Wire drawing
Two paths to your success

At Sampsistemi, we strive to understand our clients markets and be aware of their needs, and we have therefore concentrated our efforts on engineering technical solutions which minimise energy requirements along lines to give you a real competitive advantage, for our mutual benefit. We pursue two parallel paths at Sampsistemi, on the one hand developing new cutting-edge products and, on the other, making improvements to existing products to ensure that you have the best always.
Drawing lines

- Rod break-down
  page 4

- Multi-wire drawing
  page 8

- Single-wire drawing
  page 14

- Spooling & coilling solutions
  page 16
Rod break-down line for copper, aluminium and alloys

Pay-offs  | Rod break-down machines  | Annealers  | Dynamic spoolers  | Static spoolers  | Coilers
---|---|---|---|---|---
SV M  | MT 500  | AN 600  | DS 800/1000/1250  | BS 800/1000  | IN 800/1000
SV L  | MT 500 SC  | AN 450  | DS 800/1000/1250 A  |
SV RT  | RB 450  | RC 600  | DS 800 DM/DA  |
SV MO  | RB 400 C  | RC 500  | BD 800/1000/1250  |

<table>
<thead>
<tr>
<th>Rod break-down machines</th>
<th>MT 500</th>
<th>MT 500 SC</th>
<th>RB 450</th>
<th>RB 400 C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. capstan Ø [mm]</td>
<td>500</td>
<td>500</td>
<td>450</td>
<td>400</td>
</tr>
<tr>
<td>Max Inlet Ø [mm]</td>
<td>Cu</td>
<td>Al/Alloys</td>
<td>Cu/Alloys</td>
<td>Al/Alloys</td>
</tr>
<tr>
<td>Outlet Ø range [mm]</td>
<td>Cu</td>
<td>Al/Alloys</td>
<td>Cu/Alloys</td>
<td>Al/Alloys</td>
</tr>
<tr>
<td>No. of wires</td>
<td>1 - 2</td>
<td>1 - 4</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Max. speed* [m/sec]</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>

* Cu & Al Alloys max speed depending on alloy type
Other machine configurations are available on request
All technical data are subject to change without prior notification.

Breaking-down 4 wires at the same time

Optimised energy consumption and production processes mean unrivalled levels of productivity (it is possible to manufacture 9 tons/hour with 4 annealed wires of 1.80 mm).
Rod break-down machines

**RB 450**

- Multimotor technology with slip control technology
- Programmable wire elongation on each draft
- 15% more energy-efficient than state-of-the-art technology
- User-friendly design and full access to the work area for easy string-up
- Fully submerged process with additional spray lubrication on each die (inlet and outlet die cone) and capstan (for string-up process)
- High performance gear transmission
- Anti-backlash capstans to prevent wire breakage during machine stop
- Quick change dies
- Electrical architecture and equipment based on AC Siemens Drive
- Wire path suitable for shaped wire
- No soundproof cabinet needed
- Low preventive maintenance
- Optional first module with 600 mm dia. capstan for special applications
- Optional final rotating die

**RB 400 C**

- Compact design and reduced footprint
- Multimotor technology with intermediate slip recovery for energy saving and better wire quality
- User-friendly design and full access to the work area for easy string-up
- Partially submerged process with additional spray lubrication on each die (inlet and outlet die cone) and capstan (for string-up process)
- High performance gear transmission
- Anti-backlash devices to prevent wire breakage during machine stop
- Quick change dies
- Electrical architecture and equipment based on AC Siemens Drive
MT 500 Series

+ Fully submerged process with additional spray lubrication on each die (inlet and outlet die cone)
+ High performance gear transmission (MT 500)
+ Multimotor technology with slip control technology and programmable wire elongation on each draft (MT 500 SC)
+ Anti-backlash capstans to prevent wire breakage during machine stop
+ Quick change dies
+ Available also in right to left working direction
+ Optional first module with 600 mm dia. capstan for special applications
+ Optional final rotating die

MT 500 SC

500-400 mm conical-profile capstans. In the first module dies work under more than 500 mm of emulsion oil. Programmable wire elongation. Independent, identical and interchangeable AC motors (DC motors also available) on each shaft.

