CASTEYE

THERMAL IMAGING SYSTEM FOR HIGH-PRESSURE DIE CASTING



WHY CASTEYE?

- autonomous operation – Plug & Play
- improved casting quality
- stable and repeatable technological process
- reduced production costs and lower utilities consumption
- extended lifetime of dies and equipment
- increased operator safety
- measurable improvement in efficiency and OEE

The system combines autonomy, measurement precision, integration capabilities, and exceptional ease of implementation

ABOUT US

Over 30 years of experience in die casting and thermal imaging monitoring systems. Our solution is the result of decades of practical work in various foundries and the implementation of thermographic systems in demanding industrial environments.

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INDUSTRIAL INTEGRATION CAPABILITIES

Despite its full autonomy, the system offers a wide range of industrial inputs and outputs, enabling optional integration with plant automation.
Available integration features:

- analog inputs and outputs (temperature, process signals)
- digital inputs and outputs (alarms, states, triggers)
- temperature alarm signaling
- safe galvanic isolation of signals

The customer may choose between full autonomy or integration with MES / SCADA / PLC systems.

SOFTWARE – FULL PROCESS CONTROL

Automation of Measurements – Intelligent Work Cycle
The system includes a dedicated automatic image acquisition module which:

- detects die opening,
- automatically captures a series of images at predefined intervals,
- can close and open the shutter during the cycle to protect the optics from contamination.

As a result, the entire process is fully autonomous and independent from machine control signals.

The system enables detailed thermal analysis both in real time and during post-processing:

- definition of any ROI and POI (points, polygons, areas)
- measurement of minimum, maximum and average values for each ROI
- temperature profiling and histograms for selected areas
- comparison of the current image with a reference image (image subtraction) – fast detection of deviations from the standard
- configurable temperature and deviation alarms with the option to assign alarm outputs
- saving radiometric images and video sequences for later analysis
- export of temperature data (CSV / DAT) to higher-level systems or for further processing

Offline Analysis and Process Documentation

- playback of recorded sequences and images
- cycle review, image comparison and historical analysis
- support for reporting and quality documentation

TECHNOLOGICAL AND PROCESS BENEFITS

Early Detection of Casting Defects
- misruns
- hot cracks
- improper die cavity filling
- local thermal anomalies
- Fast reaction = fewer scrap parts and reduced production losses

Monitoring of Die Thermal Balance
- detection of hot spots
- evaluation of cooling efficiency
- supervision of temperature uniformity over multiple cycles

Process Parameter Optimization
- adjustment of molten aluminum temperature
- optimization of shot, cooling and solidification times
- reduction of lubrication time and water consumption

Extended Die Lifetime
- fewer thermal shocks
- reduced surface erosion
- fewer breakdowns and unplanned downtimes

Increased Throughput and OEE
- fewer rejects
- faster process decisions
- more stable production line performance

Industry 4.0 Support
- cycle archiving
- trend analysis
- data export to MES / SCADA
- predictive maintenance

Higher Operational Safety
- remote temperature monitoring
- faster response to thermal anomalies or uncontrolled metal splash



AUTONOMOUS OPERATION – PLUG & PLAY

The system's main advantage: no connection to the PLC is required.
The system automatically detects die opening and begins measurement without machine control signals. This ensures:
- immediate readiness for operation
- no interference with machine control
- easy installation and rapid commissioning

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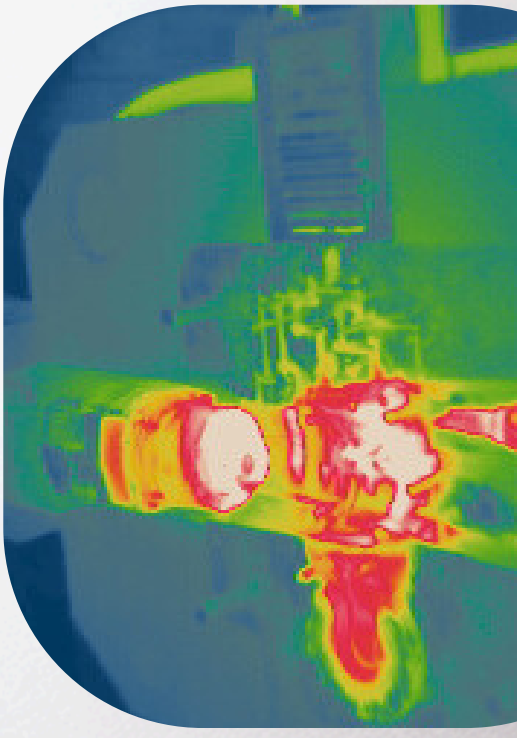
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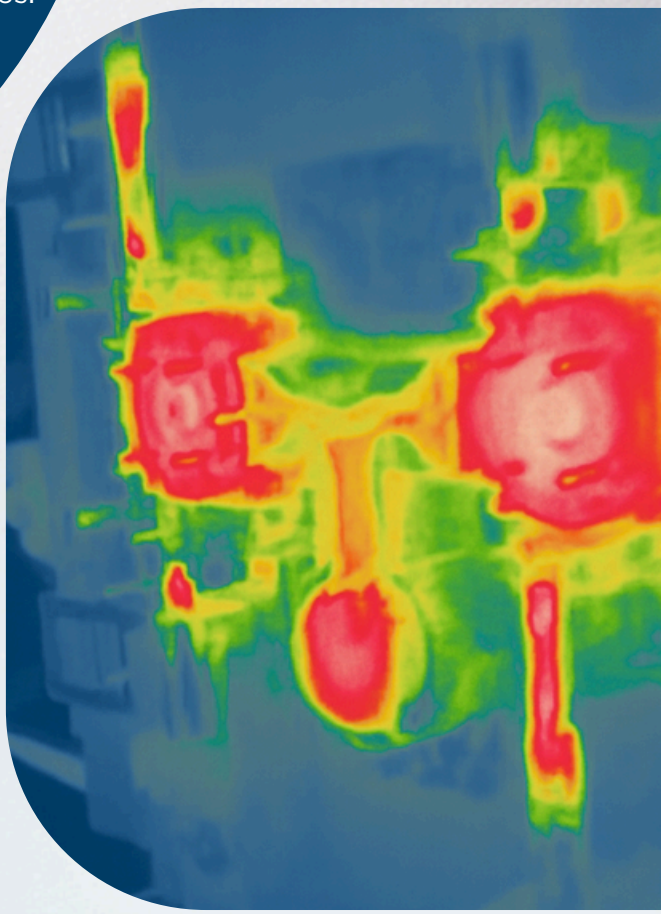
HARDWARE ADVANTAGES OF THE SYSTEM

The system's compact cameras are designed for operation in harsh die casting environments. They combine high measurement precision, stability and flexible mounting options. The system also supports both touchscreen operation and traditional keyboard-and-mouse control, ensuring comfort and flexibility for operators.
Key hardware advantages:

- high-resolution thermal imaging for detailed temperature mapping
- short response time and stable measurement in dynamic die opening/closing conditions
- wide selection of optics to match various workstation layouts
- compact and robust design suitable for high-temperature and dusty areas
- reliable communication interfaces and flexible parameter configuration

This camera system ensures high-quality thermal data and the reliability required for continuous operation in foundries.





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