

MiNTEQ

A MINERALS TECHNOLOGIES COMPANY

SEGMENTATION

MINSCAN™ / LACAM® / SCANTROL™

FAMILY OF PRODUCTS

14.11.2025

What is MINSCAN™ ?

Technology to maintain EAF refractories in optimal condition.
Maintenance is done in a hot EAF furnace after tapping and before charging.



Liquid refractory material is sprayed onto the hot furnace walls by a tiltable and rotatable nozzle.

Gunning Capabilities

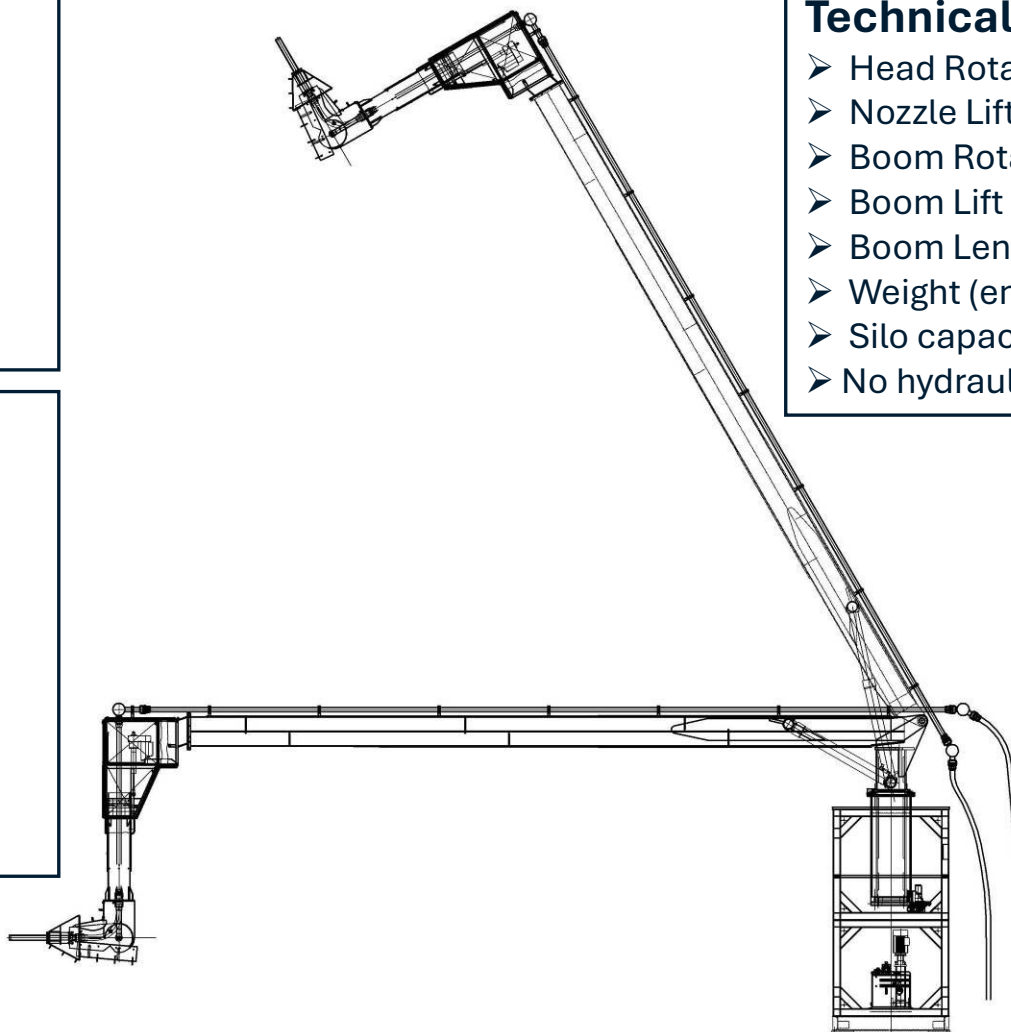
- MINTEQ®'s Patented Nozzle
- Up to 150 kg/min wet material
- Up to 250 kg/min dry material
- EAF Maintenance possible immediately after tapping
- EAF Maintenance possible with remaining steel in the furnace

