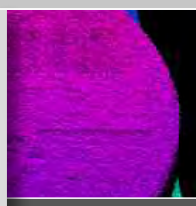

PSI Technics

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INDUSTRIAL IMAGE PROCESSING

Digital Camera Systems Improve the Quality, Productivity and Safety in Your Production Environment

Cut production costs with state-of-the-art camera technology for automated processes

PSI Technics' industrial image processing uses camera technology and laser sensors. It is the ideal solution for the automated inspection of industrial processes and guarantees safe, reliable production, contributing to quality and process improvements.

>> Optimized workflow
>> Safe and reliable production processes
>> Early detection of defects and automatic redirection of damaged products
>> Reduced expenses for manual and/or visual tests and inspections,
>> Replaces several sensors with one flexible camera
>> Avoids production downtime caused by defects
>> Industrial imaging quality assurance leads to improved product quality and productivity
>> Tremendous cost savings due to significantly reduced downtimes
>> Increased customer satisfaction

State-of-the-art digital imaging technology complements or replaces manual and visual inspections in manufacturing processes:

MEASURE
>> Length, width, height
>> Area, volume, size
>> Object count

DETERMINE
>> Physical presence
>> Position (x,y), (x,y,z)

MONITOR
>> Correct assembly
>> Form, surface area

IDENTIFY
>> Text and icons
>> Codes and patterns

Camera-based solution for quality assurance and process optimization

PSI Technics offers easy-to-use, application-specific digital image processing solutions that are designed for the continuous monitoring and quality control of production processes. Nearly all monitoring and measuring tasks can be automated by means of industrial image processing.

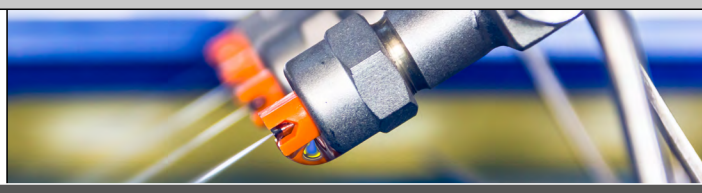
For example, powerful 2D and 3D cameras or smart cameras identify defective products during the early stages of the manufacturing process – considerably cutting costs and improving line production as well as automated production processes.

The camera systems are suitable for all industries and have proven reliable in harsh industrial environments.

Whether you need a 2D or 3D camera depends on your product.
Each camera type is suitable for a specific application range or task. We would be happy to assist you in finding the solution that is right for you.

Industries:

>> Automotive
>> Transportation, passenger and freight traffic (road, rail, sea)
>> Metal coating plants
>> Abattoirs
>> Food industry
>> Foundries
and many more



OUR SERVICES

We assist you every step of the way – from concept to completion. We focus on a close cooperation with our customers to provide the right solution for your production environment. The benefits of industrial image processing include improved product quality and reliable production monitoring. The choice is yours – we help you to achieve the desired results.

PSI Technics offers different service levels. Levels 1 and 2 can be combined in a single package.

Level 1: Feasibility Study

PSI Technics engineers conduct a feasibility study that answer questions such as:

- Can the requirements be met?
- Are there possible alternatives?
- Is there optimization potential?
- Can the implementation costs be reduced?
- What type of equipment would be required (lighting, cameras, light section sensor)?

Objective: General feasibility assessment that includes the scope of work, expenses, required hardware, achievable reliability and precision.

Duration: 1 week turnaround

Your Advantage: Clarification of requirements, assessment of potential obstacles or problems. Level 1 service includes an initial report that evaluates the feasibility of integrating image processing into your application. It is an entry level service that is designed to optimize implementation time and costs at a later stage.

Level 2: Schematics and Functional Model

PSI Technics develops initial schematics for the implementation, creates an image processing software prototype and a corresponding test setup, where required, to provide you with an overview of the required technology and to illustrate a practical solution. A functional model of the application will be created that can include existing workpieces and imaging material, if available. Level 2 services are an integral part of defining image processing specification catalogs in level 3.

Duration: Approximately 1 month

Deliverables: Application-related schematics and a functional model will be created that illustrate the operating principle and the process based on the required inspection task. This includes a report with pictures, image processing results, a brief description and sketches regarding potential system operation and system design.

Level 3: Functional Specification

PSI Technics assists you in creating coherent specification catalogs as well as the accompanying documentation. Clear communication and the coordination of requirements are vital for a successful outcome. This service level includes:

- Comprehensive advice on creating the relevant documents
- Support for drafting detailed requirements
- Provision of viable alternatives, identification of risks and optimization potentials
- Cost calculation and optimization
- Functionality descriptions

Level 4: System Development

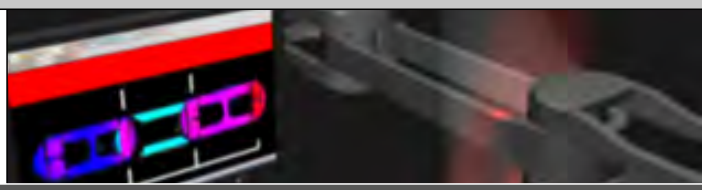
During the development stage, a dedicated PSI Technics engineer will inform you about the development progress of the system and will answer technical or progress-related questions during the course of the project.

