

# DEMjournal

WE'RE ROLLIN' IT!

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## DIRECT WIRE ROLLING: MAKE A STEP FURTHER!



### REINFORCING WIRE BREAK THROUGH TECHNOLOGY

Shorter footprint, less components, faster production change over, less maintenance, less operational costs, more production output and better efficiency are obtained thanks to DWR technology and its newest design.

Market flexibility demand with small and many productions lots per day require a new flexibility on the machine output. DWR answers to this new demand and fulfills the market needs, zeroing the set-up time, machine preparation and threading.

DWR removes pulling capstans from the cold rolling technology by using driven rolls to make a better wire. This solution has been developed merging the DEM know-how of profile rolling and reinforcing wire rolling, combining

all benefits from each technology. A new patented quick locking system of the rolling rings, combined with a fast roll positioning, allows roll changing time to be reduced in less than a coffee break.

The new direct rolling concept guarantees:

- Higher wire reductions
- Faster and easier wire threading
- Better wire quality
- Better wire straightness when producing bars
- Inline wire weight control

Quick and flexible production changes thanks to automated roll positioning.

### INDUSTRY 4.0

DEM DIGITAL  
PLATFORM:  
TO LEAD  
THE CHALLENGE  
OF THE  
INDUSTRY 4.0



**DEM DIGITAL PLATFORM:  
TO LEAD THE CHALLENGE  
OF THE INDUSTRY 4.0.**

# DDP LETS MACHINES TALK WITH YOU!

**D**EM strongly believes that digitalization will revolutionize and transform the machine industry to a higher level. DDP (DEM DIGITAL PLATFORM) has been designed as an innovative solution for the wire industry which brings the machine users to the next stage of digital manufacturing, where benefits result from a network of interconnected components.

DEM machines have been built since years with a strong number of transducers that today, through the new DDP tool, will enhance the production process to interact with the machine to improve productivity, reduce time to market, predict maintenance and predict tool and components life. DDP is also aiming at reaching 100% yield, "single-piece flow demand".

The goal is to increase efficiency by providing an "x-ray" tool for the production process capable to actively give you data-driven advisory and guidance to support trouble shooting and decision making. DDP will also help companies to forecast potentially critical events before they happen, timely inform users about relevant data, provide data-driven guidance for trouble-shooting and to predict shortages of consumable and component parts.



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## PERFECT LAYER WINDING AND PERFECT WIRE CLEANING FOR COPPER, STEEL AND MORE...

**D**EM has developed a technology of its own to master Perfect Layer Winding and Perfect Wire Cleaning for flat and profile wire manufacturers, which summarized consist of:

- a take-up granting Perfect Layer Winding for sizes as small as 2.5x0.8 mm at 10 m/s speed, with automatic unloading system;
  - a fully automatic brushing system coupled to wiping and drying systems.
- These technologies definitely play a key role when the copper flat wire shall be coated with a layer of enamel for electric insulation. Enameling being a ceaseless process that calls for undisturbed operations and excellent wire surface.



# WIRE SHINES MORE THAN EVER

**D**EM equips nowadays its Flat and/or Profile Rolling Lines removing sticky particles from rolling rolls with a new inline cleaning package. Main advantages are:

- Improvement of wire surface finishing, avoiding undesired marks;
- Efficiency increase of rolling process, with zero rolls slippage due to greasy surfaces;
- Less dependence on cleaning devices at the rolling line exit;
- Increased value of wire, due to higher product quality.

This automatic and adjustable system does not require human intervention.

This package, together with rod pre-cleaning, preparation and finished post rolling wire polishing, guarantees a constant and uniform clean, shiny, bright surface of the final product as never seen before.



## DEM PROVIDES WIRE ROLLING TECHNOLOGY FOR ALL APPLICATIONS

### DEM AND STEEL

DEM is active in the field of:

- Construction industry, with equipment for reinforcing wire in Coils and Bars;
- Architectural industry, with lines for profiles used for door and window hardware;
- Automotive industry, with mills for wire then transformed in mechanical and engine parts;
- Oil & Gas industry, with technology for shapes used as armoring for subsea pipe lines;
- Chemical industry, with know-how for shapes in stainless steel used in filters;
- High Precision industry, with lines for shapes used for watches.

### DEM AND NON-FERROUS

DEM designs and manufactures rolling lines for copper, aluminum, titanium, etc. wires whose final uses are:

- Conductors in electric machines (such as motors and transformers);
- Stranded conductors general overhead infrastructures;
- Electronic harnessing;
- PV ribbon used in solar panels;
- Aerospace industry;
- Medical and surgery applications.