Control System

- Remote Control of all movement and for material selection
- Controlled by **SIEMENS PLC** and frequency inverters
- Hydraulic movements controlled by proportional valves
- Emergency functions available to move the robot out of the EAF
- CE Certified reg. **EN 98/37/EC**

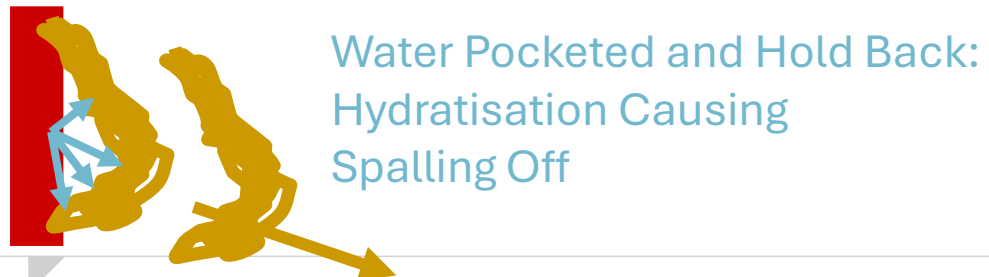
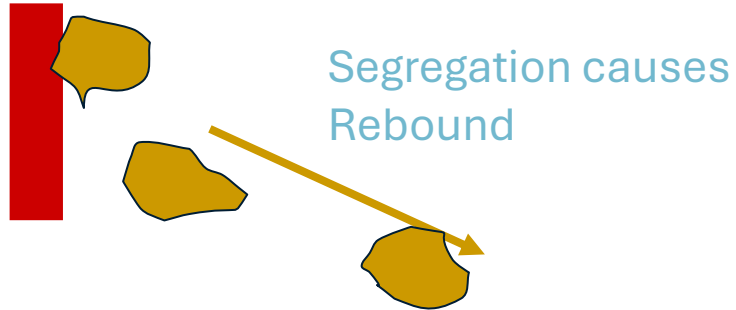
Technical Data

- Head Rotation 360° endless
- Nozzle Lift 1° – 105°
- Boom Rotation 0° – 300°
- Boom Lift 0° – 80°
- Boom Length up to 12 m
- Weight (empty) 7.500 kg
- Silo capacity 3 mt; Tank capacity 1.5 mt
- No hydraulics in hot furnace zones

