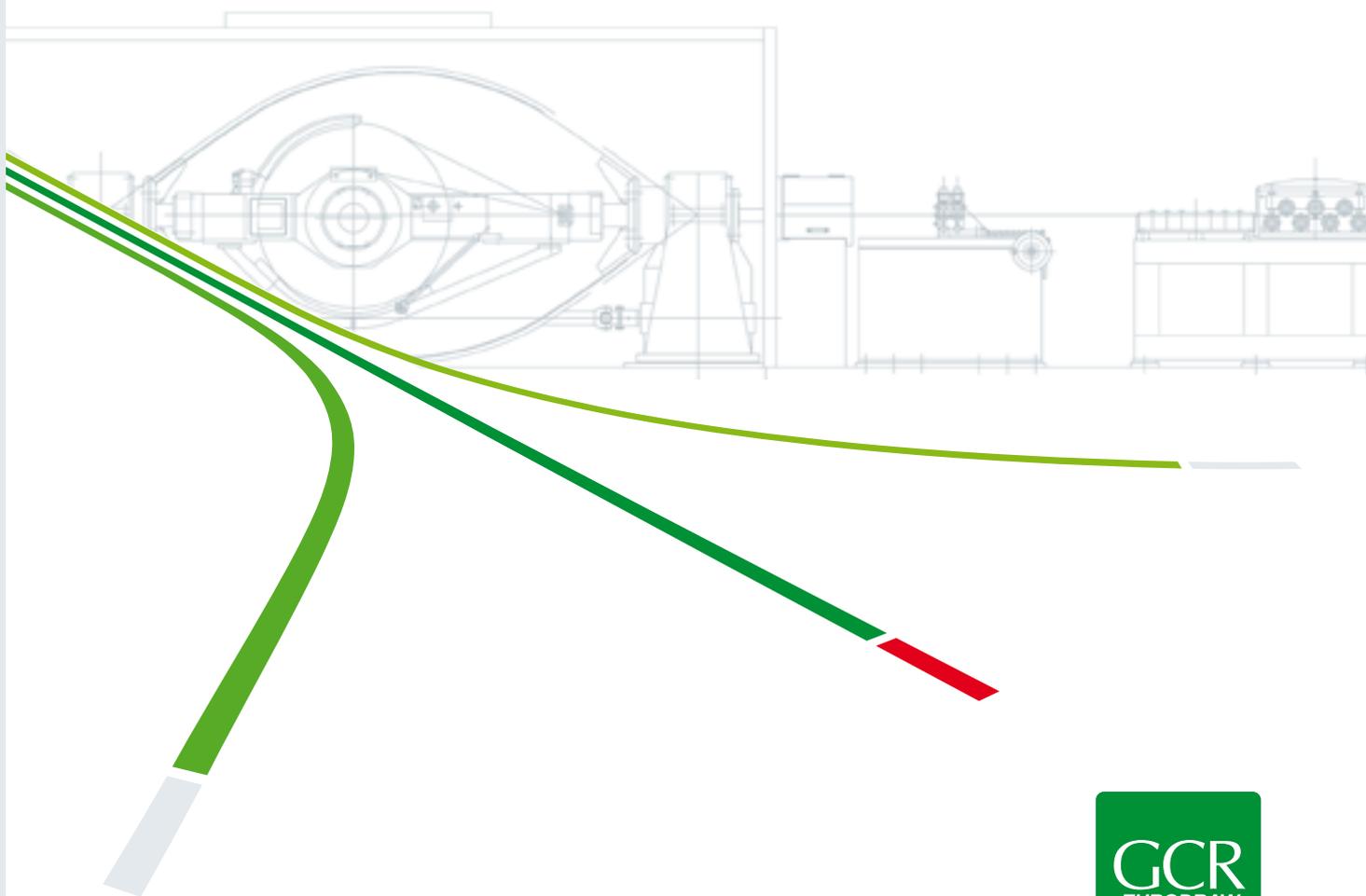


03

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



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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.

GCR Eurodraw SPA, 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

GCR Eurodraw 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 GCR Eurodraw 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 GCR Eurodraw 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

GCR Eurodraw 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.

GCR 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

GCR 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, GCR 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.

