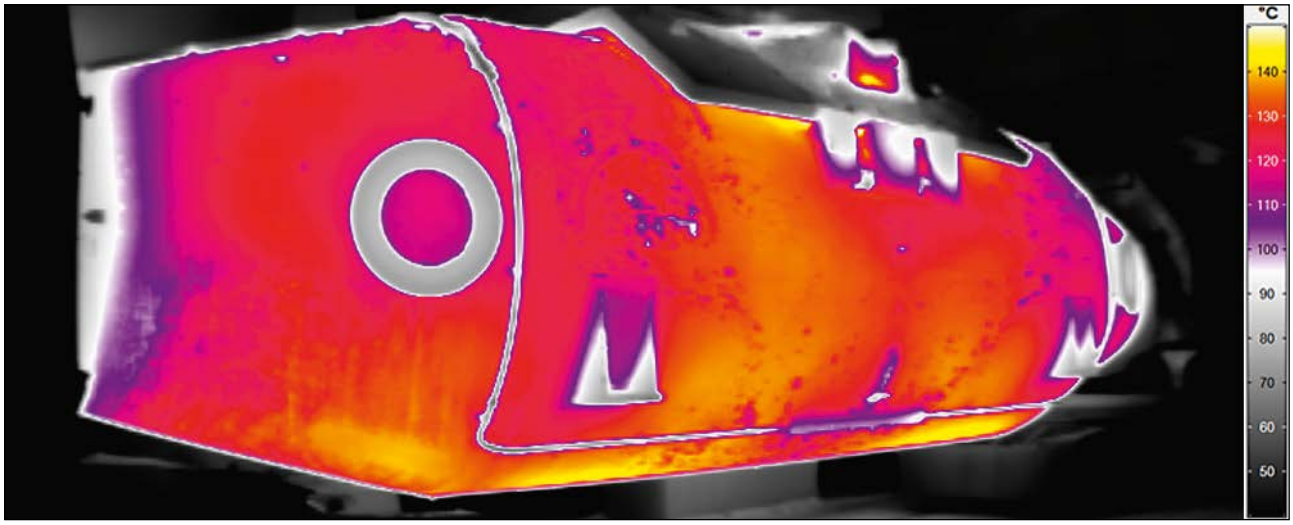
Torpedo Hot Spot Detection

Thermography based Torpedo Monitoring System

System Description



The Torpedo Hot Spot Detection (THSD) system uses Infrared (IR) technology to monitor the temperature of the torpedo steel structure. Two thermography cameras observe the torpedo cars while they are moved to the steel shop. The temperature measurements are made fully automatically without the need of any manual interaction.

THSD automatically raises the alarm if an adjustable temperature threshold is overrun. This reliably prevents dangerous and loss-making breakouts of liquid iron. THSD automatically tracks the temperature development of all torpedos in circulation. This allows to maximize the torpedo refractory lifetime without cutback of security and helps to save remarkable costs. THSD comes with highly reliable components in a flexible structure and thus is easily adoptable to the different situations and operational modes in iron and steel plants.

Benefits of the THSD System

- Complete automatic thermographic temperature screening
- of the outer shell of all torpedos in circulation
- Early detection of hotspots let keep you the close control of the refractory lining of your entire torpedo fleet
- Secure protection against torpedo breakouts saves life, investments and long term operating ability of your shop
- Optimisation of your torpedo fleet deployment improves the quality and saves time and energy
- Prolongation of the torpedo refractory lifetime without cutback of security
- Flexible structure for customised adoption to your operational modes
- Return on investment within less than a year

System Features

- Full automatic operation without stopping the torpedo car
- Reliable alarm release at defined pre- and main alarm limits
- Temperature trend recording and analysis for all torpedos
- Customised system alignment and adjustment
- Main window allows parameterisation, supervision, operation, display, evaluation and playback
- Decentralised monitoring of system status and measured values
- Recall of all recorded data for comparison and optimisation
- Easy to operate data presentation in the steel plant network
- Remote access available

