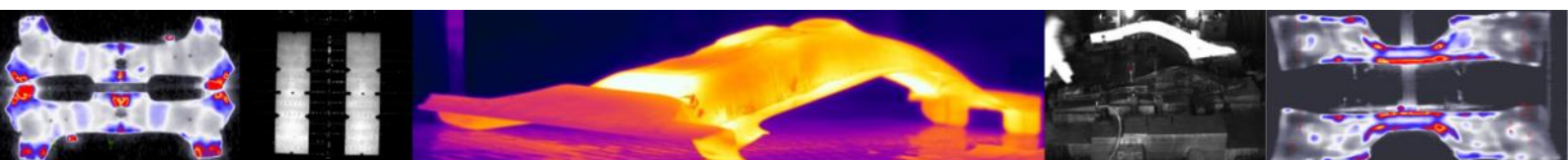
CUSTOMIZED
ENGINEERING

Robust machine vision systems for process automation

Non-contact infrared temperature measurement devices/systems

and

visual inspection systems.



OUR COMPANY

Selmatec Systems GmbH supplies a broad range of non-contact temperature measurement devices. From application-specific, stand-alone systems to highly integrable industrial machine vision solutions – all using state-of-the-art technology. These diversified systems are used worldwide in any industry, among others by automotive manufacturers and tier-1 suppliers in stamping and heat treatment processes.

We always focus on your requirements and have a broad product portfolio available. This enables us to provide application- and customer-specific components at any time.

In addition, our engineering team will gladly meet further large and small industrial challenges in any industry. Within these applications we connect IR temperature measurement systems and/or visual monitoring systems to production facilities to deliver a comprehensive overall system to our customers providing quality assurance and decision support. Thanks to our in-house software development we guarantee and deliver solutions which are upgradeable at any time. As a result we ensure a reliable and durable system investment for upcoming new requests and demands.

We will support you from consulting to engineering, start-up of obtained devices to regular maintenance/system or hardware checks.

COOPERATION PARTNERS

Robust Machine Vision Systems

We place importance on robust solutions withstanding 24/7 operation even under extreme adverse environmental conditions. We consider the software operation of our solution can be understood safely and set up by any plant operators in production plants, regardless of your system complexity.

We define machine vision as using a combination of selected hardware, software and know-how in accordance with the application, which enables us to generate a solution for various tasks in the industrial production process.

With these components visual and thermal information in the form of images are used precisely and automatically to meet the quality requirements in production.

Due to the cooperation with development departments of our partner companies (manufacturers) as well as renowned research institutes and our many years of experience in the field of automation of image processing systems, you will find a selection of example applications within our product portfolio, which we can adapt to your specific requests.

To ensure the availability of the systems for many years, we only use high quality industrial products. Within the scope of our services, besides telephone, local and remote support we also provide AR support.

AR-Support

PRODUCT PORTFOLIO

Increasing quality specifications and resultant monitoring tasks consistently issue new challenges to corresponding inline systems. The careful selection of suitable measuring devices is essential to cope with the task and the measuring object (surface). Next to the available cycle time the effective achievable measurement precision also requires close attention. Applied to our range of devices this means we are able to chose suitable devices from at least 10 model series with 16 spectral ranges, which have to be chosen according to the measuring object, as well as additional resolution and interface options. For many of our machine vision applications we also utilize Linux real time image processing computers, for which we create the application firmware in-house. As a result we also measure up to tests with minimal cycle times. The configuration and the entire user interface is of course implemented under usual Windows systems.

Non-contact temperature measurement devices:

IR-Cameras:
series: ThermoView

IR-Ratio Pyrometer:
series: Endurance

LWL Pyrometer
series: Endurance

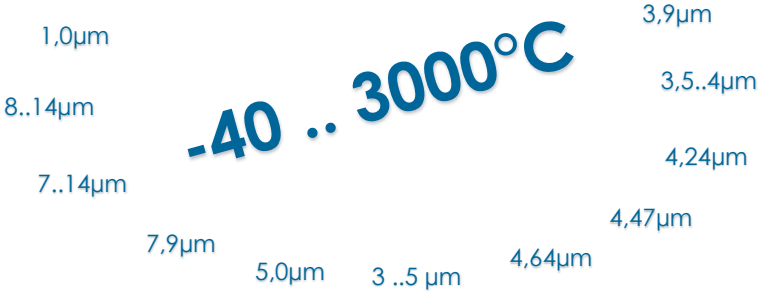
Pyrometer series:
Marathon MM

Linescanner
series: MP150

Pyrometer series:
Thermalert TX

Pyrometer
series: MI3

Pyrometer series:
Thermalert 4.0



In addition to our portfolio, further components required for the set up or the implementation of customer demands, are included precisely. This enables a simple and smooth project planning.