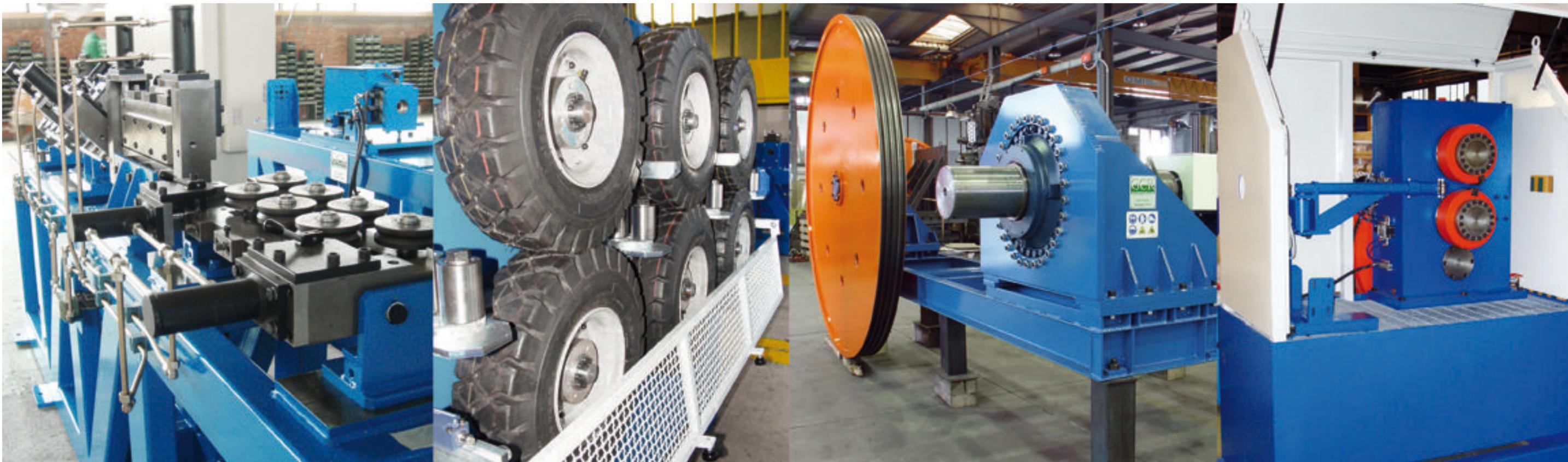
From the spool in pay-off position, the strand is layer rewound at high speed onto a collapsible spool to make the final package of "spoolless core" coils. With the GCR Eurodraw layer rewinder, coil packages are perfectly laid without the need of any operator assistance. Once a package is complete, a 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

GCR Eurodraw 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.

| Wire Ø | Tensile strength | Cross-section | Pull | Furnace speed | Linear weight | Hourly production |
|--------|-------------------|-----------------|------|---------------|---------------|-------------------|
| mm | N/mm ² | mm ² | kg | m/min | g/m | kg/h |
| 3,00 | 2000 | 7.06 | 705 | 420 | 55.44 | 1397 |
| 4,00 | 1900 | 15.56 | 1195 | 400 | 98.56 | 2365 |
| 7,00 | 1750 | 38.50 | 3369 | 350 | 301.80 | 6333 |
| 9,00 | 1650 | 63.58 | 5250 | 215 | 499.00 | 6450 |

GCR COLD ROLLING LINES

HIGH SPEED PRODUCTION OF INDENTED WIRE FOR MESH AND REBAR

GCR Eurodraw, in cooperation with DEM, designs and builds high performance cold rolling lines for the production of indented wire for mesh and rebar.

The line is composed of a double vertical rod pay-off, a heavy duty mechanical descaler, a soap application unit with double soap feeding screw, a single/twin or three-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 GCR Eurodraw 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.

Two rolling cassettes can be mounted on each rolling bench so that changing wire sizes does not require the removal of the rolling cassette from its location.

GCR Eurodraw cold rolling lines are exclusively equipped with DEM rolling cassettes.

| 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 |



COMAPAC COLD ROLLING LINES

STURDY, RELIABLE, SIMPLE AND COMPETITIVE

Comapac is part of the GCR Eurodraw Group of companies and among its various products, also offers single-block, multi-stage cold rolling lines.

Comapac lines are very sturdy and reliable, and at the same time very simple and competitive.

The 2-stage cold rolling line is equipped with a 3-speed gearbox in order to roll large diameter material at lower speeds as well as finer sizes at very high speeds.

