



## "CAST & PUNCH" GRID PRODUCTION LINE TYPE CW 320/14

Sovema's breakthrough solution which combines lead strip production and punching into a single line.





## Sovema's "Cast & Punch" line produces punched grids with a continuous flow from lead ingots to finished products

### LEAD MELTING FURNACE WITH AUTOMATIC INGOT FEEDER

The lead melting unit is comprised of two pots with a capacity of 20 tons each.

The first pot is designed for melting all the scraps coming from the line and for alloy preparation while the second pot feeds the casting unit.



### CASTING UNIT

This unit produces the continuous casting of a lead strip having a width of 320 mm and a thickness of 14 mm through an endless steel belt system and an ad hoc lead-feeding ladle.

At the output of the unit, a sensor measures the temperature of the raw strip providing feedback to the cooling system, integrated in the casting wheel, to adjust the amount of cooling water.

### AUTOMATIC RAW STRIP CUTTER

The unit cuts the raw strip into small pieces when required, by feeding the scraps back to the furnaces.



### ROLLING MILLS

This unit consists of four rolling stands plus one finishing rolling stand ("4+1" configuration) to roll the strip down to the final thickness ranging between 0,7mm and 1,2mm. A water tank containing the emulsion (1%) for lubrication and cooling of the rolling stands is built in the support frame of the unit. This tank is equipped with a recirculation pump, a water heat exchanger, and a filtering system.

The unit is provided with a strip cooling system in the front end and with an air-blowing drier at the back end.



### CONTINUOUS THICKNESS MEASUREMENT (OPTIONAL)

Laser sensors measure the strip thickness in two points on both sides.

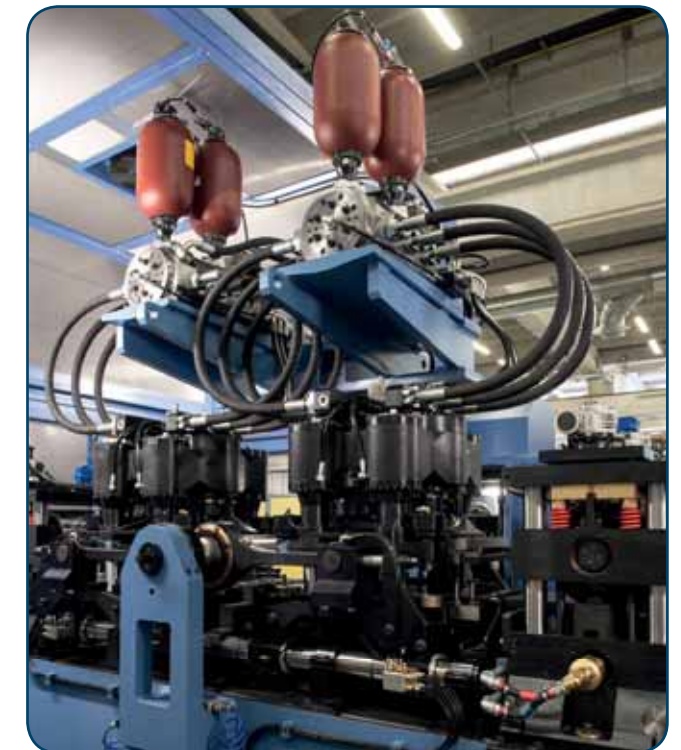
The self-calibration is automatically performed with a frequency set by the user.

It is suitable for working in a closed-loop system with the finishing rolling stand.



### SIDE TRIMMING UNIT

The unit trims the sides of the strip to the required final width up to 300 mm by cutting the scraps into small pieces. It can also cut the whole strip returning the resulting scraps back to furnaces.



### PUNCHPLUS UNIT

This innovative punching unit is designed to work within a continuous-flow process and consists of two punching stations moving alternately upstream and downstream in a synchronized fashion. Each station punches the strip only when it moves downstream with the same speed as the strip's. The two most relevant PunchPlus features consist in the fact that 1) it allows a continuous process flow at constant speed (no Stop&Go) thus avoiding any stress to the lead and 2) it does not require any lubricant thanks to the high punching speed (the so-called "Shooting Effect").

### STRIP CHOPPING UNIT AND DOUBLE COILER

This unit rotates by 180° around a vertical axis and supports two coiling reels: when the coil is completed, the punched strip is cut in the strip chopping unit while the reel is replaced and a new coiling operation is started in the second coiling station. In the meantime, the completed coil is unloaded by a hoist or forklift and replaced with an empty one. The winding operation is manually triggered.

- ▶ **Compact footprint**
- ▶ **Combined "CAST & PUNCH" operation eliminates the need to stock semi-finished products thus reducing WIP**
- ▶ **The continuous flow of scrap returns from the punching unit guarantees a constant proportion of material with respect to the input lead ingots, optimizing the new alloy batch preparation**
- ▶ **No stress on the grid thanks to the continuous process flow**
- ▶ **Production of rolled strips with a reduction ratio of 90% - 95%, providing high corrosion resistance**

## TECHNICAL DATA

### OVERALL DIMENSIONS:

Width: 7,800 mm  
 Height: 3,700 mm  
 Length: 37,500 mm

### PRODUCTION SPECIFICATIONS:

Throughput: up to 6,5 ton/h of Cast Strip  
 and up to 36 m/min of Punched Grid

### ELECTRICAL REQUIREMENTS:

Voltage: 400 V, three phases + N + G  
 (or as required)  
 Frequency: 50 Hz (or as required)  
 Installed Power: 430 kW  
 Average Consumption: 320 kWh

### COMPRESSED AIR:

Pressure: 0.6 MPa (6 bar)  
 Installed: 2 Nm<sup>3</sup>/h  
 Pipe Connector: 1" gas

### EXHAUST REQUIREMENTS:

Lead Pot Suction Flow Rate:  
 1,500 m<sup>3</sup>/h for each pot (max 300°C)  
 Burners Suction Flow Rate:  
 1,500 m<sup>3</sup>/h for each pot (max 700°C)

### TAP WATER REQUIREMENTS:

Pressure: 0.12 – 0.15 MPa (1.2 – 1.5 bar)  
 Average Consumption:  
     Water Supply: 0.5m<sup>3</sup>/h  
     Temperature: 20÷25°C  
 Hardness Value: 15°F (French Degrees)  
 pH: 7.5÷8  
 Fe content: < 0.5 mg/kg  
 Cu content: < 0.1 mg/kg  
 Pipe Connector: 1" gas - thread connections

### CHILLED WATER REQUIREMENTS:

Hardness Value: 15°F (French Degrees)  
 pH: 7.5÷8  
 Fe content: < 0.5 mg/kg  
 Cu content: < 0.1 mg/kg  
 Average Consumption for Casting Wheel & Rolling Mill:  
     Water Supply: 45 m<sup>3</sup>/h  
     Input Temperature: 10°C  
     Output Temperature: 15°C  
     Pipe Connector: DN80 PN16  
 Average Consumption for Punching Unit:  
     Water Supply: 10 m<sup>3</sup>/h  
     Input Temperature: 10°C  
     Output Temperature: 15°C  
     Pipe Connector: 1"-1/2 gas

### LEAD POT GAS REQUIREMENTS:

Installed: 1,200,000 kcal/h  
 Average consumption: 850,000 kcal/h  
 Type of Gas: Natural Gas or LPG  
 Pipe Connector: DN100 PN16