit the space necessary to dry the borax or lime before the wire proceeds to the wire drawing machine, Eurodraw Wire Equipment has developed an induction dryer that heats the wire to instantly dry the borax or lime coating. Heating power is automatically adjusted with the speed of the wire and can be further controlled with an optical pyrometer that reads the wire surface temperature and adjusts the power accordingly.



PAY-OFFS

FOR HIGH OR LOW CARBON WIRE ROD

HIGH CARBON WIRE ROD PAY-OFFS

SM 3000/2 P, double horizontal flipper type pay-off suitable for high carbon wire rod with diameters up to 7 mm. The unit is fitted with a clicker bar that releases the wire rod wraps one by one for smooth operation.

SM 3000/2 L, double horizontal flipper type pay-off suitable for high carbon wire rod with diameters up to 14 mm. The unit is fitted with a clicker bar that releases the wire wraps one by one for smooth operation.

RP 6000 P, flyer type pay-off with double hydraulic stand and coil pusher. The unit is equipped with a rod coil position detector that activates the pusher, which progressively moves the rod towards the flyer arm. The two hydraulic arms are alternately raised and lowered when

loading the coil on the pay-off. The unit is suitable for wire rod with diameters up to 8 mm. As an option the flyer arm can be motorized.

RP 6000 PL, flyer type pay-off with double hydraulic stand and coil pusher. The unit is equipped with a rod coil position detector that activates the pusher, which progressively moves the rod towards the flyer arm. The two hydraulic arms are alternately raised and lowered when loading the coil on the pay-off. The unit is suitable for wire rod with diameters up to 14 mm. As an option the flyer arm can be motorized.

SVD/2 R, double vertical axis defilé pay-off with rotating stems. The stems are hydraulically tilted to horizontal position to allow easy coil loading with a forklift or overhead crane: During operation, the stems rotate as the rod unwinds, to avoid

twisting. The unit is suitable for high carbon rod with diameters up to 7 mm and for low carbon rod with diameters up to 12 mm.

LOW CARBON WIRE ROD PAY-OFFS

SVD/2, double vertical type defilé pay-off with tilting coil stems and upper pulley mounted on a moveable beam that is lowered for threading. All movements are performed by hydraulic cylinders.

SV1 and SV2, vertical flyer arm pay-off with wire accumulation system, the unit is suitable for low and high carbon wire in coils with diameters up to 4 mm. The SV2 model is equipped with a swivel mechanism on which the flyer arm is mounted, so that it can shift from one coil to the other thus allowing continuous operation.

MECHANICAL DESCALING

DESCALERS AND BRUSHING UNITS

Eurodraw Wire Equipment offers four types of mechanical descalers suitable for low or high carbon, small or large diameter wire rod. Descalers for high carbon, large diameter wire rod are equipped with descaling rollers that are mounted on a hydraulically operated swivel support so that threading is very simple.

Descalers can be followed by brushing units. Eurodraw Wire Equipment brushing units are available in single or double configuration for high speed brushing.

DESCALER MODELS

RD 80, suitable for low carbon wire rod up to 7 mm diameter.

RD 80A, suitable for low and high carbon wire rod up to 8 mm diameter with hydraulically operated roll closing for easy threading.

RD 140/1, single plane descaler for low carbon large diameter wire rod with hydraulically operated roll closing for easy threading; particularly suitable for installation in-line with cold rolling equipment.

RD 140/2, double axis descaler suitable for high and low carbon large diameter

wire rod, with hydraulically operated roll closing for easy threading operation.

BRUSHING UNIT MODELS

B-50/1, single head brushing unit with orbital brushing system suitable for low and high carbon wire rod up to 7 mm diameter. The unit can handle wire rod speeds up to 2 m/sec.

B-50/2, dual head brushing unit with orbital brushing system suitable for low and high carbon wire rod up to 7 mm diameter. The unit can handle wire rod speeds up to 3.50 m/sec.

B-100/1, single head brushing unit with orbital brushing system suitable for low and high carbon wire rod up to 12 mm diameter. The unit can handle wire rod speeds up to 2 m/sec.

B-100/2, dual head brushing unit with orbital brushing system suitable for low and high carbon wire rod up to 12 mm diameter. The unit can handle wire rod speeds up to 3.50 m/sec.

SAND BELT WIRE GRINDING UNITS MODELS

GRM 800/1, single head sand belt wire rod grinding unit, suitable for wire rod sizes ranging from 8 to 16 mm, high and low carbon. Maximum processing speed 80 m/min. Equipped with soundproof and dustproof fully enclosed cover. Belt linear speed, belt rotation speed are infinitely adjustable. Electronic belt alignment possible while the machine is running.

GRM 800/2, double head sand belt wire rod grinding unit, suitable for wire rod sizes ranging from 8 to 16 mm, high and low carbon. Maximum processing speed 80 m/min. Equipped with soundproof and dustproof fully enclosed cover. Belt linear speed, belt rotation speed are infinitely adjustable. Electronic belt alignment possible while the machine is running. Each head is independent and can be run either synchronized or at different speeds.



WIRE ROD COATING, E-PHOS COATING UNITS

FOR HIGH OR LOW CARBON STEEL AND STAINLESS STEEL

Prior to wire drawing, in order to achieve high production speeds, it is often necessary to coat the wire with borax, lime, phosphate or other products. For this purpose, Eurodraw has designed four units for four specific applications: High carbon wire rod coating, low carbon wire rod coating and stainless-steel wire rod coating and calcium phosphate coating.

High carbon wire rod coating

The unit consists of two main components: an induction furnace to pre-heat the wire rod up to 120°C and a coating tank, containing either a borax or lime solution. The rod enters the tank at a higher temperature than that of the solution so that the coating dries instantly on the wire. Pre-heating the wire rod assures exceptional bonding between the wire rod surface and the coating, which translates into high drawing speeds and better lubricating capacity.

Low carbon wire rod coating

The unit consists of two main components: a borax tank and an induction dryer. The rod enters the borax tank and passes through a series of air blowers that remove excess borax carried out by the wire. At the end of the process, a small induction furnace heats only the wire skin to instantly dry the borax.

Stainless steel coating

This unit is a combination of the above two units and is composed of a high frequency pre-heating induction furnace, a coating tank and an induction or hot air dryer.

Phosphate coating units

Phosphate coating units are used for high and low carbon wire rods. In case of low carbon, phosphating can be very useful for cold heading applications, so that the forming tools can have a much longer

life. For high carbon wire applications, phosphating gives great improvement in wire drawing speed and die life. Traditional phosphate coatings require long immersion time and are incompatible with in line applications, however, new coating products such as calcium phosphate can be applied to the wire with much faster methods such as an electrolytic process. Eurodraw has been manufacturing electro deposition lines for over 40 years and has designed and built specific electro phosphate coating lines for low and high carbon wire applications. The phosphate coating line is combined with electrolytic H²SO⁴ pickling. This unique solution makes possible to avoid the need of any sliding contact point to transmit the current to the wire, which is necessary for the electrolytic process to take place. The e-phos coating line is available for wires from 5.50 mm up to 25 mm in diameter.

MTS WIRE DRAWING MACHINES

INCLINED-AXIS DRAWING BLOCKS AND LOOP SYNCHRONIZATION SENSOR ARMS

Eurodraw Wire Equipment is one of the world leaders in the manufacture of wire drawing machines. The range of MTS machines can process wire rod of up to 16 mm down to finished wire diameters as small as 0.80 mm.

MTS machines are ideal to process high and low carbon wire rod, they have inclined-axis drawing blocks and loop synchronization sensor arms. The machine structure is made of normalized electro welded steel. They are heavy enough so that special foundations are not necessary; they are simply placed on the factory floor and attached with suitable anchoring bolts.

The drawing blocks are made of forged C50 carbon steel, induction tempered to obtain a surface hardness of 62 HRC. This makes them three times more wear resistant than

cast iron blocks. The block and gearbox form one easily removable assembly.

The blocks are driven by Siemens motors and power is transmitted by high performance parallel axis reduction gears sourced from major internationally recognized gearbox manufacturers that produce thousand of these units every year. This is a guarantee of quality and performance, as Eurodraw Wire Equipment will always adopt the latest design and innovations in the field.

Dieboxes assure efficient, direct die cooling and ease of operation. MTS machines can be equipped with three types: Rotating dieboxes, fixed dieboxes equipped with the exclusive, easily removable Eurodraw Wire Equipment die cartridge that does not require any tools to change the dies

and, on request, specific custom-designed dieboxes for production of plating quality or shaped wire.

Eurodraw's MTS wire drawing machines are recognized worldwide for their exceptional cooling capacity. The exclusive Eurodraw Wire Equipment ALUCOOL system provides high turbulence narrow gap cooling and uses materials that are highly resistant to corrosion so that maintenance is reduced to a minimum.

Electronics used on Eurodraw machines are supplied by world-renowned manufacturers such as Siemens, General Electric, Allen Bradley. Machine wiring can be analogical or digital to limit the number of wires between the machine and the electrical cabinet.

All MTS machines can be highly customized with a wide range of options that make them suitable for production of a very wide variety of wire products. Among these options are: OTO blocks, final stripper blocks, tungsten carbide or ceramic-coated blocks, soap mixers, laser wire diameter gauges, rolling cassettes, dustproof guards and many more.

Machine model		MTS 400	MTS 560	MTS 630	MTS 660	MTS 710	MTS 760	MTS 900	MTS 1200
Block diameter	mm	480	560	630	660	710	760	900	1200
Max installed power	kW	30	45	60	74	90	105	129	170
Max. HC Inlet Ø	mm	4.80	6.35	7.50	8.00	9.00	11.0	14.0	18.0
Max. LC Inlet Ø	mm	5.50	7.00	8.00	9.00	11.0	13.0	16.0	22.0
Min. wire outlet Ø	mm	0.70	1.20	1.50	1.50	2.00	2.50	3.00	3.80
Max. speed	m/sec	30	25	25	25	20	18	15	15





MTX WIRE DRAWING MACHINES

COMPACT DESIGN, INTEGRATED ELECTRICAL CABINET

MTX multi-block drawing machines have inclined-axis drawing blocks and loop synchronization dancer arms. They are especially suitable for processing medium to fine diameter carbon steel wire.

The structural design is the most outstanding characteristic of the MTX line of wire drawing machines: The back part of the machine houses the electrical cabinet, which becomes an integral part of the machine structure rather than a separate unit. Due to the strong and rigid structure, the complete machine can be transported as a single unit, thus avoiding costly installation and cabling.

The drawing blocks are made of forged C50 steel, induction tempered to obtain a surface hardness of 62 HRC.

This hardness ensures an extremely long block life. Furthermore, the block-reduction gear assembly is very simple and easy to dis-assemble.

The blocks are internally water-cooled with the exclusive Eurodraw Wire Equipment cooling system.

Water-cooling of the dies can be direct or indirect. Heavy duty rotating die holders and/or soap mixers can be mounted on standard soapboxes. The dieboxes are simply adjusted with a pair of micrometric screws that ensure precise and stable alignment.

The dieboxes of smaller-sized MTX machines are designed so that the wire can be threaded in the dies before they are positioned in the dieboxes.

The drawing blocks are driven by AC motors directly coupled with high efficiency parallel axis reduction gears; eliminating the use of belts and pulleys between the motor and the gearbox. This has evident advantages in terms of maintenance and noise levels, in addition to the fact that it makes the machine much more simple and compact.

Motors and gearboxes are sized for a minimum machine lifespan of 80,000 working hours at the heaviest load.

The electrical cabinet is an integral part of the machine itself and is adequately cooled and protected against dust. This greatly reduces installation costs, as no wiring is necessary between a separate electrical cabinet and the machine.

Eurodraw Wire Equipment uses only electronic and electro-mechanical components supplied by leading international companies.

Machine model		MTX 180	MTX 250	MTX 350	MTX 400	MTX 450	MTX 500
Block diameter	mm	180	250	350	400	450	500
Max installed power	kW	4	7.5	13	18	22	34
Max. HC Inlet Ø	mm	2.20	3.00	3.50	4.00	4.50	4.80
Max. LC Inlet Ø	mm	2.60	3.20	3.80	4.20	4.50	4.80
Min. wire outlet Ø	mm	0.10	0.25	0.40	0.50	0.80	1.00
Max. speed	m/sec	30	30	30	30	30	28

MTO WIRE DRAWING MACHINES

HORIZONTAL AXIS DRY DRAWING MACHINES

MTO multiple-block drawing machines have horizontal axis drawing blocks and loop synchronization sensor arms.

Models with larger diameter blocks are indicated for production of high carbon steel wire; whereas models with smaller drawing blocks are especially suitable for processing fine diameter stainless steel or low carbon steel wire.

The MTO is the only drawing machine in the world with 1300 mm diameter drawing blocks; these enormous blocks assure exceptional cooling, to allow high drawing speeds for large diameter wires.

The MTO 1300 has cooling capacity that is 45% greater than the MTO 900 and 27% greater than the MTS 900 vertical axis model.

MTO 330 and 460 models on the other hand are ideal when there is insufficient space to permit installation of very long, multi-block machines. In fact, these MTO drawing machines have the blocks arranged in two rows, effectively halving the machine length.

The machine structure, made of normalized, electrowelded steel, is designed to allow easy access to all the mechanical organs, thus facilitating maintenance operations. It is heavy enough so that special foundations are usually not necessary.

The drawing blocks are made of forged C50 carbon steel and are provided with an exclusive, pressurized cooling system that creates high turbulence, to assure the highest possible thermal exchange.

Furthermore the blocks are very wide, so considerable wire can be accumulated.

MTO drawing machines are driven by IP 55 AC motors controlled by frequency inverters manufactured by the best internationally known companies. The machines are designed to allow easy access to the motors for belt adjustment. Parallel axis reduction gears are used, that are exceptionally rugged and guarantee the highest possible efficiency.

Machine model		MTO 330	MTO 400	MTO 560	MTO 660	MTO 760	MTO 900	MTO 1300
Block diameter	mm	330	400	560	660	760	900	1300
Max installed power	kW	15	18.5	45	60	110	155	225
Max. HC Inlet Ø	mm	3.00	3.80	6.35	7.50	11.0	14.0	18.0
Max. LC Inlet Ø	mm	3.40	4.20	7.00	8.00	13.0	16.0	22.0
Min. wire outlet Ø	mm	0.40	0.60	1.20	1.50	2.50	3.00	3.80
Max. speed	m/sec	25	25	25	20	18	14	12



HORIZONTAL/VERTICAL AXIS SPOOLERS

WITH OR WITHOUT SPOOL LIFTER

Eurodraw Wire Equipment builds horizontal and vertical axis spoolers for every wire application and every type of spool from as small as 80 mm up to 2800 mm flange diameter. The horizontal spoolers are available without (BOS) or with spool lifter (BOM) in order to accommodate various spool sizes. The vertical spoolers can be equipped with an upper pneumatic pintle or with a central centering shaft, depending on the speed, the spool size and the application.

The spoolers are equipped with a fixed, motorized tailstock that is driven by the main spooler motor. The tailstock rotates the spool by means of dragging pins inserted in the spool flange. The drive tailstock is mounted on robust bearings that are able to withstand the dynamic load generated by rotation of the spool as well as the spool weight itself. The moveable tailstock is operated by pneumatic cylinders and has enough force to push

the spool against the drive tailstock and securely lock it in position. An additional safety device prevents accidental opening of the moveable tailstock during operation; and prevents startup of the spooler if the tailstock is not firmly closed.

The traverse mechanism is driven by an independent AC motor and a small gearbox that drives a toothed belt. On the traverse carriage, two pneumatic clamps alternately clamp one or the other side of the belt reversing the movement of the carriage. This system allows very quick reversing times.

Other spoolers are equipped with a geared motor that directly drives the traverse carriage; and on some simpler models the traverse mechanism is driven by the main motor through a speed variator. In every case, the traverse speed is always proportional to the winding speed and the lay is constant.

However, for some applications where conical winding is required, Eurodraw Wire Equipment has developed special software that controls the traverse mechanism in order to obtain conical or bi-conical wound spools.

A sliding door fitted with an inspection window is mounted on most Eurodraw horizontal spool models. A working light facilitates viewing of the inside during operation. For the vertical spooler, the door is designed to allow loading of the spool either with a forklift or with a crane.

The back of the spooler houses the main motor, the spool lifter mechanism and the pneumatic equipment as well as the electrical terminal board and the remote PROFIBUS control module. The design is such that all the components are easily accessible for maintenance.

Machine model		BOS 400	BOS 560	BOS 630	BOS 800	BOS 900	BOS 1000	BOS 1120	BOS 1250	BOS 1400
Max spool diameter	mm	400	560	630	800	900	1000	1120	1250	1400
Max spool capacity	kg	150	285	350	1000	1500	2000	2500	4000	5500
Wire Ø range	mm	0.15 - 0.80	0.30 - 1.50	0.40 - 1.60	0.50 - 2.50	0.70 - 3.00	1.00 - 5.00	1.50 - 5.00	2.00 - 7.00	2.00 - 9.00
Max speed	m/sec	35	35	35	30	30	28	20	18	16
Max installed power	kW	11	22	30	60	74	90	90	90	105



Machine model		BOM 355-630	BOM 560-800	BOM 630-900	BOM 630-1000	BOM 760-1120	BOM 900-1250
Max spool diameter	mm	630	800	900	1000	1120	1250
Min spool diameter	kg	355	560	630	630	760	900
Max spool capacity	kg	350	1000	1500	2000	2500	4000
Wire Ø range	mm	0.40 - 1.60	0.50 - 2.50	0.70 - 3.00	1.00 - 5.00	1.50 - 5.00	2.00 - 7.00
Max speed	m/sec	35	30	30	28	20	18
Max installed power	kW	30	60	74	90	90	90

AUTOMATIC SPOOLERS

FOR SPOOLS FROM 200 TO 630 MM

Eurodraw Wire Equipment builds fully automatic spoolers for every type of spool, from 630 mm to 200 mm flange diameter. The automatic spoolers allow the operation of the preceding machine for long time without presence of the operator. They are generally equipped with a storage device that can hold several empty and several full spools, allowing the operation of the machine for a full night without presence of any operator.

The particularity of the Eurodraw Automatic spoolers is the way that the wire is attached to the spool. In our machines the wire end is fixed to the spool by crossing the windings over each other on the spool barrel and then cutting away the tail. This ensures a good fixation of the wire to the spool and at the same time avoids having the wire tail laying against the inner side of the flange of the spool.

The automatic spoolers are equipped with pneumatic pintles that interlock the spool when in operation, fully automated wire traversing system that detect any winding imperfection and are equipped with a system that automatically corrects the pitch and the traversing width, in order to obtain a perfectly flat-wound spool.

When changing spool, the wire is automatically cut and clamped on the arm that will fix the wire on the empty spool. For initial threading it is sufficient to fix the wire to this arm, press a button to load the spool and the spooler will do all the rest by itself.

The automatic spooler is equipped with a soundproof cabinet that totally encloses the unit. This ensures good noise abatement and makes the unit totally safe. When spools are loaded

or unloaded, a door opens to allow the spools to pass. This door automatically closes once the spools have passed. For particular applications, the spooler can be equipped with a wire accumulation unit. This unit will accumulate the wire coming from the preceding machinery while the spooler is changing the spool. This will avoid any stoppage of the preceding machine when the spool is changed, even though the speed might be reduced during accumulation.

The main motor, the electrical terminal board, the pneumatic equipment and the remote PROFIBUS control module are housed on one side of the spooler; where they are easily accessible for maintenance. On the spooler front, a dedicated screen will group all the spooler functions and incorporate some of the line functions as well.



DOUBLE SPOOLERS

HORIZONTAL AND VERTICAL AXIS

Eurodraw Wire Equipment designs and builds three types of double spoolers, two of which with vertical axis spool and one with horizontal axis:

BOM/2 double horizontal axis spooler

This consists of two single horizontal spoolers placed side by side, with a traverse mechanism that is common to both spoolers. The traverse mechanism covers the full width of both spools and is equipped with a wire clamp. When one spool is full, the operator cuts the wire, which is tightly gripped by the clamp, and presses a button to move the carriage to the other spooler position. The wire can then be attached to the empty spool and the machine can be restarted.

While the spooler is running, the operator can unload the full spool and load a new empty spool. In normal working conditions, it takes no more than 30 seconds to change a spool.

Generally this type of spooler is combined with an accumulation block that stores the wire during spool changeover, to avoid stopping the wire drawing machine.

BVS/2 double vertical axis spooler

This unit works in a similar way to the horizontal axis double spooler. It has two fully functional spool positions and one traverse mechanism. When one spool is full, the wire is cut and attached to the other spool and the line is restarted while the full spool is unloaded.

This spooler is generally used to wind wire on collapsible spools. In this case the wire can be strapped on the spooler itself and the spool dis-assembled immediately, while the other side is operating. In this way, uptime of the machine is far greater than with a single spooler.

BVD double vertical axis spooler

This unit has been designed for production of large diameter wire at high speed. The unit has one spool winding position and a spool stand-by loading position. When one spool is full, the wire is clamped and cut automatically, the tailstock opens and the spool carousel raises and removes the spool from the drive tailstock. The carousel then rotates, moving the empty spool to the winding position and moving the full spool to the unloading position, to be removed by a crane or a forklift truck.

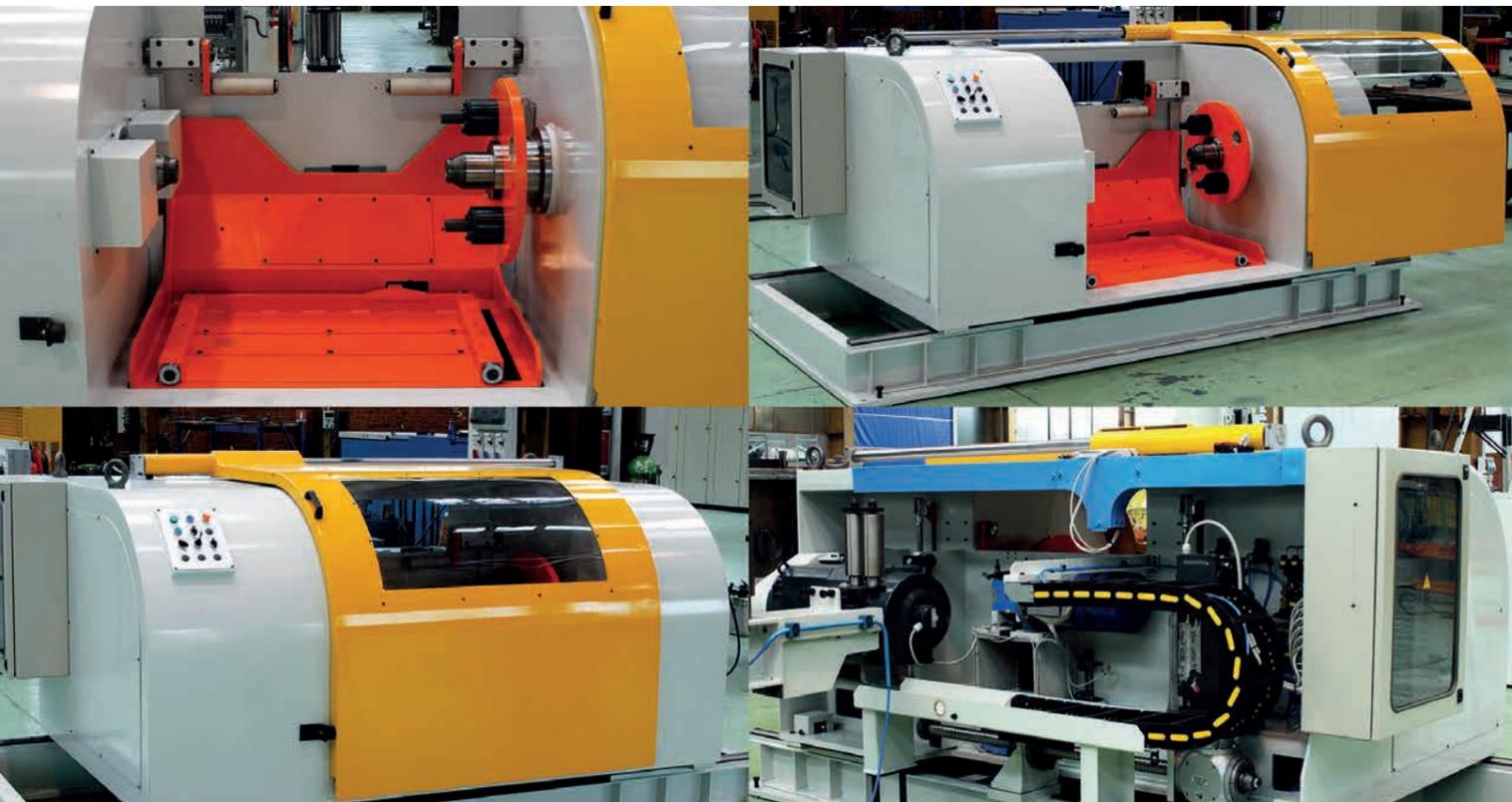
This type of spooler is generally used when the factory layout has only one access point to change the spool and when the wire diameters are above 4-5 mm.