- Development of an industrial image processing system based on the functional specifications
- PSI Technics selects the hardware and software that is best suited for the project at hand (cameras, lighting, sensors, etc.)
- Software installation, system implementation, including installation

Level 5: Commissioning, Maintenance and Training

PSI Technics commissions and maintains your image processing system to ensure consistent and reliable production. Any modifications such as changes required for the use of new workpiece types will be carried out in a timely and straightforward manner.

- Flexible and long-term use (no costly redevelopments for similar inspection tasks)
- An optional maintenance agreement ensures that you will receive a complete set of services such as cleaning and recalibration from a single source
- Guaranteed support, 24-hour support hotline available, if needed
- Training



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INDUSTRIAL IMAGE PROCESSING

A Case Study from the Automotive Industry: Reliable Systems Guarantee Operational and Process Stability

Image Sources: PSI Technics, Volkswagen AG, Fotolia

An industrial image processing system (Inline Control System) prevents disruptions at a Power & Free Golf vehicle assembly line at Volkswagen AG in Wolfsburg, Germany.

The Inline Control System analyzes the wheels of chain-driven trolleys that are passing through the assembly line. The 3D cameras take three-dimensional images to detect trolley wheel damage. Every picture is analyzed directly inside the camera. If excessive wear or abrasion is detected, the wheel is damaged, and the camera issues a signal that is used to automatically reroute the defective trolley to a service track for repairs. In addition, all images of damaged trolleys are transmitted to and stored on a server.

2D/3D SMART camera system for inspecting trolley wheels in Power & Free conveyors (overhead rail chain conveyor)

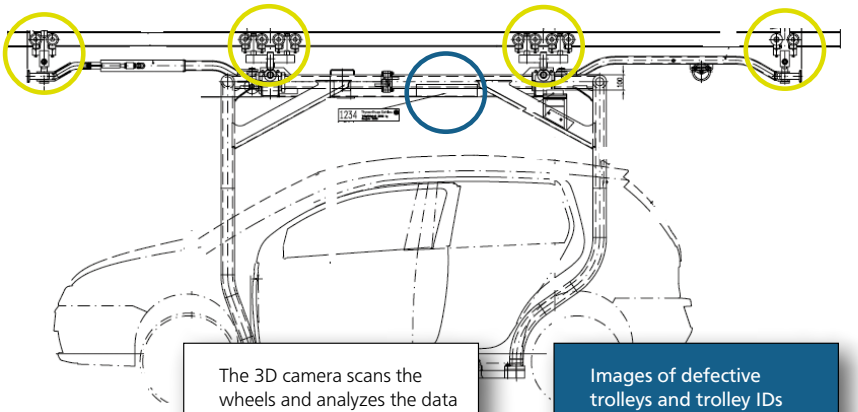
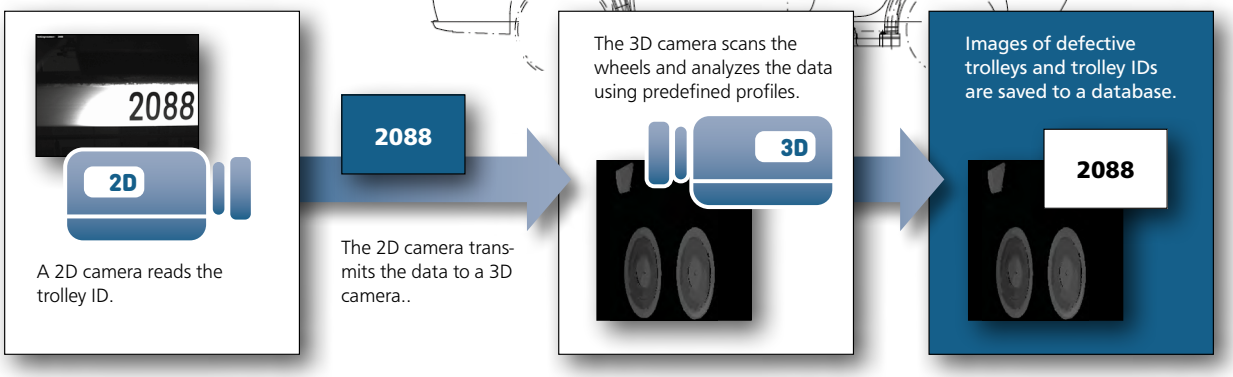


Image Analysis

- Trolley wheel inspection
- Trolley IDs are read



Jürgen Bastek,
Manager of Maintenance, Volkswagen AG:
„A product that was quick to install and would provide a reliable trolley wheel inspection was important to us. We wanted to proactively detect material fatigue to avoid corrective measures. Costly production downtimes are a thing of the past."

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Just scan the code to gain an information edge.

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