Wire drawing
Rod break-down line for copper, aluminium and alloys

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 breakdown machines

- 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 commercial gearboxes
- 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 650 mm dia. capstan for special applications
- Optional final rotating die

R1

- Compact design and reduced footprint
- Multimotor technology with slip recovery technology 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 commercial gearboxes
- Quick change dies
- No soundproof cabinet needed
- Low preventive maintenance
- Electrical architecture and equipment based on AC Siemens Drive

R3
+ Low investment cost
+ Multimotor technology with slip recovery technology for energy saving and better wire quality
+ User-friendly design and full access to the work area for easy string-up
+ High performance commercial gearboxes
+ Submerged die-holder
+ Quick change dies
+ No soundproof cabinet needed
+ Low preventive maintenance
+ 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
+ Optional first module with 600 mm dia. capstan for special applications
+ Optional final rotating die
R5 Heavy Duty Rod Breakdown

R5

+ No-slip rod breakdown machine
+ Capstan up to 1000mm diameter
+ Multimotor technology
+ Suitable for large round and flat wires
+ Suitable for contact wire
+ Available shaving equipment system for inlet rod
+ Available skin-pass equipment for finished wire
+ Built-in pointing machine for easier string-up
+ Low preventive maintenance
+ Electrical architecture and equipment based on AC Siemens Drive

R3-WW Rod Breakdown for Welding Wire

R3-WW

+ Line for Mechanical and Welding Aluminium Wire
+ Multimotor technology with slip recovery technology
+ Fully submerged process
+ Large drawing capstans
+ Shaving equipment for removing surface oxide
+ User-friendly design and full access to the work area for easy string-up
+ Low preventive maintenance
+ Electrical architecture and equipment based on AC Siemens Drive

R1-E Rod Breakdown for Enamelling Lines

R1-E

+ Low investment cost
+ Designed for operate in-line with enamelling machines
+ Multimotor technology with slip recovery technology for high wire surface quality and energy saving
+ Complete with haul-off capstan for enamelled wire
+ Partially submerged process with additional spray lubrication on each die and capstan
+ Low preventive maintenance
+ Designed for round wire up 5 mm
+ Designed for flat wire up 20 mm²
Annealers

Horizontal annealers close control with maximum efficiency

The AH series features, such as an especially long preheating path for copper, ETP and Recycled, and Aluminium wire treatment, the individually driven axis, the continuous improvements in cooling and drying section and the easy maintenance increase the wire surface quality, the effectiveness of annealing process and reduce the Total Cost of Ownership.

- Horizontal design for easy string-up and maintenance operations
- Multimotor Technology to optimize annealing process
- Reduce set-up time
- Annealing current up to 12000Amp
- Suitable for the annealing of large wire diameter, up to 7mm
- 5% annealing accuracy during ramps
- Designed for annealing copper from cathod, recycled copper and copper alloys.
- Available left-hand and right-hand line direction
- Optional upgrade for aluminium wire

Annealers

<table>
<thead>
<tr>
<th>Annealers</th>
<th>AH 400</th>
<th>AH 500</th>
<th>AH 600</th>
<th>AH 700</th>
<th>RC 500</th>
<th>RC 600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact rings Ø [mm]</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>700</td>
<td>500</td>
<td>600</td>
</tr>
<tr>
<td>Transfer pulley Ø [mm]</td>
<td>250</td>
<td>318</td>
<td>318</td>
<td>400</td>
<td>318</td>
<td>400</td>
</tr>
<tr>
<td>Max annealing current [A]</td>
<td>4500</td>
<td>6000</td>
<td>10000</td>
<td>12000</td>
<td>6000</td>
<td>8000</td>
</tr>
<tr>
<td>Max number of wires</td>
<td>1</td>
<td>2</td>
<td>2/4</td>
<td>2</td>
<td>2</td>
<td>2/4</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
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

** Pay-offs **

<table>
<thead>
<tr>
<th>Pay-offs</th>
<th>Drawing machines with integrated annealers</th>
<th>Drawing Machines</th>
<th>Annealers</th>
<th>Skin-pass</th>
<th>Dynamic spoolers</th>
<th>Static spoolers Coiler</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO-I</td>
<td>MT 220 RC</td>
<td>MT 250 4A</td>
<td>Al 160</td>
<td>SP 250*</td>
<td>DS 460</td>
<td>BS 630</td>
</tr>
<tr>
<td>SV R</td>
<td>MT 250 RC 4A</td>
<td>T2</td>
<td>Al 200</td>
<td></td>
<td>DS 630</td>
<td>BS 800</td>
</tr>
<tr>
<td></td>
<td>MT 250 RC 4AP*</td>
<td>T4</td>
<td>Al 250</td>
<td></td>
<td>DS 630 C</td>
<td>IN 650</td>
</tr>
<tr>
<td></td>
<td>MT 250 RC 6A</td>
<td>Z1</td>
<td></td>
<td></td>
<td>DS 630 / 800 D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MT 250 RC 6AP*</td>
<td></td>
<td></td>
<td></td>
<td>DS 800 / A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DS 630 / A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Suitable for tandem extrusion lines