MT 500

500-400-300 mm diameter conical-profile capstans. In the first module dies work under more than 500 mm of emulsion oil.
Horizontal annealer
close control with maximum power factor

The AN series feature an especially long pre-heating path for copper and aluminum wire treatment. Separate drives on each axis avoid any interference with the annealing process.

Three large 600 mm diameter rings increase the contact surface with the wire, eliminating potential power sparks to increase the life of the contact bands.
Annealing rings are easily replaced with convenient access for maintenance. All electro-valves are directly controlled by the line supervision system.

<table>
<thead>
<tr>
<th>Annealers</th>
<th>AN 600</th>
<th>AN 450</th>
<th>RC 600</th>
<th>RC 500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact rings Ø [mm]</td>
<td>600</td>
<td>450</td>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>Transfer pulley Ø [mm]</td>
<td>400</td>
<td>318</td>
<td>400</td>
<td>318</td>
</tr>
<tr>
<td>Max. annealing current [A]</td>
<td>10000</td>
<td>8000</td>
<td>8000</td>
<td>6000</td>
</tr>
<tr>
<td>Max number of wires</td>
<td>2 / 4</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Annealers at a glance
+ Easy string-up ensured by simple wire path
+ Consolidated DC annealing technology for:
  1. lower consumption
  2. annealing from zero speed
  3. excellent re-crystallisation
  4. constant wire elongation
+ Axes and contact rings internally liquid-cooled
+ Wire walker device to increase the life of annealing rings
+ Long-lasting annealing rings
+ Annealing process in auto-generating steam atmosphere
+ Ceramic-coated wire transfer pulleys
+ Air drying by pressure blower and moisture suction device
Multi-wire drawing line

for bare and electroplated copper, copper alloys, aluminium and aluminium alloys

<table>
<thead>
<tr>
<th>Pay-offs</th>
<th>Drawing machines</th>
<th>Annealers</th>
<th>Dynamic Spoolers</th>
<th>Static Spoolers</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV F</td>
<td>DM 105</td>
<td>AN 350</td>
<td>DS 1000 / A</td>
<td>BS 1000</td>
</tr>
<tr>
<td>SV R</td>
<td>DM 105-80</td>
<td>AN 250</td>
<td>DS 800 / A</td>
<td>BS 800</td>
</tr>
<tr>
<td>SV L</td>
<td>DM 80</td>
<td>AN 200</td>
<td>DS 630 C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DM 60</td>
<td>AN 160</td>
<td>BD 800</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AN 135</td>
<td>BD 630</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AN 120</td>
<td>BD 450</td>
<td></td>
</tr>
</tbody>
</table>

High speed drawing of multiple wires with a wide range of configurations to fit your requirements in the best possible way

<table>
<thead>
<tr>
<th>Drawing machines</th>
<th>DM 105</th>
<th>DM 105-80</th>
<th>DM 80</th>
<th>DM 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing rings Ø  [mm]</td>
<td>105</td>
<td>105 - 80</td>
<td>80</td>
<td>80 - 60</td>
</tr>
<tr>
<td>Max inlet Ø [mm]</td>
<td>2.60</td>
<td>2.60</td>
<td>2.05</td>
<td>1.60</td>
</tr>
<tr>
<td>Outlet Ø range [mm]</td>
<td>0.25 - 1.35</td>
<td>0.13 - 0.60</td>
<td>0.08 - 0.50</td>
<td>0.05 - 0.20</td>
</tr>
<tr>
<td>Max no. of wires</td>
<td>56</td>
<td>40</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>Max no. of drafts</td>
<td>25</td>
<td>29</td>
<td>29</td>
<td>37</td>
</tr>
<tr>
<td>Max speed [m/sec]</td>
<td>40</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>

Other machine configurations are available on request. All technical data are subject to change without prior notification.
Multi-wire drawing machines
High quality, maximum flexibility

Sampsistemi multiwire drawing lines guarantee first-class quality manufacture, which is why our products are valued by customers all over the world.

Our transmission system significantly reduces the number of gears required and therefore minimises friction. Furthermore, our design ensures safer and more reliable drawing operations.

