

# Smart Assembly Configuration Check



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## Use Case Overview:

Accurate condition assessment and efficient maintenance processes are critical for ensuring reliable operations and reducing resource needs. However, challenges such as an aging workforce, diverse product varieties, complex systems, and regulatory requirements pose difficulties for conventional inspection approaches, especially for safety-critical assets.

## Challenges:

Conventional inspection methods face challenges due to factors such as an aging workforce, diverse product varieties, complex systems, and stringent regulatory requirements. These factors make it difficult to ensure accurate condition assessments and efficient maintenance processes, particularly for safety-critical assets.

## Solution:

Our solution involves partial automation and worker assistance to revolutionize inspection and maintenance processes. AI-based systems have the potential to achieve accuracies comparable to or surpassing expert workers while significantly improving speed, traceability, and enabling 24/7 operations.



### Key Components of Our Offering:

- 1- Digital Workstations for Assisted Maintenance:** Utilizing AI for adaptive worker support during maintenance tasks.
- 2- Handheld Inspection & Web Apps for Tablets:** Offering convenient tools for inspection using tablets with AI-powered capabilities.
- 3- Camera Gates for Train Maintenance:** Implementing sophisticated camera and sensor setups for accurate inspection, especially in challenging conditions.

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# Detailed Workflow

## 1-Accurate Inbound Inspection:

Using a sophisticated camera and sensor setup for precise assessment of damage and wear during inbound inspection, even in obstructed, dirty, or hard-to-reach areas.

## 2-Image Understanding:

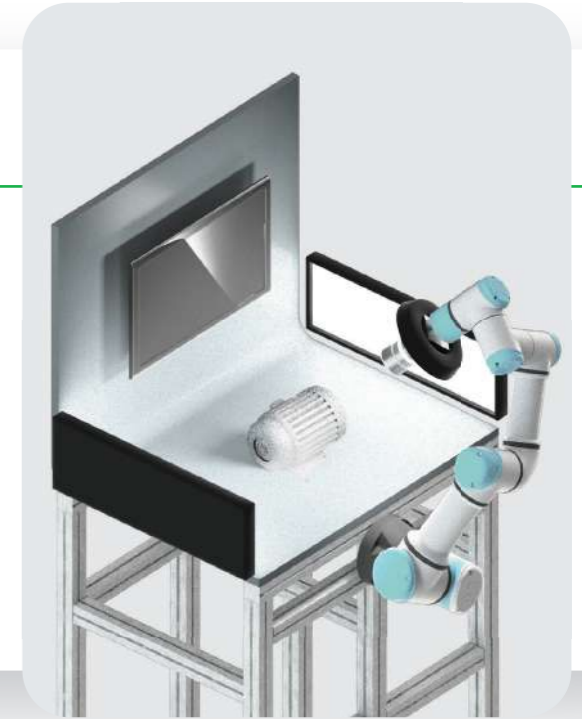
Employing AI models with advanced machine learning techniques and anomaly detection algorithms to assess captured images. This provides task descriptions for workers or exports insights to a digital twin for enhanced information flow.

## 3-Assisted Overhaul:

Implementing adaptive worker assistance for individual, complex, and error-prone repair and overhaul tasks. This includes visualizing the process on screens, augmented reality devices, or directly on the part to guide workers effectively.

## 4-Reliable Outbound Check:

Using a sophisticated camera and sensor setup for precise assessment of damage and wear during inbound inspection, even in obstructed, dirty, or hard-to-reach areas.



## Benefits:

- **Traceability and Scalability:** Ensuring traceability and scalability in maintenance operations.
- **Codify Expert Knowledge:** Leveraging AI to codify expert knowledge for consistent and reliable assessments.
- **Worker Assistance:** Providing adaptive worker assistance for diverse applications, enhancing worker guidance.
- **Objective Evaluation:** Facilitating objective evaluation of maintenance processes, contributing to process improvements.  
This comprehensive solution transforms the maintenance, repair, and overhaul processes, combining AI expertise with human capabilities for optimal results.



Objective  
evaluation



Codified  
expert  
knowledge



Consistent  
quality



Highly  
adaptive

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