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New Robotics Concept for Safer Casting Operations Realized at Steel Producer in Thailand

- **LiquiRob robotics system from Primetals Technologies designed for a new approach toward safe and efficient shroud manipulation**
- **Advanced 3D camera system ensures exact positioning**
- **Improved occupational health for operators**

Thai steel producer Siam Yamato Steel has realized a new robotic concept from Primetals Technologies, including LiquiRob, at its steel plant in Map Ta Phut. The solution is used for shroud manipulation at Siam Yamato Steel's bloom caster. References from recent robotics system projects and the tailor-made technological solution were among the decisive factors influencing Siam Yamato Steel's choice of supplier.

Thanks to the robotics solution, safety and occupational health have improved significantly at the steel plant. Workers operating the shroud manually previously had to stand right next to the tundish and the flow of liquid steel coming from the ladle. Additionally, in the event of a so-called "frozen ladle" i.e. an unwanted solidification of liquid steel in the ladle, operators had to get into even closer proximity of the ladle slide gate to manually execute oxygen lancing.

Performing dangerous tasks

Developed by Primetals Technologies, the new concept consists of a standard ladle shroud manipulator equipped with a mechanical interface tailored to Siam Yamato Steel's needs. The robot attaches to the interface to guide the shroud in the right position and attach it to the ladle. Primetals Technologies' position measurement system, featuring a 3D camera system, determines the correct position of both the ladle and the shroud manipulator. The LiquiRob robotics system performs several dangerous tasks, including oxygen lancing, tundish measurements, tundish sampling, and tundish powder feeding.

Increased safety for operators

Primetals Technologies has also devised and executed a comprehensive safety concept as part of the LiquiRob robotics solution at Siam Yamato Steel. A fence that encloses the area near the robot as well as doors with automated safety locks ensure that the surroundings are secured before the LiquiRob robot system starts operating, elevating occupational safety at the plant.

Primetals Technologies' scope of supply comprised a LiquiRob robotics system, a tailormade shroud manipulator, a camera system, electronics and automation equipment for automated operation, and a pneumatic cubicle.

Meeting domestic needs

Established in 1992, Siam Yamato Steel produces hot-rolled structural steel. It operates two plants in the industrial estate of Map Ta Phut with a total annual production capacity of 1.1 million tons of steel. The domestic need for heavy section steel is almost entirely met by the production output of Siam Yamato Steel, the company therefore makes a significant contribution to Thailand's economy.

LiquiRob is a registered trademark of Primetals Technologies in certain countries.



The new tailormade LiquiRob robotics system from Primetals Technologies, in operation at Siam Yamato Steel's plant in Map Ta Phut.

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