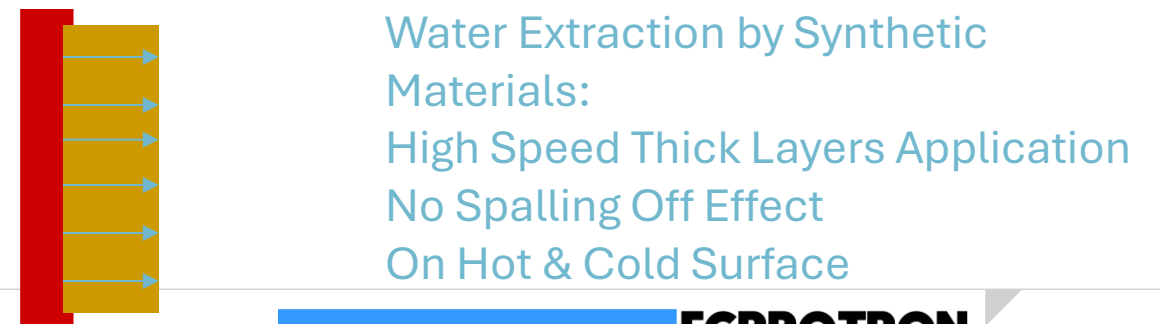


Advantages Versus Hand-Gunning

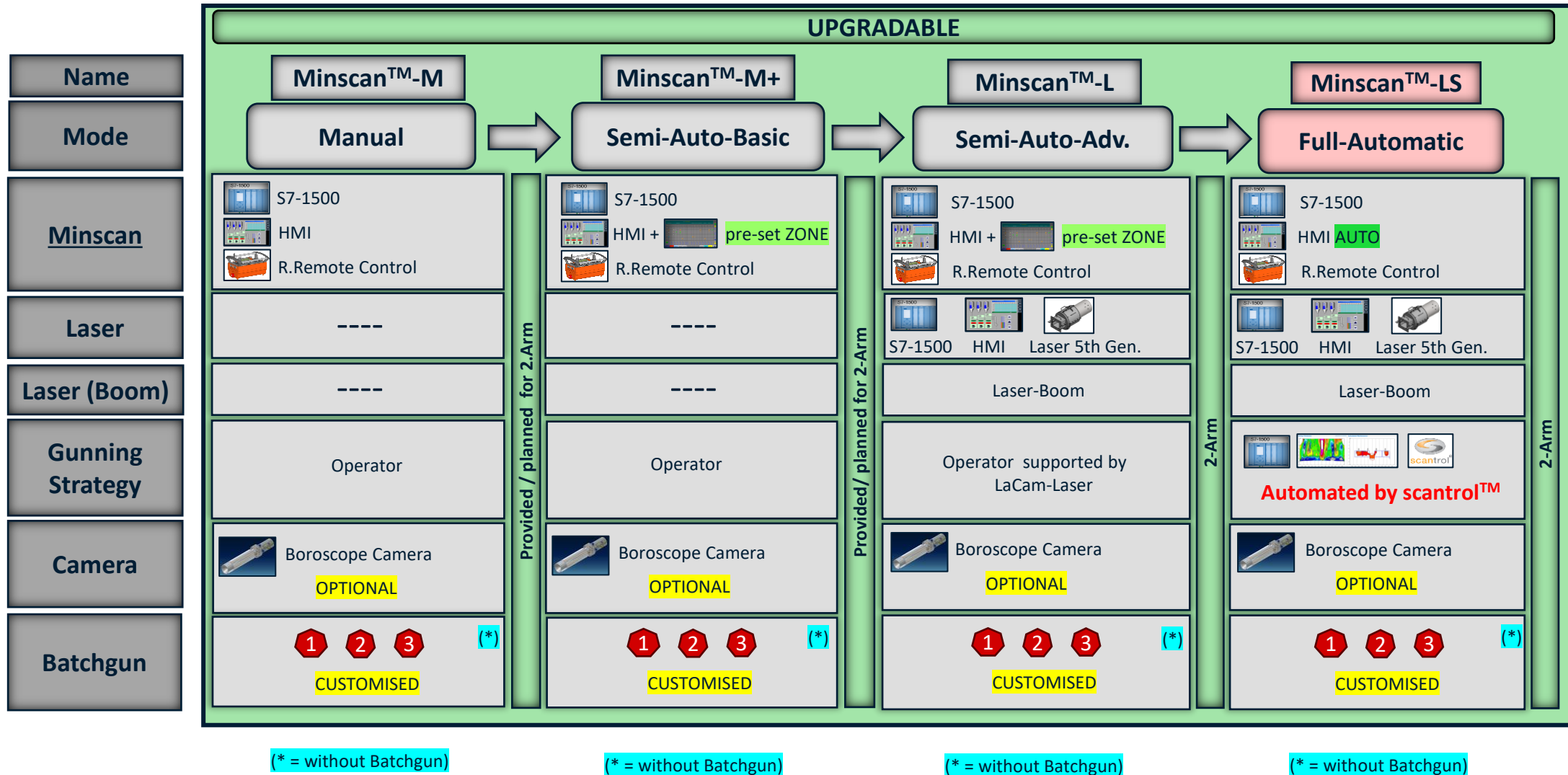
Conventional Gunning from elevated position:



Minscan™ Gunning by Manipulator:



MINSCAN™ FAMILY: UPGRADABLE, FROM MANUAL VERSION TO FULL AUTOMATIC



Our MINSCAN™ family is modular and upgradable from **Minscan™ M** to **Minscan™ M+** to **Minscan™ L** to **Minscan™ LS**

- **Minscan™ M Mode : Manual** (Spray Manipulator with Radio Remote Control)
 - Control PLC with CPU, tower is prepared for 2nd arm (laser)
 - Operator analysis EAF and decides on spraying per remote control
- **Minscan™ M+ Mode : Semi-Auto-Basic** (Spray Manipulator with HMI and Pre-set Zones)
 - Control PLC with CPU, tower is prepared for 2nd arm (laser)
 - Operator analysis EAF and decides on spraying per remote control
- **Minscan™ L Mode : Semi-Auto-Advanced** (Spray Manipulator with HMI, Pre-set Zone, Laser LaCam):
 - Control PLC with CPU and Laser Handling CCU, 2nd arm for laser is equipped
 - Operator analysis EAF and is supported by a laser-scan 2D plot to decide on spraying per remote control
- **Minscan™ LS Mode : Full-Automatic** (Spray Manipulator with HMI, scantrol™, Laser LaCam):
 - Control PLC with CPU and Laser Handling CCU, 2nd arm for laser is equipped
 - Additional **Scantrol™** PLC and software bridge
 - No operator needed. The laser system analysis the refractory maintenance demand and **scantrol™** supplies the material fully automatic

Upgrade Path:

Upgradable from a Manual to a Fully Automatic version, which highlights flexibility and scalability of the product. This allows customers to start with a lower investment and gradually upgrade as needed. Tower is fortified and ready to be equipped with a 2nd arm.

Competitive Advantage:

Staggered approach to a functionality of a fully automatic system **without operator intervention**.

Cost Efficiency:

The product's upgrade path is cost-efficient, allowing customers to make incremental investments rather than a large upfront cost. This makes their product more attractive to their end-customers looking for long-term solutions.

Market Positioning:

More advanced and flexible solution, due to upgrade-path and full automation capabilities.