DEFINE YOUR REQUIREMENT

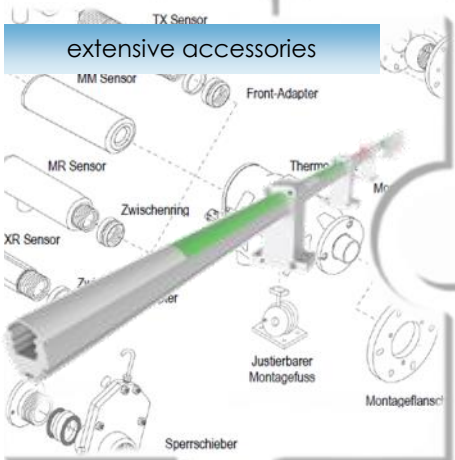
Benefit from our engineering experience and focus on you system solution.

IR-Cameras /Linescanner

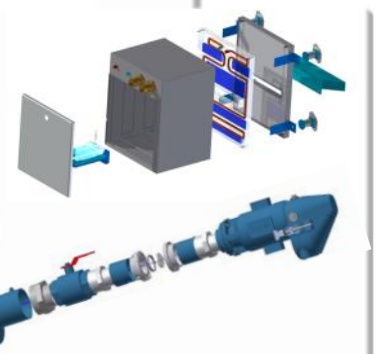
SelVision components

IR-Pyrometer

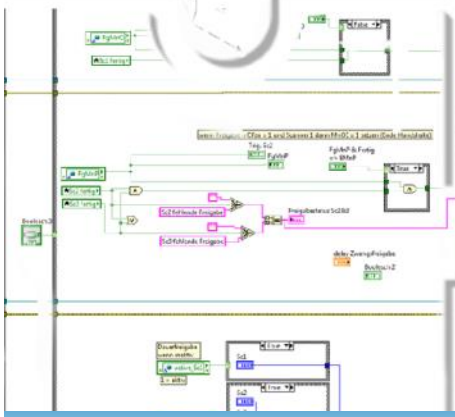
extensive accessories



Selmatec Systems GmbH

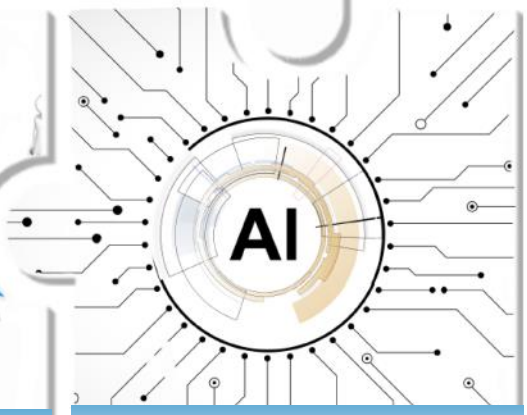


individual mech. solutions



software development

support

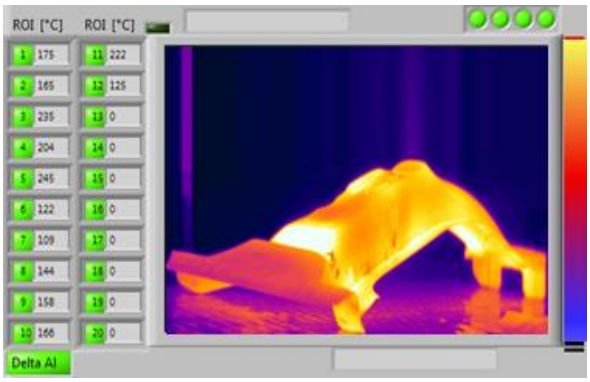


machine learning

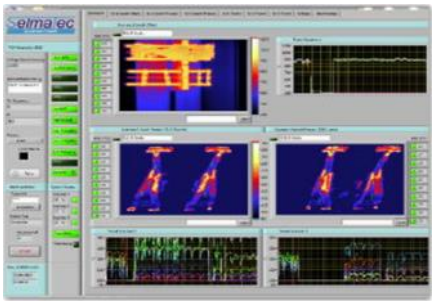
Draft your task, our sales and project engineers will adcise you about the possible scope of solution. At that we draw on cross-industry and -application hard– and software modules.