DM 105
+ up to 16 wires per row
+ up to 25 drafts
+ max. inlet wire: 2.60 mm

DM 105-80
+ up to 16 wires per row
+ up to 29 drafts
+ max. inlet wire: 2.60 mm

at a glance
+ Extremely flexible solutions with a wide range of possible configurations depending on the customer’s requirements
+ Multi-motor technology with intermediate slip recovery for energy saving and better wire quality
+ User-friendly design and full access to the work area for easy string-up
+ High-speed drawing (up to 40 m/sec)
+ Helical gears
+ No soundproof cabinet needed
+ Easy installation
+ Optimised energy consumption and production processes
+ Wide range of annealers with annealing current from 500 to 7000 A
+ Wide range of dynamic (manual and automatic) and static spooling systems
+ Profibus interconnection: less cabling required
**DM 80**

- Up to 12 wires per row
- Up to 29 drafts
- Max. inlet wire: 2.05 mm

**DM 60**

- Up to 8 wires per row
- Up to 37 drafts
- Max. inlet wire: 1.60 mm

80 and 60 mm drawing cones on DM 60

Multi-motor technology
According to the LCA, Life Cycle Assessment (ISO 14040:2006 and ISO 14044:2006 standards), the obtained results show that: in one working year, DM machine platform enable a reduction of greenhouse gas emissions by over 200 tons CO₂eq compared to traditional machines.
Sampsistemi annealers for multiwire lines

Continuous annealing for excellent results

The AN series features a range of annealers which can easily be adapted to your exact requirements. Sampsistemi annealers stand out thanks to our consolidated DC annealing technology for lower consumption and annealing from zero speed. Versions with electronic unit with high cos Φ and low THD-I are available, too. Ceramic-coated wire transfer pulleys and wire walkers increase wire surface quality and annealing ring life span resulting in a decrease of service and spare part costs while raising the overall machine productivity.

at a glance

+ Designed for copper and aluminium wires
+ 5% annealing accuracy during ramps
+ Easy string-up: reduced set-up time
+ Continuous annealing from 0 m/s
+ Excellent wire drying system
+ Ceramic-plated wire transfer pulleys
+ Wire walker device to increase the life of annealing rings
+ Optional electronic annealing equipment with cos Φ > 0.9 and low THD-I
+ No drying dies required
**Wire walker device to increase life of annealing rings**

**Cleaning device for aluminium wire drawing and electroplated wire**

**Multi-motor technology**

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**Annealers**

<table>
<thead>
<tr>
<th>Annealer</th>
<th>Contact rings [mm]</th>
<th>Max. annealing current [A]</th>
<th>Outlet Ø range [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>AN 350</td>
<td>350</td>
<td>7000</td>
<td>0.25 – 1.35</td>
</tr>
<tr>
<td>AN 250</td>
<td>250</td>
<td>5200</td>
<td>0.150 – 1.024</td>
</tr>
<tr>
<td>AN 200</td>
<td>200</td>
<td>3500</td>
<td>0.150 – 1.024</td>
</tr>
<tr>
<td>AN 160</td>
<td>160</td>
<td>1500</td>
<td>0.10 – 0.51</td>
</tr>
<tr>
<td>AN 135</td>
<td>135</td>
<td>1000</td>
<td>0.08 – 0.32</td>
</tr>
<tr>
<td>AN 120</td>
<td>120</td>
<td>700</td>
<td>0.05 – 0.200</td>
</tr>
</tbody>
</table>

Other machine configurations are available on request. All technical data are subject to change without prior notification.
Single-wire drawing/annealing line
for plain and electroplated wire

at a glance

+ Intermediate and fine wire production range
+ Easy string-up and maintenance operations thanks to full front access and ergonomic design
+ Fully submerged drawing sections
+ Additional spray lubrication available
+ Excellent wire surface quality
+ Great energy savings
+ Annealing performed in a self-generating steam atmosphere
+ Compact design
+ Large diameter annealing rings and long wire path
+ Also suitable for data and communication cables extrusion lines
+ Optional final preheater when in tandem with extrusion line
+ Optional wire temperature control