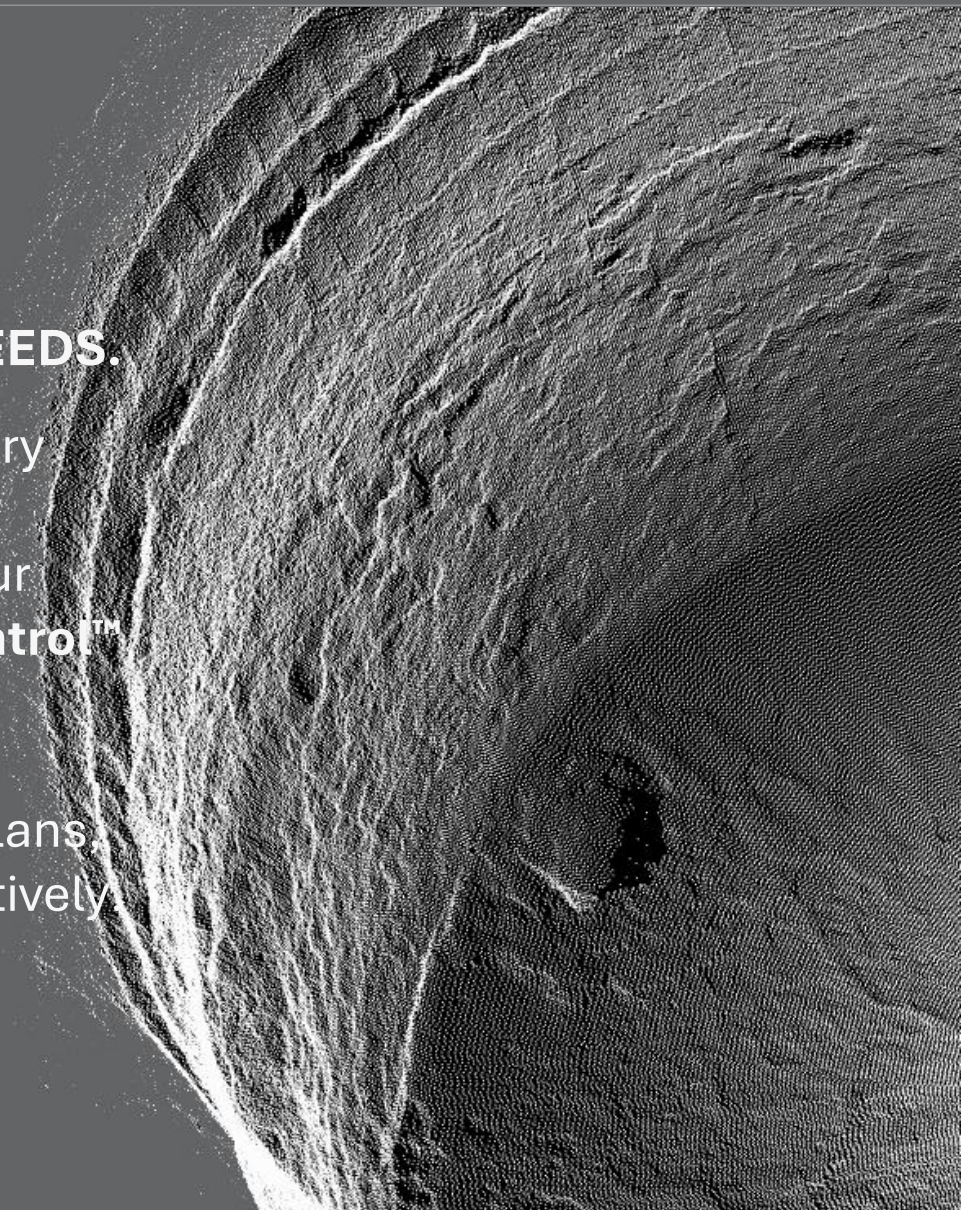
scantron™

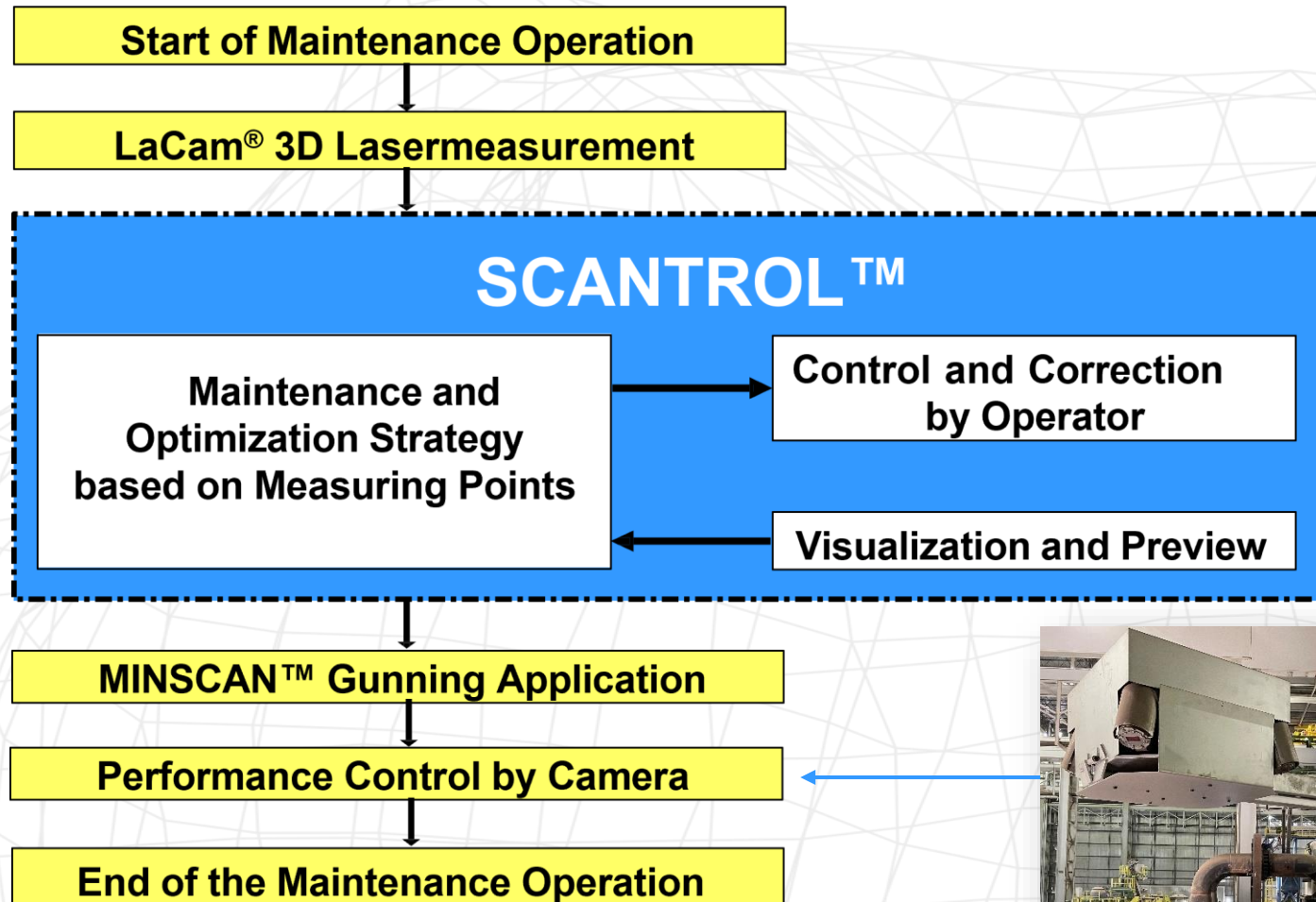
THE WINNING COMBINATION TO MEET STEELMAKERS' NEEDS.

