p-matriX

3D level measurement system for blast furnace plants

Engineering GREAT Solutions
p-matriX is a measuring system for gauging the geometric shape of the bulk material surface in a blast furnace optimising burden load and usage.

The measuring method of the p-matriX-measuring probe works reliably and robustly within the hot and dust-laden atmosphere of a blast furnace. The measured data is recorded, analyzed and visually plotted for the user. The p-matriX Radarprofilometer is also able to measure directly the temperature of the bulk material inside the blast furnace.

The radar-based p-matriX system measures the transit times of electromagnetic waves between the bulk material (coke and/or ore) and the horn antenna. The distance is then calculated on the basis of the determined transit times.

During a scan of the complete burden/coke topology, the system collects multiple measurement points, which are used to create a 3D-Image of the burden/coke topology. The operator is able to extract filling levels from every spot of the complete cross-sectional area of the blast furnace.

### Key features

- Measurement of the depth of burden/coke temperature
- Independent of the temperature gradient in the process area
- Impervious to dust and aggressive media
- Simple and rugged design of the antenna
- Complete scan of the burden/coke topology after each charging cycle
- Visualization of the measurement results in 3D
- Remains constantly inside the Blast Furnace
- Withstands high temperatures due to nitrogen cooling
- No loss in weight as when using a mechanical probe
- No impurity of sensitive measurement optics
- The p-matriX-Radarprofilometer can also be directed to any location over the entire furnace for spot measurement
- Data-exchange via multiple interfaces
- High accuracy of measurement results
- Multiple options to display the measurement results
**Benefits**

The aggressive and dust loaded atmosphere within a blast furnace represents challenging requirements for measurement systems. Therefore, the new p-matriX system utilizes the advantages of the RADAR technology, which has been proven in the past few years under these conditions. The robust mechanics as well as the simple antenna design ensure a failure-free operation. The p-matriX can be combined with a temperature profile and 3D burden profile cross section. This data can be stored and used for further performance evaluations.

**Product Specification**

<table>
<thead>
<tr>
<th>Max. Temperature (peak)</th>
<th>Location of installation</th>
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<tbody>
<tr>
<td>1200°C</td>
<td>Multiple options</td>
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<table>
<thead>
<tr>
<th>Design Pressure</th>
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<tr>
<td>3.5 bar(g)</td>
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