Machine model		BVS 800/2	BVS 900/2	BVS 1000/2	BVS 1120/2	BVS 1250/2
Max. spool diameter	mm	800	900	1000	1120	1250
Max. spool capacity	kg	1000	1500	2000	2500	4000
Wire Ø range	mm	0.50 - 2.50	0.70 - 3.00	1.00 - 5.00	1.50 - 5.00	2.00 - 7.00
Max. speed	m/sec	25	25	20	18	16
Max. installed power	kW	60	74	90	90	90

Machine model		BVD 900	BVD 1000	BV 1120	BVD 1250
Max. spool diameter	mm	900	1000	1120	1250
Max. spool capacity	kg	1500	2000	2500	4000
Wire Ø range	mm	0.70 - 3.00	1.00 - 5.00	1.50 - 5.00	2.00 - 7.00
Max. speed	m/sec	25	20	18	16
Max. installed power	kW	74	90	90	90

Machine model		BOS 800-2	BOS 900-2	BOS 1000-2	BOS 1120-2	BOS 1250-2
Max. spool diameter	mm	800	900	1000	1120	1250
Max. spool capacity	kg	1000	1500	2000	2500	4000
Wire Ø range	mm	0.50 - 2.50	0.70 - 3.00	1.00 - 5.00	1.50 - 5.00	2.00 - 7.00
Max. speed	m/sec	25	25	20	18	16
Max. installed power	kW	60	74	90	90	90



TRAVERSING SPOOLERS

FOR SHAPED PRODUCTS

Eurodraw Wire Equipment makes equipment not only for round wire but also for shaped products. For such applications, it is required that the wire always remain in position and that the spools do the traversing.

Eurodraw Wire Equipment has designed both a vertical and a horizontal model traversing spooler.

On the vertical unit, a hydraulic cylinder performs the traversing movement; while on the horizontal unit, traversing is performed by a geared motor and a screw mechanism.

Both systems allow very precise winding and, with specific spools, lay-by-lay winding is also possible.

The vertical unit includes a spool loading and tilting unit.

The empty spool is placed on the tilting table and, by pressing a selector, the spool is tilted and deposited on a trolley that moves it to the winding position.

The tailstocks close and clamp the spool and the spooler can then be started up.

The hydraulic traversing mechanism will shift the spool up and down to obtain lay-by-lay winding.

The horizontal unit is more simple than the vertical traversing spooler. The unit uses the same structure as the BOM spooler, with the difference that the wire traverse mechanism is removed and the spooler structure is mounted on wheels.

The spooler traversing mechanism is mounted on the back of the spooler and attached to the ground.

STATIC HORIZONTAL DEADBLOCK COILERS

ROT HORIZONTAL-AXIS COILERS WITH DRAWING DRAFT

ROT coilers are designed to draw down and take up medium-to-large diameter steel wire onto carriers in free fall or pattern-laid coils⁽¹⁾.

The machine structure is made of normalized, electrowelded steel plate. It is heavy enough so that special foundations are not necessary.

The rotating plate ("flyer") is equipped with a series of idle pulleys, a directly water-cooled die in an adjustable die holder, and a twin set of adjustable wire straighteners in vertical and horizontal configuration, each with a double row of rollers.

The flyer is driven by an IP 55, inverter-controlled, horizontal-axis AC motor; and is electronically balanced to keep the gooseneck vibration-free.

The double-deck capstan is made of forged, induction tempered steel. It is cooled both by water and air to maximize wire temperature control.

The wire drops off the gooseneck onto a carrier in free fall or pattern-laid coils. In pattern-lay coiling, spirals fall through a rotating basket that distributes them around the carrier in an adjustable pattern lay. The basket is motorized so that it climbs as the carrier fills up to capacity.

Controlled wire accumulation makes carrier changeover possible without stopping the drawing line. In free fall, coiling accumulation is pneumatically controlled; while in pattern-lay coiling, the motor-driven basket performs the function.

Optionals

- Independent cooling system with water/ water heat exchanger
- Three-position rotating turntable for automatic carrier changeover
- Tungsten carbide coating on capstan
- Stairs for access to the work platform
- Height adjustment system for use with different sized carriers
- Dancer for synchronization of the coiler with existing machines
- Computer for production data acquisition

⁽¹⁾ The ROS model, without a drawing die, is also available.

Machine model		ROT 400	ROT 460	ROT 610	ROT 660	ROT 760	ROT 1000
Capstan diameter	mm	400	460	610	660	760	1000
Max. carrier capacity	Kg	400	800	1500	2000	2000	2000
Finished wire diameter	mm	0.50 - 1.50	0.70 - 2.50	1.50 - 5.00	2.00 - 6.50	3.00 - 7.00	3.00 - 11.0
Max. speed	m/sec	28	28	25	20	18	12
Max. installed power	kW	22	37	55	70	90	130





INVERTED COILERS

FOR LARGE DIAMETER, HIGH CARBON WIRE INTO LARGE-SIZED COILS

The inverted coiler is suitable to wind large diameter high carbon wire into large-sized coils. The working principle is identical to that of a stripper so the wire is not twisted while being wound; which makes it very practical for production of large packages of spring wire.

The unit is generally fitted with a diebox so that it is easy to set the cast and helix of the wire. The wire is taken up on a carrier placed on the rotating platform.

The platform rotates at the same speed as the capstan so that no twisting is induced in the wire.

By fine adjusting the rotating speed of the platform, it is possible to obtain a pattern-like package and increase capacity of the coil up to 2.5 tons.

Due to the large package size, machine speed cannot exceed 3 m/sec; which makes the unit unsuitable for production of fine wire.



EURODRAW
WIRE EQUIPMENT

YOUR TECHNOLOGY PROVIDER

OPTIONALS, ACCESSORIES AND SERVICES

FOR EVERY POSSIBLE REQUIREMENT

Eurodraw Wire Equipment can be customized to meet specific customer needs. For this purpose we have developed a wide range of optionals to fit every possible requirement; such as:

- Accumulation blocks, OTO or Barcro type
- Cartridge type dieboxes
- Conical cartridges for pressure dies
- Cooling water temperature sensors for dies, blocks and capstans
- Ceramic or tungsten carbide coating of drawing blocks
- Ceramic or tungsten carbide coating of dancer arm pulleys
- Composite material sensor arm pulleys
- Independent refrigerator cooling system for MTX machines
- Trouble-shooting modem and remote link
- Stripper blocks
- Straightening rollers on spooler traverse mechanism
- Turk's heads, rolling cassettes
- Wire vibration dampers
- Closed circuit cooling systems for coilers

ACCESSORIES

All Eurodraw Wire Equipment lines and machines can be supplied with a number of specific accessories either designed and produced by Eurodraw Wire Equipment or made by selected affiliated companies.

Pointers

We produce a complete range of wire pointers suitable for the machines described in this catalogue.

Welders

Eurodraw Wire Equipment can provide wire butt welders suitable for every application, from high performance pressure welders with programmable annealer for high carbon rod for PC strand, to simple low carbon rod and wire welders equipped with grinders and shears.

Spool tilters

Eurodraw Wire Equipment can provide hydraulic spool tilters for every spool size.

Wire drawing accessories

Rotating dies, soap mixers, laser wire diameter gauges, Eurodraw Wire Equipment digital drawing data acquisition and supervision system, PROFIBUS machine- to-cabinet link, disc brakes on every block, wire presser rolls on every block, dustproof machine guards, water flow indicators and many more.

Die re-cutting and laboratory equipment

Through affiliated partners, Eurodraw Wire Equipment can provide all necessary die reworking equipment, as well as laboratory equipment for tensile and torsion testing and chemical analysis of pickling solutions and waste water.

SERVICES

Eurodraw Wire Equipment is not only a plant and machinery manufacturer but also provides production know-how and technology for PC strand, PC wire and many other products.

Eurodraw's long and varied experience in setting up turnkey wire production operations, and jointly managing the production with their customers during the start-up and commissioning phases, gives major added value to the project and ensures success.

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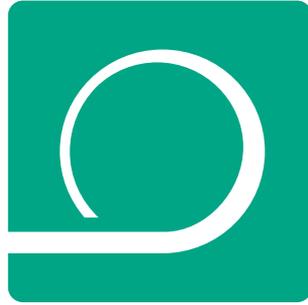
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DRY DRAWING LINES AND WIRE ROD PREPARATION EQUIPMENT



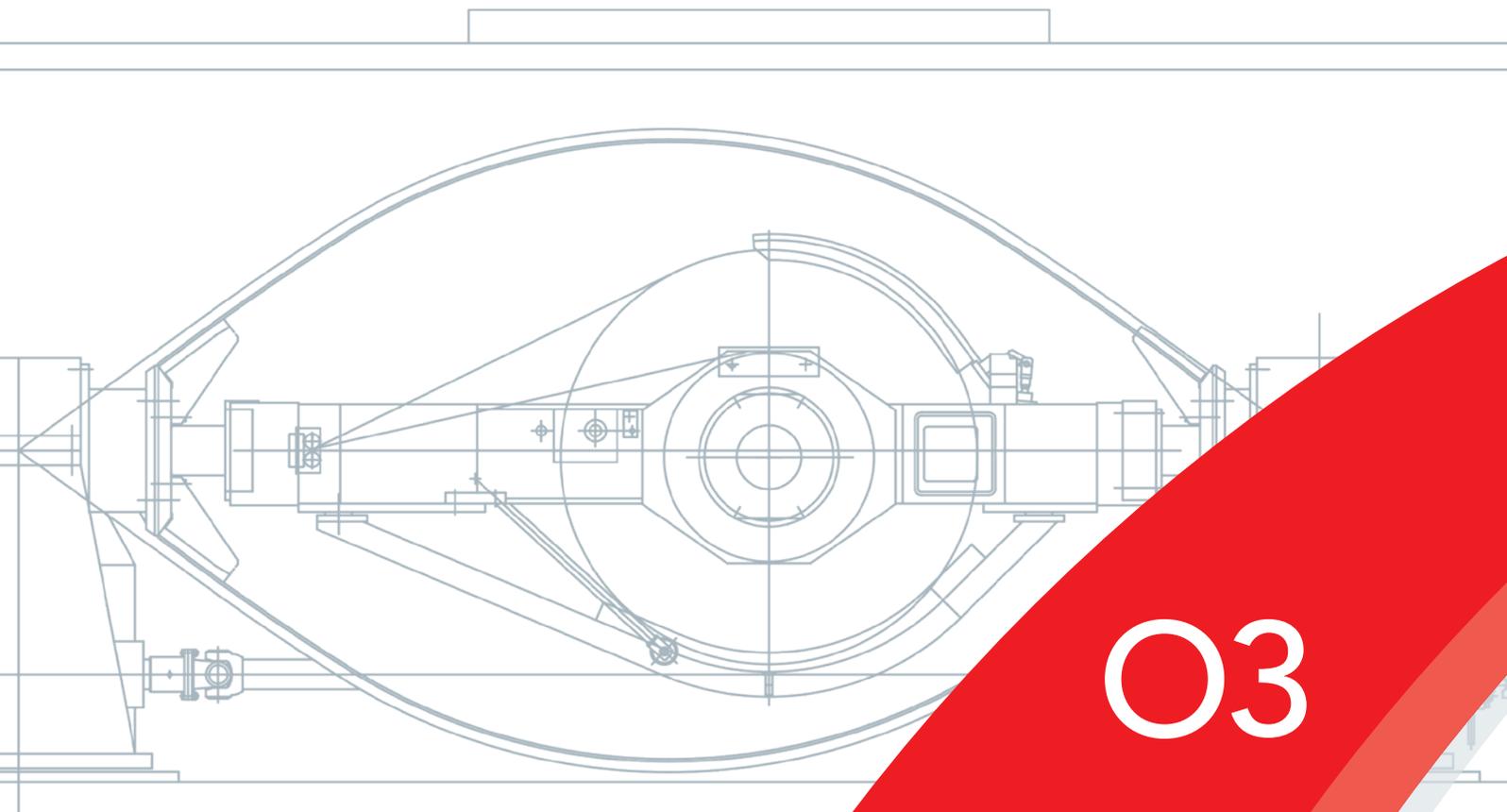
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EURODRAW
WIRE EQUIPMENT

PLANTS FOR PRODUCTION OF CONCRETE REINFORCEMENT WIRE AND STRANDS

BATCH PICKLING PLANTS, WIRE DRAWING LINES, PC STRAND LINES, PC WIRE LINES,
COLD ROLLING LINES, STRAIGHTENING AND CUTTING LINES



03

O3.01 BATCH PICKLING PLANTS
THE MOST ECONOMICAL SOLUTION FOR QUALITY PRODUCTION

O3.02 MTS 1200 DRAWING MACHINES
THE LARGEST WIRE DRAWING MACHINE ON THE MARKET

O3.03 PC STRAND LINES
LOW RELAXATION STRAND PRODUCTION

O3.04 PC WIRE LINES
LOW RELAXATION WIRE PRODUCTION

O3.05 COLD ROLLING LINES
HIGH SPEED PRODUCTION OF INDENTED WIRE FOR MESH AND REBAR

O3.06 COMBINED PC STRAND AND PC WIRE LINE
STURDY, RELIABLE, SIMPLE AND COMPETITIVE

O3.07 ACCESSORIES AND SERVICES
ACCESSORIES - SERVICES - AFTER SALES SERVICES

BATCH PICKLING PLANTS

THE MOST ECONOMICAL SOLUTION FOR QUALITY PRODUCTION

Every modern wire factory starts with a fully automated state-of-the-art wire rod batch pickling plant.

Eurodraw Wire Equipment, in cooperation with VJL Technologies, builds the most modern, environmental friendly and efficient plants for pickling wire rod with hazardous emissions that are virtually zero.

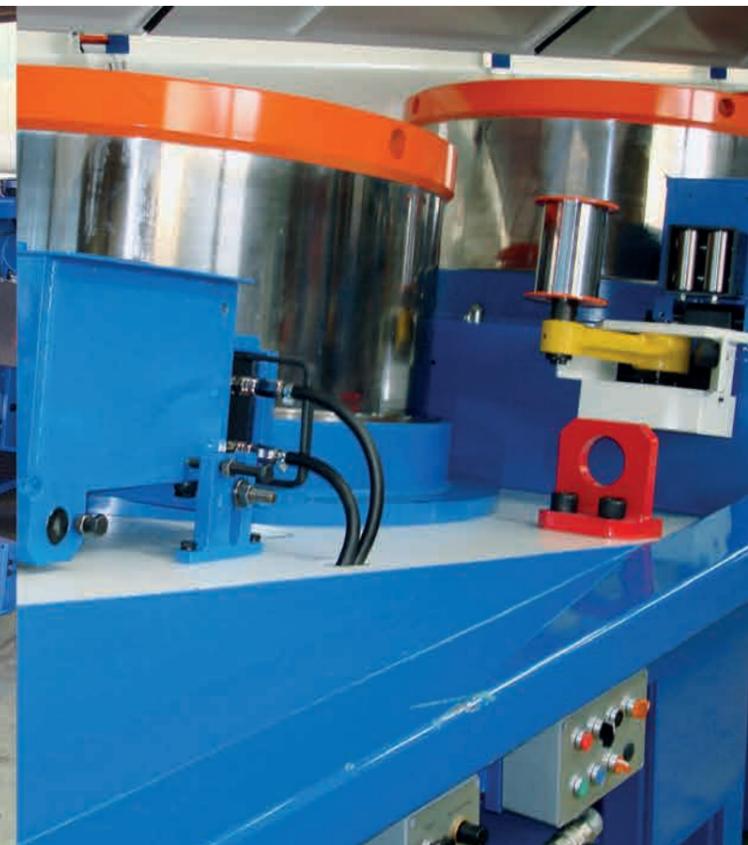
Plants can be designed for hydrochloric or sulphuric acid pickling, with capacity of 60,000 to 240,000 t/year.

Plant configuration can be either "tunnel" or "open design" and are equipped with acid recovery and regeneration systems, waste water treatment systems, clarifiers, scrubbers and filter presses for phosphate sludge.

The pickling sequences are managed by sophisticated SCADA systems that operate two rigid automatic cranes and optimize coil movements in order to reduce process time to a minimum. Different pickling sequence programs can be selected in order to process wire rod coils of different grades that require different process times.

A state-of-the-art batch pickling plant is the key to successful wire production and is the most economical solution to assure consistent wire quality.





MTS 1200 DRAWING MACHINES

THE LARGEST WIRE DRAWING MACHINE ON THE MARKET

Eurodraw Wire Equipment has designed a specific series of wire drawing machines for processing large diameter high carbon steel wire rod. At the top of the line is the MTS 1200 machine that can process high carbon wire rod of up to 16.0 mm in diameter at speeds never before reached.

For PC production plants, besides the MTS 1200, machines can be supplied with drawing block sizes of 900 mm, 812 mm, 760 mm and 710 mm. All models are modular, multiple-block, characterized by inclined axis blocks and loop sensor speed synchronization.

The sturdy, exceptionally heavy machine frame is provided with integrated piping for easy connection to a dust and fume extraction system.

Dieboxes assure efficient, direct die cooling and ease of operation. With the exclusive Eurodraw Wire Equipment diebox design, die changeover is fast and simple and often no tools are required.

Each drawing block is driven by an inverter-controlled AC motor and power is transmitted by high performance parallel axis reduction gears sourced from major internationally recognized gearbox manufacturers.

The exclusive Eurodraw Wire Equipment block water cooling system plus air cooling all around the block perimeter assures exceptional wire cooling capacity, to allow installation of up to 170 kW motors per block on the MTS 1200.

All MTS machines can be highly customized with a wide range of options that make them suitable for production of a very wide variety of wire products. Among these options are: OTO blocks, final stripper blocks, tungsten carbide or ceramic-coated blocks, soap mixers, laser wire diameter gauges, rolling cassettes, dustproof guards and many more.

MTS machines do not require foundations. They are simply positioned on the factory floor and attached with suitable anchoring bolts.

Machine model		MTS 1200	MTS 900	MTS 812	MTS 760	MTS 710
Block diameter	mm	1200	900	812	760	710
Max installed power	kW	170	110	90	90	75
Max. ROD Inlet Ø	mm	16.0	14.0	11.0	11.0	9.00
Min. Wire outlet Ø	mm	3.50	3.50	3.00	2.40	2.00
Max. Speed	m/sec	15	12	15	18	20

PC STRAND LINES

LOW RELAXATION STRAND PRODUCTION

Eurodraw Wire Equipment has been manufacturing PC strand lines for more than 25 years and, in addition, has built and jointly operated with its customers many complete turnkey PC strand plants.

Eurodraw's PC strand line is therefore the ultimate result of many years of experience in design and operation of such lines and plants.

Skip strander

Eurodraw skip stranders are suitable for spool sizes ranging from 800 to 1250 mm with total load capacity of 7 to 28 tons. As standard equipment, Eurodraw skip stranders include: upper and lower spool enclosures, an efficient wire break detection system that includes a center wire break detector, reinforced soundproof cabinet with automatic door closing system, double disk braking with quick release and braking

force proportional to spool filling, heavy duty cradles with pneumatically operated tailstocks protected by safety locks, cradle overturn detection system, heavy duty bearings with temperature monitoring and automatic lubrication system, interior lighting of cabinet, AC motor drive, carbon fiber bows, hollow shaft rotors for easy wire threading, post former with large diameter rolls and compacting die for the production of compact strands.

Capstans and induction furnace

The capstans are equipped with planetary gearboxes and driven by two separate AC motors. With independent motor power an infinite number of stranding lays are available.

After the first, tensioning capstan, the load cell controls stretching of the strand. The load cell is equipped with a self-calibrating

device, to ensure consistent tension reading even after years of operation.

The induction furnace is available with power up to 800 kW so that larger strand diameters can be produced with maximum efficiency and speed.

A powerful induction furnace ensures long equipment life without stressing the units since, on many occasions, it will not be used at full load. An infrared pyrometer at the furnace outlet reads the strand temperature and controls the heating power. The furnace is followed by a water quenching unit with two independent cooling sections.

This unit includes a water heating system and water temperature control and, on request, can be provided with a strand temperature control device. The second, haul-off capstan is identical to the first, but is equipped with a larger AC motor.

Rewinding section

The strand coming from the second haul-off capstan is taken up on a large traversing spooler with two positions. The spooler has a capacity equivalent to the load capacity of the strander. Motor speed between the second capstan and the spooler is synchronized with a synchronization sensor arm, which also acts as a final metercounter. After one spooler is loaded with strand, it shifts to one side and becomes a spool pay-off while the other spooler is aligned with the stranding section and begins to take up strand.

From the spool in pay-off position, the strand is layer rewound at high speed onto a collapsible spool to make the final package of "spoolless core" coils. With the Eurodraw Wire Equipment layer rewinder, coil packages are perfectly laid without the need of any operator assistance. Once a package is complete, a coil lifter removes it and an in-built scale system prints out a label with the measured weight.

Strander model	Spool size	Max strand size	Rotating speed	Linear speed	Furnace capacity
	mm	inches	rpm	m/min	kW
CLR 1250	1250	0.75	800	135	800/600
CLR 1120	1120	0.70	850	135	800/600
CLR 900	900	0.60	1000	140	600
CLR 800	800	½	1100	150	450

CLR 1250 STRANDER PRODUCTION DATA

Product	Nominal Ø	Nominal Ø	Average area	Linear weight	Breaking load	Speed	Pull	Lay length	Theoretical production
Standard sizes	inches	mm	mm ²	g/m	kg	m/min	kg	mm	kg/hr
3/8"250K	0.375	9.53	51.61	405.1	9100	100	4095	133	2431
3/8"270K	0.375	9.53	54.84	430.5	10450	100	4389	133	2583
7/16"250K	0.438	11.13	69.67	546.9	12250	115	5513	156	3774
7/16"270K	0.438	11.13	74.19	582.4	14100	115	5922	156	4019
1/2"250K	0.500	12.70	92.90	729.3	17300	130	7266	178	5689
1/2"270K	0.500	12.70	98.70	774.8	18750	130	7875	178	6043
1/2"SP	0.508	12.90	100.00	785.0	20450	130	8589	181	6123
9/16"270K	0.562	14.27	123.87	972.4	23600	130	9912	200	7585
9/16"SP	0.585	14.86	133.54	1048.3	25450	130	10689	208	8177
0.6"270K	0.600	15.24	140.00	1099.0	26650	128	10500	218	8440
0.6"SP	0.600	15.70	150.00	1180.0	29600	120	11500	218	8496
0.7"270K	0.700	17.78	190.55	1495.8	36000	94	13750	248	8436
0.75"	0.750	19.05	218.75	1717.2	41500	82	17500	267	8400
0.80"	0.800	20.32	248.33	1949.4	44500	72	19800	284	8420





PC WIRE LINES

LOW RELAXATION WIRE PRODUCTION

Eurodraw Wire Equipment designs and builds two types of PC wire indenting and stabilizing lines.