** Drawing machines **

<table>
<thead>
<tr>
<th>Drawing machines</th>
<th>MT 250 4A</th>
<th>MT 250 RC 6A / 6AP</th>
<th>MT 220 RC</th>
<th>T2-T4</th>
<th>Z1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max drawing cone Ø [mm]</td>
<td>250</td>
<td>250</td>
<td>220</td>
<td>280</td>
<td>140*</td>
</tr>
<tr>
<td>Max inlet Ø (hard copper) [mm]</td>
<td>3.20</td>
<td>3.20</td>
<td>1.65</td>
<td>3.20</td>
<td>2.60</td>
</tr>
<tr>
<td>Max inlet Ø (soft copper) [mm]</td>
<td>3.50</td>
<td>3.50</td>
<td>1.80</td>
<td>3.50</td>
<td>3.50</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>
<td>0.15 ÷ 1.40</td>
<td>0.15 ÷ 2.00</td>
</tr>
<tr>
<td>No. of wires</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1 ÷ 2</td>
</tr>
<tr>
<td>No. of drafts</td>
<td>17</td>
<td>23</td>
<td>31</td>
<td>9 ÷ 21</td>
<td>9 ÷ 25</td>
</tr>
<tr>
<td>Max speed [m/sec]</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>No. of horizontal shafts</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>2 - 4</td>
<td>*</td>
</tr>
<tr>
<td>Annealing rings Ø [mm]</td>
<td>250</td>
<td>250</td>
<td>160</td>
<td>**</td>
<td>**</td>
</tr>
</tbody>
</table>

* Z1 is a capstan-type drawing machine
** T-type and Z1-type can be combined with Al type annealers
MT RC Series

MT 250 RC 4A / 4AP

MT 250 RC 6A / 6AP

MT 220 RC

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 when working in tandem with extrusion line

Skin-pass module

Spray or spray + submerged type lubrication can be provided

Self-aligning vertical dies
+ Multimotor technology for intermediate slip recovery between each couple of cones for better wire quality and energy saving
+ Final capstan driven by separate motor to allow variable final elongation on the final die and reduced die sets for different finished wire diameters
+ For Cu/Cu alloys, Al/Al alloys, CCA, CCS
+ Horizontal shafts with tungsten carbide or solid ceramic drawing cones
+ 2-4 cones execution available, left and right hand
+ Submerged or spray type lubrication
+ Annealing current from 300A DC to 2000A DC
+ Integrated thermoregulation system for coolant refrigeration and circulation

Z1

+ Multimotor technology with slip control technology for better wire quality and energy saving
+ Programmable wire elongation on each draft
+ User-friendly design and full access to the work area for easy string-up
+ For Cu/Cu alloys, Al/Al alloys, CCA, CCS
+ Quick change dies
+ Submerged or spray type lubrication
+ Single or twin wire
+ Annealing current from 300A DC to 2000A DC
+ Integrated thermoregulation system for coolant refrigeration and circulation
+ Available version for in-line with enamelling plant
Multi-wire drawing line

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

Pay-offs  Drawing machines  Annealers  Dynamic Spoolers  Automatic Dynamic Spoolers  Static Spoolers
SV F  DM 60  AN 120  DS 460  DS 630-A  BS 630
SV R  DM 80  AN 135  DS 630  DS 800-A  BS 800
SV L  DM 105-80  AN 160  DS 630-C  DS 1000-A  BS 1000
DM 105  AN 200  DS 630-D  DS 800  BS 1000
DM 105MM  AN 250  DS 800-D  DS 1000
AN 350

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

Multiwire drawing  DM 60  DM 80  DM 105-80  DM 105  DM 105MM
Drawing rings Ø [mm]  80 ÷ 60  80  105 ÷ 80  105  100
Max inlet Ø [mm]  1.60  2.05  2.60  2.60  2.60
Outlet Ø range [mm]  0.05 ÷ 0.20  0.08 ÷ 0.50  0.13 ÷ 0.60  0.25 - 1.35  0.18 ÷ 1.05
Max no. of wires  16  20  32  56  24
Max no. of drafts  37  29  29  25  24
Max speed [m/sec]  35  35  35  40  40

