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Successful Commissioning of Innovative Anti-Bulging Technology on All Five Arvedi ESP Lines at Rizhao

- **All five Arvedi ESP lines at Rizhao are now equipped with Primetals Technologies' new LevCon Bender Anti-Bulging technology, following 10 years of successful operation**
- **Innovative patented solution from Primetals Technologies controls bulging phenomena in high-speed, high-mass-flow casting**
- **The technology was first successfully tested and implemented in 2021 at the Arvedi ESP line in Cremona, Italy**
- **All new ESP lines worldwide, based on patented Arvedi technology, now feature the anti-bulging solution**
- **Long-lasting partnership between Rizhao Steel and Primetals Technologies continues, supporting the expansion of endless hot-rolled coil (eHRC) markets**

Primetals Technologies has received the final acceptance certificate (FAC) from leading Chinese producer Rizhao Steel for the installation of the innovative LevCon Bender Anti-Bulging system on all its five Arvedi ESP high-speed casters. This upgrade keeps the Rizhao plant—the world's largest ESP facility with over 11 million tons of annual capacity—at the cutting edge, featuring the latest solutions from Primetals Technologies.

Innovation in Action

The LevCon Bender Anti-Bulging technology, patented by Primetals Technologies, was first successfully tested and implemented in 2021 at the Arvedi ESP master plant in Cremona, Italy, and at the Rizhao ESP line No. 5. It enables more precise control over bulging in slab casting, which is crucial for the high-speed process typical of Arvedi ESP technology.

The system combines conventional mold-level control with the ability to dynamically adjust the roller gap in the bender—hydraulically operated and position-controlled—allowing active regulation of the liquid steel volume at the top of the caster. This real-time control strategy continuously compensates for mold-level fluctuations caused by bulging, increasing average casting speeds, improving surface quality by reducing oscillation marks, and minimizing casting powder entrapment. At the same time, it significantly reduces the risk of breakouts and liquid steel overflow.

A stable mold-bath level is essential for smooth operation in any caster but is especially critical for high-speed, high-mass-flow lines such as the Arvedi ESP. At these productivity levels—up to 10 tons per minute—traditional level-control methods alone are insufficient.

Tangible Results

Thanks to superior control of mold stability via the LevCon Bender Anti-Bulging system, some plants have boosted their average casting speed, resulting in a throughput increase of approximately 7.5 percent. The solution also improves the surface quality of eHRC products from ESP lines using Arvedi technology. This supports both higher volumes and production of advanced steel grades, positioning ESP technology for specialized applications and quality-critical market segments.

The introduction of the LevCon Bender Anti-Bulging technology at the Rizhao plant has been instrumental in the successful evolution of Rizhao’s target market, moving from commodity applications into quality-oriented product niches such as grades for automotive applications – both body and components – medium- and high-carbon steel, and hot-forming steel. This Primetals Technologies solution is now deployed across all ten operational Arvedi ESP lines worldwide and is a standard feature on lines currently under development.

The Most Energy-Efficient Technology for eHRC Production

Arvedi ESP technology is recognized as the only officially certified solution for carbon-neutral thin-slab casting and rolling. It is also the most energy-efficient process for producing high-quality eHRC. Rizhao’s first ESP line began operations in 2015; 2025 marks the 10th anniversary of a long and successful partnership with Primetals Technologies. To commemorate this milestone, Primetals Technologies presented Rizhao’s leadership with a 3D model of the Arvedi ESP line, which is now displayed at the Rizhao Visitors Center.

Founded in 2003, Rizhao Steel is a subsidiary of Rizhao Steel Holding Group and is located about 30 kilometers from Rizhao Port in southern Shandong Province.



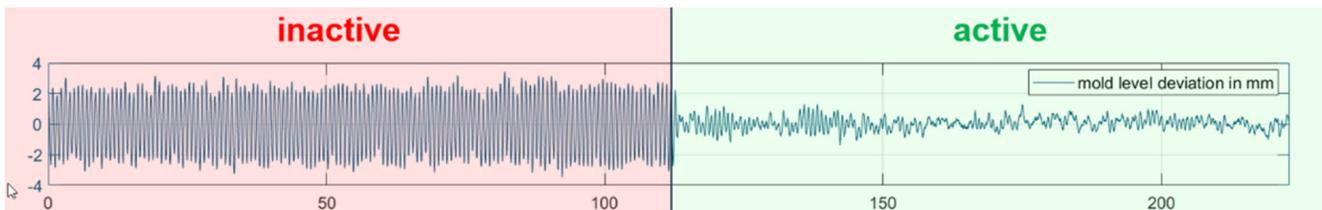
After 10 years of successful operation, all five Arvedi ESP lines at Rizhao are now equipped with LevCon Bender Anti-Bulging technology.

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Display of the Arvedi ESP 3D model at the Rizhao Steel Visitors Center.



Dramatic increase of mold-level stability thanks to LevCon Bender Anti-Bulging from Primetals Technologies.

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