PC wire line with single capstan and back tensioning die

The line is composed of a spool pay-off, a back tensioning die, an indenting unit and wire straightener, a movable induction furnace and a pulling capstan; followed by a pinch wheel, a hydraulic shear and two basket coilers that take up the wire non-stop, to allow continuous line operation. This line can be fed directly from a wire drawing machine so that continuous drawing indenting and stabilizing is made possible.

PC wire line with double capstan

The line is composed of a spool pay-off, an indenting unit followed by a wire

straightener and cleaning unit, double tensioning capstan, a fixed or movable induction furnace and a double haul-off capstan. Here too, the second capstan is followed by a pinch wheel, a hydraulic shear and two basket coilers that take up the wire non-stop, to allow continuous line operation.

This line can also be fed directly from a wire drawing machine so that continuous drawing indenting and stabilizing is made possible. The double capstan line can be equipped with a back tensioning die so it can also be used with one capstan only.

The double capstan line has the advantage that the wire tension is fine adjusted with a load cell to maintain constant pull during passage through the induction furnace. With a back tensioning die the tension

depends on the area reduction of the die. The double capstan line is also easier to operate, as there is no die to thread.

PC wire line with double vertical axis capstan

The PC wire lines can be supplied either with a horizontal axis capstan or with a pair of vertical axis capstans. While this configuration is a little easier to thread, the space requirements are significant.

PC wire capstan threading unit

The PC wire line that is configured with a double horizontal axis capstan can be equipped with an automated capstan threading unit. This equipment allows to thread the pulling capstans in less than 5 minutes without any effort. The operator just needs to clamp the wire on the threading unit and press the start button.

This equipment significantly reduces the threading time of the line and reduces the risk of injuries that may occur in these operations. The threading unit allows a single person to thread a 4000 mm double capstan.

Wire Ø	Tensile	Cross section	Max available pull	Furnace speed	Linear weight	Hourly production	Theoretical Power consumption
mm	N	mm ²	dN	m/min	g/m	kg/h	kW
3.00	2000	7.07	636	420	55	1397	54.50
4.00	1950	12.56	1102	400	99	2365	90.00
5.00	1850	19.63	1634	380	154	3511	126.80
7.00	1750	38.47	3029	350	302	6339	216.50
9.00	1700	63.59	4864	215	499	6437	213.60
9.40	1650	69.36	5150	200	544	6532	210.40
10.70	1600	89.87	6471	150	705	6347	198.30
12.60	1550	124.63	8693	120	978	7041	213.10

COLD ROLLING LINES

HIGH SPEED PRODUCTION OF INDENTED WIRE FOR MESH AND REBAR

Eurodraw Wire Equipment, designs and builds high performance cold rolling lines for the production of indented wire for mesh and rebar. We have been the first company to introduce the multi block cold rolling lines on the market and have, since then, built and installed dozens of lines all over the world.

The line is composed of a double vertical wire rod pay-off, a heavy duty mechanical descaler, a soap application unit with double soap feeding screw, a single/

twin or triple-block horizontal axis cold rolling machine with a mechanical stress-relieving unit and a heavy duty single horizontal spooler or double vertical spooler with semi-automatic spool changeover system.

The Eurodraw Wire Equipment cold rolling line has been designed to work in the toughest industrial environment, requires limited maintenance and is operator-friendly; giving full access to the rolling blocks and rolling cassettes.

A version equipped with noise abatement and dustproof cabinet is available.

Two rolling cassettes can be mounted in front of each pulling capstan so that changing wire sizes does not require the removal of the rolling cassette from its location. These machines can be equipped with dies in place of rolling cassettes if required.

Machine model	Block Ø	Max inlet wire Ø	Max speed	Installed power	Block water cooling	Rolling cassettes
	mm	mm	m/sec	kW		n°
CRL 760/1 H	760	16	8	1x220	YES	2
CRL 760/1 L	760	10	8	1x170	YES	2
CRL 760/2 H	760	16	12	2x170	YES	4
CRL 760/2 L	760	14	12	1x129 + 1x105	YES	4
CRL 760/3 H	760	16	14	1x170 + 2x129	YES	5



COMBINED PC STRAND AND PC WIRE LINE

STURDY, RELIABLE, SIMPLE AND COMPETITIVE

In order to increase the flexibility of a Prestressed Concrete Reinforcement line a combined PC wire and PC strand line is now available.

The line shares the capstans, the furnace and the cooling unit that can be used alternatively to produce PC strand or PC wire in all the various sizes.

In this case the standard PC strand line would be equipped with this additional equipment allowing to produce PC wire as well:

- Motorized spool payoff for PC wire
- PC wire straightening assembly
- Double capstans groups of 2000-3000 mm in diameter
- Pinch rollers for PC wire pulling
- Hydraulic shear with double Basket coilers

The PC wire production speed would be limited to 240 m/min.

This combination of the two lines reduces the space requirements and allows to produce both PC wire and PC strand alternatively giving more flexibility to the plant.

If the demand requires at a later date the lines are splitted in two separate dedicated lines, all the PC wire specific components can be re-installed and completed with new furnace, pulling capstans and colling unit as well as a new electrical cabinet.

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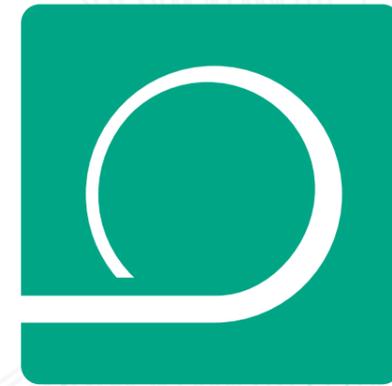
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WIRE EQUIPMENT

YOUR
TECHNOLOGY
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PLANTS FOR PRODUCTION OF CONCRETE REINFORCEMENT WIRE AND STRANDS



EURODRAW WIRE EQUIPMENT S.r.l.

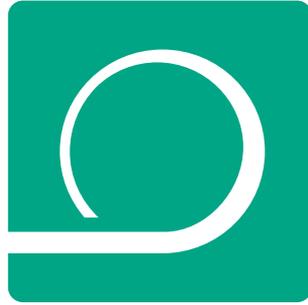
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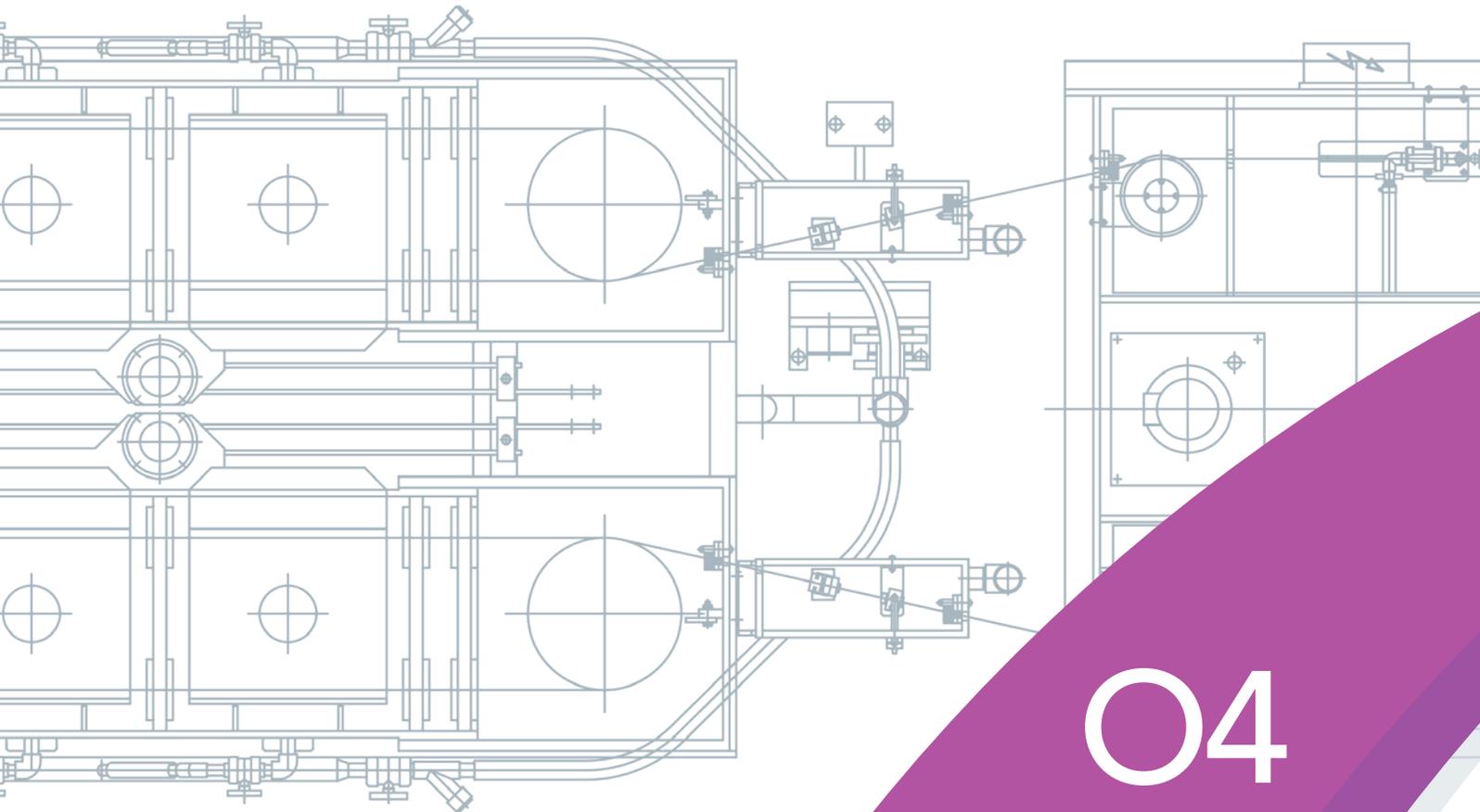




EURODRAW
WIRE EQUIPMENT

SURFACE TREATMENT LINES

WIRE CLEANING AND PLATING EQUIPMENT FOR EVERY PRODUCTION REQUIREMENT



04

04.01 **BATCH PICKLING PLANTS**
THE MOST ECONOMICAL SOLUTION FOR QUALITY PRODUCTION

04.02 **MULTI-WIRE PICKLING LINES**
H₂SO₄ ELECTROLYTIC PICKLING AND HCl PICKLING LINES

04.03 **DEGREASING UNITS**
WITH ANNEALING FURNACES, WIRE DRAWING MACHINES, PLATING SECTIONS

04.04 **MULTI-WIRE ELECTRO-PLATING LINES**
FOR PRODUCTION OF COPPER, NICKEL, TIN, ZINC-PLATED WIRE AND OTHERS

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KNOW-HOW AND TECHNOLOGY FOR ELECTRO-PLATED WIRE

BATCH PICKLING PLANTS

THE MOST ECONOMICAL SOLUTION FOR QUALITY PRODUCTION

Every modern wire factory starts with a fully automated state-of-the-art wire rod batch pickling plant.

Eurodraw Wire Equipment, in cooperation with VJL Technologies, builds the most modern, environmental friendly and efficient plants for pickling wire rod with hazardous emissions that are virtually zero.

Plants can be designed for hydrochloric or sulphuric acid pickling, with capacity of 60,000 to 240,000 t/year.

Plant configuration can be either "tunnel" or "open design" and are equipped with acid recovery and regeneration systems, waste water treatment systems, clarifiers, scrubbers and filter presses for phosphate sludge.

The pickling sequences are managed by sophisticated SCADA systems that operate two rigid automatic cranes and optimize coil movements in order to reduce process time to a minimum. Different pickling sequence programs can be selected in order to process wire rod coils of different grades that require different process times.

A state-of-the-art batch pickling plant is the key to successful wire production and is the most economical solution to assure consistent wire quality.



MULTI-WIRE PICKLING LINES

H₂SO₄ ELECTROLYTIC PICKLING AND HCl PICKLING LINES

Multi-wire pickling lines are usually supplied for installation with wire annealing or patenting and/or plating lines. Eurodraw Wire Equipment builds two types of multi-wire pickling units:

H₂SO₄ electro-pickling

The H₂SO₄ electro-pickling unit is extremely efficient and very compact. Sulphuric acid is used as the cleaning agent combined with the electrolytic effect, allowing fine adjustment of the pickling effect. By increasing or decreasing the current it is possible to adjust the pickling action depending on the surface conditions of the wire.

The unit is equipped with a fume suction system and can be supplied with a scrubber for acid fumes abatement. All tanks are made of high quality PP adequately

reinforced where needed and mounted on a stainless steel structure. The unit is completely wired and piped with all pumps mounted on board.

HCl multi-wire pickling

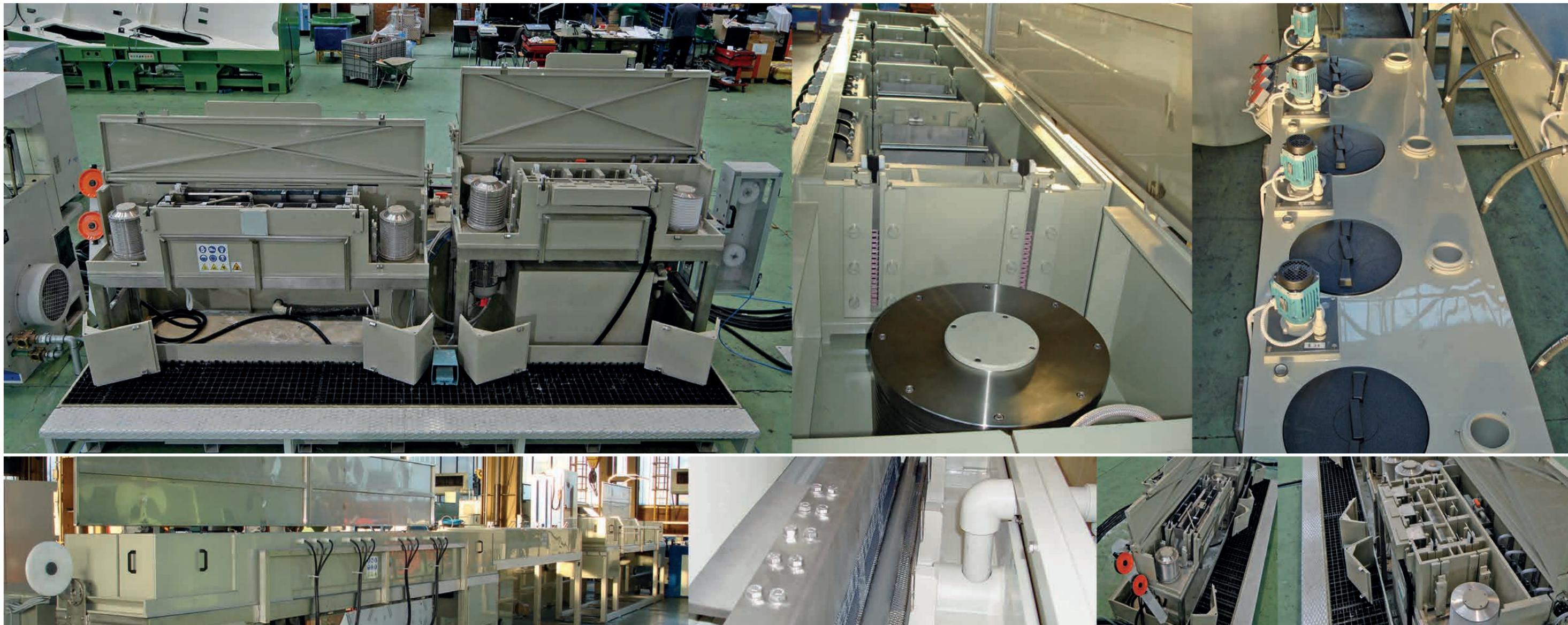
The HCl multi-wire pickling unit built by Eurodraw Wire Equipment has a unique design with a round bottom tank that offers many advantages. First of all, servicing of the tank is much easier than with a conventional square tank as all residues are collected in the center where the drain is located.

Furthermore, the unit is constructed so that it is completely rigid and self-supporting, thus avoiding the need of additional metal frames that are not compatible with HCl acid spillages. The unit is of course fumeless, with triple water curtains and

demisters that totally prevent the escape of dangerous fumes into the factory. Depending on the line speed, the pickling unit can be configured in two or three separate sections, all with independent pumps and with separate pickling trays in each tank.

Pressurized counterflow rinses combined with water curtains ensure the removal of all acid residues from the wire before it proceeds to the next processing phase. Threading of the unit is made easy with a built-in threading trolley that moves all along the unit and pulls the wires through. If wire must be threaded manually, special side openings that are flooded with water allow passage of the wire, while preventing escape of the pickling fumes.





DEGREASING UNITS

WITH ANNEALING FURNACES, WIRE DRAWING MACHINES, PLATING SECTIONS

Eurodraw Wire Equipment has developed various types of degreasing units for different applications:

Multi-wire degreasing units for installation with annealing furnaces

These units have been designed specifically to clean stainless steel wire prior to annealing. Cleaning before annealing prevents the formation of black spots on the wire that are impossible to remove with subsequent pickling.

The degreasing unit for stainless steel wire is generally composed of two separate sections. The first is an ultrasonic cleaning section that "mechanically" cracks the residues on the wire; the second section is electrolytic with a degreasing agent that dissolves the residues and removes them completely.

Thereafter, powerful counterflow hot rinse unit removes the degreasing agents.

Mono-wire degreasing units for installation with wire drawing machines

These units have been designed to work in-line with wire drawing machines and therefore operating speeds can reach 25 m/sec. The degreasing system can be either electrolytic or electrolytic with a degreasing agent such as caustic soda. In case of very dirty wire, a combination of ultrasonic and electrolytic degreasing in sequence gives exceptional results.

Multi-wire degreasing units for installation with plating equipment

These units are used to remove all wire drawing residues or burnt residues from the wire surface prior to plating. It is very important that the wire be perfectly clean

before plating, in order to assure good bonding between the wire and the deposit. The cleaning agent in this case can be either electrolytic using a degreasing chemical or sulphuric acid or only chemical using phosphoric acid.

MULTI-WIRE ELECTRO-PLATING LINES

FOR PRODUCTION OF COPPER, NICKEL, TIN, ZINC-PLATED WIRE AND OTHERS

Eurodraw Wire Equipment's long experience in building brass-plating lines for the steel tire cord industry has evolved into the design of multi-wire electro-plating lines for many other applications, including multi-wire electro-galvanizing lines for the production of staple wire, nickel-plating lines, copper wire electro-galvanizing lines and many more.

Eurodraw has mastered a unique electro-galvanizing technique using insoluble anodes. This is achieved with a dissolution tank in which zinc pellets are dissolved into the zincing solution. Powerful pumps then bring the zinc-charged solution to the working trays where the zinc is deposited on the wire.

The system has many advantages compared to a traditional line using soluble

anodes, among which better wire coating concentricity and consistency as the solution is equally charged with zinc all around the wire and the zinc concentration is easily controllable.

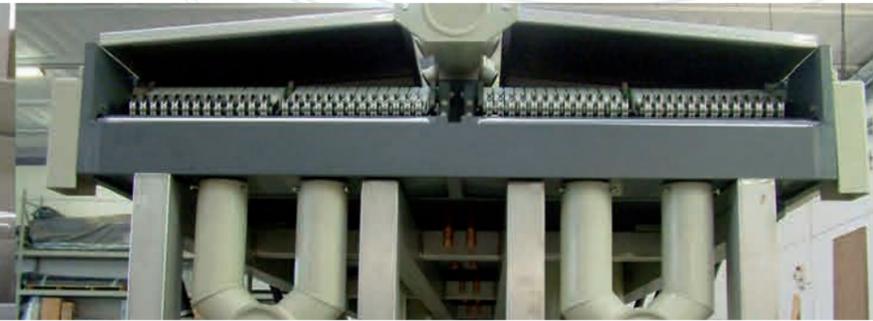
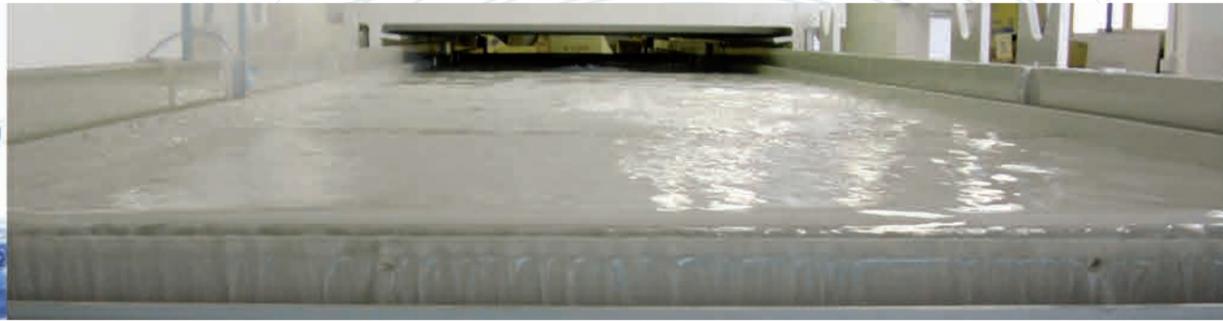
It is also possible to use a higher current density in order to increase coating weights at higher speeds. And maintenance is reduced to a minimum because there is no need to replace zinc anodes as they wear out, but simply to add zinc pellets to the dissolution tank as necessary.

The electronic controls are equally important on such type of lines. Eurodraw Wire Equipment can now offer new generation state-of-the-art rectifiers that ensure clean delivery of current with no fluctuations.

This translates into lower power consumption and better control of the coating weights and consistency.

Eurodraw Wire Equipment's unique supervision system gives an overview of all the line functions and allows operation in manual or automatic mode.

All pumps, pH meters, flowmeters, rectifiers, valves, temperature probes and fans are carefully monitored so that the operator is in full control of the line and of all the working parameters.





MONO-WIRE ELECTRO-PLATING LINES

HIGH SPEED LINES FOR APPLICATIONS WITH MAXIMUM PLATING FLEXIBILITY

Eurodraw Wire Equipment's expertise in multi-wire plating lines has been transferred to mono-wire lines as well. Mono-wire lines are generally not coupled with heat treatment systems and therefore can be operated at very high speeds, up to 12 m/sec.