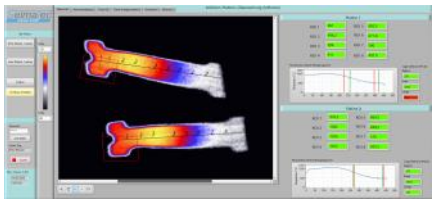
PH-INSPECTOR

Thermal inline monitoring (for hot stamping lines)



The integration of this self-sustaining PH-Inspector system enables a reliable thermal adherence to process instructions, including an automated in-line alerting/unload demand in case of nonobservance of the adjustable temperature frames. By embedding the oven and press control via OPC and archiving all process data, anomalies are not only recognized and alarmed, trouble-shooting is also greatly simplified. If required, a web server visualizes the data acquisition software on the entire intranet. Due to the integrated recipe management the tool change requires no further intervention as the system automatically resorts to stored tool-specific test recipes. Various incycle telegrams to communicate with higher level systems are available for industry 4.0 applications. The open system layout enables the integration of further hard– and software features at any time.



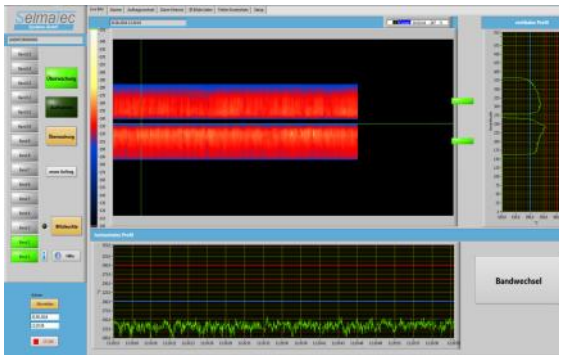


Properties/details at a glance:

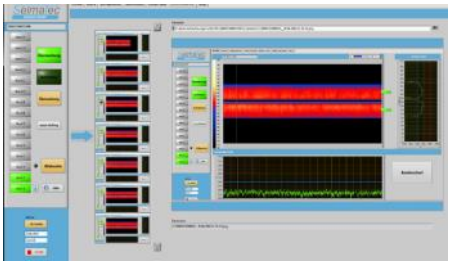
- Thermal 100% inline monitoring of the temperature control regarding firmness/form stability
- Maximum temperature measuring accuracy (CQI-9 compliant) by using shortwave IR sensors
- Cycle time neutral inline measurement due to linear component imaging during the component movement
- Early detection of tool wear and plant malfunctions at the oven, press and tool
- Optimized tool tryout
- Archiving of radio metrical temperature images and of all system parameters for up to 22 years.
- Intranet visualization via browser (integrated web server)
- Auto reporting function
- Forecast function
- Interface connection e.g. via OPC to controls provided by the customer

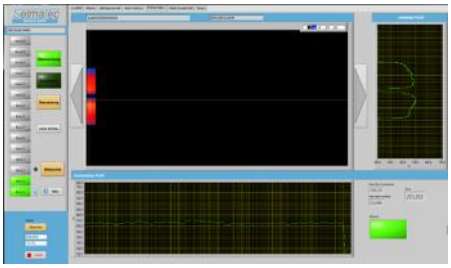
HS-INSPECTOR

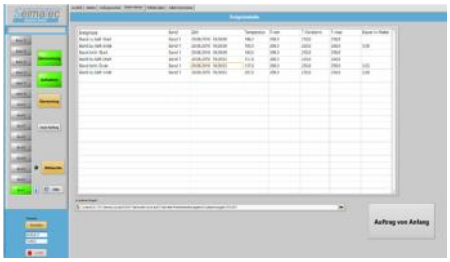
Thermal inline monitoring (for hot strip processes)



On strip processes, our HS-inspector system enables a reliable all-over thermal adherence to process instructions, including an automated inline alerting/unload demand in case of nonobservance of the adjustable temperature frames. By embedding the oven and press control via OPC and archiving all process data, anomalies are not only recognized and alarmed, troubleshooting is also greatly simplified. If required, a web server visualizes the data acquisition software on the entire intranet. Due to the integrated recipe management the tool change requires no further intervention as the system automatically resorts to stored tool-specific test recipes. Various incycle telegrams to communicate with higher level systems are available for industry 4.0 applications. The open system layout enables the integration of further hard– and software features at any time.





