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Review of the Latest Achievements of
Officine Meccaniche Bruno Prezezzi

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When Bruno Prezezzi founded a mechanical engineering workshop in 1954 he equipped his company with machine tools capable of producing precision components such as those needed for rolling mills, extrusion plants, offshore platforms or turbines. His company, Officine Meccaniche Bruno Prezezzi, based near Milan in Northern Italy, very quickly gained a reputation as a qualified, competent, flexible and reliable supplier among this demanding clientele. As it grew, the company became a partner of major Italian plant manufacturers in the steelworks, rolling plant and power station sectors.

That reputation has been maintained by Prezezzi for more than five decades and today the company continues to produce high quality components for various sectors of industry. Its machine park has grown, along with its production knowhow, and the company is capable of handling unit weights well over 100 tons. Prezezzi's facilities now spread over a total area of 36,000 m² of which 6,500 m² are covered, and the company workforce totals nearly 100.

Prezezzi's accumulated skills and knowhow in the design and construction of equipment and established reputation, led it to offer products under its own brand name. Bruno Prezezzi management decided that the aluminium strip casting market offered great opportunities for its special expertise.

Twin-roll casters for the direct production of aluminium strip from molten metal are a less expensive alternative to the conventional production route of continuous casting of slabs and then hot rolling plus cold rolling. Extensive experience in the design and construction of such machines has given Prezezzi a comprehensive understanding of the twin-roll continuous casting process, especially in

the context of roll and core technology. More recently, the accumulated knowledge of the last 30 years has provided the basis for the design of a new caster roll assembly concept. Central to this development has been the manufacture of a new type of core and shell design (patent pending) that the company believes is an important step forward in twin-roll continuous casting technology. The concept itself was described in a technical paper presented during the Aluminium2004 exhibition/conference that took place in Essen (Germany) in September 2004, and published in the 2005 issue of Aluminium World.

The first version of the Prezezzi TT1000 caster was commissioned in May 2003 at the Profilglass plant in Fano, Italy. The customer is a world-leader in the manufacture of spacer bars and decorative profiles for insulated windows. The success of this first

machine led Profilglass to order two further TT1000 lines which went on stream in April 2006. Just before this article went to press, the same customer ordered two more complete lines for delivery in 2007, underlying the satisfactory performance of the three Prezezzi casters in the Profilglass plant.

It is worth mentioning here that the first machine started-up without any major problem and was normal production within a couple of weeks. More remarkable is the fact that the second Prezezzi TT1000 machine in Profilglass (the first of the two commissioned in April 2006) started-up and went into normal production after only two days! This is clearly the result of the long and very close co-operation between the Profilglass cast-house team (and its technologists) and Prezezzi specialists.

The main technical features of the TT1000 layouts, which include a state-of-the-art AGC system, are as follows:

- Maximum castable strip width: 1,750 mm (before edge milling)
- Minimum strip width: 800 mm
- Strip thickness: from 3 to 8 mm
- Maximum casting speed: 6 m per min

The first Prezezzi TT1000 continuous casting line at Profilglass (Fano, Italy)



- Maximum coil weight: 13 tonnes
- Maximum coil diameter: 2,000 mm
- Coil internal diameter: 600 mm
- Maximum torque available for each roll (in continuous mode): 380,000 Nm
- Total force exerted by the two capsules: 2,200 tonnes (at 260 bar)
- Casting roll diameter (in Presezzi's patented configuration): 970 mm
- Casting roll table length: 1,900 mm
- Casting roll power drive: 2 x 110 kW (inverter controlled AC motors).

The main data related to the start-up (April 2006) of these machines were as follows:

- Alloy: 3105
- Strip width: 1,300 mm
- Strip thickness: 5 mm
- Casting speed: 1.25 m per min
- Specific tension on winder: 12 Nm per mm²
- Actual tension on winder: 77,000 Nm
- Force exerted by every capsule: 500 tonnes
- Average torque on top roll: 146,000 Nm
- Average torque on bottom roll: 155,000 Nm.

Following the successful commissioning in May 2003 of the first continuous caster

The two new TT1000 casters at Profilglass (April 2006)



purchased by Profilglass, a Turkish customer, AK Alüminyum, based in Konya, ordered a similar machine, in this case a TT800 (a slightly smaller size). This unit, like the TT1000 lines, was totally preassembled and underwent dry tests in the Presezzi plant before being delivered to the customer. It commenced full production in October 2005.

The parameters of the layout in the Turkish plant, which also incorporates an AGC system, are as follows:

- Maximum cast-able strip width: 1,680 mm (before edge milling)
- Minimum strip width: 800 mm
- Strip thickness: from 5 to 8 mm
- Maximum casting speed: 3.5 m/min
- Maximum coil weight: 9.5 tonnes
- Maximum coil diameter: 1,800 mm
- Coil internal diameter: 600 mm
- Maximum torque available for each roll (in continuous mode): 270,000 Nm
- Total force exerted by the two capsules: 1,900 tonnes (at 280 bar)
- Casting roll diameter (in Presezzi's patented configuration): 880 mm
- Casting roll table length: 1,800 mm
- Casting roll power drive: 2 x 60 kW (drive controlled DC motors).

A typical Presezzi layout for twin-roll casting lines includes the following machines:

- Casting housing (including tip table) with hydraulic gap control capability (AGC)
- Tip and roll preheating equipment
- Roll cooling system
- Roll spraying system
- Strip edge milling equipment
- Pinch rolls
- Travelling shear
- Deflector roll unit
- Threading tables
- Coiler with push-off plate
- Coil car for coil removal

Roll's spray system on TT800



The TT800 caster at AK Aluminioy (Konya, Turkey)



- High pressure and auxiliary hydraulic power units
- Process control and SCADA system.

Melting and holding furnaces, degassing and filtration units, grain refining system, liquid aluminium level control system, traversing X-ray profile and thickness measurement gauge, coil weighing system

and strapping machine are also supplied by Prezezzi when specifically requested by customers.

The Officine Meccaniche Bruno Prezezzi has also been a supplier of the traditional caster cores and shells utilised on twin-roll casters for over 30 years. The company's worldwide customer references include all the major companies active in this field.

Prezezzi's exceptionally skilled technical team provides a worldwide Customer Service, available to both existing and potential clients. This ensures prompt delivery of spare parts, including commercially sourced parts, simple or specially-configured spares and special or dedicated assemblies. The team is also available to provide engineering technical assistance for the study and implementation of modifications and/or improvements to existing machinery, including continuous casters, rolling mills, processing lines of every type, etc.

Complete pre-assembly of the two new TT1000 lines for Profilglass at the Prezezzi facility



The Officine Meccaniche Bruno Prezezzi has excellent chances to be awarded further orders for complete casting lines in various countries around the world in the short term and the R&D department of the company is working very hard for the development of new application technologies of paramount importance to be dedicated to the aluminium field. ■

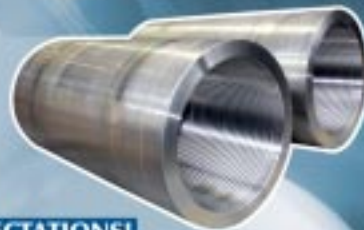
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