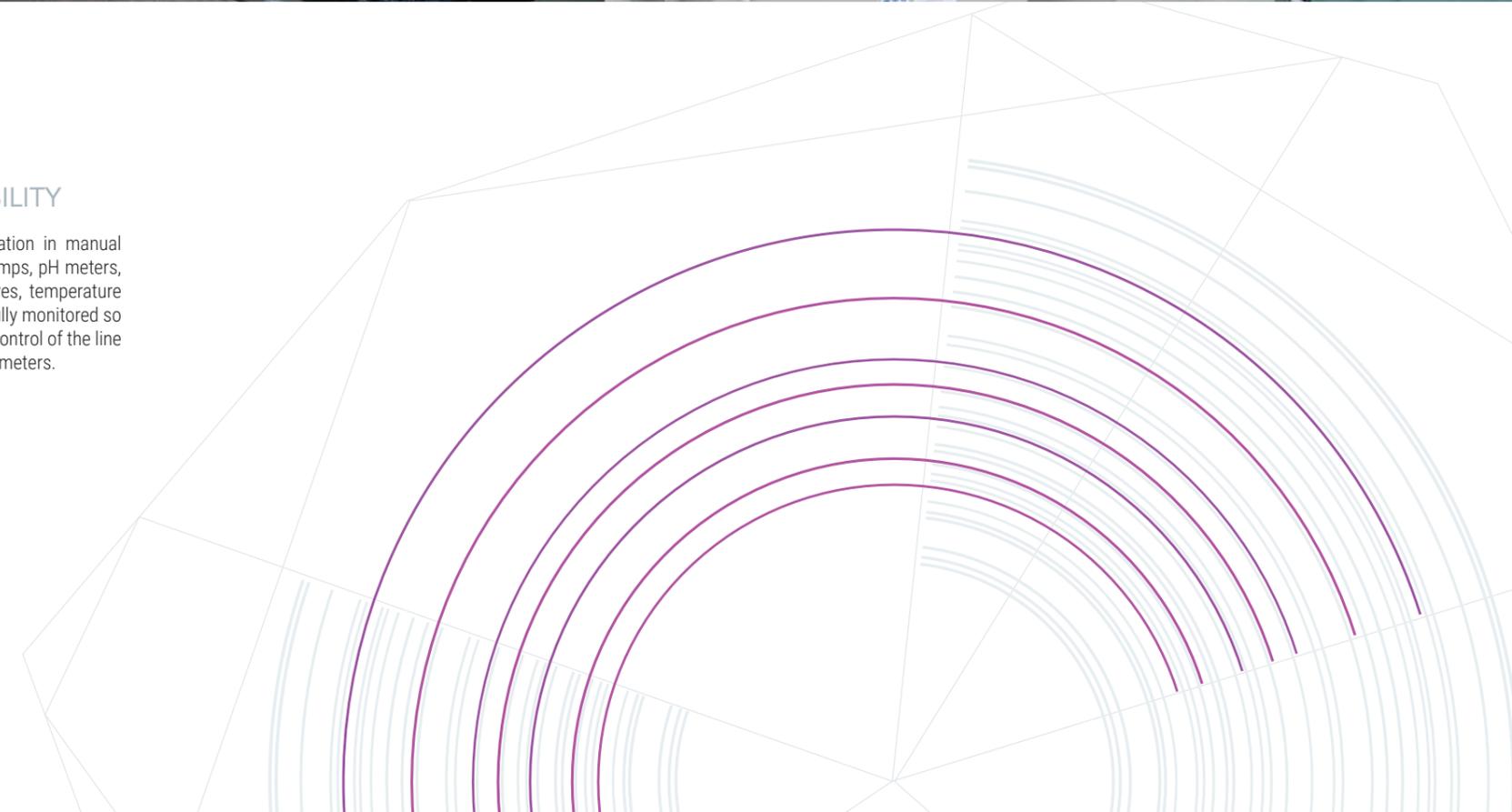
Mono-wire electro-plating lines can be designed for production of galvanized wire, nickel-plated wire, tin-plated wire and also brass-plated wire for hose wire or tire steel cord. Specifically for the production of brass-plated wire, Eurodraw Wire Equipment has developed a quite unique high-speed diffusion system. The wire is pickled, copper-plated, zinc-plated and then heat treated so the zinc and copper melt together and form brass. The diffusion can be either by Joule effect or by induction heating.

Mono-wire lines offer maximum flexibility because they can be laid out in many different configurations, such as U-shape, S-shape or L-shape, making it possible to maximize factory space usage. An equivalent 12-wire line would require about three times the space of a mono-wire line with the same production capabilities.

The electronic controls are very important on mono-wire lines as well. Here too, Eurodraw Wire Equipment offers new generation state-of-the-art rectifiers that ensure clean delivery of current with no fluctuations; which translates into lower power consumption and better control of the coating weights and consistency.

The Eurodraw Wire Equipment unique supervision system is also applied to mono-wire lines, to give an overview of all the line

functions and allow operation in manual or automatic mode. All pumps, pH meters, flowmeters, rectifiers, valves, temperature probes and fans are carefully monitored so that the operator is in full control of the line and of all the working parameters.



CHEMICAL PLATING LINES

FOR PRODUCTION OF BEAD WIRE AND CO₂ WELDING WIRE

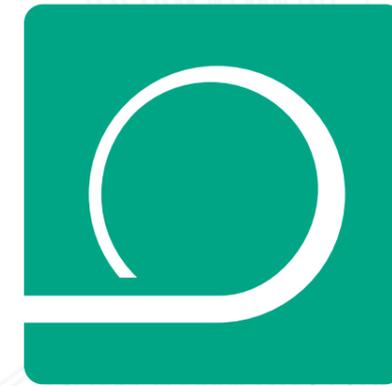
Chemical plating lines are generally used to produce products such as bead wire or CO₂ welding wire.

Eurodraw Wire Equipment can supply both mono-wire and multi-wire chemical plating lines.

Essential to these lines are proper cleaning and activation of the wire surface prior to plating; and agitation of the plating solution.

To this end, Eurodraw Wire Equipment has designed unique wire cleaning systems (described in the cleaning section) and a recycling and distribution system so that the plating solution is properly distributed around the wire to assure consistent coating.

Mono-wire lines can be installed in-line with wire drawing machines because the operating speed is the same as that for wire drawing.



EURODRAW
WIRE EQUIPMENT

YOUR
TECHNOLOGY
PROVIDER

KNOW-HOW, ACCESSORIES AND SERVICES

KNOW-HOW AND TECHNOLOGY FOR ELECTRO-PLATED WIRE

KNOW-HOW

Eurodraw Wire Equipment's long experience in the production of steel cord and related products allows us not only to deliver equipment, but also to deliver know-how and guide our customers in the achievement of their production targets according to the specifications of the major tire manufacturers.

The Eurodraw Wire Equipment team of experienced engineers have been trained at modern steel cord facilities and are in full control of the latest plating, wet drawing and bunching technology and operating procedures for certification of the final products.

Eurodraw Wire Equipment expertise excels in tire cord, hose wire, bead wire and staple wire production where equipment, technology and know-how can be delivered by a single company without the need to share responsibilities among many vendors. Many greenfield operations have been set up by Eurodraw Wire Equipment in the past 30 years. Most major steel cord manufacturers have at least some equipment in their plants supplied by Eurodraw Wire Equipment.

The Eurodraw Wire Equipment team is composed of experienced mechanical engineers, chemists, process engineers and production management experts, all of whom are available to assist customers whenever and wherever necessary.

ACCESSORIES

All Eurodraw Wire Equipment lines and machines can be supplied with a number of specific accessories either designed and produced by Eurodraw Wire Equipment or made by selected affiliated companies.

Pointers

We produce a complete range of wire pointers suitable for the machines described in this catalogue.

Welders

Eurodraw Wire Equipment can provide wire butt welders suitable for every application, from high performance pressure welders with programmable annealer for high carbon rod for PC strand, to simple low carbon rod and wire welders equipped with grinders and shears.

Spool tilters

Eurodraw Wire Equipment can provide hydraulic spool tilters for every spool size.

Wire drawing accessories

Rotating dies, soap mixers, laser wire diameter gauges, Eurodraw Wire Equipment digital drawing data acquisition and supervision system, PROFIBUS machine-to-cabinet link, disc brakes on every block, wire presser rolls on every block, dustproof machine guards, water flow indicators and many more.

Die re-cutting and laboratory equipment

Through affiliated partners, Eurodraw Wire Equipment can provide all necessary die reworking equipment, as well as laboratory equipment for tensile and torsion testing and chemical analysis of pickling solutions and waste water.

SERVICES

Eurodraw Wire Equipment is not only a plant and machinery manufacturer but also provides production know-how and technology for PC strand, PC wire and many other products.

Eurodraw's long and varied experience in setting up turnkey wire production operations, and jointly managing the production with their customers during the start-up and commissioning phases, gives major added value to the project and ensures success.

AFTER SALES SERVICES

Eurodraw Wire Equipment is committed to total customer satisfaction. Our after sales service department is fully staffed with mechanical engineers, electronic engineers and process engineers that are able to solve any problems that may arise. Our spare parts service department is available to answer all spare parts inquiries, even for the very first machines we built.



KEY FACTS ABOUT EURODRAW WIRE EQUIPMENT

- 1974** Established as GCR Engineering SpA with the scope of designing and building equipment for the production of steel cord.
- 1982** Acquired the company MILL, specialized in the production of wire drawing machines.
- 1988** Established the company Eurodraw Srl for the production of straight through wire drawing machines.
- 1990** Acquired the company OZ Cams and merged MILL and OZ Cams into Eurodraw. GCR Engineering and Eurodraw work as a team for the supply of several turnkey steel cord plants in Europe, Asia, USA and South Africa; as well as supplying a wide range of equipment for different applications throughout the world.
- 1999** GCR Engineering is awarded ISO 9001 quality certification, further requalified in 2002 to VISION 2000 certification and constantly renewed till today.
- 2002** GCR Engineering and Eurodraw Srl move to new premises. GCR Engineering and Eurodraw Srl merge into GCR Eurodraw to become one of the largest wire machinery manufacturers and with the widest production program.
- 2005** GCR Eurodraw opens a branch operation in China to consolidate its market position in the People's Republic of China.
- 2006** GCR Eurodraw is awarded construction of the largest PC strand operation in the Middle East, with a capacity of 100,000 tons/year.
- 2007** GCR Eurodraw, with EVG of Austria, purchases the company DEM located in Udine; with this acquisition the production program of the group also covers rolling cassettes and wire profile machinery.

GCR Eurodraw purchases Comapac Wire Machinery Srl located near Lecco, specialized in the production of pay-offs and take-ups, competitive rolling machines and custom-designed wire drawing equipment for special applications.
- 2015** GCR Eurodraw SpA renames itself Eurodraw Wire Equipment Srl.
- 2017** Eurodraw Wire Equipment builds the first tyre steel cord plant in the Middle east and provides know how and technology.
- 2018** Eurodraw Wire Equipment is awarded the contract to build the largest wire rope factory in the Middle east from greenfield.



SURFACE TREATMENT LINES



EURODRAW WIRE EQUIPMENT S.r.l.

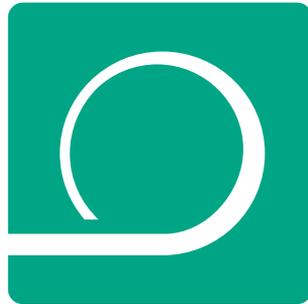
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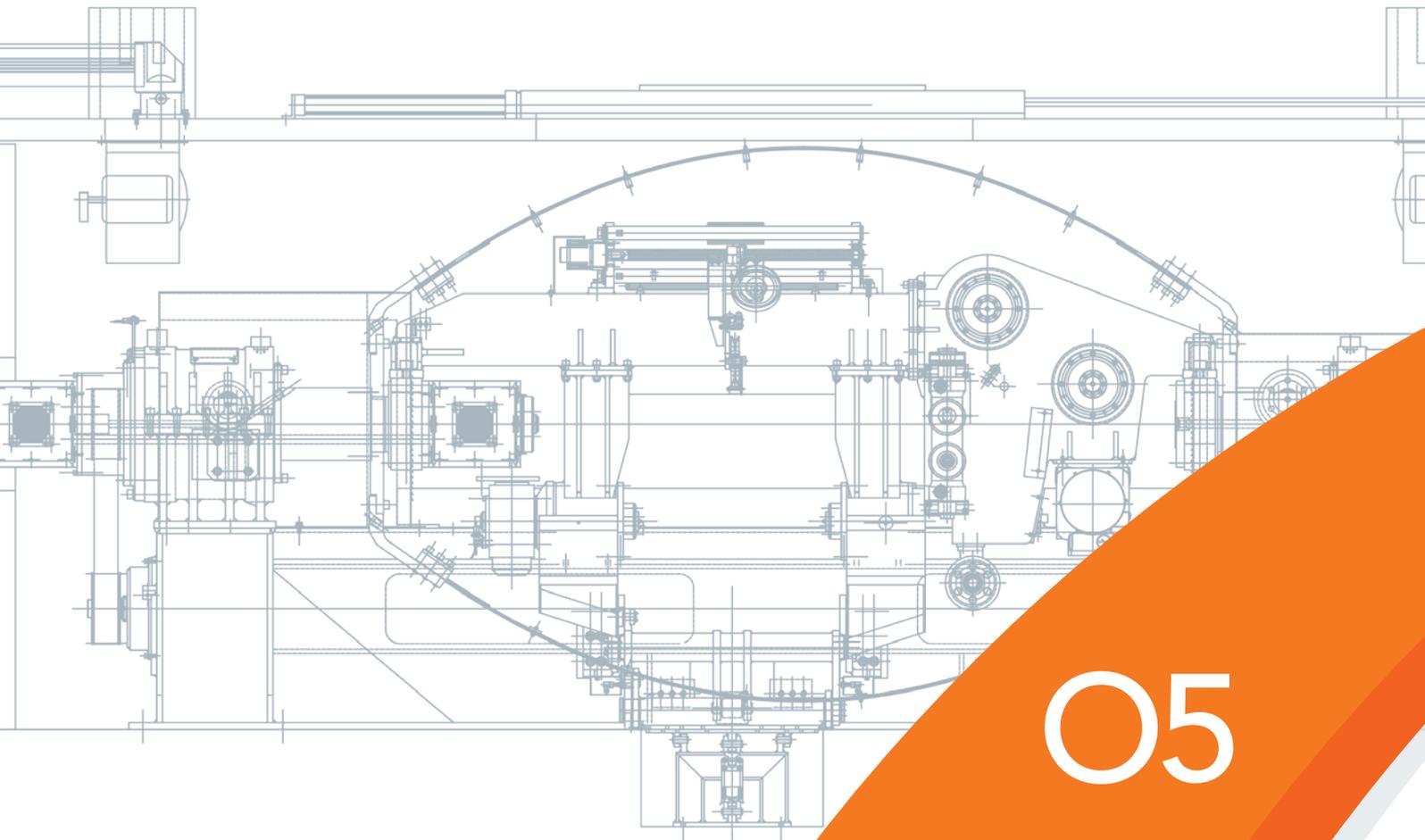




EURODRAW
WIRE EQUIPMENT

ROPE PRODUCTION EQUIPMENT

STRANDING, BUNCHING AND CABLING MACHINES FOR PRODUCTION OF
CORDS, CABLES AND WIRE ROPE



05

05.01 QT3 STRANDING MACHINES

05.02 DTU BUNCHING MACHINES

05.03 DTSR BUNCHING MACHINES

05.04 DTAR CABLING MACHINES

05.05 DT6 BUNCHER MACHINES

05.06 CTR TUBULAR STRANDERS AND CLOSERS

05.07 CLR SKIP STRANDERS

05.08 CONTROL CABLE WRAPPING LINES

05.09 KNOW HOW, AFTER SALES SERVICE AND SPARE PARTS



QT3 STRANDING MACHINES

The QT3 stranding machine is designed to take a number of steel filaments from spools and form them into a cable by using the double twist principle twice with the in-out-in system, to produce a final product or a semi-finished product for subsequent operations. The machine produces high tensile strength strands composed of two to four filaments with diameters ranging from 0.15 to 0.40 mm, in constructions with S or Z lay direction. The machine is simple and functional and noise and maintenance problems are reduced to a minimum by, among other things: the use of high quality components accurately assembled; the equilibrium of the rotating groups which are dynamically balanced at high speeds; and insulation of the machine structure itself with soundproofing material.

The machine is composed of two units and, as a matter of fact, each of them is a complete stranding unit. They are assembled on the same structure. The internal pay-off arrangement consists of a cradle with flywheels and three vertical axis spool holders, and finger rolls to guide the filaments. The flywheel shafts are driven by the motor. The external pay-off can accommodate one vertical axis spool holder mounted on a block attached to the machine frame. Finger rolls and pulleys guide the external filament to the center of the inlet bushing of the rotating shaft.

Inside the cradle, rolls and pulleys are mounted to guide the external filaments according to the out-in-out system. Correct wire unwinding tension is maintained by a gravity braking system, which assures even winding off and smooth braking. The system is based on the ratio between the weight of the spool and the spool holder, the filament unwinding diameter and the diameter of the friction ring. Once regulated, this system requires no further adjustments and no maintenance and, moreover, it has a very long working life. The partially formed strand (first double-twist) passes into the rotating take-up unit (second double-twist). This consists of a cradle which is mounted between the stranding flywheels and holds the double-grooved haul-off capstan, overtwister, wire straightener, traverse mechanism and take-up spool support. The cord advances by means of the capstan through the overtwister and wire straightener and is wound on the spool. The traverse mechanism runs on a double-cross-threaded screw and is designed to assure perfect winding of the strand.

The traverse is driven by the take-up spool shaft, so the traverse lay is also constant as the spool fills up. When changing from one spool type to another, it is sufficient to substitute the traverse screw with a very simple operator intervention. The rotating pay-off unit and the take-up unit are driven

by AC motors and they are electronically controlled to operate in synchronization. The take-up motor is the master. The direction of lay of each unit can be chosen, right or left, depending on needs, simply by adjusting switches located on the operator control station.

The housing is closed with doors that have thick glass viewing windows. When the doors are open, the operator has easy access to the inside. The doors are electrically interlocked to prevent running of the machine when they are open or opening when the machine is running. The operator control station is located above the take-up unit. It includes keyboard with a liquid crystal display to visualize the working parameters, such as rotating speed, lay length, spool length, etc. The control station also includes a series of pushbuttons for execution of the normal commands and signal lights. Air is circulated inside the sound-absorbing cabinet by a fan which draws air in from outside. The electrical equipment is contained in a cabinet mounted on one side of the take-up unit and is easily accessible. The electrical equipment is constructed in accordance with IEC standards.

Machine foundations are not necessary.

DTU BUNCHING MACHINES

The DTU produces S or Z lay strand or rope constructions on the basis of the double-twist principle, so that at every revolution of the flywheels the cord or cable is twisted two times. Some models are specifically destined for the production of strands that are then used for complex cord or rope constructions.

DTU bunching machines are composed of separate modular units, including a filament pay-off unit, an external, preforming twisting unit (when necessary) and a take-up unit. The external twister and the take-up are enclosed in soundproof covers, to reduce noise to a minimum.

The take-up unit consists of a cradle mounted between two flywheels that create the double twist. A haul-off capstan group, overtwister, wire straightener, traverse mechanism and take-up spool support are mounted on the cradle.

The double-deck haul-off capstan consists of two coaxial rings, one idle and the other motorized. The idle capstan includes a mechanical clutch. The motorized capstan is driven by the main take-up motor or by a separate motor, depending on the dimensions of the machine; and power is transmitted by a reduction gear. This system assures perfect stabilization of the cord by maintaining constant tension on it

as it advances by means of the double-deck capstan through the overtwister and wire straightener and is wound on the spool.

Together with other advanced technological and construction details, this results in a cord formation that is free of waves, warps and residual torsions. The great flexibility to adjust the various machine components allows the construction of cord constructions with different characteristics depending on the customer's needs.

The capstan is mechanically connected to the flywheel shaft through a reduction gear that includes a pair of external toothed pinions, which are easily interchangeable in order to achieve the desired lay length. The direction of the lay (S or Z) is changed by adjusting the gear wheel and reversing the motor phases by means of a suitable commutator.

The overtwister that stabilizes the torsions is driven by the reduction gear through a series of interchangeable toothed pulleys and toothed belts. The pulleys can be changed quickly to adjust the rotating speed depending on the type of cord, lay and so on.

The cradle structures are available with different characteristics depending on the size of the spools. On machines suitable

for DIN 255 - 315 - 400 mm and B80 take-up spools, the spool axis is vertical and the spool is driven by the reduction gear through an adjustable clutch.

On machines suitable for take-up spools ranging from 560 to 900 mm, the cradle is a portal type with the horizontal spool axis parallel to the machine axis. In this case, the spool is supported by pneumatic tailstocks and is driven by its own motor. These bigger machine models are equipped with a lifting platform for spool loading and unloading.

The design of the flywheel also varies, depending on the size of the cord and the working material. The flywheels can be bell-shaped without transmission pulleys (DTU version), or with specially designed guide pulleys that facilitate passage of the torsions, suitable for zinc-plated or stainless steel wire (DTUR version). Both types foresee a free catenary curve. For particular uses, such as machines for production of cord with high flexibility or with flexible shaft or low resistance wires, the flywheels can be equipped with bows designed to contain the catenary curve (DTUF version).

The layplate consists of a metal ring with as many equidistant holes and, if necessary, wireguide pulleys as there are filaments.

The core passes through the middle of the layplate (when foreseen).

From the layplate the filaments converge on a closing die where formation of the cord takes place. The distance between the closing die and the layplate is adjustable to obtain the best cord formation.

The external twister serves to preform the cord before it enters the double-twist take-up. This twister is optional. However it is important in case of complex cord constructions and/or Unilay cords with many wires in order to recall the exact length necessary to place a particular wire in the finished product.

Moreover, because the external twister speed can be varied in relation to the take-up speed, constructions with many different characteristics can be produced, to meet all manufacturing requirements.

The twister consists of a rotor with guide pulleys splined inside so that the cord is wound around them in its path from the closing die to the take-up.

The unit is driven by an independent motor, which is electronically synchronized with the main motor of the take-up unit. Upstream of the layplate and closing die is the pay-off stand, on which are mounted

a certain number of spool supports and corresponding wireguide rollers depending on production requirements.

The pay-off braking system provides even braking of the spools, thus assuring smooth winding off which helps to avoid breakage of the wires or strand caused by variations in tension. In the construction of cords using the double-twist cabling principle, this is of fundamental importance.

In particular, tension on the pay-off wires must be uniform, constant and controlled. We have dedicated a great deal of attention to this problem and have designed a series of pay-offs for a wide variety of spools.

These assure constant tension that is controlled from full to empty spool and it is adjustable depending on the diameter and type of spool to be used and can be summarized as follows.

Horizontal axis with mechanical dancer arm and band brake

The spool is mounted on a horizontal axis shaft with a spool locking system. The shaft rotates on bearings and it is integral to a drum with a band brake.

The torque generated by the brake is controlled by a mechanical dancer arm loaded by an adjustable spring.

Vertical axis with mechanical dancer arm and band brake

The spool is mounted on a vertical axis shaft that rotates on bearings and it is integral to a drum with a band brake. Here too, the torque generated by the brake is controlled by a mechanical dancer arm loaded by an adjustable spring. In both cases, each pay-off is equipped with hardened steel guide rolls to direct the wire to the layplate.

The electrical cabinet is positioned behind the external twister. The main operator control station is mounted on the cabinet, facing the operator. The electrical equipment in the cabinet is easily accessible by opening a door located on the back. The control station includes a liquid crystal keypad display connected to a microprocessor, with which all the machine settings are made (motor speed, metercounter length, direction of bunching lay, etc.). The electrical equipment is constructed in accordance with IEC Standards.

