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## Bow-Type Continuous Casting: A New Era in Ultra-Thick Slab and Heavy Plate Manufacturing

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Continuous slab casting is the leading technology for steel production, but it has limitations for heavy plate production. To pass ultrasonic tests, a reduction ratio of 3 to 4 from slab to final thickness is required, which eliminates central porosity and segregation. Current thick slab casters operate at a maximum thickness of 400 mm, limiting final plate thickness to 100-130 mm.

Primetals Technologies has advanced thick-slab casting with machines capable of casting up to 460 mm thick slabs. To cast such thicknesses in a bow-type caster, several special solutions are needed. Optimized geometry in terms of radius and roll layout improves bulging behavior and slab quality. A continuous straightening process, combined with high-temperature casting, prevents cracking. Hard reduction in the horizontal area of the machine improves slab center quality by reducing porosity and segregation with a thickness reduction five times higher than conventional methods.

The Single Roll DynaGap (SRD) segment allows individual roll gap adjustments, enabling precise reduction at the end of solidification. This reduces center porosity and segregation, making it easier to pass ultrasonic tests and reducing the required mill reduction to less than 3. This new generation of bow-type continuous casting machines with increased thickness and hard reduction capabilities opens new opportunities in the heavy plate market previously inaccessible to continuous casters.

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