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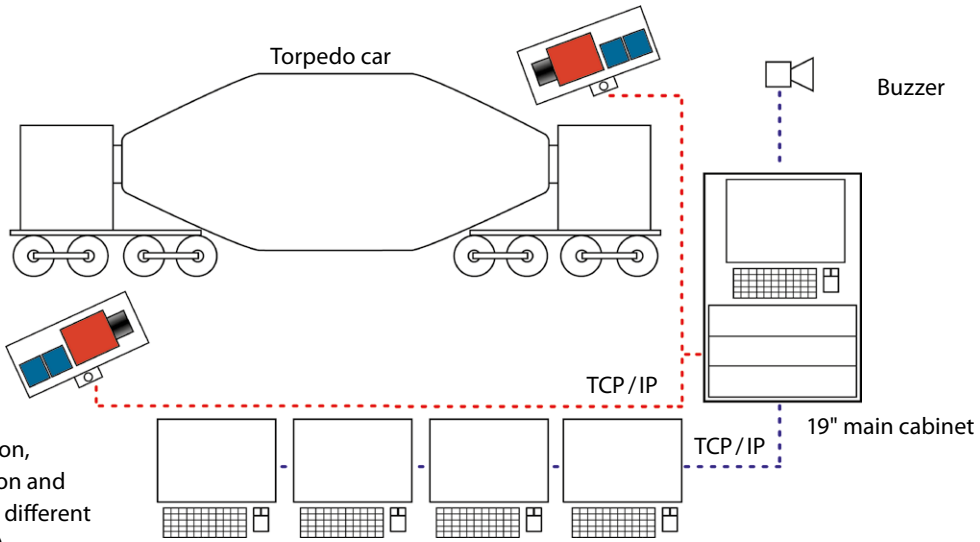
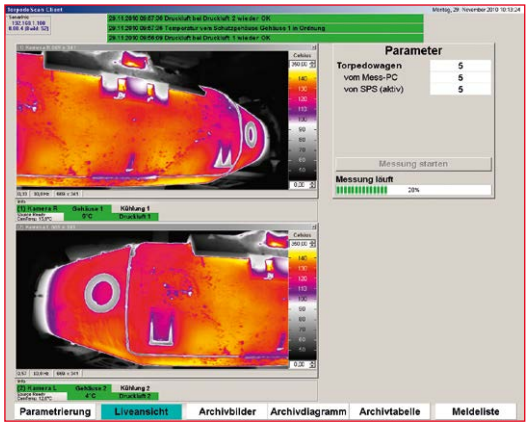
System Structure

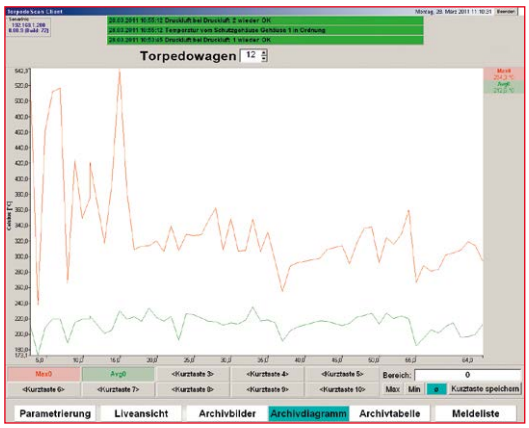
IR cameras built in protective housing with junction box



Parameterisation, supervision, operation, display, evaluation and playback on standard PC at different sites (user-level dependent)

Construction / Design





- Reliable 19"- industrial standard main cabinet
- Protective housing made of stainless steel with air purge and Vortex-cooling designed to withstand the harsh environmental conditions in a steel plant
- VarioCAM® hr head IR camera with (384 × 288) IR pixels guarantees long term exact and reliable temperature measurements
- Nearly maintenance-free, no wearing parts
- Decentralised installable components (IR-cameras, PC, alarm unit); fibre optic cable for interference-free data transmission
- TCP / IP based flexible structure allows customized adoption to the specific steel plant situation
- Easy to use THSD software allows flexible customisation