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Fully automatic dummy bar system from Primetals Technologies receives FAC at Baosteel

- **New fully automatic dummy bar top feeding system replaces semi-automatic operation mode**
- **Operator can now start fully automatic process by pressing only one push button once**
- **Additional sensors and encoders ensure safe and collision-free “dummy bar insertion” into mold**
- **Safety guaranteed despite fully automated procedure and operators’ workload reduced for dummy bar insertion process**

In May 2020, Primetals Technologies received the final acceptance certificates (FAC) for a fully automatic dummy bar top feeding system for the CC3 two-strand continuous caster of Baoshan Iron and Steel Co Ltd. (Baosteel) at Steelworks No. 1 in Shanghai. With the new solution the operator starts the fully automatic insertion of a dummy bar into the mold and the fully automatic takeover from hoist to car each by pushing only one button. To witness and validate the position of all moveable components, Primetals Technologies has installed several additional safety-related measuring systems as e.g. safety encoders, laser distance sensors and safety limit switches. The new solution relieves operators from routine tasks, saves valuable time and guarantees safety requirements despite the automatic processes. The automatic sequence can be started from the casting platform (by push button on LCP) or from the main control room via Level 1 - HMI (Integrated Control Center – Room “ICC”).

Fully automatic dummy bar system merges single sequences

The new fully automatic dummy bar top feeding system from Primetals Technologies executes all necessary steps for the dummy bar insertion into the mold and the takeover of the dummy bar by withdrawal drives, each in one sequence. The operator just has to push one button once at the local pulpit (LCP) or on the HMI (human machine interface) in the main control room (Integrated Control Center (ICC)) to start such a fully automated sequence.

In the past, the operators of Baosteel had to control and supervise each step of the insertion of a dummy bar into the mold as well as each step of the takeover from hoist to car. Such a sequence consisted of several steps, and each step had to be started manually by pushbuttons (= semi-auto mode) on the local pulpit (LCP) on the casting platform. Before the start of any next subsequent step, the operator had to supervise whether the previous step was completed correctly - like e.g. car traveling to exact mold or hoist position, hoist lifting position or correct chain positioning.

Additional safety-related measuring systems installed

For a safe and reliable operation of the fully automatic dummy bar top feeding system, it is very important, that the hoist, the car and the chain are in the exact and correct position for all steps of a fully automated sequence. Therefore, Primetals Technologies installed several additional safety-related measuring systems as e.g. safety encoders, laser distance sensors and safety limit switches. These components continuously witness and validate the correct position of all controlled components before any automated movement is released. Before the installation of the new fully automatic dummy bar top feeding system, the operator himself had to review the result of each previous step as well as the correct positioning of all components before initiating the next step.

Safety improved and time saved

With the new solution, the operator is relieved from routine tasks and just has to monitor the fully automated sequence for the dummy bar insertion and takeover by withdrawal drives. In case of any problems, operating personnel can intervene by stopping the automatic sequence and switching to semi-automatic or manual mode. These modes can also be used for maintenance tasks. After the fully automatic dummy bar insert and takeover of the dummy bar by withdrawal drives, the operator only has to adjust the casting width for the width adjustable mold. This is executed as usual, and he jogs the dummy bar to the exact start position in the mold by a pendant panel back.

Project background information

This project was part of the modernization of the CC3 continuous caster at Steelworks No. 1 in Shanghai. In 2019, a new Integrated Control Center (ICC) for controlling and monitoring the entire continuous casting plant was commissioned including two casting platform robots and a new facial recognition system.

Baoshan Iron & Steel Co Ltd. is part of the newly formed China Baowu Steel Group Corp Ltd, the second largest steel producer in the world with a production capacity of 70 million metric tons.

Baosteel produces high-quality products for both the Chinese domestic and world markets. The CC3 continuous caster at Steelworks No. 1 in Shanghai produces slabs in two strands, each with a width of between 1,200 mm and 2,300 mm, with an annual production capacity of 2.3 million metric tons.



With the new fully automatic dummy bar top feeding system from Primetals Technologies, Baosteel can now start complete sequences as e.g. the takeover from hoist to car by pushing just one button.

This press release and a press photo are available at <http://www.primetals.com/press>

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Primetals Technologies is a joint venture of Mitsubishi Heavy Industries and partners, with around 7,000 employees worldwide. To learn more about Primetals Technologies, visit the company website www.primetals.com.