COILING MACHINE

The coiling machine is completely electronic, designed and made to solve a series of problems and limitations common to traditional machines, such as:

- inconsistency of speed due to a single motorization and to the use of clutches to transmit movement to the backing wheels
- long set up times and skilled operators to run the machine
- variation of the coil ohmic value due to possible variations within the wire used
- difficulty to obtain a product without the deformations on the ends due to the cutting operation (curl)
Summary

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COMPOSITION

The machine is formed by:

- No. 2 coil holders for resistive wire
- Device to measure in continuum the wire ohmic value
- Device to measure in continuum the length of the wire (encoder)
- Mandrel group to wind the coil; driven by a brushless motor
- No. 2 thrust (support) wheel group, pushed against the mandrel so that the coil can be wound. They are operated by a d.c. motor
- Cutting device, operated by a d.c. motor
- Hopper to collect coils after the cutting operation
- Device to check the ohmic value of the first coil produced and also used for the automatic self-calibration of the machine at the set ohmic value
- Work bench, complete with drawers

Mandrels are not included with the machine
ADVANTAGES

Elimination of the deformation (curl) normally produced during the cutting process, thanks to:
- adjustment of the pre-cut position on the run (no need to stop the machine)
- NC control: electronic positioning of the blade (can be set very precisely from the operator panel)
- motorized cutting device (coils up to 8 mm ø) – no pneumatic

Dynamic resistance measurement:
- Constant ohmic value of the coil
- Enabling of the cutting system at the set ohmic value (without measuring)
- Identification of wire tensioning problems (I see the log jumping and I adjust the brake)
- Hot spots/ zebra effect/ different materials on a specific section of the wire
- Wrong ohm parameter (if the operator has typed a wrong ohm parameter, the machine stops)

Production in automatic mode without the presence of the operator, thanks to:
- Possibility to program the production (quantity and ohmic value)
- Automatic system which stops the machine in case the wire is tangled around the mandrel
- The speed of the thrust wheels follows automatically the mandrel speed in proportional way
- The mandrel speed and thrust wheels speed are constant, thanks to the use of cc motors (no clutch)

Ease of use:
- User-friendly operator interface: easy and intuitive touchscreen HMI
- Fast and easy format change (different coil diameter, mandrel diameter and/or wire diameter), thanks to the parameters saved under the program
## TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>DIN</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard wire spools type</td>
<td>mm</td>
<td>600</td>
</tr>
<tr>
<td>Length of the standard coil offloading system</td>
<td>6000</td>
<td></td>
</tr>
<tr>
<td>Ratio between wire diameter and mandrel diameter</td>
<td>&gt; 2-2.5</td>
<td></td>
</tr>
<tr>
<td>Number of mandrel revolutions</td>
<td>rev/min</td>
<td>6000</td>
</tr>
<tr>
<td>Product codes to be stored (wire Ø - alloy - mandrel Ø - 1-2 wire coil)</td>
<td>n.</td>
<td>2000</td>
</tr>
<tr>
<td>Max. batches to be set (same product code)</td>
<td>n.</td>
<td>20</td>
</tr>
<tr>
<td>Precision on final coil ohmic value (depending on speed)</td>
<td>ohm ±</td>
<td>0.5 - 0.8%</td>
</tr>
<tr>
<td>Electric supply</td>
<td>V</td>
<td>To be defined</td>
</tr>
<tr>
<td>Total installed power</td>
<td>KVA</td>
<td>1</td>
</tr>
<tr>
<td>Machine dimensions</td>
<td>mm</td>
<td>1300x840x1740H</td>
</tr>
<tr>
<td>Weight</td>
<td>Kg</td>
<td>230</td>
</tr>
</tbody>
</table>

## LIMITATIONS OF THE EXTERNAL COIL DIAMETER AND WIRE DIAMETER

Indicative data, wire max. Ø to be used for min. coil OD to be obtained (mandrel Ø)