<table>
<thead>
<tr>
<th>Pay-offs</th>
<th>Drawing machines with integrated annealers</th>
<th>Skin-pass</th>
<th>Dynamic spoolers</th>
<th>Static spoolers</th>
<th>Coiler</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV F</td>
<td>MT 250 RC 4A</td>
<td>SP 250*</td>
<td>DS 800</td>
<td>BS 800</td>
<td>IN 800</td>
</tr>
<tr>
<td>SV R</td>
<td>MT 250 RC 4AP*</td>
<td></td>
<td>BD 800 / 630</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MT 250 RC 6A</td>
<td></td>
<td>DS 630 C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MT 250 RC 6AP*</td>
<td></td>
<td>BD 250 / A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MT 220 RC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>Suitable for tandem extrusion line</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drawing machines</th>
<th>MT 250 RC 4A / 4AP</th>
<th>MT 250 RC 6A / 6AP</th>
<th>MT 220 RC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max drawing cone Ø [mm]</td>
<td>250</td>
<td>250</td>
<td>220</td>
</tr>
<tr>
<td>Max inlet Ø (hard copper) [mm]</td>
<td>3.20</td>
<td>3.20</td>
<td>1.65</td>
</tr>
<tr>
<td>Max inlet Ø (soft copper) [mm]</td>
<td>3.50</td>
<td>3.50</td>
<td>1.80</td>
</tr>
<tr>
<td>Outlet Ø range [mm]</td>
<td>0.32 - 1.40</td>
<td>0.15 - 1.40</td>
<td>0.08 - 0.30</td>
</tr>
<tr>
<td>No. of drafts</td>
<td>17</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Max speed [m/sec]</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>No. of horizontal shafts</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Annealing rings Ø [mm]</td>
<td>250</td>
<td>250</td>
<td>160</td>
</tr>
</tbody>
</table>

Other machine configurations are available on request. All technical data are subject to change without prior notification.
MT RC Series

at a glance

+ Monolithic structure including drawing and annealing sections
+ Horizontal shafts with tungsten carbide or solid ceramic drawing cones
+ Annealing current from 175A DC to 1200A DC
+ Integrated thermoregulation system for coolant refrigeration and circulation
+ Skin-pass module available for data cables applications
+ Final pre-heater available when working in tandem with extrusion line
Spooling & Coiling solutions

Winding solutions designed for copper, aluminium and alloys wires are ideal for Sampsistemi drawing lines and for enhancing drawing systems of other manufacturers. Wire winding quality is excellent and cycle times are reduced in down stream processes.

Coilers

<table>
<thead>
<tr>
<th></th>
<th>IN 1100</th>
<th>IN 800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø range (soft Cu) [mm]</td>
<td>1.00 - 4.50</td>
<td>0.80 - 3.00</td>
</tr>
<tr>
<td>Ø range (hard Cu) [mm]</td>
<td>1.10 - 4.50</td>
<td>0.80 - 3.00</td>
</tr>
<tr>
<td>Ø range (tinned) [mm]</td>
<td>1.10 - 4.50</td>
<td>0.80 - 3.00</td>
</tr>
<tr>
<td>Ø range (Al) [mm]</td>
<td>1.20 - 4.75</td>
<td>-</td>
</tr>
<tr>
<td>Coiling head Ø [mm]</td>
<td>650 - 1070</td>
<td>570 - 800</td>
</tr>
<tr>
<td>Max overall width [mm]</td>
<td>1450</td>
<td>1100</td>
</tr>
<tr>
<td>Outlet filling Ø [mm]</td>
<td>1400</td>
<td>1000</td>
</tr>
<tr>
<td>Overall height [mm]</td>
<td>1790</td>
<td>1750</td>
</tr>
<tr>
<td>Full basket max weight [kg]</td>
<td>3500</td>
<td>1800</td>
</tr>
</tbody>
</table>

at a glance

+ Equipped with an integrated dancer for space reduction
+ For winding wire in metallic or cardboard baskets
+ Automatic full/empty basket change-over without operator intervention at full speed
+ Wide range of conveyors available
+ Optional: wire cooling and drying system for hard wire production
+ Easy integration with existing lines

IN 1100

Close-up of the built-in dancer and cooling system for the hard wire and aluminium production
Static spoolers

at a glance

+ Ideal for high-speed spooling; no reel balancing required
+ All rotating parts are balanced to maximise stability
+ Automatic reel change without operator intervention
+ Wide range of straight-line or “U” shaped conveyors available
+ Spooling onto cylindrical and/or cone-shaped barrel reels
+ Conical spooling onto cylindrical barrel reels available
+ Max. spooling speed of 40 m/s
+ Easy integration with existing lines

<table>
<thead>
<tr>
<th></th>
<th>BS 1000</th>
<th>BS 800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flange Ø range</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>Max overall width</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>Max traverse width</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>Central bore Ø range</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>Full reel max weight</td>
<td>kg</td>
<td></td>
</tr>
</tbody>
</table>