Comapac cold rolling lines can be equipped with a standard diebox as well as with DEM rolling cassettes.

| Machine model | Block Ø | Max inlet wire Ø | Max speed | Installed power | Block water cooling | Rolling cassettes |
|---------------|---------|------------------|-----------|-----------------|---------------------|-------------------|
| | mm | mm | m/sec | kW | | n° |
| BBK 500/610 | 500/610 | 10 | 8 | 1x90 | YES | 3 |
| BBK 560/700 | 580/700 | 14 | 8 | 1x132 | YES | 3 |
| BBK 610/760 | 610/760 | 16 | 10 | 1x170 | YES | 3 |

DEM STRAIGHTENING AND CUTTING LINES

SIMPLE, ECONOMICAL HIGH QUALITY PERFORMANCE

DEM is a company owned by EVG and GCR Eurodraw and is specialized in the production of straightening and cutting lines, as well as rolling cassettes and profile wire machinery. Their combined rolling, straightening and cutting line is the highest performing and most economical solution for the production of straight indented bars.

Rolling machine

This consists of two benches assembled on a single heavy-duty welded steel structure. One cassette is mounted on the first bench and a half cassette plus three driven rolls are mounted on the second bench. The cassettes are fitted with 3+3 150 mm diameter rolls and are complete with water-cooling circuit and roll gap-adjustment system with digital position counter.

The motorized cassette with three driven rolls is water-cooled, as are all cold rolling cassettes. The machine has an inlet range of 13.5 - 5.50 mm and outlet of 12.0 - 4.00 mm.

Straightening section

The rolled material then passes through two idle roll straightener panels installed at 90° in order to straighten both wire axes. Each panel consists of fourteen rolls.

TYPICAL PRODUCTION TABLE

| Inlet Ø | Outlet Ø | Speed | Weight | Hourly production |
|---------|----------|-------|--------|-------------------|
| mm | mm | m/sec | kg/m | t/h |
| 5.50 | 4.00 | 7.0 | 0.099 | 2.495 |
| 6.00 | 5.60 | 7.0 | 0.187 | 4.712 |
| 7.00 | 6.30 | 7.0 | 0.240 | 6.048 |
| 8.00 | 7.10 | 6.0 | 0.300 | 6.480 |
| 10.0 | 8.00 | 6.0 | 0.395 | 8.532 |
| 10.5 | 9.00 | 5.0 | 0.499 | 8.982 |
| 11.5 | 10.0 | 4.5 | 0.617 | 9.995 |
| 13.5 | 12.0 | 4.0 | 0.888 | 12.787 |

The straightening rolls can be manually adjusted with screws, thereby making straightener set-up very quick and easy to change. There are also several preset adjustments to facilitate switching from one wire size to another.

In order to guarantee perfect wire tension through the straightening panels a series of pinch rolls is provided.

Cutting shear

Two knives are mounted on two heavy duty shafts between two blade holders and driven by an AC motor to rotate them. An encoder controls the knife positions and synchronizes them as the material travels forward.

The shear knives run constantly, while a deviator shifts the material in-between the knives at the right length to be cut. The material is then conveyed towards an opening guide. The bar length can range from 1.50 to 13.0 m.

Unloading bench

Installed after the shear, this consists of a welded steel structure with two opening guides where the material is alternately fed to the left and to the right. A collecting pocket is provided to separate the bars coming from the rolling process to the bundle ready to be removed. The bars fall into a pocket that is suitable to unload bars up to 13 m in length.



NOT ONLY A
MACHINERY MANUFACTURER.



ACCESSORIES AND SERVICES

ACCESSORIES - SERVICES - AFTER SALES SERVICES

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

Pointers

Comapac produces a complete range of wire pointers suitable for the machines described in this catalogue.

Welders

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

Spool tilters

GCR Eurodraw can provide hydraulic spool tilters for every spool size.

Rolling cassette maintenance benches

A specific accessory for maintenance of DEM rolling cassettes is available as an option. The unit assures easy and precise roll alignment and easy dis-assembly and re-assembly of the cassettes.

Wire drawing accessories

Rotating dies, soap mixers, laser wire diameter gauges, GCR Eurodraw 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, GCR Eurodraw 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

GCR Eurodraw 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.

GCR'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 SERVICE

GCR Eurodraw 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 ever built by any of the companies of the GCR Group.



KEY FACTS ABOUT THE GCR GROUP

In 1974 established as GCR Engineering SPA with the scope of designing and building equipment for the production of steel cord.