All rotating parts are dynamically balanced and the structures are designed to eliminate vibrations and attenuate noise. With the soundproof covers, this makes machine operation smooth and silent, even at the highest rotating speeds.

Machine foundations are not necessary.





DTSR BUNCHING MACHINES

The DTSR is suitable for the production of cord and cable constructions using the double-twist cabling system. It has been specifically designed to eliminate certain intermediate stranding phases by providing for construction and/or twisting of the core strand at the same time as the cord or cable.

The DTSR produces SS or SZ lay constructions on the basis of the double-twist principle, so that at every revolution of the flywheels the cord or cable is twisted two times.

The machine is composed of modular units that are separate from one another, more precisely: a core pay-off unit, a filament pay-off unit, an external twisting unit and a take-up unit. The core pay-off, external twister and take-up units are enclosed in soundproof covers, to reduce noise to a minimum.

Among special features of the DTSR machine is the design of the take-up that permits different combinations of reduction gears/haul-off capstans with different take-up cradles and different twisting ratios, to satisfy a wide range of production requirements both as regards the diameter and quality of the wires as well as the size of the take-up spool.

Bell-shaped flywheels are used, or flywheels having pulleys with a special form and inclination can be used for zinc-plated and/or stainless steel wire. The angle of inclination is adjustable in respect to the path of the cord, to facilitate passage of the torsions, resulting in a product with excellent formation and a smooth surface.

The first pay-off is a rotating unit, for construction of the core strand, or as back twister for a pre-stranded core. The vertical spool supports are mounted on a rotating cradle between the flywheels, which twist the wires or strand. Following the core pay-off unit is the "static" filament pay-off stand on which are mounted a certain number of vertical spool supports and corresponding wireguide rollers depending on production requirements.

On both the rotating core pay-off and the static filament pay-off, constant pay-off tension is maintained by a braking system that requires no further regulation once it has been defined for each working cycle. This braking system provides even braking of the spools, thus assuring smooth winding off which helps to avoid breakage of the wires or strand caused by variations in tension. In the construction of cords using the double-twist cabling principle, this is of fundamental importance. In particular, tension on the pay-off wires

must be uniform, constant and controlled. We have dedicated a great deal of attention to this problem and have designed a series of pay-offs for a wide variety of spools. Besides satisfying the most advanced technological requirements, these pay-offs need practically no maintenance whatsoever. Furthermore, our pay-off tensioning system differs totally from that of other manufacturers, who use mechanical friction brakes controlled with a dancer arm.

The pay-off spools are braked using a special gravity system which is based on the simple principle that the braking torque depends on the total weight of the spool, the spool support and the wire: less weight means less torque; which is equivalent to lower pay-off diameter.

To simplify loading and unloading with a hoist or other similar handling systems, it should be noted that the spools are normally mounted on their vertical axis. This also means that tailstocks, shafts and spool locking systems are not necessary.

The number and type of pay-offs is up to the customer, depending on the cord to be manufactured and the spools to be used for the filament wires. It is also possible to combine different-sized pay-offs, in particular for the production of Seale

or Filler type ropes. To assure precise equilibrium of the core and filament pay-off pull, a specially designed "equalizer group" is used, with wireguide rolls and clutch-operated capstans around which the wires and core strand are wound.

From the pay-offs and pull equalizer group, the wires and core strand pass through a layplate and closing die, which are mounted on the external twisting unit. The external twister preforms the cord or rope construction with a lay close to the final preset lay.

The partially formed cord, consisting of the core strand and the filaments, passes into the take-up unit, which consists of a cradle mounted between the cabling flywheels, on a working structure that is completely enclosed in a sound-absorbing cabinet.

The rotating pay-off unit, external twister and take-up unit are driven by AC motors, with belt and pulley transmissions. The pay-off and twisting group motors are electronically controlled to operate in synchronization with the take-up motor. Once the speed ratio has been set among the various units, it remains constant. Each unit automatically adjusts to eventual speed changes of the main, take-up motor. To vary the length of the bunching lay, it is sufficient to substitute two toothed pinions

(extra pairs are optional). The direction of the lay (S or Z) is changed by adjusting the gear wheel and reversing the motor phases. To vary the revolutions of the overtwiner inside the take-up unit, it is necessary to substitute the overtwiner transmission pulleys.

The electrical cabinet is positioned behind the external twister. The main operator control station is mounted on the cabinet, facing the operator. The electrical equipment in the cabinet is easily accessible by opening a door located on the back. The control station includes a liquid crystal keypad display connected to a microprocessor, with which all the machine settings are made (motor speed, metercounter length, direction of bunching lay, etc.).

Machine foundations are not necessary.

DTAR CABLING MACHINES

The DTAR cabling machine has been designed for the production of multi-strand high tensile strength ropes using the indirect cabling method. With Indirect cabling the wires or simple strands are twisted around their own axes (twisting of the wires and double-twisting of the strands), and these twists become double-twists around the axis of the cord. The unique feature of this machine is thus the application of double-twisting in the concept of indirect cabling (back twisting).

The latest versions of the DTA cabling machine incorporate certain technological innovations, which makes it simpler and more flexible than ever. Accurately assembled, high quality components help to reduce maintenance.

Carefully balanced rotating groups make it possible to operate the machine at high speeds; and the noise level has been further reduced by the use of anti-vibration supports and specially designed noise-insulating machine structures and covers.

The machine is modular, with separate rotating pay-off and take-up units, as well as a stand for the layplate and closing die and an external twister.

The rotating strand pay-off consists of a number of vertical spool supports, each

one mounted on an oscillating cradle between two flywheels, which twist the strands as they are paid off. These spool groups are arranged in groups of four and, depending on the type of cord to be manufactured, the machine is supplied with two or more groups.

The core pay-off is located on a separate stand upstream of the filament strand pay-offs.

The speeds of the core pay-off and the strand pay-offs can be regulated independently. Each pay-off spool is braked separately and each strand also passes through a strand tension detection device.

This assures smooth winding off and helps to avoid wire breakage or defects in the formation of the cord or rope.

From the pay-offs, the core and filament strands pass through a layplate and closing die, which are located on an intermediate stand that also houses the external double-twisting groups to form and stabilize the cord construction. The first twisting group preforms the construction with a lay close to the final preset lay. The second group stabilizes the construction.

The partially formed cord then passes into the take-up unit, which consists of a cradle

mounted between the cabling flywheels, on a working structure that is also completely enclosed in a sound-absorbing cabinet.

On the take-up cradle are mounted the haul-off capstan, traverse mechanism, take-up spool support, etc. The rope advances by means of a double-deck capstan through the overtwister and straightening group, and is wound on the spool.

The rotating pay-offs, external twisting groups and take-up unit are driven by AC motors, with belt and pulley transmissions. The pay-off and twisting group motors are electronically controlled to operate in synchronization with the take-up motor. Once the speed ratio has been set among the various units, it remains constant.

Each unit automatically adjusts to eventual speed changes of the main, take-up motor.

To vary the length of the cabling lay, it is sufficient to substitute two toothed pinions. The direction of the lay (S or Z) is changed by adjusting the gear wheel and reversing the motor phases.

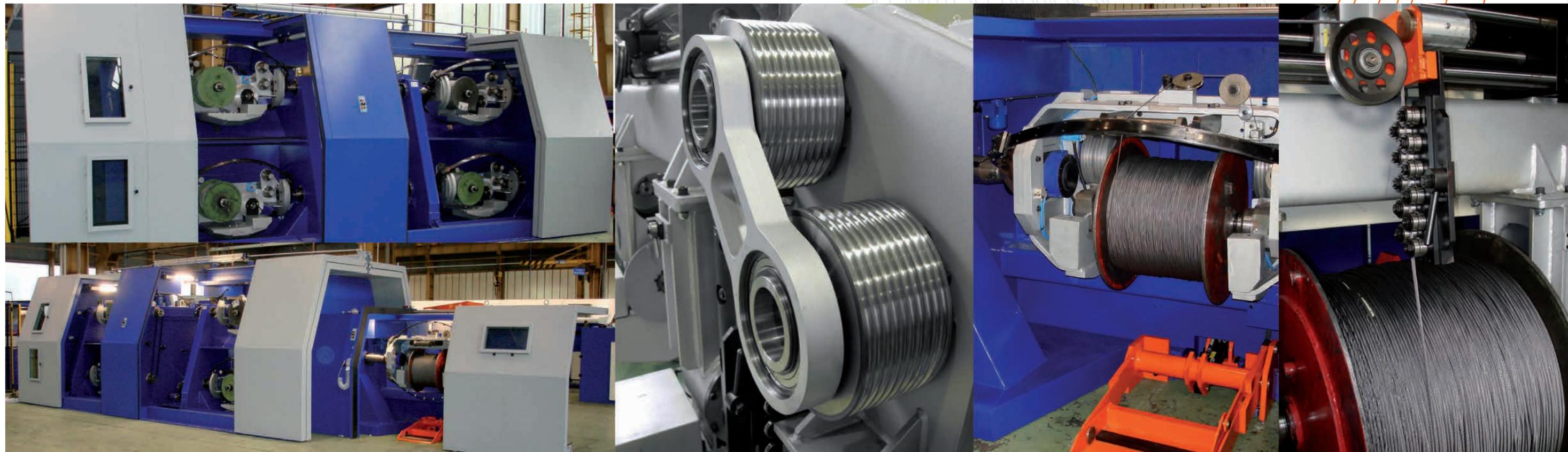
The electrical cabinet is positioned behind the external twister. The main operator control station is mounted on the cabinet, facing the operator. The electrical equipment in the cabinet is easily

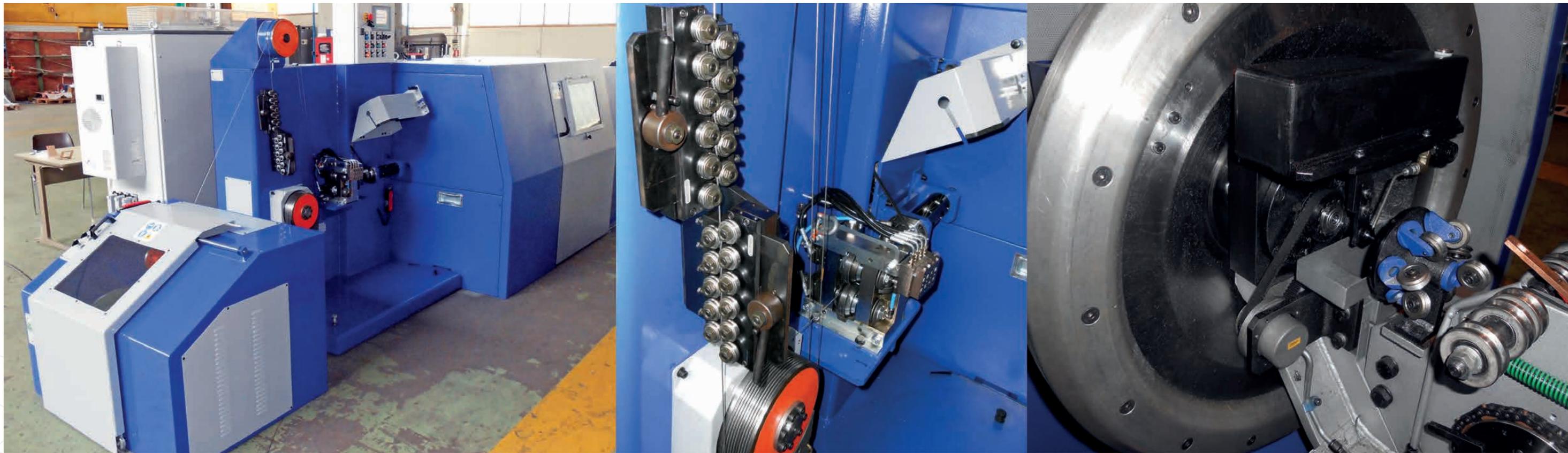
accessible by opening a door located on the back.

The control station includes a liquid crystal keypad display connected to a microprocessor, with which all the machine settings are made (motor speed, metercounter length, direction of bunching lay, etc.). The control station also includes all the buttons and signal lights to operate the machine. The preset metercounters control the length of cord wound on the take-up spool, as well as the wires and strand unwound from the pay-off spools. When the preset cord length is reached, or the pay-off metercounters register zero meters, the machine stops automatically.

Wire break contacts signal eventual wire or strand breaks both before and after formation of the cord, and automatically cause the machine to stop.

Machine foundations are not necessary.





DT6 BUNCHER MACHINES

The DT6 buncher is designed to take a number of steel wire filaments from spools and form them into a cable by using the double twist principle to produce a final or a semi-finished product.

The machine produces high tensile strength strands composed by 7 filaments with wire diameters ranging from 0.20 to 1.0 mm in construction with S or Z lay direction.

The machine is simple and functional, with little requirements of maintenance and with very low noise level. The use of high quality components accurately assembled, the precision balanced rotating groups and the fully enclosed guards equipped with thick soundproofing materials make the machine extremely silent.

The machine particularity is that it is a In- Out type machine which for the type of products it is intended to manufacture gives several advantages compared to equivalent tubular type machines.

The machine is composed of three distinct units. One unit is the payoff in which all the 7 spools are mounted, one is the overtwister and pulling capstan which are independently motorized and infinitely adjustable in speed, and the last one is the take-up.

The payoff arrangement consists of a cradle with flywheels and 7 horizontal axis spool holders each equipped with their own adjustable brake and sensor arm for the wire tension regulation. The cradle houses a system for lubricating the wires at the closing die entry, with a tank for fresh oil and one to collect the used oil.

The tension control system for each spool is very precise and ensures a constant unwinding tension from full to empty spool at any working speed. Wire break detection in the cradle is electronically controlled and the signal transmission is wireless.

The DT6 machine is available in several spool payoff sizes, the smallest one is the DT6-250 that can accept spools DIN 250, the intermediate one is the DT6-315, that can take spools DIN 315 and the largest one is the DT6-400 that can take spools up to DIN 400 with the longest running time.

The rotating payoff is motorized by its own AC motor which is electronically synchronized with the pulling capstan motor, the overtwister motor and the take-up motor.

The formed strand passes through the flywheels and then is directed to the overtwister which tightly closes the strand. The overtwister is independently motorized

and can be adjusted to speeds ranging from 70% to 140% of the machine speed.

Between the overtwister and the pulling capstan a space is available to install a rolling cassette or a die to produce compacted strands. The pulling capstan is robustly designed to be able to sustain effortlessly the additional torque required by the compacting process.

The pulling capstan is independently motorized, allowing the setting of the lay length without any need to change gears but just by selecting the desired lay length setting on the operator console.

The strand is then passed through a killing rollers assembly to complete the formation of the strand before being wound on the spool.

The spooler is a separate unit of the machine, therefore it is very easy to control that the spool is correctly wound and the traverse system is very easy to adjust. The spooler can be designed to take several spool types to suit customer requirements.

The performances of these machines are unmatched and incomparable with equivalent spool size tubular stranders and can be summarized as follows:

- Production speeds that are over 100% higher than equivalent spool size tubular stranders
- Much better tension control on the wires than on a tubular strander
- No foundations required
- Much more compact machine
- Easier to load as there is no tube around the cradle, possibility to automate the spool loading
- Safer machine and very low noise emissions
- All adjustments are electronic through touch screen, no mechanical intervention

CTR TUBULAR STRANDERS AND CLOSERS

The tubular strander is designed for the production of wire ropes with different diameters and is composed of: an external spool pay-off, a rotor with the spool cradles, a closing die, a double haul-off capstan and a take-up.

The external pay-off spool is mounted on tailstocks connected to a mechanical brake controlled by a dancer arm to maintain correct tension on the wire.

The tubular elements of the rotor are made of high quality, stress-relieved carbon steel. Each tube is balanced statically and dynamically before assembly. A micrometric device allows easy alignment of the rotor during installation and after maintenance operations.

The rotor rotates on a series of large-sized, heavy duty bearings that are mounted on normalized, welded steel stands. The rigid construction of the stands assures efficient dampening of any vibrations. The bearings are lubricated through a centralized system, with a positive displacement pump that delivers the exact required volume of lubricant to each bearing.

The bearings are housed in very thick, high precision rings that are bolted to the corresponding rotor flange. This design makes it easy to disassemble them for repair or substitution.

The rotor houses all the spool cradles. The number of cradles depends on the construction of the rope and can range from 3 to 48 units.

The spools rotate on tailstocks that are also mounted on ball bearings. One is stationary and the other is moveable to load and unload the spool. The moveable tailstock is pneumatically operated with manual controls. A safety device prevents accidental opening of the tailstocks during machine operation.

The rotor is driven by a speed-controlled AC motor. Power is transmitted with pulleys and belts. The rotor is braked with pneumatically controlled disk brakes.

Wire tension is adjusted for each spool with shoe brakes. The adjustment is manual and the tension is kept constant with a sensor.

The wire path is designed to avoid scratching or other damage to the filaments. They pass through polished hard metal bushings.

The rotor is enclosed in a soundproof cabinet that is separate from the machine structure itself. It is accessible through doors that can be opened only when the machine is stopped. Thick safety glass inspection windows and internal lights

allow inspection when the machine is running. Internal ventilation is also foreseen.

Care has been taken to prevent accidents to the machine and/or operator. Besides the other protection and safety devices, in particular the rotor includes: a pressure switch to control bearing lubricant pressure, a thermostat to control bearing temperature, wire break detectors in the path of the filaments, soundproof cabinet door interlocks.

The closing die is located after the rotor and consists of a welded steel stand on which is mounted the die itself.

The position of the die on the horizontal axis can be adjusted longitudinally with a handwheel.

For production of closed cords, a preformer can be installed upstream of the closing die and a wire straightener can be installed downstream (optionals).

The haul-off capstan is designed with two capstan rings having hardened surfaces that assure a long life with reduced maintenance.

The capstan is driven by an AC motor that is electronically synchronized with the rotor motor.

The stranding lays are continuously adjustable and different stranding lays are obtained by setting the two motor speed ratios with the keypad display located on the main operator control station.

The take-up consists of a heavy steel structure on which are mounted the drive components, traverse group and spool tailstocks.

The tailstocks are mounted on shoulders with displacement devices that permit a wide tailstock stroke, with a torque-limiting device to adjust locking pressure on the spool flanges.

The traverse excursion and speed are adjustable depending on the different production requirements.

The take-up is driven by a separate AC motor synchronized with the haul-off capstan drive.

Safety features: Whenever an alarm is activated, the machine either does not start up, or stops with the emergency brake.

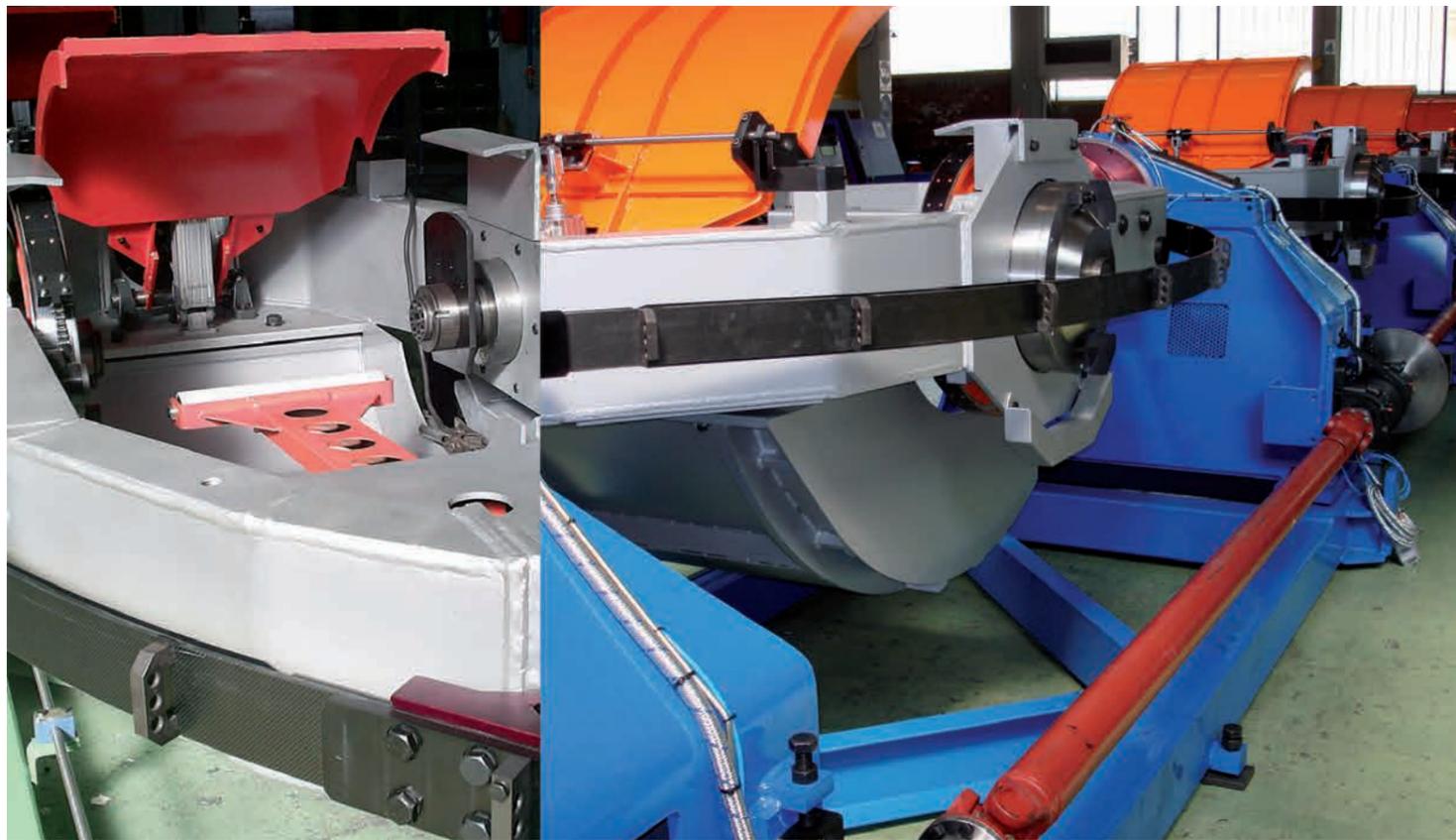
This can occur if the rotor doors or other safety guards are open or opened during operation, if bearing lubrication is faulty, if any of the bearings overheat or in case of wire breakage.

The machine stops normally when the preset rope or a filament length is reached, or when a stop button is pushed.

The electrical controls are contained in a separate cabinet and include the motor drives and electronic control equipment. The main operator control station is mounted on a console installed near the machine.

The main control station includes a liquid crystal keypad display connected to a microprocessor, with which all the machine settings are made (motor speed, metercounter length, direction of stranding lay, etc.). The control station also includes all the buttons and signal lights to operate the machine.





CLR SKIP STRANDERS

The CLR bow or "skip" type strander is suitable for the production of 3 to 7 wire strands. The size and characteristics of the machine model depends on the individual requirements of the customer.

The CLR is also the strander that is coupled with Eurodraw Wire Equipment's PC stranding line for production of concrete reinforcement strands.

Basically, the machine is composed of the following elements: the skip type strander structure with cradles suitable for spools according to customer specifications, a separate postformer, the machine drives, transmission, electrical and electronic equipment and various accessories.

The bow strander is the equivalent of a tubular strander in all of its applications. The heavy steel tube rotating on rollers or large bearings is replaced by a pair of bows or flyers, one pair for each cradle which, due to the low mass and high rigidity of the bows, rotates at speeds higher than an equivalent tubular machine.