### DEM AND SUPERCONDUCTORS

DEM designs and manufactures rolling lines for superconductors whose final use is:

- Power generation, as the case of magnets used in nuclear power station;
- Medical applications, as the case of windings used in magnetic resonance machinery.



Compaction of 50x50 mm square tube used to implement nuclear fusion plant (ITER).



## RIVA GROUP RUNS LINES FOR COLD ROLLING AND STRETCHING

**R**IVA Group is a leading company in the field of reinforcing products with production sites in Belgium, France, Germany and Spain. In 2015 RIVA decided to award DEM for the supply of 6 new lines for cold rolling and stretching.

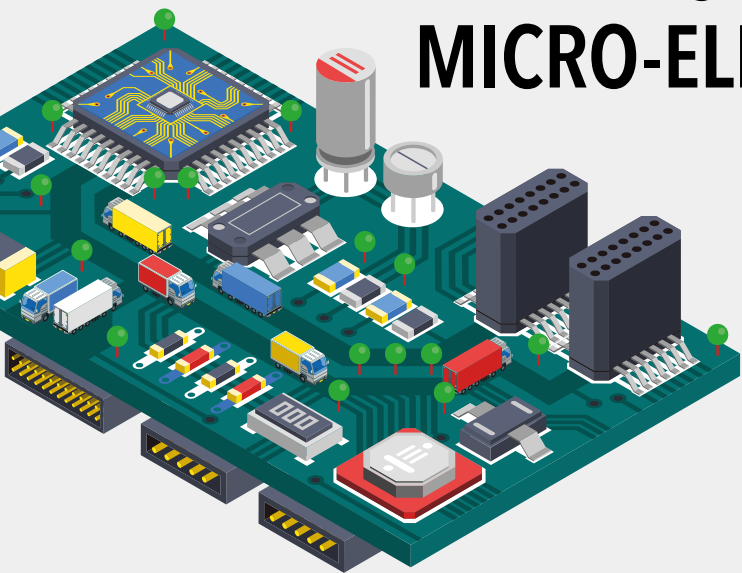
DEM scope of supply included:

- pay-offs with coil weight surveillance system;
- stretching - descaling unit;
- soap applicator for cold rolling;
- rolling cassettes for cold rolling;
- pulling equipment;
- double vertical coilers for fast changing;
- as an alternative, equipment for direct feeding of mesh welders.

Thus, the new lines can obtain both A and B steel classes as per EN10080, with different process methods.



## DEM EQUIPMENT TO PRODUCE MICRO-ELECTRONIC WIRES



**E**DM, electronic and welding wire peak as precise products, having as final destination the automotive and all sorts of high-tech industries. DEM Profile Rolling Lines to produce at such high standard, have the ability to produce profiles as small as 0.25 mm and flats as tiny as 2x0.6 mm.

Measurements on such a minimal scale, with step-less adjustment at micronic level, lead to a tolerance of less than 0.002 mm (2 microns), while error-free traverse winding is performed at speeds as high as 20 m/s.

## XXXL CASSETTES FOR ALL PURPOSES

### STRAND COMPACTING FOR WIRE ROPES

Widely used in cold rolling, cassettes have become more than just shaping devices. They are now extensively used in wire rope making, where they are a key in strand compacting, as well as in final sizing where they are an excellent substitute for dies.

### HEAVY DUTY CASSETTE

Not only Micro Rolling Cassettes to replace dies and Cold Rolling Cassettes for reinforcement wire, the family welcomes now the new CLF-240 Heavy Duty model. It has been designed to cold roll calibers in the range of 30 mm, in ferritic, austenitic and martensitic grades. The Cassette configuration is with two independent sets of three rolls, whose gap position is adjusted by motors.



## SIAT RUNS UP-TO-DATE DEM ROLLING TECHNOLOGY FOR FLATS AND PROFILES



**P**ittini Group is a steel major with headquarters in Italy. The group integrates all facilities to turn steel scrap into downstream products. Within such organization, SIAT stands as the unit in charge for cold rolled flat, profiled and drawn wire. In 2016, SIAT inaugurated a new Cold Rolling Line supplied and commissioned by DEM for the production of profiles for door and window hardware as well as for other applications.