<table>
<thead>
<tr>
<th>Coi OD</th>
<th>125/29.D 1 wire 2 wires</th>
<th>125/44.D 1 wire 2 wires</th>
<th>125/45.D 1 wire 2 wires</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,20</td>
<td>0.40 0.35+0.35</td>
<td>0.40 0.35+0.35</td>
<td>0.40 0.35+0.35</td>
</tr>
<tr>
<td>2,50</td>
<td>0.50 0.50+0.50</td>
<td>0.50 0.50+0.50</td>
<td>0.50 0.50+0.50</td>
</tr>
<tr>
<td>3.00</td>
<td>0.70 0.65+0.65</td>
<td>0.70 0.65+0.65</td>
<td>0.70 0.65+0.65</td>
</tr>
<tr>
<td>3.50</td>
<td>0.85 0.75+0.75</td>
<td>0.85 0.75+0.75</td>
<td>0.85 0.75+0.75</td>
</tr>
<tr>
<td>4.00</td>
<td>0.90 0.85+0.85</td>
<td>0.90 0.85+0.85</td>
<td>0.90 0.85+0.85</td>
</tr>
<tr>
<td>4.50</td>
<td>1.00 0.90+0.90 *</td>
<td>1.00 0.90+0.90 *</td>
<td>1.00 0.90+0.90 *</td>
</tr>
<tr>
<td>5.00</td>
<td>1.00 1.00+1.00 *</td>
<td>1.40 1.00+1.00 *</td>
<td>1.40 1.00+1.00 *</td>
</tr>
<tr>
<td>6.00</td>
<td>1.00 1.00+1.00 *</td>
<td>1.40 1.40+1.40 *</td>
<td>1.50 1.50+1.50 *</td>
</tr>
<tr>
<td>8.00</td>
<td>1.00 1.00+1.00 *</td>
<td>1.40 1.40+1.40 *</td>
<td>1.80 1.50+1.50 *</td>
</tr>
<tr>
<td>10,00**</td>
<td>1.80 1.50+1.50 *</td>
<td>1.80 1.50+1.50 *</td>
<td>1.80 1.50+1.50 *</td>
</tr>
<tr>
<td>12,00**</td>
<td>1.80 1.50+1.50 *</td>
<td>1.80 1.50+1.50 *</td>
<td>1.80 1.50+1.50 *</td>
</tr>
<tr>
<td>14,50**</td>
<td>1.80 1.50+1.50 *</td>
<td>1.80 1.50+1.50 *</td>
<td>1.80 1.50+1.50 *</td>
</tr>
</tbody>
</table>

* without ohmic control in continuum  
** minimum wire diameter 1 mm

Concerning the above described limits, the following characteristics have to be guaranteed:

- single wire: mandrel diameter ≥ 2 ÷ 2.5 times wire diameter  
- double wire: mandrel diameter ≥ 2,5 ÷ 3 times wire diameter  
- triple wire: mandrel diameter ≥ 3 ÷ 3,5 times wire diameter
## AVAILABLE VERSIONS

<table>
<thead>
<tr>
<th>Machine model</th>
<th>125/29.D</th>
<th>125/44.D</th>
<th>125/45.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil max. diameter mm</td>
<td>8</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Wire diameter mm</td>
<td>0.15 – 1.00</td>
<td>0.30 – 1.80</td>
<td>0.30 – 1.80</td>
</tr>
<tr>
<td>Mandrel diameter mm</td>
<td>1.10 – 6.00</td>
<td>1.10 – 8.00</td>
<td>1.10 – 11</td>
</tr>
<tr>
<td>Coil with 1-2 wires Optional 3-4 wires</td>
<td>1-2 wires Optional 3-4 wires</td>
<td>1-2 wires Optional 3-4 wires</td>
<td></td>
</tr>
</tbody>
</table>
OPTIONAL PARTS

• REACTIVE BREAK
  Mod. 125/29.D00015
  Mechanic braking system to set the required wire tension.

• KIT TO PRODUCE COILS WITH THIN WIRES OR SMALL MANDRELS
  Mod. 125/00.KIT FOR MANDREL GRINDING (available only for model 125/29.D)
  It is possible to produce coils with single wire, wire diameter < 0,09 and mandrel diameter < 0,60 mm using this special kit.

