































# The company LASE is a system house for

#### **Company data LASE GmbH**

- Founded in 1990
- Location Wesel (head office) and Bremen (development department)
- Offices Shanghai (China), Kolkata (India)
- World wide distributor network
- Main business lines
  - Steel Industry (70%)
  - Bulk material handling -mining, power plant)- (20%)
  - Port handling machines (10%)

#### **Products:**

- 1D- 2D- and 3D- Laser measurement systems, 3D-Camera- and Radar solutions
- System solutions (turn key solution provider, with Laser, Software, mechanical and electrical construction, building, mounting, commissioning, training and documentation)





#### **Product range – laser system components**





#### **Product portfolio – 1D laser sensors**

#### Time of flight principle

Long range market

## LHSE Industrielle Lasertechnik GmbH

#### **Triangulation principle**

Short range market



LASE 1000D-X



LASE 1000T Greenline



LASE 1000T

Blackline



LASE 1000T Greyline

## **1D - Measurement**



Functional principle laser distance meter (Time of Flight System)







#### New Generation for Laser Distance Measurement, the "LASE 1000D-X"

- Ranges of up to 800 m with a reflector
  - and up to 120 m on natural surface
- High accuracy 1mm
- High resolution 0,1mm
- Measuring frequency 20 kHz
- Laser Pointer for the adjustment
- All industrial Interfaces integrated
- •Optional with special protection housing (e.g. cooling, heating)



## **1D - Measurement**

**Functional principle laser distance meter (Triangulation systems)** 

#### **Black line**

- Ranges from 4 mm to 700 mm
- Accuracy of 0.5 to 500 µm
- surface temperature till 2200°C

#### **Green line**

- Ranges from 100 2000 mm
- Accuracy of 10 500 μm
- surface temperature till 2200°C













#### **1D - measurement**

**Examples laser distance meter (Triangulation systems)** 





#### **2D - measurement**



Functional principle laser distance meter (Triangulation systems)



### **2D - measurement**



Functional principle laser distance meter (Time of Flight System)



- +/- 10mm with a LASE-Systemsolution
- \* depends from the Laser scanner type

## **3D - Measurement**

Functional principle laser distance meter (Time of Flight System) in Combination with a Swivel-Platform







**Industrielle Lasertechnik GmbH** 



- Range > 80 m on dark natural targets \*
- Range > 250 m on light natural targets \*
- Accuracy single shot +/- 30 mm,
- with a LASE-Systemsolution is
- +/- 10mm possible
- \* depends from the lasertype



## LASE can provide







#### **LASE System Solutions using:**

# **CEWS** Framework

### **CEWS Framework:**

Included Filter Algorithms:

- Definition of Region of Interest
- Blind-Out Areas
- Elimination of Invalid Measurement Points
- Dust / Rain Filter
- Average Calculations
- Segmentation (Object Detection)
- Filling Functions
- Div. Project Specific Filter (e.g. Edge Detection, Volume Determination, Velocity Measurment etc.)



Industrielle Lasertechnik GmbH

#### **CEWS Diagnostics & Service**



04.12.2011 12:29:01;499

UF NUM RF



Screenshot of a typical LASE application

DV Recorder

Bereit

## **CEWS Diagnostic & Service**



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Example Status Telegramm

(all needed telegrams can be defined upon consultation)

### **Example Hardware Overview**





Netzwerkübersicht

### Steel plant applications - 1D / 2D / 3D

#### Automatic ladle transport









#### **Automatic operation**

Great savings in time and distance with optimised positioning

#### High functional reliability



#### Steel plant applications - 1D / 2D / 3D

#### Hot level measurement in ladles









#### Automatic operation

**High Availability** 

**Contactless measurement** 

Wear measurement in harsh environments

# High operational safety and reliability



#### **Gasometer - 1D**

- Control of Gasometer cover movement
- Contactless continuous measurement on the cover for level control
- Range >400 m on reflectors
- High accuracy and resolution
- RS232, RS422, Profi-bus
- Self test, rugged design
- Simple installation in any mounting position
- Optional with explosion protection housing