The line incorporates all features for modern and economic production of flat, square and shaped wire, namely:

- An advanced rod preparation system with adjustable blasting flow for descaling as required;
- A mix of flattening (2 rolls) and profiling stands (4 rolls), having all rolls driven individually for finest torque control and highest flexibility;
- A newly developed system for inline tool cleaning (having key impact on final wire brightness);

- An improved inline control of product sizes, consisting of measurement and real-time retroaction;
- A new concept for wire cleaning before coiling;
- An even more sophisticated perfect traverse coiling unit on fixed and openable spools;
- Machine designed for maximum maintenance friendliness (minimization of human intervention);
- System fit for 4.0 industry.

All the above lead to products having:

- perfect contour, as to say premium size tolerance and accurate corner radii;
- top-class glossy finishing, thus excellent surface brilliance;
- optimal resistance: not to forget, hardware components undergo crash testing.



6 MILLION BARS PER MONTH  
AUTOMATICALLY COLLECTED IN  
SUB AND/OR MASTER BUNDLES,  
CONVEYED THROUGH TYING  
MACHINES THAN DELIVERED  
WEIGHED AND PACKAGED

More than 6 million bars per month with the DEM patented high speed in-line Rolling bar production configuration. The high-speed Reinforcing Wire Rolling lines achieves a production speed of 5 m/s for bars as short as 2 meters or up to 10 m/s at longer bars output. All with a noiseless newest bar unloading design.



**OVER 6 MILLION  
CUTS PER MONTH**

# HIGH TECH FOR HIGH CARBON



FOR VARIOUS INDUSTRIES DEM REPRESENTS A GLOBAL PLAYER IN HIGH CARBON WIRE ROLLING TECHNOLOGY FOR THE PRODUCTION OF: PRECISION COLD FINISH BARS, COLD-ROLLED CUSTOM PROFILES, FLAT WIRE, STANDARD SHAPES IN CUT-TO-LENGTH AND OSCILLATE WOUND COIL PACKAGES.

THE KEY PARTS OF DEM'S TECHNOLOGY FOR HIGH CARBON WIRE ARE:

#### PAYOFF:

- horizontal type, for multiple rod coils loading, online welding and uninterrupted rolling;
- with tailstocks for material on spools;
- automatic payoff speed control and synchronization with mill.

#### PRE-STRAIGHTENER:

- robust design and smart automation;
- rolls pitch variable system;
- it can process, in a wide range of sizes/diameters, while excellent material straightness is reached.

#### PRE-CLEANING:

- wet brushing for removal of pre-drawing lubricants;
- shot or chemical blasting for deep cleaning of rod.

#### PROFILE WIRE ROLLING STAND:

- monolithic frame for zero deflection;
- 4 rolling rings, can be either in tool steel or hard metal;
- rings in cross configuration (wire rolled on ring's center) or camera displacement (wire rolled on ring's edge);
- driven by motors or pulled by capstans;
- fully automatic adjusting system for inline gap control under load;
- it can operate in cold as well as in hot process route;
- available in different sizes (for products as small as 0.35x0.35 mm up to 50x50 mm).

#### POST-CLEANING:

- hot water, hot steam or chemical cleaning, for wire degreasing;
- air blowers to wipe away excess fluid;
- hot blowers to dry wet residuals.

#### PERFECT LAYER WINDING COILER:

- traverse perfect coiling;
- it can coil on mandrel as well as on spools;
- variable coil height and eye diameter;
- automatic unloading device (from coil eye-to-the-side to coil eye-to-the-sky);
- suitable for double arrangement (two coilers with automatic transfer of wire).

#### CALANDER SYSTEM FOR CEASELESS

##### ROLLING:

- automatic transfer of wire front end after cut;
- fully automatic adjusting of wire bending.

#### CUT-TO-LENGTH SYSTEM:

- mobile shear for single or continuous cutting;
- unloading and collection system with special care to avoid wire surface damages;
- automatic strapping of bundles;
- automatic transfer of bundles.

# CASSETTES CHANGE IN LESS THAN A COFFEE BREAK

**T**he traditional way to change cassettes in a Cold Rolling Line is now superseded by a new concept. This reduces manual operations to the lowest degree possible: move the trolley supporting the cassette in front of the Cold Rolling Line, switch the selector, slide the cassette to the working position and connect the lubrication and cooling hoses. The full operation is completed in less than 5 minutes, with an exceptional time saving compared to nowadays procedures. In addition, the cassette's rolls setup can be carried out automatically by recalling receipts when positioning the rolls. Furthermore, wire weight can be tuned automatically through a close loop control measurement new system. No more need for sampling. In tolerance wire, yet slim, continuously tracked during the whole production time in line. As fast as a coffee break, as light as lifting a coffee cup, DEM technology eases your tool change.