  Limitations wire and mandrel diameter:
  Min. wire diam. 0.08 mm
  Min. mandrel diam. 0.35 mm

  Limitations on use
  wire diam.  0.08 mm  on mandrel min. diam. 0.35 mm
  wire diam.  0.30 mm  on mandrel min. diam. 0.50 mm

• COIL SPACE WINDING
  Mod. 125/29.DSEP02
  System to separate coils through cutting blade, for wire diameter greater than 0.25 mm.
  Possibility to program up to 100 separations with definition of the separation field either in ohmic value, number of coils or percentage of the total nominal ohmic value of the coil.
  Device complete with:
  o software module
  o no. 2 cutting blades
  o no. 3 bushes
• ADDITIONAL STATIC WIRE SUPPORT, TO ALLOW 3 OR 4-WIRE WINDING:
  
  • STATIC VERSION (FOR 3 OR 4-WIRE WINDING), Mod. 125/29.000300
    composed of:
    o DIN 250 spool holder
    o Breaking cloth with weights

  • DYNAMIC, TO ALLOW 3-WIRE WINDING, Mod. 125/29.000310
    composed of:
    o DIN 250 spool holder
    o Dynamic break (same as 125/29.D00015)

• COIL OFFLOADING SYSTEM AND STATIC OHM MEASUREMENT

  The standard coil offloading tray is fixed and has a length of 670 mm. Longer trays are available, as detailed in the table below.
  In case of production of long coils, the use of pneumatic offloading systems is recommended.

  When producing longer elements, a longer system of static ohm measurement is recommended

<table>
<thead>
<tr>
<th>Model tray</th>
<th>Tray length (mm)</th>
<th>Type tray</th>
<th>Model ohm measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>125/29.D00030</td>
<td>1340</td>
<td>fixed</td>
<td>125/29.D00024</td>
</tr>
<tr>
<td>125/29.D00034</td>
<td>1000</td>
<td>pneumatic</td>
<td>125/29.D00027</td>
</tr>
<tr>
<td>125/29.D00033</td>
<td>3000</td>
<td>pneumatic</td>
<td>125/29.D00026</td>
</tr>
<tr>
<td>125/29.D00035</td>
<td>4700</td>
<td>pneumatic</td>
<td></td>
</tr>
</tbody>
</table>

• TELESERVICE KIT, Mod. 125/29.D000SW

  Software patch to manage ethernet interface
• **CALIBRATION UNIT, Mod. 125/29.D00040**  
  Device to verify calibration, for coiling machines mod.125/29.Dxxxxx. Dynamic and static Ohmic test is provided complete with:  
  - Mechanic connectors to measuring wheel.  
  - box with certified test resistors  
  - set of connection cables

• **3-COLOUR INDICATOR LIGHT, Mod. 125/29.DL0000**  
  The standard indicator light is orange colour.  
  The 3-colour indicator light allows the use of colour to indicate the machine status (green: machine in use; yellow: machine during setting or production batch ready; red: machine in alarm)

• **LUBRICANT, Mod. 125/30.000050**  
  Lubricant specially developed for coiling machines biodegradable and to be washed away with water.

• **DISPENSER FOR LUBRICANT, Mod. 125/29.D00120**  
  The dispenser restores the level of lubricant in the lubricant basin. It is recommended in case the machine works without frequent surveillance.
### Wire Speeds

#### Traditional Machines:

- **Single Wire Coils**
- **Double Wire Coils**

#### C.S.M. Machines:

- **Single Wire Coils**
- **Double Wire Coils**

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#### Table: Wire Speeds

<table>
<thead>
<tr>
<th>Wire Diameter (mm)</th>
<th>Rev./Min</th>
<th>Wire Speed (Mt/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,18</td>
<td>1000</td>
<td>6,6</td>
</tr>
<tr>
<td>0,25</td>
<td>2000</td>
<td>13,2</td>
</tr>
<tr>
<td>0,32</td>
<td>3000</td>
<td>19,8</td>
</tr>
<tr>
<td>0,40</td>
<td>4000</td>
<td>26,4</td>
</tr>
<tr>
<td>0,50</td>
<td>5000</td>
<td>33</td>
</tr>
<tr>
<td>0,60</td>
<td>6000</td>
<td>39,6</td>
</tr>
</tbody>
</table>

**Example:**
- Wire diameter 0,40 mm Coils outside diameters:
  - 2,50 mm: 8,2 Mt/min
  - 3,00 mm: 16,4 Mt/min

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**Diagram:**

- Graph showing wire diameter versus wire speed (Mt/min) for different coil outside diameters.