In 1982 acquired the company MILL, specialized in the production of wire drawing machines.

In 1988 established the company Eurodraw Srl for the production of straight through wire drawing machines.

In 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.

In 1999 GCR Engineering is awarded ISO 9001 quality certification, further requalified in 2002 to VISION 2000 certification and now valid until 2011.

In 2002 GCR Engineering and Eurodraw Srl move to new premises.

In 2002 GCR Engineering and Eurodraw Srl merge into GCR Eurodraw to become one of the largest wire machinery manufacturers and with the widest production program.

In 2005 GCR Eurodraw opens a branch operation in China to consolidate its market position in the People's Republic of China.

In 2006 GCR Eurodraw is awarded construction of the largest PC strand operation in the Middle East, with a capacity of 100,000 tons/year.

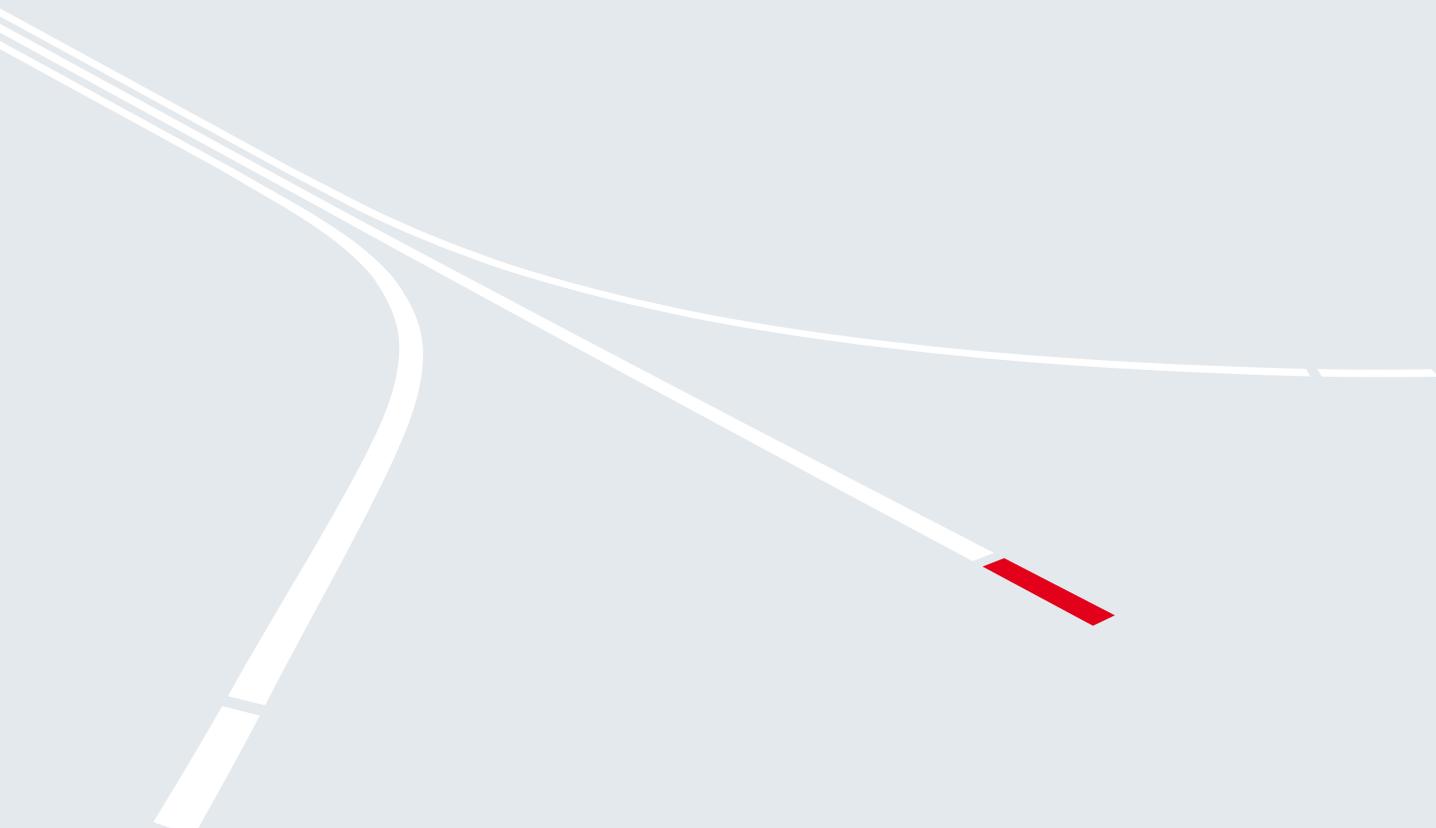
In 2007 GCR Eurodraw, in cooperation with EVG of Austria, purchases the company DEM located in Udine; with this acquisition the production program of the group also covers rolling cassettes and wire profile machinery.