Minscan™ leads the industry in real-time automated refractory maintenance, ensuring furnace safety.

It integrates the **Minscan™** remote gunning applicator with our **LaCam®** laser measurement system through advanced **Scantron™** software.

This combination offers an unmatched refractory solution: measuring, evaluating for repairs, generating maintenance plans, and applying refractory automatically, swiftly, and cost effectively.





The SCANTROL™ interface module converts the measured data from the laser scanner into a spraying pattern, which is moved to the MINSCAN™ spraying unit. Depending on pre-set parameters, the spraying strategy is applied.



4 Video Cameras



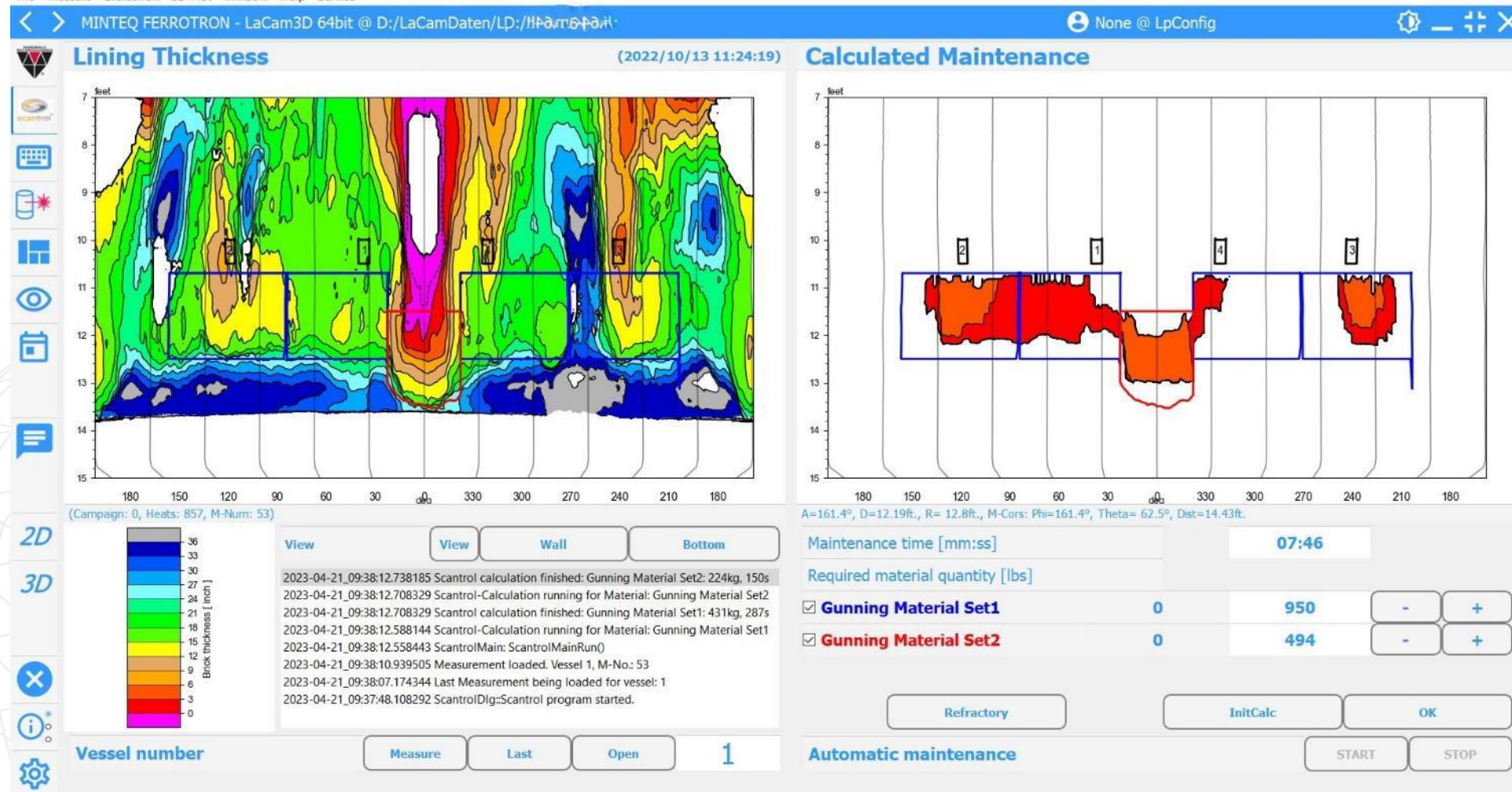
Video Monitor

Components Of The Unique scantrol™ System With Two Booms



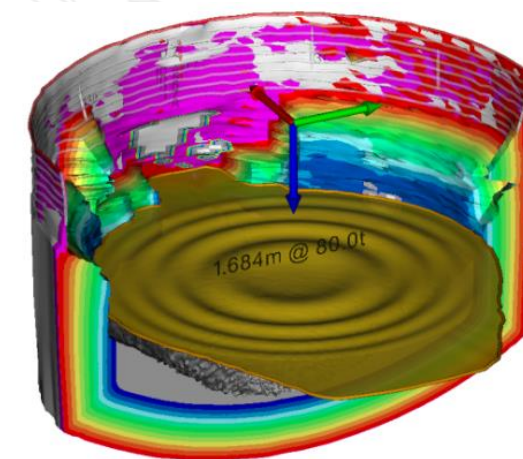
- LaCam® Laserscanner measures the residual refractory thickness of the furnace
- The scantrol™ interface module, links the laser with the gunning machine. The laser data is evaluated, the application strategy defined, and the data transferred to the MINSCAN™ manipulator, performing the maintenance.
- MINSCAN™ gunning system repairs the refractory lining in analysed areas of the EAF based on the laser scan
- Optional high temperature cameras provide additional safety, improve performance, and visual control.