In addition, due to the sinuous path of the wire through the machine and the use of special wireguide bushes on the bows, it is possible to obtain a finished product equal to or better than one made on a tubular strander.

The machine can produce both "S" and "Z" lay strands, with adjustable lay length. The bow strander assembly is a welded and stress-relieved structure equipped with micrometric screws to allow easy and precise alignment of the machine.

Inside the structure there are a number of cradles, one for each spool. The cradles are welded, stress-relieved steel structures that oscillate on bearings in cradle supports mounted at the ends of the hollow rotor shafts. Photocells monitor the movement of the cradles and signal any anomalies.

On each cradle, the spool is suspended between pneumatically operated tailstocks that hold it in place. A band brake is mounted on each tailstock.

The brakes are designed to maintain constant tension on the wire as it is being paid off. This is done by means of a sensor arm that detects the diameter of the spool as the wire is unwinding and the torque varies accordingly.

The bows are also attached to the rotor shafts, by means of clamps mounted at the ends. The bows are equipped with bushings to guide the wires. This system assures smooth running of the wire along the bows without unwanted friction, and preserves the quality of the wire surface.

The wires, guided by the bushings along the path formed by the bows, pass through the center of each rotor so that tension on the wires is greatly reduced by the balanced centrifugal force.

All the bearings have grease nipples, for easy lubrication. The rotor bearings are automatically grease lubricated with one or more centralized pumps. The temperature of the bearings is measured with thermostats. If the temperature exceeds the preset level, the stranding machine stops.

The shafts are driven by belts and pulleys connected to a transmission shaft. The transmission shaft is divided into sections connected by universal joints, to simplify dismantling for maintenance or for substitution of the drive belts.

The transmission shaft is braked with disk brakes that are activated electro-pneumatically and a dual braking system is provided, for normal and emergency braking.

The internal working structure is completely enclosed in a sound absorbing cover, to reduce noise to a minimum. The cover is equipped with a ventilation system to maintain the temperature inside the machine within acceptable limits.

The postformer is made of normalized welded steel and consists of a closing die mounted on a moveable housing that can be adjusted longitudinally with a handwheel.

The machine is driven by an AC. motor controlled by a frequency inverter. The electrical and electronic controls are contained in a sturdy metal cabinet.

The main machine functions are electronically controlled and evidenced by LEDs located on an operator control station at the front of the cabinet.

The controls include machine start, stop, jogging pushbuttons, signal and alarm lights etc. for the electrical and pneumatic systems, a preset metercounter, and a wire break detector system, with identification of the cradle section where the wire has broken.

CONTROL CABLE WRAPPING LINES

The line is specifically designed for the production of control cables for automotive applications. It includes elements both of a PC strand and a PC wire production line and is composed of: a rotating spool pay-off for the wrapping wire, a rotating spool pay-off for the control cable, a haul-off capstan, a pinch wheel pulling unit and a basket coiler.

The wrapping wire coming from the wrap wire pay-off is passed through the rotating bow pay-off that houses the control cable. The cable is paid off though the shaft of the cradle. The bows rotate around the cable spool and a special device winds the wrapping wire on the center cable at the desired pitch.

This makes it possible to use large spools for the wrapping wire and for the cable to be wrapped, so that downtime can be considerably reduced. In addition, the cable can be double-wrapped with textile at the same time, by adding a second wrapping unit in-line with the first one.

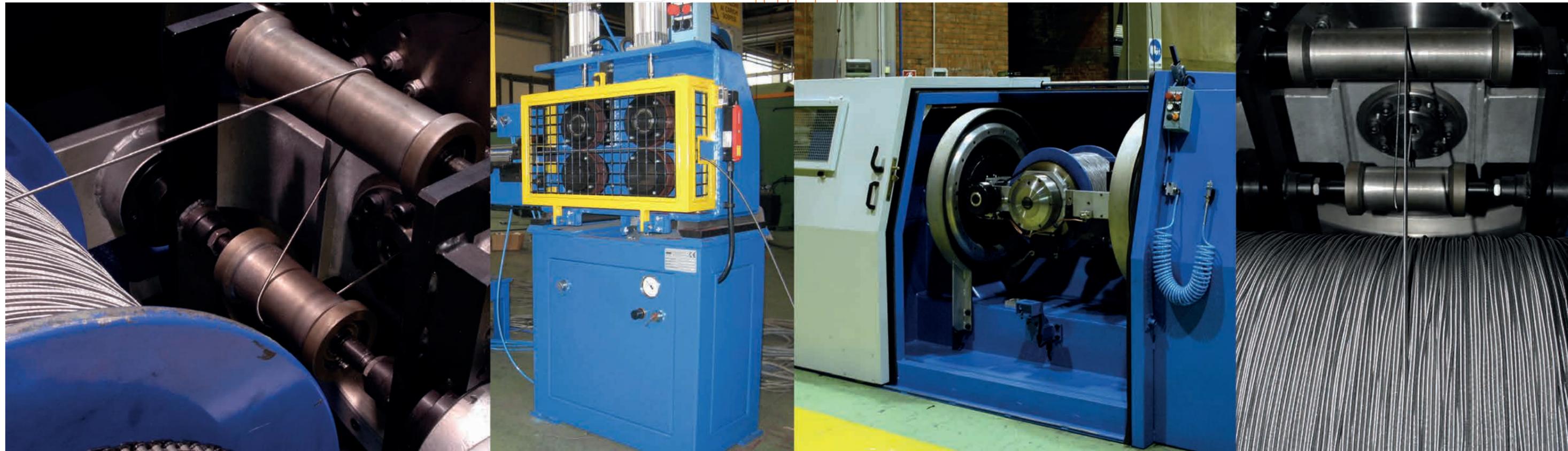
A special device controls the pitch of the wrapped wire so that it is always within the desired specification.

The haul-off capstan pulls the wrapped cable out of the bow pay-off.

The pinch wheel puts the cable under tension and at the same time directs it to the basket coiler.

The final product is generally used as a control cable/screw for operating automotive components such as electrical roofs or power windows, but also in other applications where it is necessary to use special flexible shafts cables.

With this line, control cables can be manufactured in a one-step high-speed operation with substantially lower manufacturing costs compared to traditional methods. In the past, the same product was made in three steps and at much lower speeds.



KNOW HOW, AFTER SALES SERVICE AND SPARE PARTS

Eurodraw Wire Equipment began over 35 years ago to design and build double-twist machines for tire steel cord production. From this experience the product range expanded to machines for fine strands for other automotive applications and then further to machines for the production of ropes for elevators, cranes and for the mining industry, and others.

The stranders manufactured by Eurodraw Wire Equipment have been designed taking into consideration the feedback received from our customers during the past 35 years. This invaluable experience allows Eurodraw to develop new machines for specific rope constructions such as flexible shaft, wrapped ropes, high flexibility ropes.

Eurodraw's broad experience in setting up wire production plants allows us to offer complete turnkey wire rope production plants, from wire rod to finished rope, including intermediate patenting, electro- or hot dip galvanizing and wet or dry drawing. Our technology department can provide all the necessary know-how for production of all the most popular types of ropes and can assist in the development of special ropes.

Our after sales service staff is fully prepared to assist our customers not only to solve any type of problem pertaining to the equipment, but also to help in the development of new products. Eurodraw Wire Equipment always has a double-twist machine in-house that is used for test and development purposes. This machine is used by to help customers test new products, make trial runs and test new developments that can later be implemented on the production equipment.

The after sales service staff works closely with our spare parts department. This means that in case of urgent spare parts requirements everyone works as a team to solve the emergency as quickly as possible.

Eurodraw's sophisticated software systems are capable of tracing the availability of a spare part in a matter of minutes. If the part is not available, the production order is immediately released to our production department or to our external sourcing department.

Eurodraw Wire Equipment can supply spares from the first to the latest machines ever built. If the spares are commercial components not available any longer Eurodraw will solve the problem by selecting alternative components that are compatible with the original function.



KEY FACTS ABOUT EURODRAW WIRE EQUIPMENT

- 1974** Established as GCR Engineering SpA with the scope of designing and building equipment for the production of steel cord.
- 1982** Acquired the company MILL, specialized in the production of wire drawing machines.
- 1988** Established the company Eurodraw Srl for the production of straight through wire drawing machines.
- 1990** Acquired the company OZ Cams and merged MILL and OZ Cams into Eurodraw. GCR Engineering and Eurodraw work as a team for the supply of several turnkey steel cord plants in Europe, Asia, USA and South Africa; as well as supplying a wide range of equipment for different applications throughout the world.
- 1999** GCR Engineering is awarded ISO 9001 quality certification, further requalified in 2002 to VISION 2000 certification and constantly renewed till today.
- 2002** GCR Engineering and Eurodraw Srl move to new premises. GCR Engineering and Eurodraw Srl merge into GCR Eurodraw to become one of the largest wire machinery manufacturers and with the widest production program.
- 2005** GCR Eurodraw opens a branch operation in China to consolidate its market position in the People's Republic of China.
- 2006** GCR Eurodraw is awarded construction of the largest PC strand operation in the Middle East, with a capacity of 100,000 tons/year.
- 2007** GCR Eurodraw, with EVG of Austria, purchases the company DEM located in Udine; with this acquisition the production program of the group also covers rolling cassettes and wire profile machinery.

GCR Eurodraw purchases Comapac Wire Machinery Srl located near Lecco, specialized in the production of pay-offs and take-ups, competitive rolling machines and custom-designed wire drawing equipment for special applications.
- 2015** GCR Eurodraw SpA renames itself Eurodraw Wire Equipment Srl.
- 2017** Eurodraw Wire Equipment builds the first tyre steel cord plant in the Middle east and provides know how and technology.
- 2018** Eurodraw Wire Equipment is awarded the contract to build the largest wire rope factory in the Middle east from greenfield.



ROPE PRODUCTION EQUIPMENT



EURODRAW WIRE EQUIPMENT S.r.l.

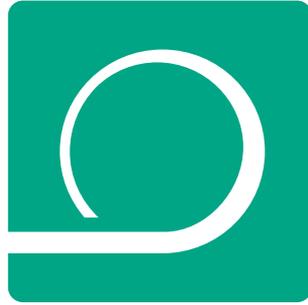
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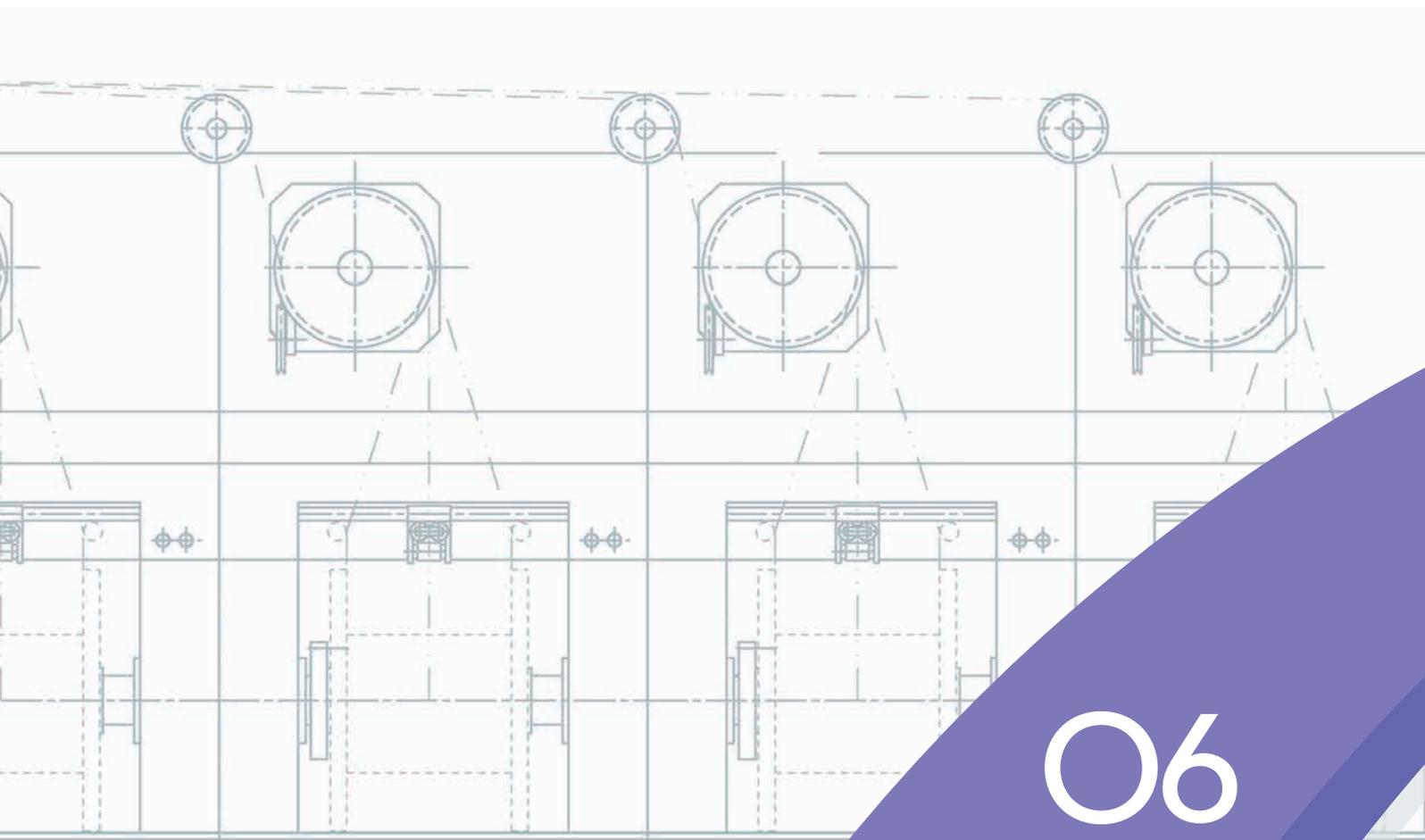




EURODRAW
WIRE EQUIPMENT

COILING AND SPOOLING EQUIPMENT

MULTI-WIRE AND SINGLE-WIRE FOR EVERY APPLICATION



06

06.01 PAY-OFFS AND TAKE-UPS

06.02 SPOOLERS

06.03 COILERS

06.04 ACCESSORIES AND SERVICES

PAY-OFFS AND TAKE-UPS

SBW, ABW

The BW series of horizontal axis spool pay-offs and take-ups are specifically designed for the production of tire bead wire. The pay-off is available in two different versions with motorized spool tailstocks or with a brake and a dancer arm: The motorized version is generally used when the pay-off spools are of large capacity. The take-ups are equipped with a pulling capstan and a special triple wire-straightening unit that is used to ensure perfect straightness of the wire prior to winding it on the spool.

SPM-DB, APM-DB

The PM series of horizontal axis spool pay-offs and take-ups are generally designed for installation with multi-wire patenting and plating lines. The units can be equipped with accumulation blocks, to allow non-stop line operation. In this case, the models are designated SPM-APM/DB. The horizontal axis accumulation blocks are mounted on the frameworks of the pay-offs and take-ups.

In some cases, the pay-offs can be motorized; or they are simply controlled by adjustable brakes, depending on the wire diameter and the spool dimensions. These units are especially suitable for use in factories with space constraints as they are very compact and can be installed side-by-side.

SVR-DN, AVR-DB

The VR series of vertical axis spool pay-offs and take-ups are also designed for installation with multi-wire patenting and plating lines. Here too, the units can be equipped with accumulation blocks for non-stop operation. The pay-offs can be motorized or controlled by adjustable brakes. The take-ups can be equipped for conical winding.

The accumulation blocks are mounted on a separate unit, so if desired the pay-offs can be equipped with two spool positions, so one would be in operation and the other one on stand-by.

SM, BM

The BM unit is used to take up wire at high speed on small spools. The unit is modular so that it can be designed for 5 to 40 spool positions. The traverse system is controlled by a PLC with specific software that always ensures flat winding on the spool without the need to continuously check every spool. The spools are locked on the spool shaft with an exclusive Eurodraw Wire Equipment designed quick locknut.

The SM unit is the pay-off version of the BM unit. It is identical in every aspect, with the exception that on the SM there is no traverse.

SSF, SSFM

These are flyer type pay-offs with two positions. The SSF version is non-motorized and can be used to pay off wire from vertical axis spools or from coils. The unit consists of a frame with a pivoting crossbeam supporting a flyer arm that directs the wire. The crossbeam can be aligned alternately with one or the other spool or coil position, to allow non-stop pay-off without the need of accumulation system.

The SSFM version is particularly suitable for finer wires. It is basically the same as the SSF but is equipped with a small motorized capstan that pulls the wire ahead and directs it to the next line unit, to maintain smooth and constant wire tension.

An SSF version is also available for use in-line-with a wire drawing machine. In this case, the unit is equipped with a series of accumulation pulleys that act as a snarl switch and stop the line in case of problems.

SPOOLERS

BOM, BOS

These are horizontal axis spoolers designed for operation in-line with wire drawing machines. A full range of sizes is available depending on the wire diameter and the spool size. The BOM version is equipped with a spool lifter so that different-sized spools can be used on the same unit. The traverse system can be equipped with a conical winding system or with an automated winding control system that ensures flat and perfect winding without operator assistance.

BOM/T, BOS/T

These are horizontal axis traversing spoolers designed for use with wire drawing machines or wire profiling machines. A full range of sizes is available depending on the wire diameter and the spool size. The BOM/T version is equipped with a spool lifter so that different-sized spools can be used on the same unit. On these machines, to prevent deflection, the wire always remains in the same place and the spools do the traversing. To this end, the spool support apparatus is mounted on wheels and traversing is performed by a geared motor and screw mechanism.

BOM/2, BOS/2

These are double spoolers that consist of two horizontal units placed side by side and equipped with a common traverse mechanism. When one spool is full, the traverse carriage is moved to the other position, to start a new spool.

BVS, BVS/2

These are vertical axis spoolers suitable for large diameter spools. The traverse system can be equipped with a conical winding system and is independently motorized.

The BVS/2 model has two fully functional spool positions and one traverse mechanism. When one spool is full, the traverse carriage is moved to the other position, to start a new spool.

BHW

The BHW spoolers have been designed for use with wet drawing machines and are available in two versions, with horizontal and vertical spool axis. The horizontal axis model is suitable for small spools up to 460 mm; the vertical axis model is suitable for spools with maximum capacity of up to 15 kg, to allow the operator to load and remove the spools manually. The horizontal version is equipped with a magazine that can store empty spools and full spools so that loading and unloading is made very easy.

COILERS

The M series of coilers has been designed for installation with multi-wire processing lines.

MSV

MSV units are static coilers that have been designed to take up low carbon galvanized wire in coils. They are available with many capstans sizes from 400 to 760 mm depending on the wire diameter and the package required. One version of the MSV coiler can be equipped with an additional pulling capstan and diebox in order to make a skin pass on the wire prior to coiling. If pattern-layer winding is required, the coilers are provided with tilted, rotating turntables for the coil carriers. MSV coilers are available with a flat capstan or V-grooved capstan.

MRV

MRV units are live coilers that have been designed to coil patented or galvanized high carbon and stainless steel wire. These units can be equipped with a diebox for skin passing the wire prior to coiling. In case of pattern-layer winding, special coil carrier platforms are used to form pattern-layer look coils. The units are equipped with arms that accumulate the turns of wire during spool changeover, to allow non-stop line operation.

MLT

MLT units are large diameter live coilers specifically designed for use on oil tempering lines for the production of oil tempered spring wire. These units generally have large diameter capstans and are equipped with pneumatic arms that accumulate the turns of wire during spool changeover, to allow non-stop line operation.

IC Inverted Stripper

The IC inverted stripper is used in combination with a wire drawing machine. This unit is suitable to take up large diameter high carbon wire at slow speeds without twisting it. The working principle is identical to that of a stripper block on a drawing machine with the advantage that this coiler can make packages of up to 3 tons. Speed is limited due to the large rotating mass; however since the unit is designed mainly for large diameter wires, this is not such a big issue.

ROS, ROT

These are horizontal axis static coilers that are designed for use in-line with wire drawing machines or in some cases in-line with a multi-wire plating line. The ROS coiler is the simplest model and is not equipped with a die. In general this unit is suitable for low carbon wire. The ROT unit is equipped with a water-cooled die and a water-cooled capstan and is suitable to draw down and take up high carbon steel wire at high speeds. Both coilers are equipped with a pattern-layer coiling system to obtain well laid packages. The ROS and ROT units are available with capstan sizes up to 1000 mm for winding very large diameter wires.

RVS, RVT

The RVS and RVT are vertical axis static coilers that are very similar to the ROS and ROT models, except for the vertical axis capstans. The capstan is kept static with a series of satellite gears. Here too, the RVS unit is not equipped with a die, whereas the RVT is equipped with a die and a water-cooled capstan and is particularly suitable for the production of mattress spring wire.

Custom-made Equipment

Eurodraw Wire Equipment SRL is not only a machinery manufacturer, but also an engineering company with the capability to design custom-made equipment for special applications. Our engineering department has in the past developed special units for strips, shaped wire and much more.



ACCESSORIES AND SERVICES

ACCESSORIES

All Eurodraw Wire Equipment lines and machines can be supplied with a number of specific accessories either designed and produced by Eurodraw Wire Equipment or made by selected affiliated companies.

Pointers

We produce a complete range of wire pointers suitable for the machines described in this catalogue.

Welders

Eurodraw Wire Equipment can provide wire butt welders suitable for every application, from high performance pressure welders with programmable annealer for high carbon rod for PC strand, to simple low carbon rod and wire welders equipped with grinders and shears.

Spool tilters

Eurodraw Wire Equipment can provide hydraulic spool tilters for every spool size.

Wire drawing accessories

Rotating dies, soap mixers, laser wire diameter gauges, Eurodraw Wire Equipment digital drawing data acquisition and supervision system, PROFIBUS machine-to-cabinet link, disc brakes on every block, wire presser rolls on every block, dustproof machine guards, water flow indicators and many more.

Die re-cutting and laboratory equipment

Through affiliated partners, Eurodraw Wire Equipment can provide all necessary die reworking equipment, as well as laboratory equipment for tensile and torsion testing and chemical analysis of pickling solutions and waste water.

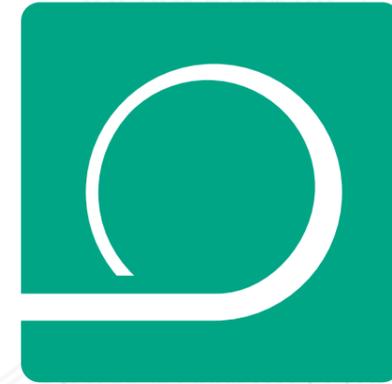
SERVICES

Eurodraw Wire Equipment is not only a plant and machinery manufacturer but also provides production know-how and technology for PC strand, PC wire and many other products.

Eurodraw's long and varied experience in setting up turnkey wire production operations, and jointly managing the production with their customers during the start-up and commissioning phases, gives major added value to the project and ensures success.

AFTER SALES SERVICES

Eurodraw Wire Equipment is committed to total customer satisfaction. Our after sales service department is fully staffed with mechanical engineers, electronic engineers and process engineers that are able to solve any problems that may arise. Our spare parts service department is available to answer all spare parts inquiries, even for the very first machines we built.