In 2007 GCR Eurodraw purchases Comapac Wire Machinery Srl located near Lecco, a company specialized in the production of pay-offs and take-ups, competitive rolling machines and custom-designed wire drawing equipment for special applications.





PLANTS FOR PRODUCTION OF CONCRETE REINFORCEMENT WIRE AND STRANDS



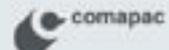
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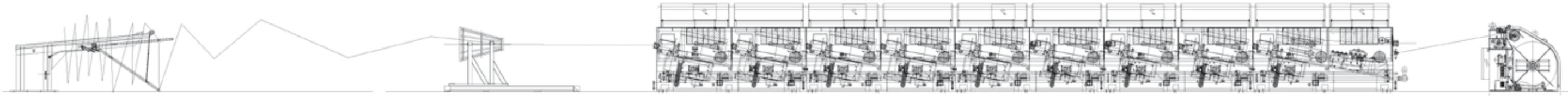
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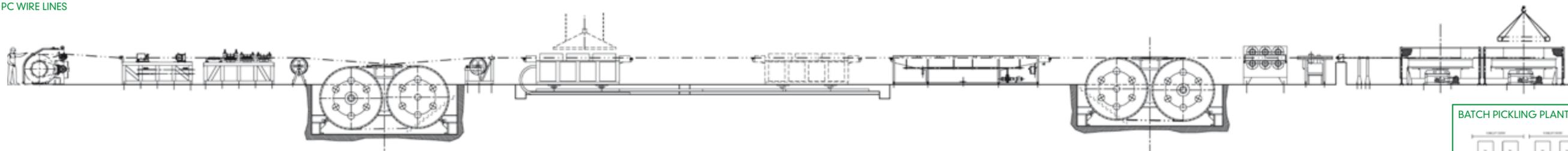
PC STRAND LINES



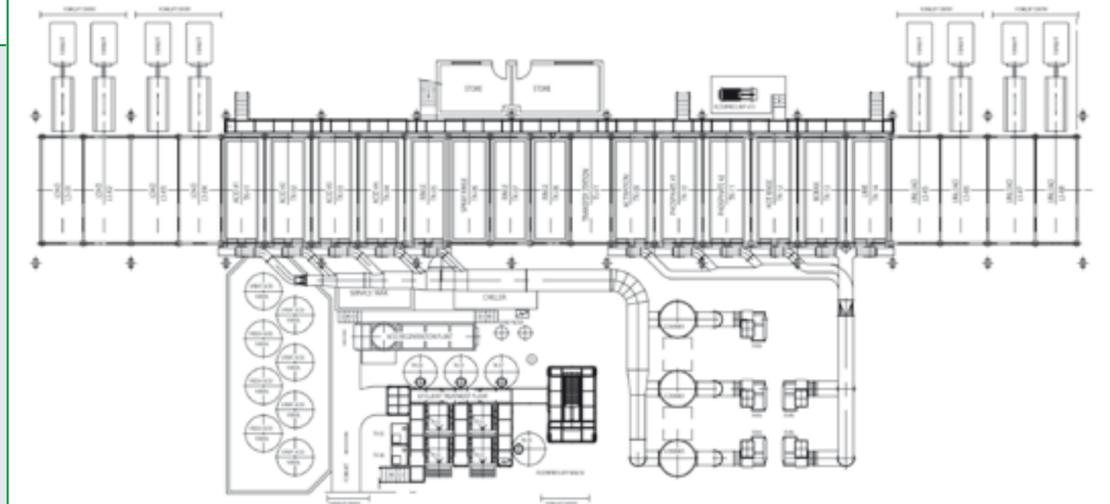
MTS 1200



PC WIRE LINES



BATCH PICKLING PLANTS



COLD ROLLING AND CUTTING LINES

