QualiMaster MT1

Fully automatic sinter feed testing

Bulk density · Permeability · Moisture

High and stable sinter quality
Sinter mix preparation by EIRICH

EIRICH supplies mixing and agglomeration systems for feeding the sintering belt. Measuring and control technologies complete the product line and assure high quality.

EIRICH QualiMaster MT1

The new EIRICH QualiMaster MT1 is designed for fully automatic sampling and analysis of granulated sinter feed. Continuous optimization and constant supervision of the sintering process is the key to meeting productivity goals and other business objectives in today’s competitive environment in ironmaking. EIRICH QualiMaster MT1 comprehensively automates and digitalizes the sampling process. The obtained data enable the expert systems to reap the full benefits in terms of productivity and efficiency. Important parameters for sinter plant process control are the moisture content, the permeability and the bulk density of the sinter raw mix.

Robot

The robot is the reliable and flexible device for taking and handling samples in constant quality.

Sampling

The sampler takes representative samples directly during material discharge from the conveyor to the feeding hopper of the sintering machine.

Sample preparation

This complete sample is fed to the rotary sample divider. Cups for collecting the individual samples are completely filled in several layers. When the cups with the individual samples are taken out by the robot every cup contains the same bulk material volume.

Measurements

The robot puts several individual samples onto a scale, one after another, to determine the bulk density. The corresponding sample is subsequently placed onto the device for measuring the moisture or permeability. Additional measuring stations can be added easily.

System for the preparation of sinter with QualiMaster MT1
Laboratory samples
To perform tests in the laboratory, samples can be removed from the robot's safety area through a security gate.

Clean-up:
After measuring, the cups are cleared, cleaned and restored. The waste container below the rotary sample divider is cleared and returned.

Technical characteristics*

<table>
<thead>
<tr>
<th></th>
<th>Primary sample:</th>
<th>Individual sample:</th>
<th>Moisture values:</th>
<th>Density values:</th>
<th>Permeability values:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20 - 40 liters</td>
<td>2 liters</td>
<td>6 per hour</td>
<td>24 per hour</td>
<td>24 per hour</td>
</tr>
<tr>
<td></td>
<td>6 times per hour</td>
<td>6 pieces</td>
<td></td>
<td></td>
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*All values are approximate data

Benefits

- Standardized sample taking
- Fully automatic sample preparation and analysis
- Improved operator safety
- Fast response to changing process parameters
- Greater flexibility in the selection of raw materials
- Increased plant productivity
- High and stable sinter quality
- Substantial energy savings thanks to optimized process control

Samples for laboratory
Sample preparation
Sample analysis

Tool changing system
Cleaning device
Conveyor belt
EIRICH QualiMaster MT1 modular concept
The robotized system allows to select a great variety of features according to the individual demands.

The ECO line operates with direct sampling. The cups are directly filled in the material flow of the sinter belt.

The PROFI line works with representative sampling and a rotary sample divider. Thus the PROFI line reaches the highest quality of measurement results.

For the measurements, an individual selection of the units for moisture control, bulk density and permeability is possible. Additionally, the security gate for collecting samples out of the safety area can be added to the system.

In addition, the measurement results are evaluated according to adjustable thresholds and marked as valid or invalid. The data are transferred to the expert system via interface. This enables the expert system to perform a comprehensive evaluation and to react quickly to spontaneous events / process fluctuations.

EIRICH offers a control system from a single source. Hardware and software are engineered and implemented at EIRICH in order to guarantee an integrated system with a high level of functionality. The EIRICH control is able to communicate with different robot systems.

The EIRICH Control system – flexible and professional
The control of the QualiMaster MT1 is designed as a modular system. The operator can allocate one or more measuring tasks to each individual sample. The control optimizes the entire process online. Depending on the occupancy of the measuring stations, measuring tasks are brought forward or postponed. This self-learning software concept simplifies the time optimization of the sequence for the operator.

The controller comprehensively records and archives the various measurement results. Beside the basic results of measuring tasks also the adjustable machine parameters required for calculations and the measured variables of the individual sensors are filed.