

WE INTEGRATE INNOVATIVE SOFTWARE TECHNOLOGIES AND
METHODS OF MACHINE INTELLIGENCE INTO YOUR PRODUCTION

PRODUCT IDENTIFICATION

AUTOMATIC CHARACTER READING SYSTEMS FOR PAINT MARKINGS - PUNCHED CHARACTERS - CODE MARKINGS

BACKGROUND AND PURPOSE

In many industries consistent material tracking is a big challenge and becomes more and more important with respect to quality management. The preventions of material mixing up and a material back tracing are aspects which play an increasing role for customers and especially for quality products.

Since many years Systemforschung offers automatic reading systems for all kinds of characters and for all kind of products.

With innovative methods of pattern recognition, image processing and data based plausibility checks an identification rate of nearly 100% can be achieved. The flexible systems can be easily integrated in customer line automation.

Identifying is possible:

- in motion
- on hot products
- Letters and all kinds of characters
- regardless of vibration
- of paint markings
- tags with bar codes and plain text
- Stamped markings

All data are stored in a data base and compared and synchronized with an existing materialflow system.



billet with punched marking



bloom with paint marking



turbine with dot marking

A visualization software allows the online display of the current reading results and a back tracing of each individual product (product documentation) of the whole production from each company PC.

READING SYSTEMS IN THE STEEL INDUSTRY



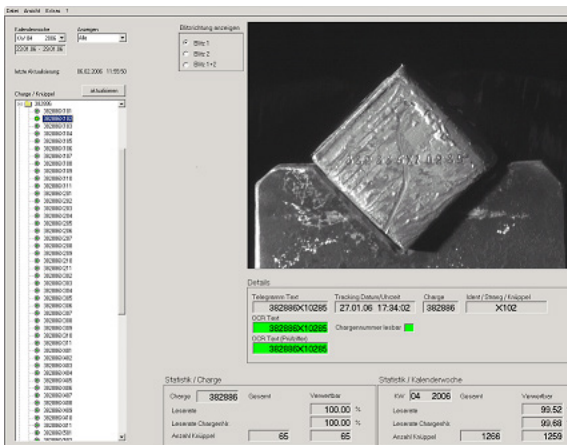
identificationsystem at a rolling mill

The purpose of the automatic identifying is the safe material tracking of billets, blooms, beam blanks etc. from the caster to the heating furnace of the rolling mill in order to ensure the quality of rolled products and for quality research of the casting process.

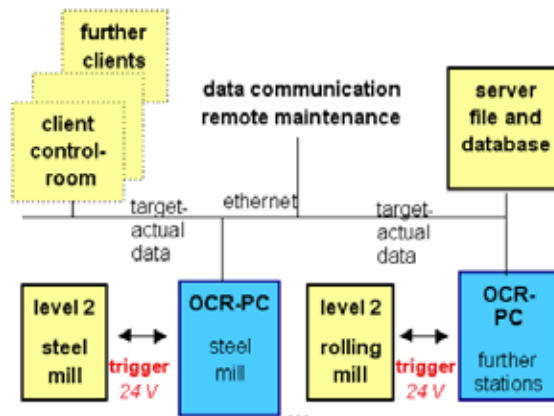
The system reads markings such as stamped alphanumeric characters, paint-markings, wire stamping dot markings, seven segment stamps on rough and hot surfaces even after the heating furnace of the rolling mill.

The safest identification starts in a first recognition system with the reading of the characters right after the marking in order to verify the correct marking and to store characteristic features of the surface (fingerprint).

A second recognition system in the rolling mill controls the markings and together with different plausibility checks ensures that the right products are rolled.



screenshot of our software



integration into customer's IT-system

All product data (reading results and images) of both recognition systems are stored in a product data base and the whole history of each product can be displayed on an HMI Station.

Features:

- Industrial Image Processing System (camera, illumination, PC) in special housings
- Readability of all known markings orientation of the characters: 0°, 90°, 180°, 270°
- Hot, cold and rough surfaces
- Product in motion
- Plausibility checks (check digits, fingerprint)
- Nearly 100% identification rate
- Integration in customer line automation
- Network components
- Remote maintenance
- Data output to HMI or to Host (Ethernet, Profibus etc.)

FURTHER APPLICATION EXAMPLES



tube

Markings on tubes for documentation of different testings and final check

The tubes with zinc coated surfaces show intermittent reflecting zones. With a special illumination the markings can be identified.



railroad track

Markings on railroad track

The markings show special production data.



coil

Paint marking of a coil (surface temperature 400° C)

The sometimes not clear dot sprayed markings are identified by our camera.



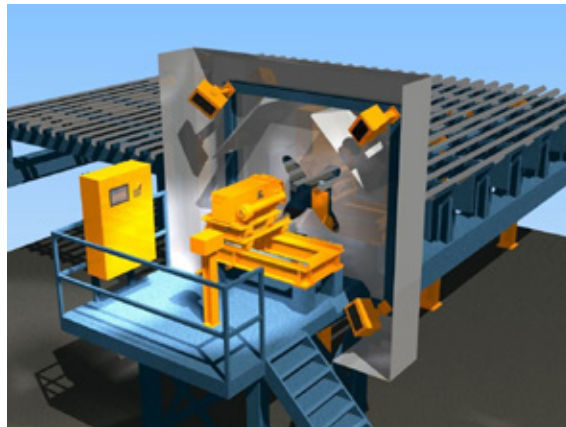
ring

Dot markings on a seamless rolled ring before the furnace

The marking can still be identified after the furnace for measurement



Round spikes with pin marking system, Rothe Erde, Dortmund, Germany



ArcelorMittal, Duisburg, Germany



Saarstahl Neunkirchen, Germany

SYSFO

Systemforschung M. Kämmerer

Königstrasse 33a ▪ D-53115 Bonn ▪ T +49 (0)228-201 39 0 ▪ F +49 (0)228-229 02 9 ▪ www.sysfo.de

GESCHÄFTSFÜHRUNG

Dipl. Phys. Martin Kaemmerer ▪ T +49 (0)228-201 39 13 ▪ kaemmerer@sysfo.de

ENTWICKLUNG

Dr. Ing. Martin Fritsch ▪ T +49 (0)228-201 39 24 ▪ mfritsch@sysfo.de

Dipl. Ing. Thomas Krahe ▪ T +49 (0)228-201 39 15 ▪ tkrahe@sysfo.de