

READY TO EXCEED.

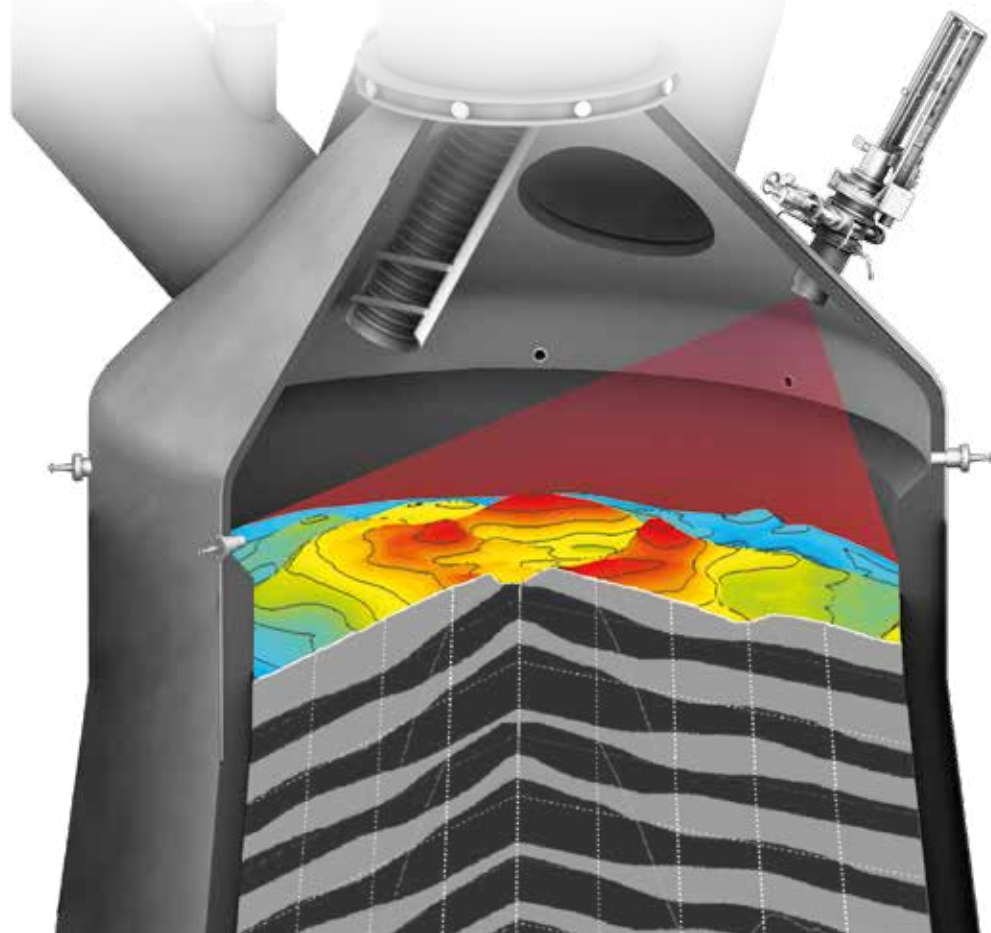


TMT

TAPPING
MEASURING
TECHNOLOGY

TMT 3D TOPSCAN™

REAL SURFACE PROFILE MEASUREMENT



tmt.com

MONITORING THE BF CHARGING PROCESS

The key process monitoring tool

Profilemeters have evolved to become one of the key process monitoring tools in blast furnace operation. Until recently, all profilemeters were based on single point radars providing a limited amount of data points, at best some 200-300 points, worst case only about 8-10 points. Under the assumption of rotational symmetry these points were then computed into a burden surface for further analyses.