EURODRAW
WIRE EQUIPMENT

YOUR
TECHNOLOGY
PROVIDER



KEY FACTS ABOUT EURODRAW WIRE EQUIPMENT

- 1974** Established as GCR Engineering SpA with the scope of designing and building equipment for the production of steel cord.
- 1982** Acquired the company MILL, specialized in the production of wire drawing machines.
- 1988** Established the company Eurodraw Srl for the production of straight through wire drawing machines.
- 1990** Acquired the company OZ Cams and merged MILL and OZ Cams into Eurodraw. GCR Engineering and Eurodraw work as a team for the supply of several turnkey steel cord plants in Europe, Asia, USA and South Africa; as well as supplying a wide range of equipment for different applications throughout the world.
- 1999** GCR Engineering is awarded ISO 9001 quality certification, further requalified in 2002 to VISION 2000 certification and constantly renewed till today.
- 2002** GCR Engineering and Eurodraw Srl move to new premises. GCR Engineering and Eurodraw Srl merge into GCR Eurodraw to become one of the largest wire machinery manufacturers and with the widest production program.
- 2005** GCR Eurodraw opens a branch operation in China to consolidate its market position in the People's Republic of China.
- 2006** GCR Eurodraw is awarded construction of the largest PC strand operation in the Middle East, with a capacity of 100,000 tons/year.
- 2007** GCR Eurodraw, with EVG of Austria, purchases the company DEM located in Udine; with this acquisition the production program of the group also covers rolling cassettes and wire profile machinery.

GCR Eurodraw purchases Comapac Wire Machinery Srl located near Lecco, specialized in the production of pay-offs and take-ups, competitive rolling machines and custom-designed wire drawing equipment for special applications.
- 2015** GCR Eurodraw SpA renames itself Eurodraw Wire Equipment Srl.
- 2017** Eurodraw Wire Equipment builds the first tyre steel cord plant in the Middle east and provides know how and technology.
- 2018** Eurodraw Wire Equipment is awarded the contract to build the largest wire rope factory in the Middle east from greenfield.



COILING AND SPOOLING EQUIPMENT



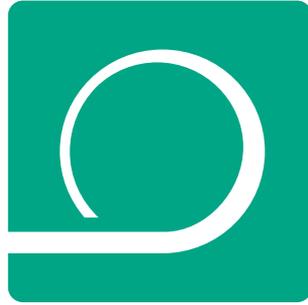
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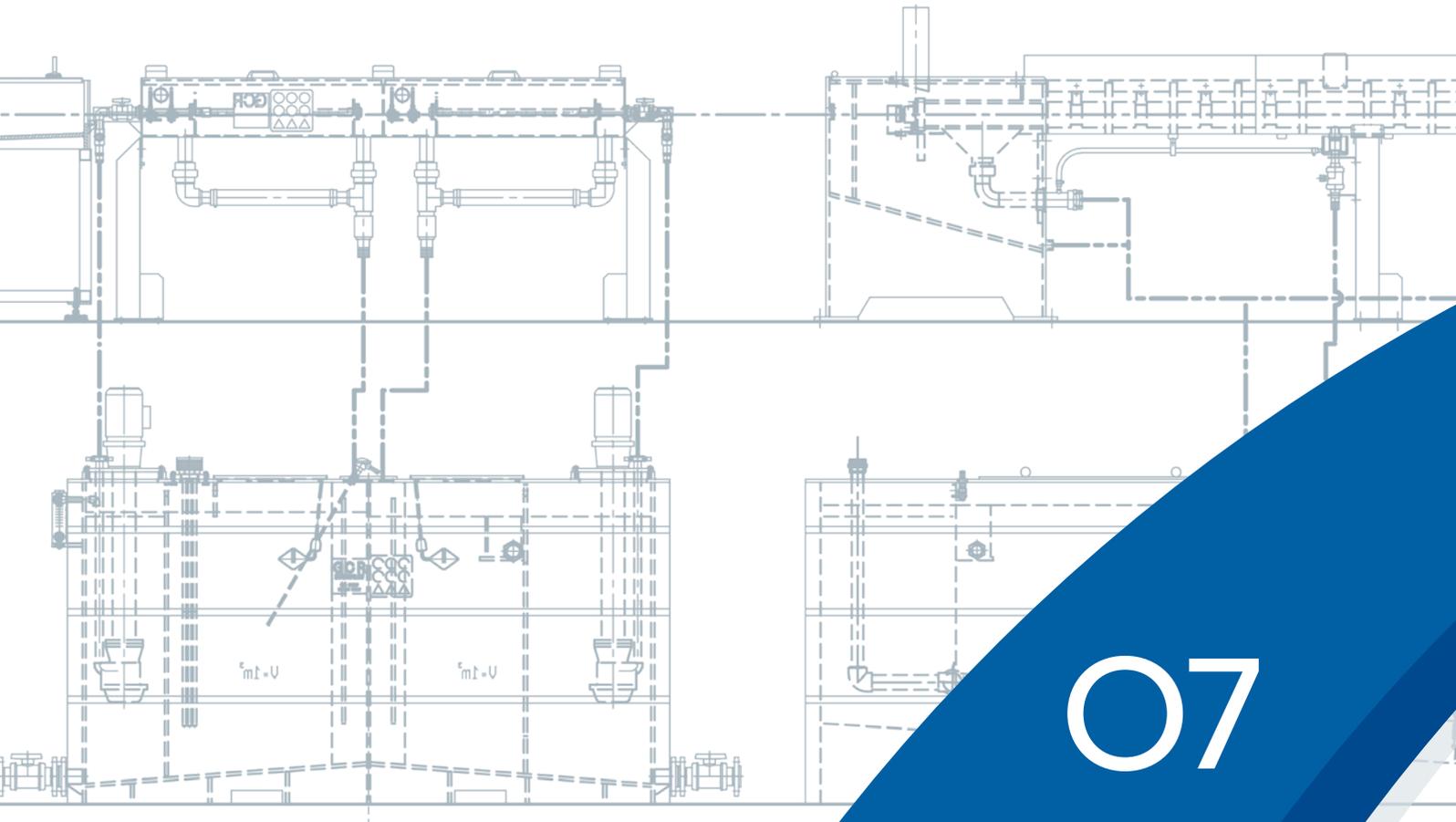
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EURODRAW
WIRE EQUIPMENT

WELDING WIRE SOLUTIONS

STICK ELECTRODES, MIG WIRE, SUBMERGED ARC WELDING AND FLUX-CORED WIRE



07

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TECHNOLOGY TRANSFER AND TURN-KEY SOLUTIONS

ADVANCED WELDING WIRE SOLUTIONS FROM A SINGLE SOURCE

Technology transfer is the process of sharing of skills, technologies, knowledge, methods of manufacturing, samples of manufacturing and facilities to ensure that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology into new products, processes, applications, materials or services.

Our advanced welding wire solutions are based on years of experience in the welding wire manufacturing industry.

We can provide you with "turn-key" and/or customized manufacturing processes (chemical and steel suppliers, product formulations, start-up supervision, etc) for the welding consumables.

The welding division provides you with adapted and targeted solutions towards your end market segments.

We have onboard knowledge and experience of their highly demanding and ever evolving welding engineers challenges and environment conditions in the Automotive Industry, Ship building industry, Off shore rigs manufacturing, On Shore & Off Shore Pipe line welding, Pressure Vessels manufacturing, Earth moving equipment manufacturing and many other market segments.

We focus our business and resources on advanced welding wire manufacturing processes allowing you to supply your end customers.

Eurodraw today has grown to become one of the major manufacturers worldwide in wire machinery and equipment solutions for the following market segments:

- Steel Cord, bead wires, hose wire, staple wire and wire rope manufacturing
- Rope and steel cable manufacturing
- Dry drawing lines and wire rod preparation
- Plants for production of concrete reinforcement wires and strand
- Surface treatment lines
- Coiling and spooling
- Welding wire manufacturing



STICK ELECTRODES

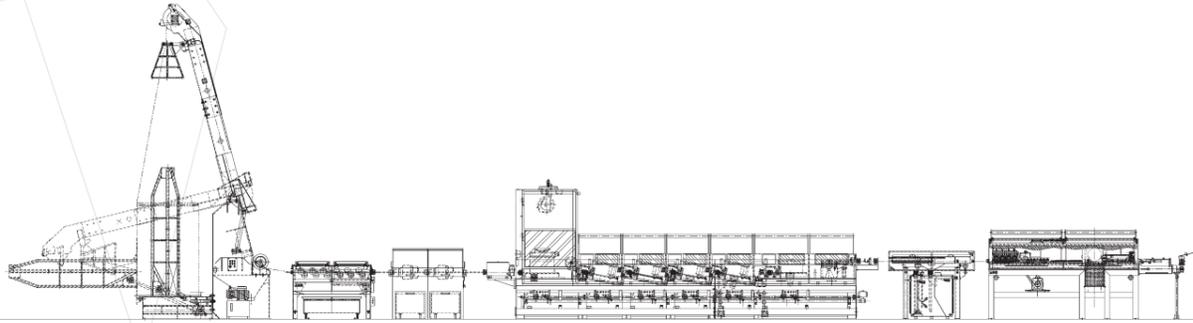
DRY DRAWING, STRAIGHTENING AND CUTTING LINE (INTERMEDIATE)

Standard die or roll type drawing lines come supplied with a rod straightening and cutting unit. Wire rods are then coated to form electrodes. Maximum cutting speed is 5 m/s.

Combining the drawing and cutting processes is extremely advantageous because production is non-stop and, by using a two-position pay-off and in-line rod preparation unit, it is possible to reach notable levels of efficiency.

AT A GLANCE

- Dry drawing line for unalloyed and low alloyed low carbon steel
- Fixed or rotating die holders; direct or indirect water cooling
- Synchronisation by means of roller-type loop sensors
- Dust-proof guards
- High-efficiency, parallel-axis gear drives
- Electrical cabinet cooling via air/water heat exchanger or AC system
- In-line wire drawing, straightening and cutting for one-step production of stick electrodes



STANDARD LINE COMPOSITION

Vertical pay-off	Descaler	Brushing machine	Drawing machine	Straightening and cutting machine
SV D 2	RD-80/2	B-50	MTS 610/7	SEM

STANDARD LINE COMPOSITION

Wire / material type	EN 756 S1, S2, S3 (C _s 0.12%)
Tensile strength	500 N/mm ²
No. of blocks	7
Block Ø	560 / 610 / 660 mm
Block surface treatment	Ceramic or tungsten carbide coated
Inlet wire Ø range	5.50 – 6.50 mm
Outlet wire Ø range	2.00 – 5.00 mm
Max. wire outlet speed (direct)	5 m/sec with cutting machine 25 m/sec with spooler
Drawing machine motor power	34 - 60 kW (A.C.)

STRAIGHTENING AND CUTTING MACHINE

Electrodes Ø	Production speed	Cuts/min electrode stick of	
		350 mm	450 mm
2.5 mm	6 m/sec	1.028	795
3.2 mm	5 m/sec	856	663
4.0 mm	4 m/sec	685	530
5.0 mm	3 m/sec	514	398



MTS series – Complete drawing line for electrodes

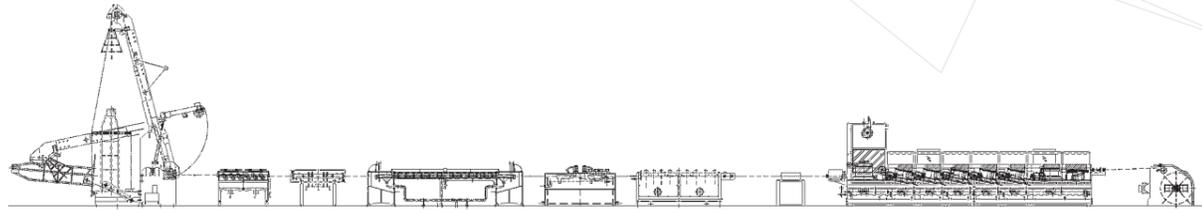


Wire rod preparation

Straightening and cutting machine

MIG WIRE

DRY DRAWING LINE (BREAKDOWN)



STANDARD LINE COMPOSITION

Pay-off	Descaler	Cleaning unit	Pickling unit	Rinsing unit	Boraxing unit	Drying unit	Drawing machine	Take-up
SVD-2	RD-80	STP-4	EPU	RU	BU	IF	MTS 560/7	BOM 1000

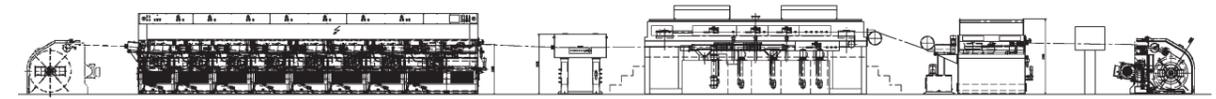


STANDARD LINE COMPOSITION

Wire / material type	SG 1 – SG 2 – SG 3 welding wire – DIN 8559
Tensile strength	600 N/mm ²
No. of blocks	7
Block Ø	560 mm
Block surface treatment	Ceramic or tungsten carbide coated
Inlet wire Ø range	5.50 - 6.50 mm
Outlet wire Ø range	2.40 mm
Max. wire outlet speed	20 m/sec
Drawing machine motor power	60 kW (A.C.)

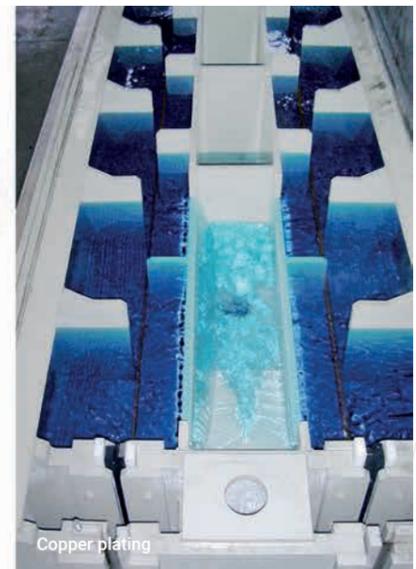
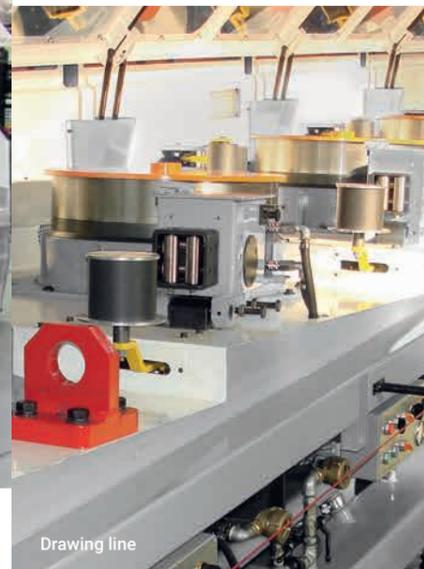
MIG WIRE

DRY DRAWING LINE AND COPPERING LINE (INTERMEDIATE)



STANDARD LINE COMPOSITION

Pay-off	Drawing Machine	Cleaning unit	Cleaning & Coppering unit	Skin pass	Take-up
SOM 1000	MTX 300/5	MCP 200	PCU	MTB 300/1	BOM 800

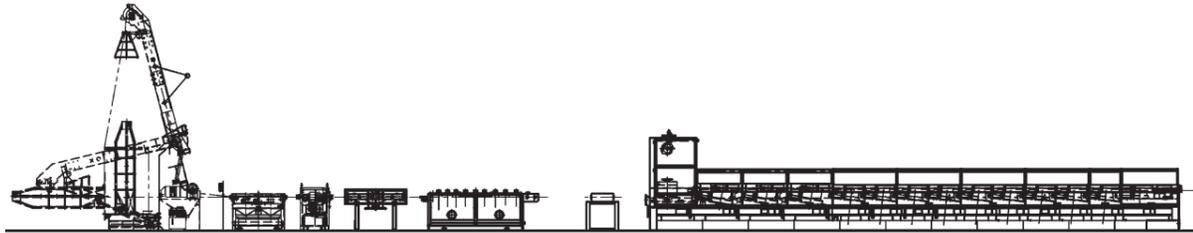


AT A GLANCE

- Dry drawing line for unalloyed and low alloyed low carbon steel
- Fixed or rotating die holders; direct or indirect water cooling
- Synchronisation by means of roller-type loop sensors
- Dust-proof guards
- High-efficiency, parallel-axis gear drives
- Electrical cabinet cooling via air/water heat exchanger or AC system

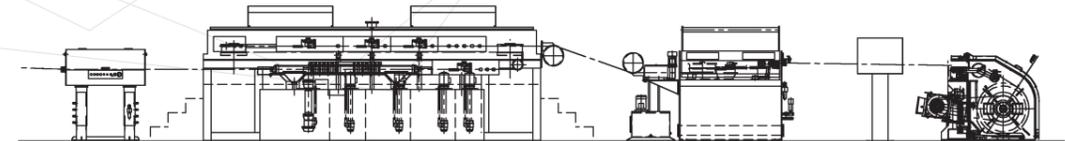
MIG WIRE

DIRECT DRY DRAWING AND COPPERING LINE



DRAWING LINE COMPOSITION

Pay-off	Descaler	Brushing unit	Cleaning unit	Boraxing unit	Drying unit	Drawing machine
SVD-2	RD-80	B 50	STP-1	BU	IF	MTS 610/4 + 400/10



CLEANING AND COPPERING LINE COMPOSITION

Cleaning unit	Cleaning & Coppering unit	Skin-pass block	Take-up
MCP 200	PCU	MTB400/1	BOM 800

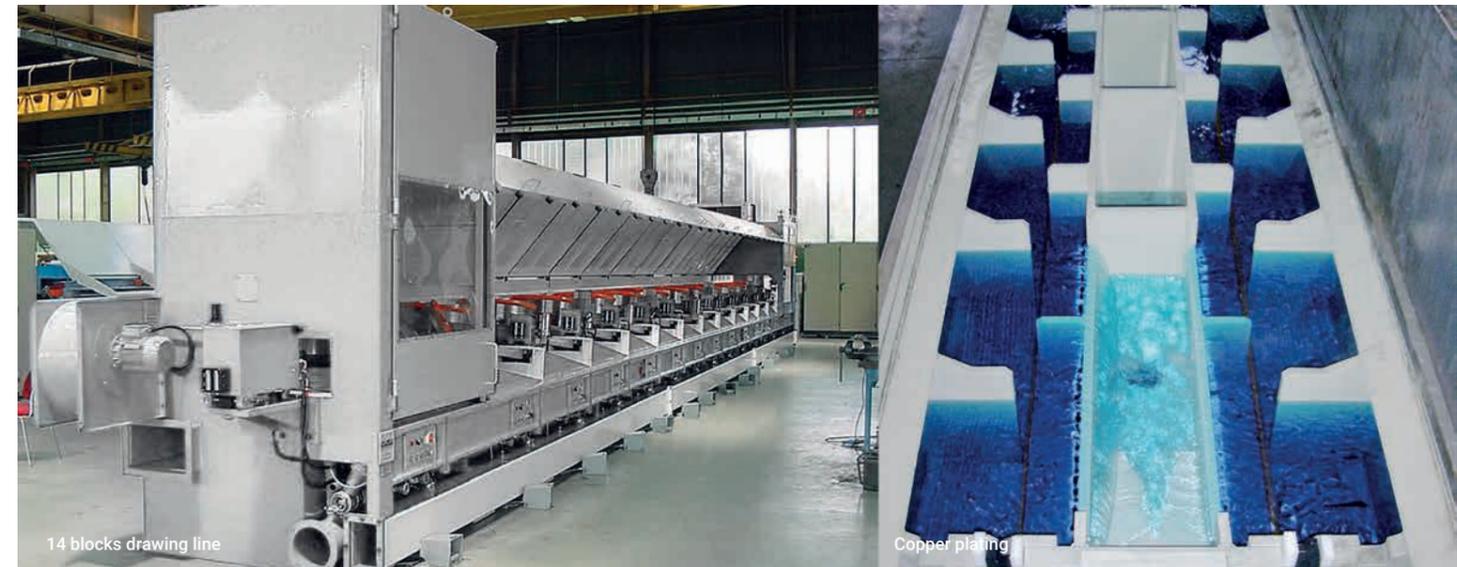
AT A GLANCE

- Dry drawing line for unalloyed and low alloyed low carbon steel
- Fixed or rotating die holders; direct or indirect water cooling
- Synchronisation by means of roller-type loop sensors
- Dust-proof guards
- High-efficiency, parallel-axis gear drives
- Electrical cabinet cooling via air/water heat exchanger or AC system



DRAWING LINE COMPOSITION

Wire / material type	SG 1 – SG 2 – SG 3 welding wire – DIN 8559
Tensile strength	600 N/mm ²
No. of blocks	7
Block Ø	560 mm
Block surface treatment	Ceramic or tungsten carbide coated
Inlet wire Ø range	5.50 - 6.50 mm
Outlet wire Ø range	2.40 mm
Max. wire outlet speed	20 m/sec
Drawing machine motor power	60 kW (A.C.)

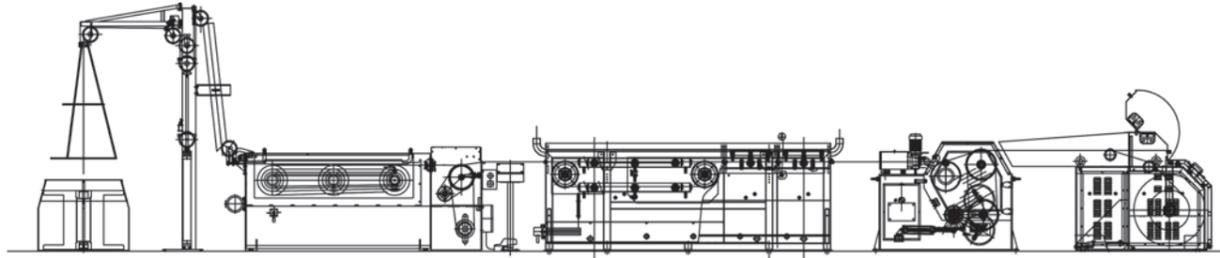


MIG WIRE

WET DRAWING AND COPPERING LINE

Two or three-axes, slip-type wet drawing machines with 350 mm diameter capstans for ferrous and non ferrous wire and high-resistance aluminium and copper alloys (brass and bronze).

With a maximum of 12 dies plus skin-pass and a minimum outlet diameter of 0.6 mm, this line may be connected to an independent pulling capstan and/or stainless steel treatment tanks.



STANDARD LINE COMPOSITION

Pay-off	Dancer	Drawing machine	Treatment tank	Independent capstan with dancer	Dynamic spooler
SV 800 DM SV A 1150 DM SV A DVP	SE A D	MT A 350 2A MT A 350 3A	VT A 3V VT A 4	SE A D 300 C SE A D 320 C	BD A 800 BD A 1000



AT A GLANCE

- Top quality finished product
- Real production speeds of 20 m/sec (MT A 350 2A) and 25 m/sec (MT A 350 3A)
- Drawing, coppering and spooling on the same horizontal plane
- Reduced wire torsion
- Independent pulling block
- Non-slip constant wire tension
- No increased die wear or work-force requirements

STANDARD LINE COMPOSITION

Wire / material type	SG 1, SG 2, SG 3 welding wire, DIN 8559
No. of drafts	10 + 1 + 1
Percent elongation on machine from drafts 1 to 10	16.7 %
draft 11	13 %
draft 12 (after copper coating tank)	12 %
Inlet Ø range	1.86 - 2.40 mm
Outlet wire Ø range	0.80 - 1.60 mm
Max. wire outlet speed	25 m/sec
Drawing machine motor power	117 kW (A.C.)