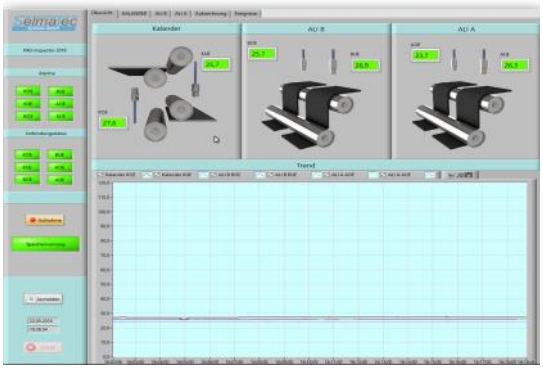


Properties/details at a glance:

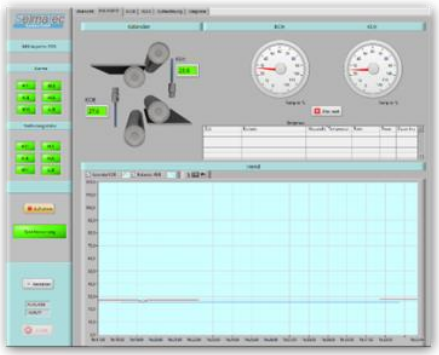
- All-over thermal inline monitoring of the temperature control
- Order specific process management control
- Maximum temperature measuring accuracy by using shortwave IR-Linescanners
- Easy to handle/coherent software layout
- Archiving of temperature profiles/alerts
- Password-protected user levels
- Intranet visualization via browser (integrated web server)
- Auto reporting function
- Open system concept for measuring points or software extensions
- Interface connection e.g. via OPC to controls provided by the customer

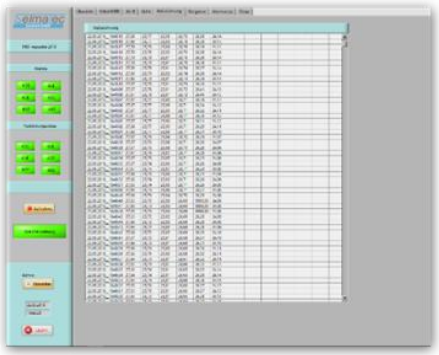
MI-INSPECTOR

Thermal inline monitoring (here exemplifying the tire production)



Our MI-inspector system enables a reliable thermal adherence to process instructions, including an automated inline alerting/unload demand in case of nonobservance of the adjustable temperature frames. The application is shown here by the example of the tire manufacturing process, but can easily be adapted to other production lines. By embedding the process data via OPC, anomalies can be assigned clearly to orders and running meters. If required, a web server visualizes the data acquisition software on the entire intranet. Various incycle telegrams to communicate with higher level systems are available for industry 4.0 applications. The open system layout enables the integration of further hard– and software features at any time.



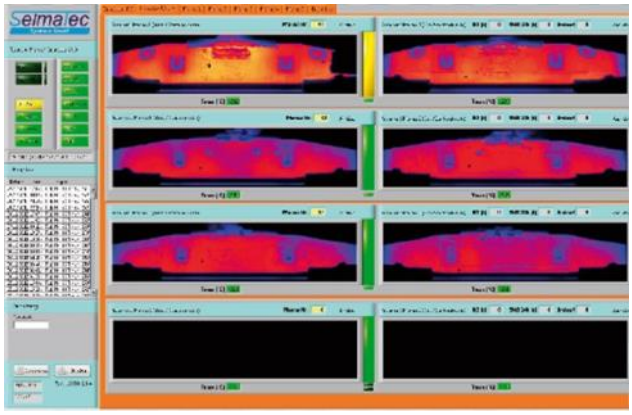


Properties/details at a glance:

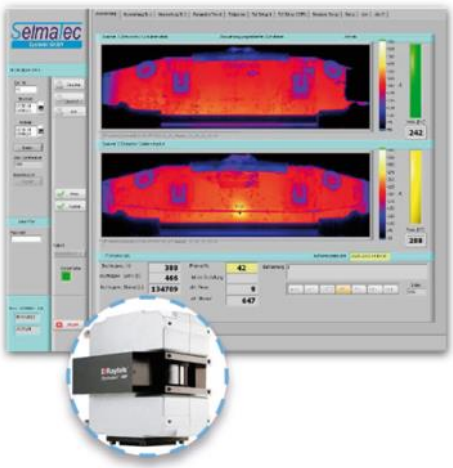
- Early detection of process anomalies
- Ideally suited for process optimization (adjustment of set temperature profile)
- Easy to handle/coherent software layout
- Archiving of temperature profiles/alerts
- Adjustable measuring point visualization
- Open system concept for measuring points and software extensions
- Password protected user levels
- Intranet visualization via browser (integrated web server)
- Auto reporting function
- Interface connection e.g. via OPC to controls provided by the customer

TP-INSPECTOR

Thermal inline monitoring (for torpedo cars)



The TP-Inspector system consist of two stationary Raytek MP150 IR-Linescanners together with a interface and system PC unit with the SELMATEC TP-Inspector software package. The system is designed for the thermal inline monitoring of torpedo cars, to prevent damage to equipment and personnel and to provide accurate information about the lining condition. A data acquisition and evaluation software acquires the measurement results of the IR-Linescanner and generates an alarm if the pre-defined measurement limits are exceeded. The IR thermal images are stored and are available for subsequent analysis purposes locally or in the network on the system PC & server. Optionally, various process parameters can be recorded and stored in a database for each generated IR thermal image via Ethernet, OPC, ProfibusDP, analog signal et cetera.

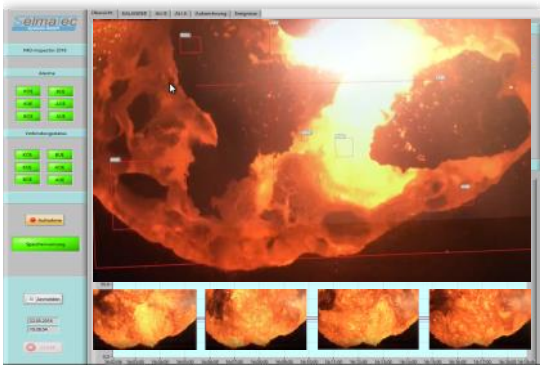


Properties/details at a glance:

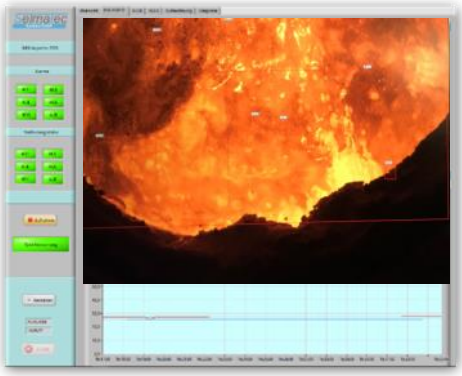
- Thermal monitoring of moving torpedo cars from 2 sides (2-12km/h)
- Exact evaluation of lining conditions with alarm when the maximum temperature threshold is exceeded
- Optimization of the torpedo car maintenance cycle
- Separate trend monitoring/traceability for individual torpedo cars – analysis function
- Logging (cumulative and car-specific), reporting function
- Interface connection to data system provided by the customer for the transmission of process parameters
- Visualization via web server access
- Order-specific process control

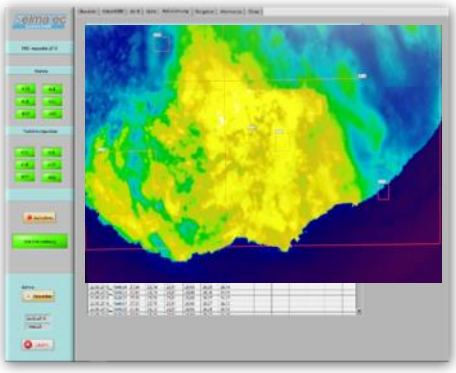
FC-INSPECTOR

Video & temperature monitoring (alloy ladles/combustion chambers)



The FC-Inspector combines video inspection and thermography in one sensor. Our endoscopic camera modules can be installed in the hot zone either air- or water-cooled. In case of a failure of the cooling medium camera sensor is automatically retrieved from the hot zone. For the individual application, sensors with different lengths and different optics (visual range) are available. The software allows an intuitive handling including automatically or manually selectable exposure time control to adjust contrast ratios. Within the image display, ROIs (regions of interest) can be stored for the temperature measurement on measuring systems. Furthermore thresholds can be stored which are alarmed by higher/lower deviation. An automated video sequence recording in the event of an alarm is also enabled. System and alarm logs exist as well as the option to activate a web server. Interfaces like OPC, Profibus or ProfiNet are available.