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

at a glance
+ Extremely flexible solutions with a wide range of possible configurations depending on the customer’s requirements
+ 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
+ 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
+ Profinet interconnection: less cabling required

DM 105-80
+ Up to 16 wires per row
+ Up to 29 drafts
+ Max inlet wire: 2.60 mm
**DM 80**

- Up to 16 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

Multimotor technology
Close-up of the drawing area with 80 mm diameter drawing rings

Close-ups of a 56 wire machine in operation

Special care paid to lubrication (aluminium wire)

Individually driven capstans for a wide range of materials

DM 105MM

+ Individually driven capstans with limited slip
+ Programmable wire elongation on each draft
+ Up to 16 wires per row
+ Up to 29 drafts
+ Max inlet wire: 2.60mm
Sampsistemi annealers for multiwire lines

**AN series**

at a glance

+ Designed for copper, copper alloys and aluminium wires
+ Wide range of annealers up to 7000Amp
+ 5% annealing accuracy during ramps
+ Easy string-up: reduced set-up time
+ Continuous annealing from 0 m/s
+ Wire walker device to increase the life of annealing rings
+ Wire path with ceramic-coated pulleys
+ Excellent wire drying system
+ No drying dies required
+ Multi-motor version available for superior wire surface quality
+ Optional electronic annealing equipment with cosΦ > 0.9 and low THD-I

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.
Cleaning device for aluminium wire drawing and electroplated wire

Multimotor technology

Wire walker device to increase life of annealing rings

### 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>0.15 – 1.05</td>
</tr>
<tr>
<td>AN 200</td>
<td>200</td>
<td>3500</td>
<td>0.15 – 1.05</td>
</tr>
<tr>
<td>AN 160</td>
<td>160</td>
<td>2000</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 – 0.20</td>
</tr>
</tbody>
</table>

Other machine configurations are available on request. All technical data are subject to change without prior notification.
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 downstream processes.

Coilers

<table>
<thead>
<tr>
<th></th>
<th>IN 1100</th>
<th>IN 650</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø range (soft Cu) [mm]</td>
<td>1.00 – 4.50</td>
<td>0.50 – 1.60</td>
</tr>
<tr>
<td>Ø range (hard Cu) [mm]</td>
<td>1.10 – 4.50</td>
<td>0.50 – 1.60</td>
</tr>
<tr>
<td>Ø range (tinned) [mm]</td>
<td>1.10 – 4.50</td>
<td>0.50 – 1.60</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>480 - 650</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>Flange Ø range [mm]</th>
<th>BS 1000</th>
<th>BS 800</th>
<th>BS 630</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 ÷ 630</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max overall width [mm]</td>
<td>750</td>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>Max traverse width [mm]</td>
<td>630</td>
<td>500</td>
<td>400</td>
</tr>
<tr>
<td>Central bore Ø range [mm]</td>
<td>200 - 121</td>
<td>200 - 121</td>
<td>200 - 121</td>
</tr>
<tr>
<td>Full reel max weight [kg]</td>
<td>2300</td>
<td>1300</td>
<td>700</td>
</tr>
</tbody>
</table>

Reel change on a 56-wires line
Dynamic Spoolers

Single manual dynamic spoolers

<table>
<thead>
<tr>
<th>Flange Ø range [mm]</th>
<th>DS 1250</th>
<th>DS 1000-D</th>
<th>DS 800</th>
<th>DS 630-D</th>
<th>DS 460</th>
<th>BD 250</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1250 ÷ 800</td>
<td>1000 ÷ 630</td>
<td>800 ÷ 500</td>
<td>630 ÷ 400</td>
<td>460 ÷ 235</td>
<td>255 ÷ 100</td>
</tr>
<tr>
<td>Max overall width [mm]</td>
<td>950</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>200</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>Flange Ø range [mm]</th>
<th>DS 1250-A</th>
<th>DS 1000-A</th>
<th>DS 800-A</th>
<th>DS 630-A</th>
<th>BD 250-A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1250 ÷ 800</td>
<td>1000 ÷ 630</td>
<td>800 ÷ 500</td>
<td>630 ÷ 400</td>
<td>255 ÷ 100</td>
</tr>
<tr>
<td>Max overall width [mm]</td>
<td>950</td>
<td>750</td>
<td>600</td>
<td>475</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>200</td>
</tr>
<tr>
<td>Full reel max weight [kg]</td>
<td>4800</td>
<td>2300</td>
<td>1300</td>
<td>750</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
The DS 630-800 DS/DA series offers 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.