BS 1000

Flange Ø range [mm] 1000 - 630
Max overall width [mm] 750
Max traverse width [mm] 630
Central bore Ø range [mm] 200 - 121
Full reel max weight [kg] 2300

BS 800

Flange Ø range [mm] 800 - 560
Max overall width [mm] 600
Max traverse width [mm] 500
Central bore Ø range [mm] 200 - 121
Full reel max weight [kg] 1300

Reel change on a 56-wires line
Dynamic Spoolers

Single manual dynamic spoolers

<table>
<thead>
<tr>
<th></th>
<th>DS 1250</th>
<th>DS 1000</th>
<th>DS 800 / BD 800</th>
<th>BD 630/DS 630 C</th>
<th>BD 450</th>
<th>BD 250</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flange Ø range [mm]</td>
<td>1250 - 800</td>
<td>1000 - 630</td>
<td>800 - 500</td>
<td>630 - 400</td>
<td>460 - 235</td>
<td>254 - 100</td>
</tr>
<tr>
<td>Max overall width [mm]</td>
<td>900</td>
<td>750</td>
<td>600</td>
<td>475</td>
<td>340</td>
<td>235</td>
</tr>
<tr>
<td>Max traverse width [mm]</td>
<td>800</td>
<td>630</td>
<td>550</td>
<td>400</td>
<td>320</td>
<td>230</td>
</tr>
<tr>
<td>Full reel max weight [kg]</td>
<td>4800</td>
<td>2300</td>
<td>1300</td>
<td>750</td>
<td>250</td>
<td>50</td>
</tr>
<tr>
<td>Built-in dancer</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

at a glance
+ Open frame structure allows for loading on one side and unloading on the opposite side
+ Automatic adjustment of traverse
+ Reels accommodated between pintles
+ Max. spooling speed 40 m/s
+ Easy integration with existing lines

Single automatic dynamic spoolers

<table>
<thead>
<tr>
<th></th>
<th>DS 1250 A</th>
<th>DS 1000 A</th>
<th>DS 800 A</th>
<th>BD 250 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flange Ø range [mm]</td>
<td>1250 - 800</td>
<td>1000 - 630</td>
<td>800 - 560</td>
<td>254 - 100</td>
</tr>
<tr>
<td>Max overall width [mm]</td>
<td>900</td>
<td>750</td>
<td>600</td>
<td>235</td>
</tr>
<tr>
<td>Max traverse width [mm]</td>
<td>800</td>
<td>630</td>
<td>550</td>
<td>230</td>
</tr>
<tr>
<td>Full reel max weight [kg]</td>
<td>4800</td>
<td>2300</td>
<td>1300</td>
<td>50</td>
</tr>
</tbody>
</table>

at a glance
+ Open frame structure allows for loading on one side and unloading on the opposite side
+ Suitable for cylindrical, conical and collapsible reels for “Tight Pack” coils
+ Automatic adjustment of traverse
+ Automatic full/empty reel changeover without operator intervention
+ External conveyor for empty reel loading and full reel unloading
+ Possible integration into automatic reel handling systems
+ Reels accommodated between pintles
+ Easy integration with existing lines
Dual automatic dynamic spoolers

The DS 800 DM / DA series offers wire and cable manufacturers a reliable and productive way to collect their finished product.

Features like self-centering pintles, a shortened distance between reel and wire traverse as well as the new tail device, result in an flawless change-over.

The whole process is controlled by precise motion control, consequently guaranteeing a very accurate pattern on the reel.

<table>
<thead>
<tr>
<th>DS 800 DM / DA</th>
<th>Flange Ø range [mm]</th>
<th>800 - 500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max overall width [mm]</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Max traverse width [mm]</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>Full reel max weight [kg]</td>
<td>1300</td>
<td></td>
</tr>
</tbody>
</table>

+ For copper and aluminum/alloys wires
+ High-precision spooling operation
+ Improved production time
+ Reliable and fast reel change-over
+ Tail device for enhanced system speed
+ Reduced distance between reel and wire traverse
+ Hydraulic self-centering pintles
+ Manual, semi-automatic, fully automatic or robotized loading/unloading
+ Easy integration with existing lines