Properties/details at a glance:

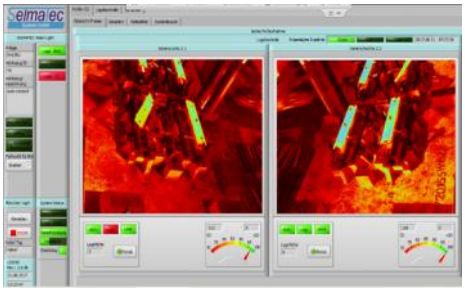
- Early detection of process anomalies
- Ideally suited for process optimization
- Monitoring of the injection of aggregates
- Archiving of temperature profiles/alarms
- Open system concept for measuring points and software extensions
- Password protected user levels
- Intranet visualization via browser (integrated web server)
- Auto reporting function
- Variable Interface connection to controls provided by the customer

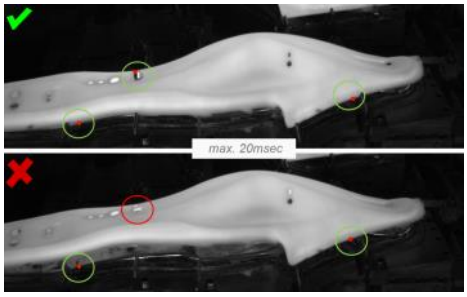
PC-INSPECTOR

Inline position control (e.g. for stamping/forging presses)

The PC-Inspector enables a reliable detection of the exact part position in a production process. The system works as fast, no process delays occur and at the same time provides a high training/user friendliness. The system makes a reliable quality assurance, the protection of your tools and a high line availability possible. Due to the integrated recipe management the tool change requires no further intervention as the system automatically resorts to stored tool-specific test recipes.

If needed the open system layout allows the integration of further hard- and software features at any time.



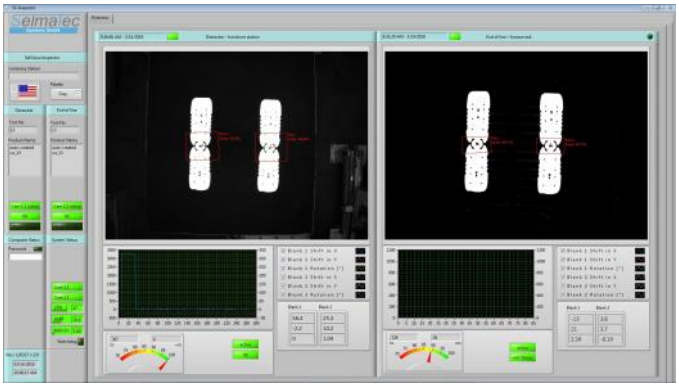


Properties/details at a glance:

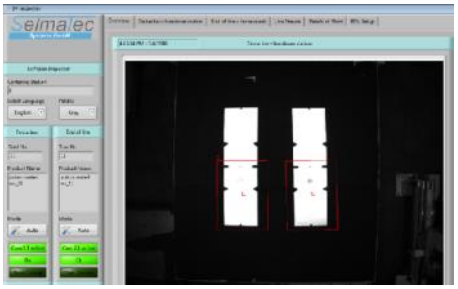
- Inline position control
- Cycle time neutral (no press emergency stop)
- High operating comfort
- Fast teach-in of new test recipes
- Robust system, even in extreme environments the cameras can work protected by housings
- Archiving off all recordings and detected errors possible
- Auto reporting function
- Interface connection e.g. via OPC to controls provided by the customer

CT-INSPECTOR

Inline component centering (e.g. for hot stamping lines)



The CT-Inspector enables a reliable component centering and monitoring of the exact component position through component/outline detections in a manufacturing process. Adjustment data of the individual components can be transmitted to a robot or feeder/transfer system by using destacking/centering applications to ensure a 100% repeatable stacking position in the downstream process. The system works as fast nearly no process delays occur and at the same time provides a high training/user friendliness. Due to the integrated recipe management the tool change requires no further intervention as the system automatically resorts to stored tool-specific test recipes. If needed the open system layout allows the integration of further hard- and software features at any time.