(ex-proof for zone 1 and 2)











### Positioning crane installation - 1D / 2D / 3D





#### Crane position - 1D / 2D

- System for automatic crane
- Automatic picking up and putting down of objects
- Verification of number of objects in the storage field
- System conversation with the warehouse management











## Crane position - 1D / 2D



Collision avoidance supervision







Crooked run supervision at portal cranes





#### Slab solutions - 2D / 3D





Automation of the slab storage

Slab measurement

Slab positioning

Monitoring of slabs on the roller table

**Form detection** 

Positioning of the torch cutting machine

## Slab and billet measurement - 1D / 2D / 3D

- Exact measurement
- Shape (saber, wedge)
- For quality and verification purposes
- Side profile recognition





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# Continuous casting thickness measurement – 1D

Calculation of the billet thickness
Recording of the measuring data
Calculation of temperature compensation
Robust design of loading gage











#### Slab measurement - 1D / 2D

•Calculation of the max., min., and average width values

- •Correction of misalignment
- •Calculation of wedge shape and saber shape
- •Calculation of a virtual space for the optimal

loading of the furnace

•Useable after casting or in front of the furnace









### Slab measurement - 1D / 2D







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## Slab measurement - 1D / 2D

















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#### Slab measurement - 2D / 3D

- Exact measurement of slab contour
- Shape (saber, wedge)
- For quality and verification purposes
- Side profile recognition







#### Slab position measurement - 2D

- Exact position measurement
- Furnace protection
- Contactless measurement
- Save labour cost (when automatic operation)











#### Slab position measurement - 2D





Material Tracking System





Slab Positioning System

#### **Measurement Frame - 3D**

- Complete profile recognition for long Material (Pipes, Billets, Beams, sheet pile wall, etc.)
- Exact measurement of dimensions, with a very high accuracy and high speed
- useable for surface detection
- For quality and verification purposes









#### **Billet / Rounds solution - 3D**









#### Loading automation - 3D





Automatic loading and unloading Product-friendly handling Recognition of the object size Accuracies up to ± 0,5mm

Accurate position collection

#### Coil solutions - 2D / 3D





Position recognition of coils and wagon pits

Automatic loading and unloading of wagons

**Coil-eye measurement** 

**Complete measurement** 

Winding quality measurement

Damage free set down

X:4.11534

## Automatic coil loading and unloading - 2D / 3D



- Automatic coil handling
- Exact coil recognition
- Coil damage avoidance
- Save labour cost







## Automatic coil loading and unloading - 2D / 3D



- Automatic coil handling
- Exact coil recognition
- Coil damage avoidance
- Save labour cost



#### Automatic coil loading and unloading - 2D / 3D



Fully automatic loading and unloading of wagons
Exact position recognition of coils and wagons pits
Product-friendly coil handling
Robust measuring technique
Avoidance of damages
Utilises existing structures







#### Automatic Coil Yard - 2D / 3D





#### Automatic Coil Yard - 2D / 3D





#### Automatic Coil Yard - 2D / 3D



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#### Automatic Slab Yard - 2D / 3D

- System for automatic crane
- Automatic picking up and putting down of slabs
- Verification of number of slabs in the storage field
- Communication between laser scanners and the warehouse management system







## **Detection cooling bed - 3D**

- high Accuracies
- Fast Measurement
- Function without an operator possible









# - 3D

#### **Sheet Measurement- 3D**

- Winding quality control (rough)
- Measurement Diameter
- High Speed Measurement
- Surface with Error detection







## **Coil form detection- 3D**

- Winding quality control (rough)
- Measurement Diameter
- High Speed Measurement









#### References

- Thyssen Krupp Steel AG
- Salzgitter AG
- TATA Steel
- Arcelor Mittal
- Baosteel
- Roukella Steel
- Posco
- Usiminas
- Gerdau

Only a small part of our reference list.

#### We can say:

For any case of contactless measurement the company LASE is a good choice!

























## YOUR APPLICATION OF TODAY WITH OUR TECHNOLOGY OF TOMORROW