

LaCam® Technology – True 3D Positioning in Extreme Conditions

When precision matters, positioning must be absolute. LaCam® 3D Positioning makes geometry measurable absolutely accurate - even under the most extreme metallurgical conditions.

LaCam® 3D Positioning uses a patented **IPS-positioning** scan that determines the exact 3D geometry and position of a vessel in all six degrees of freedom, with unmatched robustness and accuracy.

How it works

LaCam® matches hundreds of thousands of high-precision measurement points from the inner vessel geometry with measurements of the outer structure, creating a comprehensive point cloud that defines the vessel's true spatial position. Unlike conventional systems, results are not affected by dirt, slag, and harsh surface conditions, and measurement errors typical of point lasers or reference-based systems are eliminated.

Built for steelmaking

The LaCam® laser scanner delivers a repeatability of ± 2 mm, even on hot surfaces up to $1,700^{\circ}\text{C}$ ($3,092^{\circ}\text{F}$), with an unrivalled system accuracy of ± 5 mm

Why does it matter

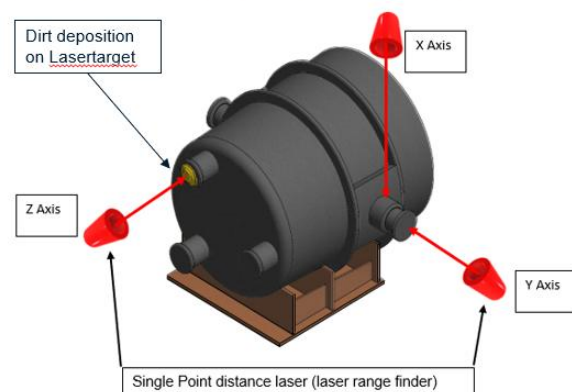
- Accurate vessel geometry and positioning are the foundation for advanced inspection, automation, and AI-based analysis.
- Reliable positioning enables consistent comparisons over time, regardless of vessel movement or installation tolerances.
- Precision positioning turns raw scans into trusted, decision-grade and AI-grade data.

#Steelmaking #Digitalization #IndustrialAI #LaCam #MINTEQ

Position Finding Methods for Ladle Refractory Measurements

Single-point distance laser(s) to determine ladle position

In general, for each degree of freedom a separate distance laser unit is necessary. Each laser is pointing onto a small spot (few mm) at the ladle outer shell. Depending on the number of distance laser you have measure points for position detection e.g. distance laser for X, Y, Z provides 3 measurement points. This method is often used but has many disadvantages and could be reason for non accurate measurements and evaluation.



Structure Finding by Position Scan (Patented LaCam Method)

The additional position scan is performed from a different position relative to the ladle as the central measurement scan. The position scan achieves several hundred thousand accurate single measurement points on the ladle outer shell. All 6 degrees of freedom are covered by these large amounts of data (point cloud). With this method you have only one measurement unit and even with deposition of dirt, slagged plates, etc. you have enough "reference points" to determine the exact position. This provides the best achievable accuracy.