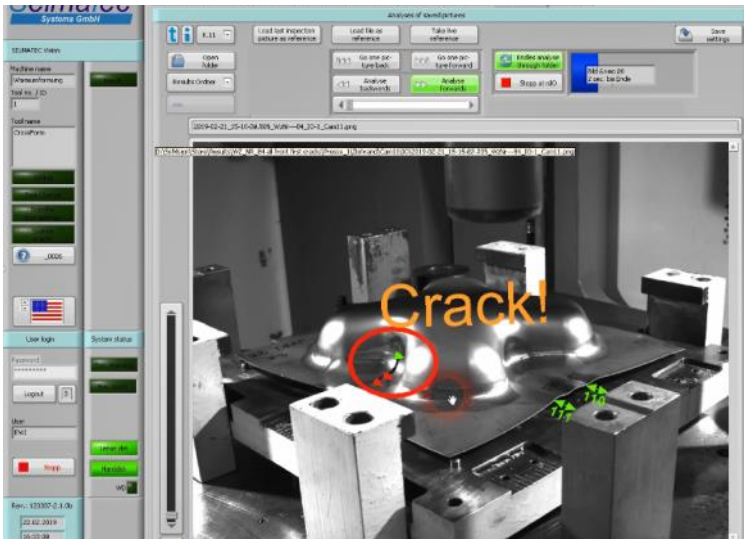


Properties/details at a glance:

- Inline centering operations/outline & position control
- Nearly cycle time neutral
- High operating comfort
- Fast teach-in of new test recipes
- Offline teaching possible
- Robust complete system
- High resistance to background light
- Adjustable archiving functions
- Auto reporting function
- Interface connection e.g. via ProfiNet to controls provided by the customer

DC-INSPECTOR

Drawn edge/crack monitoring (for cold stamping processes)

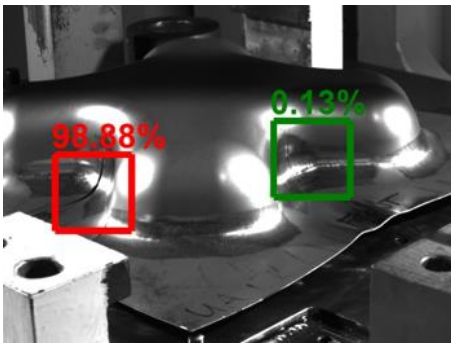


Using the DC-Inspector system ensures process stability due to the active evaluation of drawn edges, "first touch lines", wrinkling and crack detection during the cold stamping of sheet metal. The control parameters can be adapted to the components and converted as required by a suitable recipe management in the machine. Thanks to the incycle AI-models we developed, the system is able to detect and report issues at an early stage to prevent rejects without additional information. If required, an integrated, configurable web server visualizes the data collection on the intranet. Due to the integrated recipe management the tool change requires no further intervention as the system automatically resorts to stored tool-specific test recipes. Various incycle telegrams to communicate with higher level systems are available for industry 4.0 applications. The open system layout enables the integration of further hard– and software features at any time.





Properties/details at a glance:



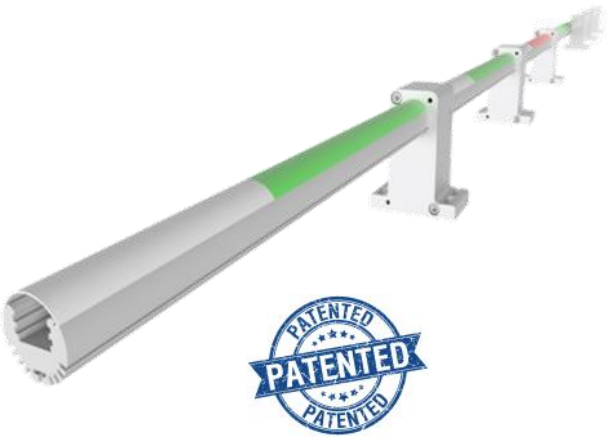
- Monitoring of drawn edges during the stamping process
- Inline crack detection
- Tight tolerances, the camera system is able to detect deviations < 1 mm
- Archiving and reporting enables an overview of the production
- Intranet visualization via browser (integrated web server)
- Auto reporting function
- Forecast function
- Interface connection e.g. via OPC to controls provided by the customer

Gefördert durch:
Bundesministerium für Wirtschaft und Energie
aufgrund eines Beschlusses des Deutschen Bundestages

LED Status Stripe

Visual status display for linear conveyor systems

With the Selmatec LED Status Stripe the product status is unmistakably visualized by light synchronized to the conveyor belt pace which moves along with the component. Due to the part-specific adjustable color and length of the LED status display, manufactured parts are easily distinguishable. The system can be integrated to the production process without any great effort. Due to the universally mountable system, matched to the installation environment this system is suitable for all of our costumers.