AT A GLANCE

- Horizontal drawing with fully submerged tungsten carbide coated cones
- Quick and ergonomic emptying/filling of drawing tank, ensuring simple, mud-free die replacement
- Emulsion cooling by means of a multi-tube heat exchanger and recirculating pump
- Rotating outer die-holder
- Horizontal pulling capstan, coated with tungsten carbide and water-cooled internally, complete with transfer pulley
- Synchronisation by means of an integrated pneumatic dancer
- A separate pulling capstan located after the treatment tank with a synchronising dancer guarantees constant wire tension control and a slip-free process
- Drawing, coppering and spooling are performed on the same horizontal plane. Wire torsion is therefore reduced to a minimum for a top quality finished product

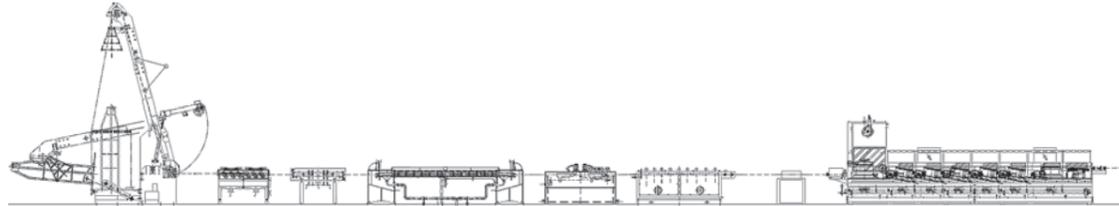


SUBMERGED ARC WELDING

DRY DRAWING AND COPPERING LINE

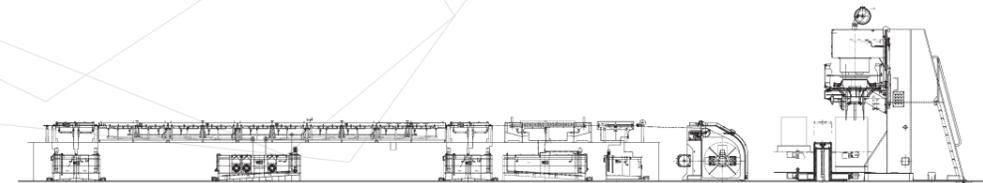
Submerged Arc Welding is process by which metals are joined by an arc or arcs between a bare metal electrode or electrodes and the work. Shielding is supplied by a granular, fusible material usually brought to the work from a flux hopper.

Filler metal comes from the electrode and sometimes from a second filler rod. The actual Arc from the electrode wire is "Submerged" within the "Flux" which is put down just before, and as the weld is laid down, keeping the Arc fully submerged at all times during the weld.



STANDARD LINE COMPOSITION

Pay-off	Descaler	Cold rinsing unit	Pickling unit	Rinsing unit	Boraxing unit	Drying unit	Drawing machine
SOD/2	RD80	CRU	EPU	RU	BU	IF HAD	MTS 560/7



COPPERING LINE COMPOSITION

Cleaning unit	Dancer	Double acid pickling	Dancer	Double chemical coppering	Dancer	Skin-pass block	Take-up
MCP 200	DA 300	DAEP	DA 300	DA 300	DA 300	MTB 400/1	RVS 500

STANDARD LINE COMPOSITION

Wire / material type	EN 756 S1, S2, S3 (C= 0.12%) SUB ARC welding wire
Tensile strength	600 N/mm ²
No. of blocks	5 + 1
Block Ø	560 mm
Block surface treatment	Tungsten carbide or ceramic coated
Inlet wire Ø range	5.50 - 6.50 mm
Outlet wire Ø range	2.50 - 5.00 mm
Max. wire outlet speed	20 m/sec
Drawing machine motor power	41 - 60 kW (A.C.)
Cooling water pressure	2 bar
Max. inlet water temperature	30 °C



AT A GLANCE

- Dry drawing line for unalloyed and low alloyed low carbon steel
- Fixed or rotating die holders; direct or indirect water cooling
- Synchronisation by means of roller-type loop sensors
- Dust-proof guards
- High-efficiency, parallel-axis gear drives
- Electrical cabinet cooling via air/water heat exchanger or AC system

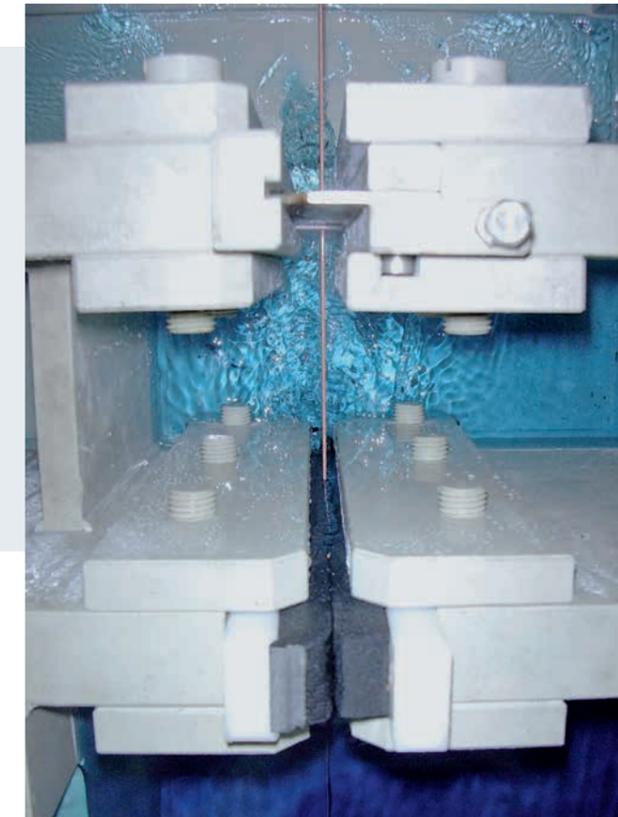
MODULAR TREATMENT TANKS AND WIRE WASHING SYSTEMS

Treatment tank for SAW wire. Wire washing system installed before the coppering process.

Wire range
SG1, SG 2, SG 3

Diameters
2.5 - 3.2 - 4.0 - 5.0

Linear speed
15 m/sec



FLUX-CORED WIRE

PRESENTATION

Flux cored arc welding (FCAW) is an electric arc welding process that uses an arc between a continuously fed flux-filled electrode and the weld pool. The process is used with shielded gas from a flux contained within the tubular electrode with or without additional shielding from an externally supplied gas.

The flux cored and metal cored welding wires are commonly used in the off shore, pipe line, pressure vessels, ship building, earth moving equipment, rail car manufacturing segments and many others. They are becoming more and more popular within the robotic applications, for example in the automotive industry (cars, trucks, buses...) due to their higher deposition rate compare to the standard solid welding wires.

Tubular welding wires research and development are very active to further enhance the Submerged Arc Welding (SAW) process to obtain better mechanical properties of the welded joints, higher travel speeds with higher deposition rates than traditional solid wires. The tubular wire manufacturing process open a new window of opportunity to welding engineers for new wire and flux combinations to answer demanding customers.

Our advanced welding wire solution to produce tubular welding wire is composed of a strip pay-off, a tube mill line (forming, filling and closing stations), a rolling line (with micro cassettes) and a wire take-up.

CONFIGURATIONS

We have three FCW manufacturing line configurations available:

4+8

Strip Coil > Forming 4 stations, Filling, Closing 8 stations > Reel 2.20 or 3.20mm Reel > Rolling with 10 passes > Reel 1.0, 1.2mm

4+4

Strip Coil > Forming 4 stations, Filling, Closing 4 stations, Rolling 5 passes > Wire Reel 2.0mm Reel > 2nd Rolling 7 passes > Reel 1.0, 1.2mm

DIRECT

Strip Coil > Forming 4 stations, Filling, Closing 8 stations, Rolling 10 passes > Reel 1.0, 1.2mm

FLUX-CORED WIRE

STRIP PAY-OFF, DEGREASING & DRYING UNIT

STRIP PAY-OFF UNIT

Driven horizontal axis spool pay-off suitable for operating with any type of processing line.

The system consists of a sturdy electro-welded framework with one horizontal carrier with an expandable core that allows locking the strip coil on the uncoiling carrier.

The pay-off is synchronized with the forming and rolling processing line through a pneumatically controlled, double tackle dancer group. This assures very precise pay-off tension control.

The back-pull tension of the dancer group is adjustable and the pay-off speed is therefore adjusted with a position transducer. Filler metal comes from the electrode and sometimes from a second filler rod. The actual Arc from the electrode wire is "Submerged" within the "Flux" which is put down just before, and as the weld is laid down, keeping the Arc fully submerged at all times during the weld.

DEGREASING & DRYING UNIT

The degreasing unit is a very simple, reliable and extremely efficient unit used to remove any residual material on the strip from the steel mill process (oil, grease, steel particules...).

The strip is submerged into a degreasing bath followed by an air blower and a brushing process composed of felted pads.

The brushing helps eliminating the material residual on the strip surface. In order to dry the strip, it passes through a tube where hot air is blown on the strip.

The air is warmed up to 90 °C with an electrical resistance heater.



FLUX-CORED WIRE

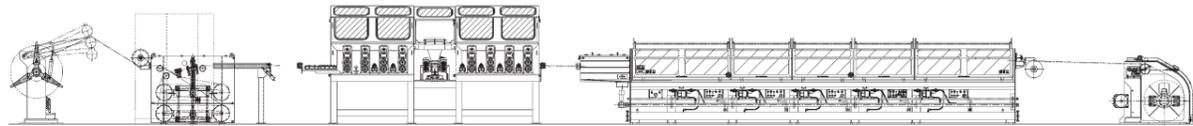
FORMING, FILLING AND CLOSING LINE

This line is very technologically advanced to ensure a reliable, consistent, and stable FCW manufacturing process. The unit is composed of four sections: 1. Strip forming, 2. Chemical (flux) powder filling, 3. Strip closing, 4. Strip compacting. Every rotating blocks/heads are individually motorized by an AC motor and controlled by a unique AC drive.

The flux feeder belt is powered with an AC controlled motor and with automatic speed regulation in accordance with forming motor speed. The power feeder is mounted on a sturdy support in order to cancel any possible vibration that would cause uneven filling of the strip.

The "tube mill" is equipped with strip straightening and guiding devices so that there is no oscillatory movement of the strip while forming and closing. The guiding devices are placed in between each forming and closing stand and a special guide tool is mounted at the filling unit in order to firmly stabilize the strip while it is being filled.

The maximum mechanical speed is about 150 meters per minute; however the flux filling limits the output mill speed at a maximum of 110 meters per minute.



STANDARD LINE COMPOSITION

Pay-off	Degreasing unit	Tube forming machine	Lubrication unit	Drawing machine	Take-up
CPO	DU	TFM	LU	MTS 610/5	BOS 800



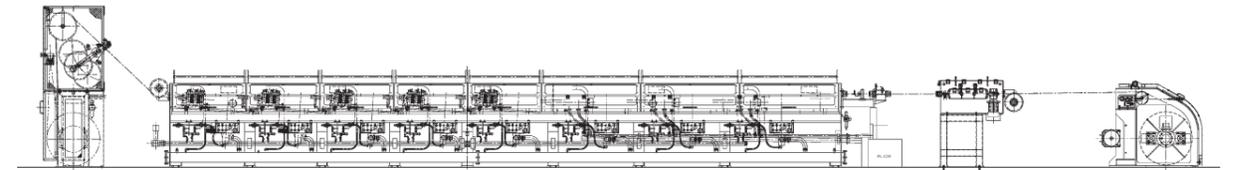
FLUX-CORED WIRE

ROLLING LINE

This drawing line makes exclusive use of rolling cassettes. The amount of lubricant required by this process is much lower than with die drawing operations, and the end product is ready to be layer wound onto spools.

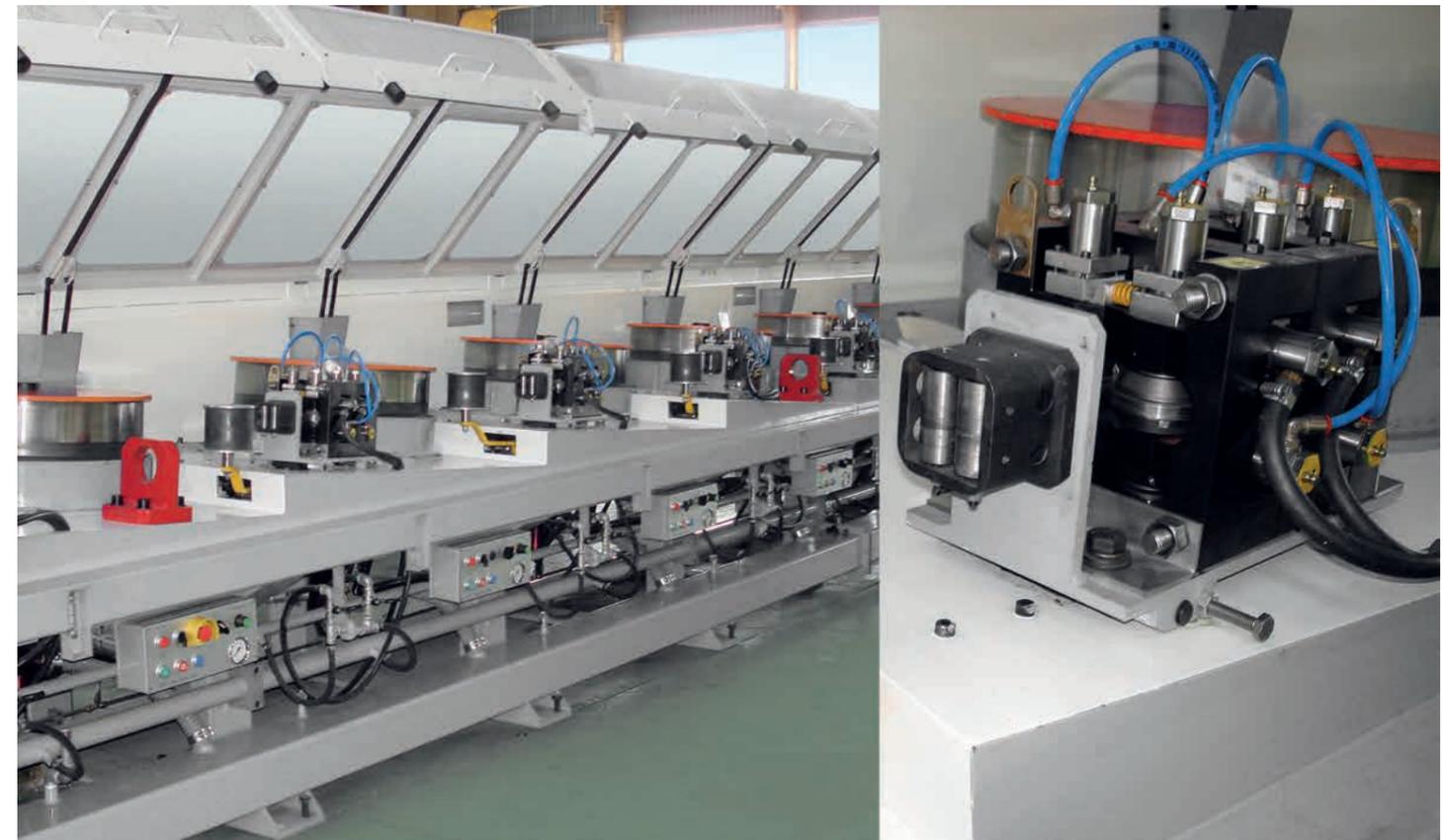
Drawing speed at the finishing block is 12 m/sec.

Wire / material type	Flux-cored wire Low carbon / stainless steel
Inlet wire Ø range	3.40 - 2.20
Outlet wire Ø range	1.80 - 0.80
Block Ø	400 mm
Rolling cassettes	Specific type for FCW
Final drawing speed	12 m/s
Drawing motor power	18 kW (A.C.)



STANDARD LINE COMPOSITION

Pay-off	Drawing Machine	Take-up
SOM 00	MTS 400/8	BOS 800



STANDARD LINE COMPOSITION

Material	Strip 9.50 x 0.40 / 10.70 x 0.65 Low carbon/stainless steel
Tensile strength	up to 650 MPa
Forming rolls	4 stages
Closing rolls	4 stages or 8 stages
Filling system	laser control
Motor power	8 x 5.5 kW (A.C.)
Speed	6 m/sec
Outlet tube diameter	3.40 - 2.20 mm

FLUX-CORED WIRE

MICRO CASSETTE TECHNOLOGY

The Micro Rolling Cassettes are specially studied to replace the traditional dies used on all multi-pass drawing lines. The applications are for low, medium and high carbon steel, copper, titanium, stainless steel and flux cored wires.

Latest generation of operator friendly micro rolling cassettes have been specifically designed to guarantee easy operator set-up and quick tuning of the final wire dimension like no other of its kind. The final wire tuning can be easily performed with the drawing line in operation.

The **Micro cassette technology** can be applied to the **MIG Welding wire manufacturing process** very easily. The materials to be "elongated" with such process are low carbon steels, low alloyed steels and high alloyed steels. The stainless steel solid wires are a very good candidate for such process innovation.

The **final diameter wire speed we obtained with stainless steel MIG welding wire were up to 30m/s with rolling cassettes**. The following table illustrates the different "reductions" or elongations you can get using the proven micro cassette technology.

BENEFITS

Higher drawing speeds

The wire is not in friction mode like with traditional dies but it is just being rolled or squeezed to elongate.

Longer roll life time

The longer roll life time compare to traditional drawing dies. Rolls are given for up to 3.000 Tons per roll for low carbon solid wires.

Less down time

The quick change over between wire sizes combined with the ease of threading the drawing line (fast opening and closing of the cassettes without having to point the wire) reduces the down time.

Lower power consumption

This is due to the much lower friction of the rolls with the wire. The capstan motors are pulling less.

Cheaper to operate

No wire lubrication needed on rolling cassettes.



CASSETTE MODELS TECHNICAL DATA

Cassette model	WIRE		ROLLS		R. HOLDER
	Inlet max (mm)	Outlet min (mm)	Diameter (mm)	Thickness (mm)	Shaft (DD) (mm)
CLF-075-20-22-E	4.5	0.8	75	10	20
CLF-090-25-22-E	5.5	1	90	15	25
CLF-125-30-22-E	8.0	1.5	125	15	30

ADVANCED PACKAGING SOLUTIONS

MIG, AI, FCW LEVEL LAYER WOUND RE-SPOOLING LINE

Servo-assisted, semi-automatic, precision-layer dynamic spooler with fully automatic first layer winding. Engineered for plastic and/or basket spools with a max. flange diameter of 300 mm.



TECHNICAL DATA

Wire / material type		SG 1 – SG 2 – SG 3 – FCW – AI welding wire – DIN 8559
Spool types	<ul style="list-style-type: none"> • basket • plastic 	K 300 - K 200 D 300 - D 200
Diameter range	<ul style="list-style-type: none"> • precision layer • random 	0.80 - 1.60 mm 0.60 - 1.60 mm
Max. weight of wound wire		20 Kg
Spooler motor power		12 kW (A.C.)
Max. winding speed		35 m/sec

ADVANCED PACKAGING SOLUTIONS

MIG, AI, FCW DRUM PACK

The IN A 400 is a highly reliable and flexible machine, engineered to wind a vast variety of wire types into round and polygonal shaped drums.

With an integrated dancer and control board, this compact solution is extremely easy to manage.



TECHNICAL DATA

Wire / material type		SG 1 – SG 2 – SG 3 – FCW – AI
Pack types		Fibre drum
Pack weight		250, 500, 1.000 Kg
Wire Ø range		0.80 - 1.60 mm
Max. coiling speed		25 m/sec
Internal dancer		Pneumatically driven

CLASSIFICATIONS AND SPECIFICATIONS

SPECIFICATIONS TABLES FOR WELDING WIRE AND PACKAGING SOLUTIONS

Stick Electrodes

Unalloyed steels

Rutile	A5.1 E 6013
Basic	A5.1 E 7018
Cellulosic family	A5.1 E 6010

High alloyed steels

300L series	A5.4 E 3xxL
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MIG Wire

Unalloyed steels

EN 440 G2Si / SG1	A5.18 ER70S-3
EN 440 G3Si / SG2	A5.18 ER70S-6
EN 440 G4Si / SG3	A5.18 ER70S-6

Low alloyed steels

EN Mn3NiMo	A5.28 ER110S-G
EN Mn3Ni1Mo	A5.28 ER100S-G
EN G3Ni1	A5.28 ER80S-G

High alloyed steels

300L series	A5.9 ER 3xxL
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Submerged Arc Welding

Unalloyed steels

EN 756 S1	A5.17 EL 12
EN 756S2	A5.17 EM 12

High alloyed steels

300L series	A5.9 ER 3xxL
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Flux-cored Wire

Unalloyed steels

Rutile	A5.20 E 71T-1M
Basic	A5.20 E 71T-5M
Metal Core	A5.18 E 70C-6M

Low alloyed steels

1% Nickel	A5.29 E 81T1-Ni1
1.5% Nickel	A5.29 E 81T1-K2M
1.7% Ni & 0.1% Mo	A5.29 E 91T1-K2M

High alloyed steels

300L series	A5.22 E 3xxLTx-4/-1
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Advanced Packaging Solutions

Wire baskets

30 Kg	K415
20 Kg	K300
5 Kg	K200
1 Kg	K100

Plastic spools

20 Kg	D300
5 Kg	D200
1 Kg	D100

Fiber spools

15 Kg	-
5 Kg	-

Drums

1000 Kg	-
500 Kg	-
250 Kg	-

Wire types

FCW, Solid Wires, SAW, Al

Steel grades

Unalloyed, low & high alloyed



KEY FACTS ABOUT EURODRAW WIRE EQUIPMENT

- 1974** Established as GCR Engineering SpA with the scope of designing and building equipment for the production of steel cord.
- 1982** Acquired the company MILL, specialized in the production of wire drawing machines.
- 1988** Established the company Eurodraw Srl for the production of straight through wire drawing machines.
- 1990** Acquired the company OZ Cams and merged MILL and OZ Cams into Eurodraw. GCR Engineering and Eurodraw work as a team for the supply of several turnkey steel cord plants in Europe, Asia, USA and South Africa; as well as supplying a wide range of equipment for different applications throughout the world.
- 1999** GCR Engineering is awarded ISO 9001 quality certification, further requalified in 2002 to VISION 2000 certification and constantly renewed till today.
- 2002** GCR Engineering and Eurodraw Srl move to new premises. GCR Engineering and Eurodraw Srl merge into GCR Eurodraw to become one of the largest wire machinery manufacturers and with the widest production program.
- 2005** GCR Eurodraw opens a branch operation in China to consolidate its market position in the People's Republic of China.
- 2006** GCR Eurodraw is awarded construction of the largest PC strand operation in the Middle East, with a capacity of 100,000 tons/year.
- 2007** GCR Eurodraw, with EVG of Austria, purchases the company DEM located in Udine; with this acquisition the production program of the group also covers rolling cassettes and wire profile machinery.

GCR Eurodraw purchases Comapac Wire Machinery Srl located near Lecco, specialized in the production of pay-offs and take-ups, competitive rolling machines and custom-designed wire drawing equipment for special applications.
- 2015** GCR Eurodraw SpA renames itself Eurodraw Wire Equipment Srl.
- 2017** Eurodraw Wire Equipment builds the first tyre steel cord plant in the Middle east and provides know how and technology.
- 2018** Eurodraw Wire Equipment is awarded the contract to build the largest wire rope factory in the Middle east from greenfield.



WELDING WIRE SOLUTIONS



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