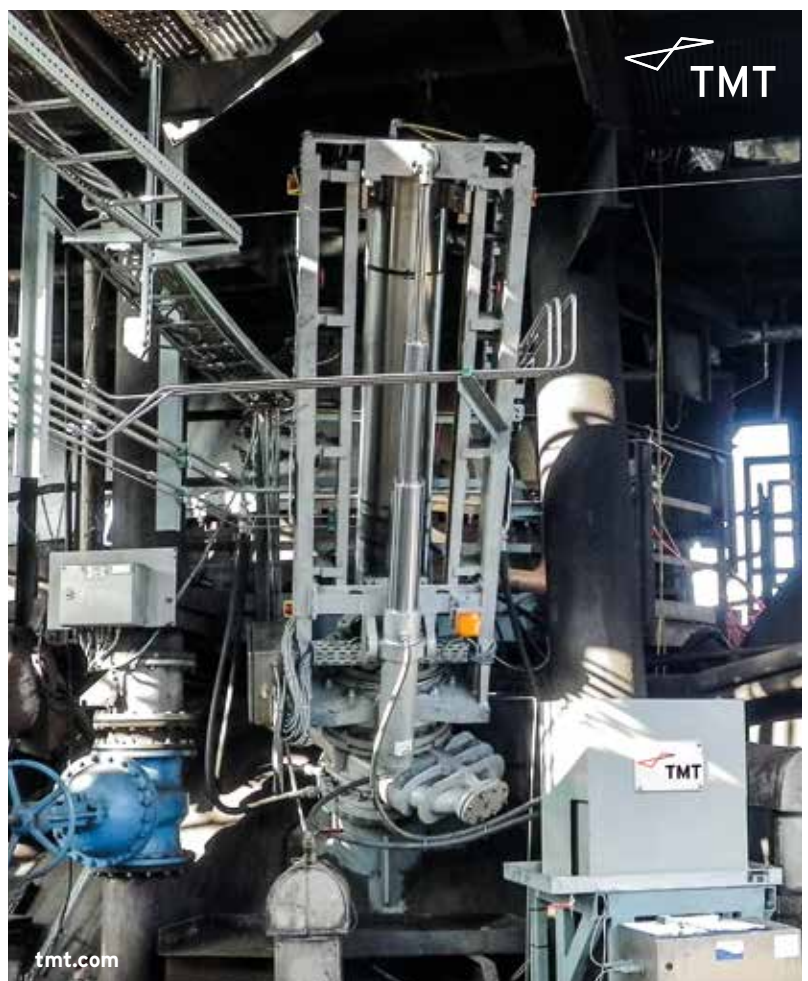
3D surface measurements inside the blast furnace

The TMT 3D TopScan™ uses the latest in radar- and antenna technology and provides a real surface scan with multiple thousand data points within a few seconds. Asymmetries are now detected and the charging feedback is drastically increased, taking process analyses to the next higher level.

For maximum reliability, the number of components and complex mechanical movements have been minimized in TMT's design.

In the measurement position, no mechanical parts protrude inside of the top cone area. Interferences with the rotating chute are impossible and no negative effects on the falling burden material can occur.

As blast furnaces only make money when producing iron, BF stops only occur a few time per year. To allow for maintenance without causing BF downtime, the TMT 3D TopScan™ can be retracted and maintained, while the furnace is in operation.



/ YOUR BENEFITS

Real 3D surface measurement:

Continuous measurement
after and during charging
at highest resolution

Fast and efficient

No charging time loss
One complete surface
measurement every
20 seconds

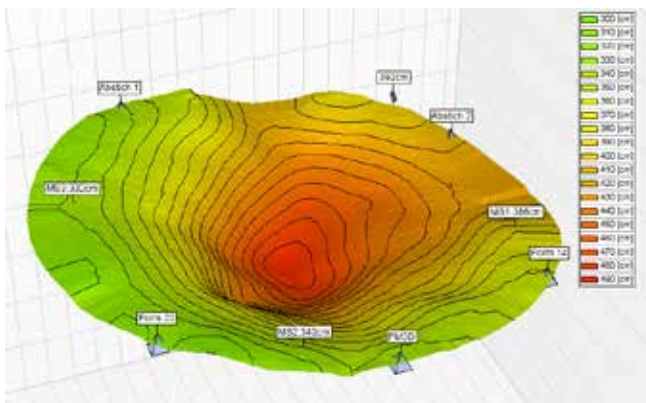
Compact and simple design

No protrusion into the
BF top cone area, no
potential interferences

Maintenance friendly

Maintenance possible with
furnace on blast
No platforms required

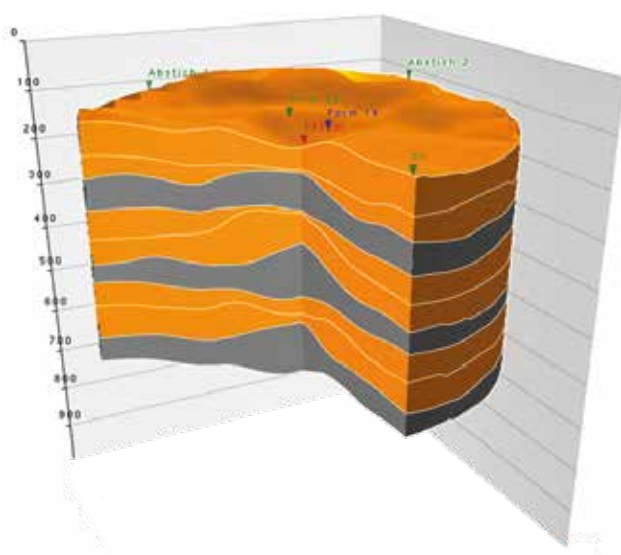
/ SURFACES RECORDED BY TMT 3D TOPSCAN™ DURING BF OPERATION



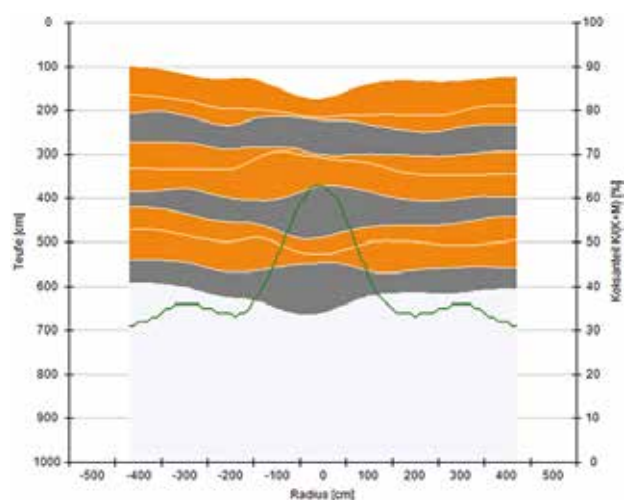
PROCESS FEEDBACK

- ▶ Live burden surface monitoring
- ▶ Detection of all asymmetries
- ▶ 3D layer model
- ▶ Cross-section at any radius
- ▶ C/(C+O) curve at any radius
- ▶ Areal burden descent speed distribution

/ THE 3D LAYER MODEL RECORDED BY TMT 3D TOPSCAN™



(9) 38.03 m³ Erz	02.02.2018	10:09	PS 800V
(8) 22.95 m³ Erz	02.02.2018	10:02	PS
(7) 33.95 m³ Koks	02.02.2018	09:57	PS
(6) 26.73 m³ Erz	02.02.2018	09:54	PS
(5) 34.26 m³ Erz	02.02.2018	09:46	PS
(4) 33.45 m³ Koks	02.02.2018	09:38	PS
(3) 26.77 m³ Erz	02.02.2018	09:32	PS
(2) 34.06 m³ Erz	02.02.2018	09:23	PS
(1) 33.45 m³ Koks	02.02.2018	09:15	PS
Bas	02.02.2018	08:06	PS 800V



TECHNICAL DATA

- ▶ Field of view: **± 60° cone**
- ▶ Accuracy: **± 50 mm**
- ▶ DN500 **PN10 flange**
- ▶ Building height: **~ 3 m**
- ▶ N2: **100 Nm³/h**
- ▶ Cooling water: **2 m³/h**



TMT TAPPING
MEASURING
TECHNOLOGY

**NO MATTER WHERE,
SUPPORT IS JUST
AROUND THE CORNER.
WORLDWIDE.**

15

**LOCAL GROUP
WORKSHOPS**

26

**REPRESENTATIVE
OFFICES**

12

**PARTNER
ENGINEERING
CENTRES**

Maximum equipment availability

With TMT you have local support around the world. OEM subsidiaries and workshops spread around the globe are ready to assist you throughout the lifetime of the equipment.

/ SERVICES

- ▶ Comprehensive refurbishments to extend the lifetime of your equipment
- ▶ Tailor made technology upgrades to boost the performance of existing equipment and to increase the safety level
- ▶ Site surveys and preventive maintenance to ensure availability of the equipment
- ▶ Supply of OEM spare parts and consumables to ensure reliable performance

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