TOOLING CHANGEOVER TIME IS BECOMING MORE AND MORE CRITICAL IN A SMALL-BATCHES PRODUCTION SCENARIO



# DEM IS HOT

DEM has technologies for:

- Hot rolling as a "roughing stage" followed by Cold rolling, with the latter working as a "finishing stage"; all together providing exact properties, excellent surface finish and proper shape;
- Induction heating used as on-line annealing equipment to relieve stress from deformed material and confer ductility avoiding offline treatments.

## DEM FINISHING EQUIPMENT FOR COILS AND SPOOLS OPERATOR FREE

**D**EM supplies two solutions for reinforcing wire packaging in coils:

- for wire finally delivered on spools, the latter often named reels, or carriers;
- for wire finally delivered without such supports, yet coiled in compact form, and strapped.

Both configurations are operated in a fully automatic mode, in other words without the necessity of man interventions.



The following are zero-operator operations:

- wire feeding to coiler area and wire front end clamping to the take-up;
- rolling process start and take-up feeding up to the pre-set wire weight;
- wire cut at coil completion;
- wire end fixation (on reels);
- full coil exchange with another spool ready for filling (full coil windings are hold tight and the rotating table lift and turns by 180° to serve a new spool);
- with the wire on the unloading position, strapping, weighing, labelling;
- unloading on a run-out roller conveyor by means of an overhead manipulator, whether on spool or as a compact coil.

Both spools and coils are finally removed from the line by the plant crane or fork lifter.

Thanks to the rotary double table the overall changeover time is attained within 1 and half min, granting yield and extra productivity to the whole line.





## INTERVIEWING DEM



# WORKING THROUGH IDEAS

## WHAT ARE THE BENEFITS OF BEING A YOUNG COMPANY?

You have to run faster to catch up and possibly overtake those who started way before you. The advantage is that being young you have an inner passion that boosts the whole company to grow. This drives you to take on projects that are increasingly challenging, developing new ideas and solutions.

## IN YOUR OPINION, WHAT IS THE MAIN CHARACTERISTIC/DIFFERENTIATING FACTOR OF YOUR COMPANY?

DEM is driven by an attitude of sharing and partnering with the Customer's new challenging ideas; most of the time by taking new roads and developing new technologies for a better product. Easier operator interface and reduced maintenance are a few examples of this. We also aim at rolling new materials such as titanium, zinc, gold and special alloys.

## HOW DOES THE RELATIONSHIP WITH THE CUSTOMER CONTINUE AFTER SELLING?

Our first goal is to exceed the Customer's expectations keeping a continuous link with them; during the whole project design phase, in-house equipment testing and throughout the installation and commissioning period. Once the line is handed-over, we keep a constant link through the network so that we are on hand when needed. Our latest development is the DEM DIGITAL PLATFORM to enhance machine output.

## WHAT IS YOUR VIEW OF THE FUTURE OF THE COLD ROLLING SECTOR?

Cold rolling technology is continuing to spread on a wide scale on new applications, thanks to the greater flexibility, higher precision, lower operating costs, etc. DEM is contributing with its innovative Direct Wire Rolling (DWR) concept aimed at minimizing OPEX.



**DEM INVITES YOU  
AT THE NEXT TRADE  
SHOWS**

**2018**

**WIRE CHINA · SHANGHAI**

26<sup>th</sup>-29<sup>th</sup> September

**INDOMETAL · JAKARTA**

17<sup>th</sup>-19<sup>th</sup> October

**METAL EXPO · MOSCOW**

13<sup>th</sup>-16<sup>th</sup> November

**WIRE INDIA · MUMBAI**

17<sup>th</sup>-29<sup>th</sup> November

**BIG 5 · DUBAI**

26<sup>th</sup>-29<sup>th</sup> November

**2019**

**INTERWIRE · ATLANTA**

13<sup>th</sup>-16<sup>th</sup> May

**WIRE RUSSIA · MOSCOW**

June

**WIRE SOUTH-EAST ASIA · BANGKOK**

18<sup>th</sup>-20<sup>th</sup> September

**WIRE SOUTH AMERICA · SAÕ PAULO**

1<sup>st</sup>-3<sup>rd</sup> October