Technology Provider of the Year

Danieli & C. Officine Meccaniche S.p.a. (Micromill Project)


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As part of its goal to find new solutions to enable companies to increase productivity while also lowering their energy consumption and other operating expenses, Danieli & C. Officine Meccaniche S.p.a. has developed many steel casting and rolling technologies, including using endless casting and rolling to enable steelmakers to reduce energy in reheating before the steel is rolled.

This is one of the main advantages of the Danieli micromill (MIDA) technology, which has created a 250,000 to 500,000 short ton per year production facility where liquid steel flows into the caster mold and the process continues until the finished products are ready for shipping. By comparison, traditional mini-mills cast semi-finished products, billets or thin slabs that are then cut at prescribed lengths and moved to a storage area to await further processing in the rolling mill.

Continuous and direct casting and rolling eliminates the need for semi-finished products, cooling, storage and reheating, as well as the need for cropping, which, along with eliminating multiple head and tail crops on the final products, maximizes product yield throughout the mill. Also, in an endless operation, with the caster and rolling mill located close to each other, there are more stable rolling conditions, which result in higher-quality finished products.

Based on its energy savings, which have been estimated at about 280 kilowatt hours per ton, and logistics advantages, Danieli estimates that MIDA could result in up to 5% product cost savings – about $15 per ton – as well as a 1-3% increase in yield and a $5 to $10 per ton reduction in operating cost compared with a traditional mini-mill. The technology also offers greater flexibility for production changes, enabling the steelmaker to deliver steel with a short lead time when their customer places an order.

Danieli & C. Officine Meccaniche S.p.a. (Universal Endless Project)

Danieli & C. Officini Meccaniche S.p.a. says that, for the first time ever, coil-to-coil and endless, thermo-mechanical and multi-phase, ultra-thin and thick products can be produced on a single production line, made possible by the company's new DUE® (Danieli Universal Endless) mill, which is the latest addition to Danieli's Quality Strip Production (QSP) family of strip-quality, thin-slab-based steelmaking plants.

What makes DUE® different is that this thin-slab casting and rolling plant can unify, in a single production line, features that up to now have been achieved only by using either endless or coil-to-coil rolling modes in separate production lines. The new technology also eliminates the limiting factors of each of those types of line.

Its ability to produce slabs 110 mm thick after soft reduction, at speeds of more than 6 metres per minute, results in high productivity as it makes it possible to easily reach the mass flow conditions required for the full endless production mode that is necessary for effective production of ultra-thin-gauge steel.

Meanwhile, its ability also to provide the mill with slabs that are thicker than those produced in a traditional thin-slab caster allows the steelmaker to produce a wider mix of products, including low-, medium- and high-carbon, high-strength low alloy, peritectic, silicon, linepipe and advanced high-strength steel grades.

DUE® also results in both high production and high operational flexibility. Also, its tunnel furnace ensures temperature uniformity throughout the thickness, width and length of the slabs, both at the mill entry side of the mill and at the furnace exit, regardless of the casting speed.

While the overall furnace length is limited to about 80 metres from first to last roll, this still allows for the production of full coil weight in coil-to-coil mode.

DUE® covers the full spectrum of geometrical strip dimensions, ranging ▶


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