

The Danieli Micromill

The micro mill is based on the 'regional-mill/product-focused' concept and, with its relatively low production capacity of 200-500kt/yr, is designed to serve a specific market (local or regional), focusing on a specific product range and making extensive use of local scrap supply. This, together with the continuous uninterrupted production cycle from raw material to finished product, and the extreme compactness of the plant, makes such plants extremely cost-efficient.

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The MI.DA (Micromill Danieli) is the most cost-efficient rebar production plant available in the world today, enabling it to compete in terms of Capex and Opex with steel plants of much higher capacity. This low-cost mill concept is not only ideal for greenfield sites, but also for existing mills with excess liquid steel capacity.

The benefits of MI.DA, compared to more conventional plants are essentially:

- Lower labour cost
- Low natural gas cost
- Higher yield due to continuous/continuous process
- Lower inventory cost

COMMERCIAL METALS COMPANY MICROMILL

Following the success of the world's first micromill in Mesa, Arizona, which was commissioned in late 2009, USA steel producer Commercial Metals Company (CMC) ordered

a second MI.DA, from Danieli s.p.A in July 2015, to be located in Durant, Oklahoma, 80 miles north of Dallas, Texas. With this investment CMC aims to forge ahead with its plan to solidify its position as a low-cost producer of long products in the USA.

The new mill, specifically for the production of rebar (see *Figure 1*), is expected to be in operation by late 2017.

The approximately \$250 million complex will be built with improved technology derived from both Danieli's and CMC's operating experience.

PLANT DETAILS

The new micromill plant layout is shown in *Figure 2* and will consist of:

- Continuous scrap feeding into the electric arc furnace via a horizontal conveyor, heating the scrap to about 600°C



Ⓐ Fig 1 Bundled rebar

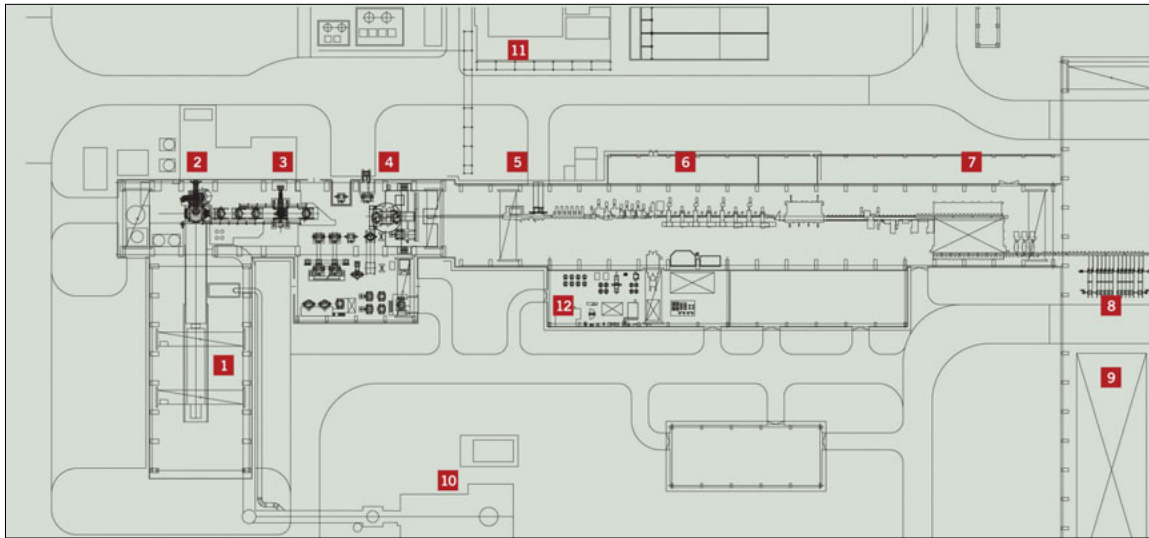


Fig 2 Plant layout

1. Scrap yard. Continuous scrap charging with preheating system
2. AC electric arc furnace
3. Ladle furnace
4. Ultra-high-speed single-strand continuous casting machine
5. Induction equalising furnace

6. 16-stand continuous rolling mill
7. Direct rolling and bundling
8. Wire tying machines
9. Finished product storage
10. Fume treatment plant
11. Water treatment plant
12. Roll shop

- AC electric arc furnace equipped with the most advanced technology packages for automatic and safe operations
- Ladle furnace with a double ladle car, ladle lifting and automatic inert gas hook-up for faster cycles and safer operation
- Alloy addition system
- Fume treatment plant
- Single-strand continuous casting machine featuring the ultra-high-speed FCC® 'PowerMould'. This mould facilitates extremely high casting speeds by generating very efficient mould cooling and hence rapid shell thickness generation
- Induction furnace for billet temperature equalisation prior to entering the rolling mill
- 16-stand continuous horizontal/vertical rolling mill with quick changing and under-load adjustment capability
- The products are the full range of rebars
- Patented Direct Rolling and Bundling (DRB), an ultra-compact finishing end system for hot cutting rebar product to any desired finished length directly off the last finishing stand to produce a superior quality bundle

- Sund Birsta wire tying machines
- Bundle collecting and finishing facilities.

Danieli Automation will supply the complete electrical package, including the induction heater, innovative 3Q automation system and More Intelligence for data analysis and reporting. Danieli Service will provide the Danieli Maintenance Management System (DMMS) package where preventive maintenance, spare parts, personnel, equipment costs and fault analysis are managed through an integrated system.

FUTURE CONTRACTS

By the middle of 2016, three additional MI.DA. plants ranging in capacities from 350,000 to 830,000t/yr are expected to be in operation in the Middle East/North Africa region, while contracts for another four plants elsewhere in the world are under negotiation. **MS**

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