

## Technical scope of supply

- 1 -

---

### ***LaCam® EAF laser profile measuring system (electric arc furnace installation) model***

New laser profile measuring system, based on a new generation laser scanner.

The **LaCam®** profile measuring system has been developed for non-contact measurement of refractory linings in metallurgical reaction and transport vessels.

The **LaCam® EAF** (EAF installation) model of the **LaCam®** measuring system series is designed for installation at Electric Arc Furnaces.

The graphical user-interface permits detailed investigations of the wear development as well as automatically printed reports of the measurements.

The **LaCam® EAF** system includes a laser measuring head and the appropriate coupled electronic units, which is stationary installed at the EAF and can be remotely controlled from the control room. Connection to a control and measuring unit as well as to an optional workstation is realized by a local computer network.

If a measurement is necessary, start and monitoring of results will be made at the operator desk (console and monitor). After automatic scanning of the surface, the results are available on all PCs connected to the network within a few seconds.

The **LaCam® EAF** system determines:

- Residual brick thickness of the refractory lining
- Brick development of the refractory lining
- Rate of wear of the different refractory materials
- Volume of EAF
- Deformation of EAF shells

Furthermore, the **LaCam® EAF** system enables

- the maximizing of EAF life time
- control of gunning material consumption
- specific application of gunning material
- area dependent optimization of lining material quality
- trend analysis and forecast of the durability of EAF lining

### Technical scope of supply

- 2 -

---

#### Specifications

##### 1. Laser measuring system

Principle of measurement	Single shot time-of-flight
Real number of range points per frame	200,000
Measuring time per frame	20 s
Measuring range	2 – 20 m
Accuracy	± 5 mm
Max. surface temperature	1700 °C

##### Technical data of the scanner (laser measuring head)

Vertical scan angle	80° fixed
Horizontal scan angle	0° - 360° selectable (80° standard)
Laser wavelength	0.9 µm (near infrared)
Cooling of the head	Water cooling
Eye safety	Class 1 laser product

##### 2. Control and operator unit

The control and operator unit transfers the measuring data of the laser measuring head and controls it. The distance between the control and measurement unit and the laser measuring head depends on the local situation, up to 10 m.

One control and measuring unit is designated for each laser measurement system. A measurement can be directly made at this unit or via remotely controlled from a workstation in the control room. Furthermore, all measurement results are represented and can be evaluated. A modem for remote service is also included.

##### Industrial-type computer

CPU Pentium® P4/3GHz (latest model)  
1 GB RAM, PC 400  
DVD +/-RW, 2 x 500 GB harddisc (RAID system)  
VGA 256MB, AGP  
Network connections, 1 GBit Ethernet  
USB Interface  
Power supply

##### Technical scope

TFT 17"

##### Operating system

WINDOWS XP® Professional

## Technical scope of supply

- 3 -

### 3. Engineering

For do-it-yourself installation, instruction details are furnished to the customer prior to commissioning:

- Construction of the mechanical components
- Wiring/cable plans for all connections
- Position of the requested air and water connections
- Plans for the mounting of the single components

The execution of the above stated instructions must be made by the customer. Ferrotron Technologies GmbH will not be held responsible for installation errors.

### 4. Documentation

The documentation of the unit is three fold and is given to the customer when the unit is placed in operation. The documentation includes the technical description of the system, an installation description and a description of the software. Please note that documentation on data mediums, e. g. disks, is **not** included in the scope of supply.

The following components are also included:

- Operating systems for all units
- Installation disks/CD ROMs of the system software

### 5. Software

The **LaCam**<sup>®</sup> system package includes all measuring and evaluation software needed for operation of the unit, as well as the Windows XP<sup>®</sup> Professional operating system, all as licensed original versions.

**If you need information for Electrode Control Systems, please do not hesitate to contact us. A linking between the LaCam<sup>®</sup> system and the DECTEQ<sup>™</sup> system is possible.**

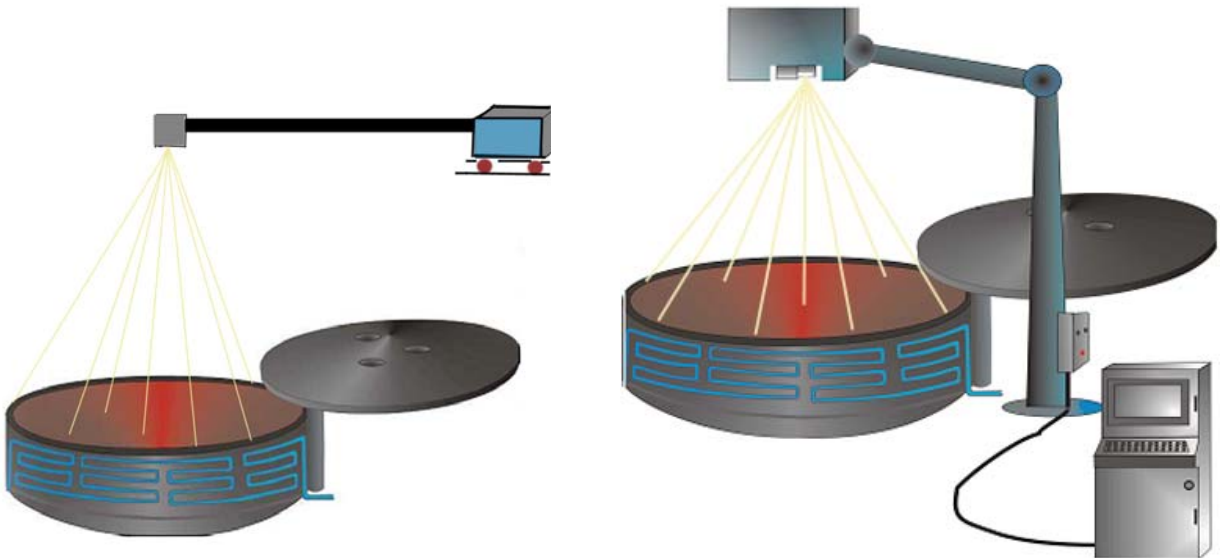
Our DECTEQ<sup>™</sup> system is a further development of the DOS based Dec PC, which is part of the equipment in many steel making furnaces around the world. Many years of experience have lead to the new DECTEQ<sup>™</sup> system, which is developed for Microsoft Windows<sup>®</sup> platforms and based on new hardware technologies. The DECTEQ<sup>™</sup> system differs from usual analogue electrode control systems by its design, larger range of performance and increased capacity.

# FERROTRON

A **MINTEQ** DIVISION

## Technical scope of supply

- 4 -



*Pentium® is a registered trademark of Intel Corporation.*

*Windows XP® and MICROSOFT WINDOWS® are registered trademarks of Microsoft Corporation.*

*FERROTRON®, LaCam® and Scantrol® are registered trademarks of Minerals Technologies Inc. or its subsidiaries in the United States and Germany*

*File: M-FE-30-PDF.doc*

**MINTEQ** International GmbH, **FERROTRON** DIVISION, D-47228 Duisburg, Dr.-Alfred-Herrhausen-Allee24,  
email: [ferrotron@minteq.com](mailto:ferrotron@minteq.com), [www.ferrotron.com](http://www.ferrotron.com), Phone: +49-(0)2065-4236500, Fax: +49-(0)2065-4236501

Technical scope of supply  
- 5 -

---

*Update: August 2009*