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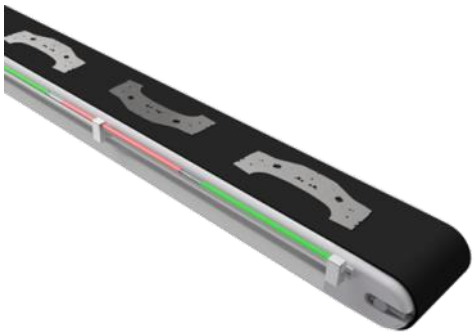


- Synchronous setting of the display with the conveyor belt pace
- Signaling for OK/n. OK & e.g. laboratory parts
- Display adjusted to component size
- Supports stacked component storage
- Signaling of batch/order change
- Signal accentuation by fade function
- Scalable up to a length of 30 m
- Robust industry case

Industry Sectors

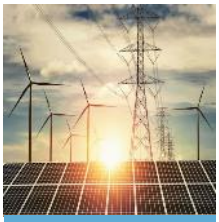
Examples of application

Automotive

Monitoring of cold/hot stamping, crack detection, drawn edge, component temp., hotspot detection, interior, hot melt application monitoring, tire manufacturing, temperature profiles, extrusion monitoring, lacquer drying, test plants, test vehicles (cold/ warm country), belt production, seal/boot production, production of composite parts, brake components manufacturing ...

Chemistry

Plant monitoring, rotary kiln monitoring, combustion chamber cameras, storage facility monitoring, early fire detection systems, sulfur recovery, boiler, cracker, reactors, pipes and gas flares ...



Energy

Solar panel monitoring, solar panel test stations, plant monitoring, transformer monitoring, transmission/brake monitoring, storage facility monitoring (wood pellets, coal, substitute fuel, ...) early fire detection systems, combustion chamber cameras, belt conveyor monitoring ...

Gypsum board

Manufacturing of gypsum board * monitoring of setting processes * kiln monitoring * adjustment optimization kiln ...

Glass

Flat glass production, bottle and container glass (forehearth, gob/glass base, plunger/glass mold, lehr, coatings), glass bending, glass hardening, glass trough monitoring, oven/vault, checkers, torch arch adhesive applications, glass coating, silicia sand (material moisture monitoring), fiberglass (forehearth, spinning, inlet/outlet annealing oven) ...

Plastic

PET bottle production, blown film extrusion, flat film extrusion, biaxial film extrusion, coating, dryer monitoring, lamination, embossing, thermoforming, deep-drawing, sheet extrusion, film calibration, sonotrode measurement during HF-welding, friction welding, injection molding, rapture molding ...

Food

Monitoring of process-specific production temperatures (cooking, baking, cutting, grinding, …), monitoring of cleaning/filling plants, sealing monitoring ...

Paper

Soft calender monitoring, temperature profile measurement, plant monitoring, print applications, coatings, lamination, cutting, storage facility monitoring, glue application control, dryer control, preheater control ...

Pharma

Plant monitoring * storage facility monitoring * tablet production ...

Steel

Sinter plant, cooling bed, coking plant, blast furnace, conveyor belt monitoring, hot blast stove, cast-iron mold monitoring, pouring stream temperature measuring, skimming detection, interior cameras for alloy ladles, hot/cold roll monitoring, torpedo car monitoring, skim stand, continuous casting plant, wire production, line refining, continuous annealing, hot-dip galvanizing, belt conveyor furnace, strip coating line ...

Cement

Rotary kiln monitoring, belt conveyor monitoring, plant monitoring, storage facility monitoring, early fire detection, substitute fuel halls monitoring, exhaust gas temperature measuring, calciner monitoring, raw mix temperature measuring, clinker cooler monitoring, slag granulation ...

Your contact partner for machine vision solutions

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