File Measure Evaluation 3D-Plot Window Help Service

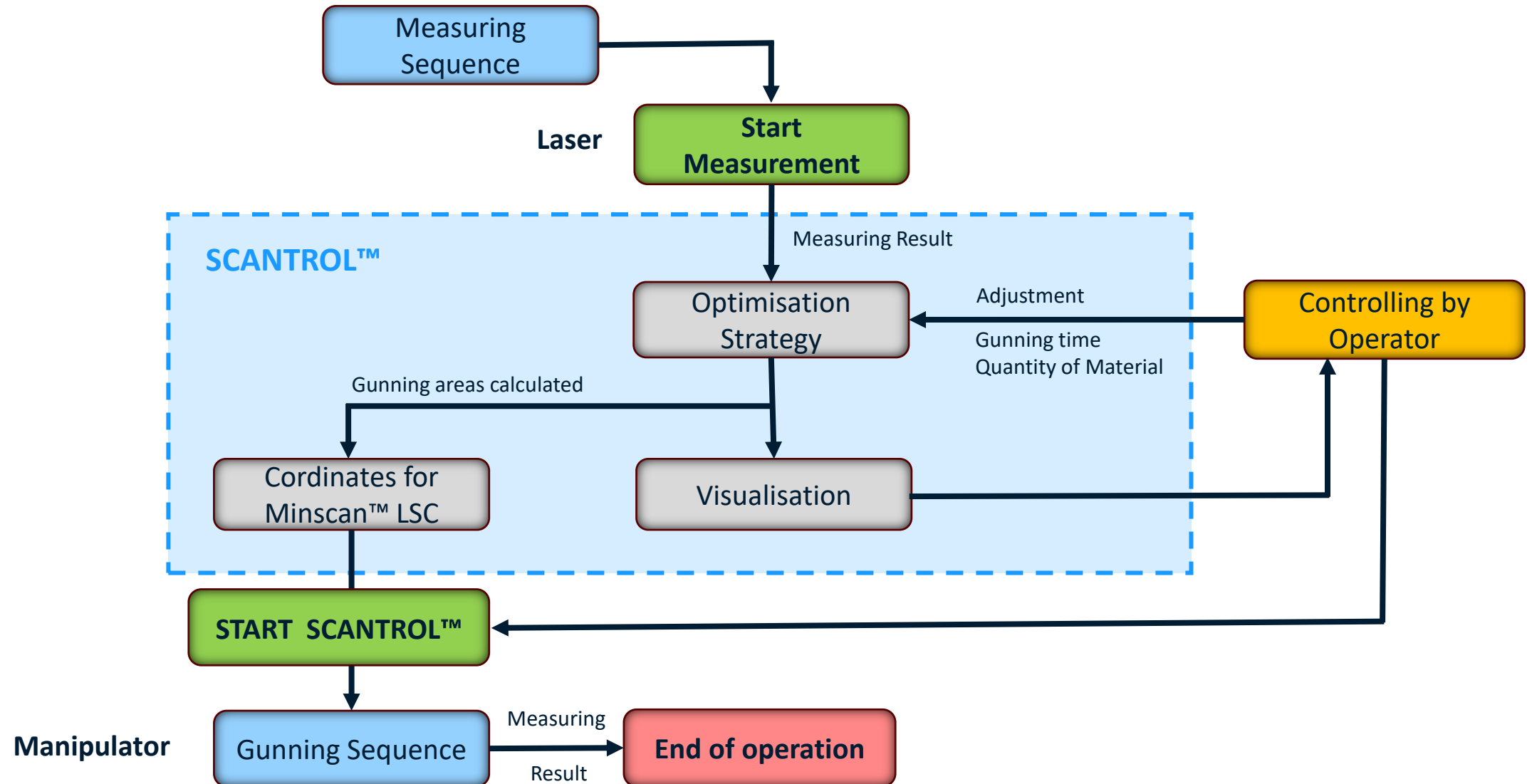


Operator can parametrize the maintenance process to optimize:

- Gunning time
- Type of material
- Amount of material



Calculation of Steelbath-Level



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FERROTRON
A **MiNTEQ** DIVISION