KONICA MINOLTA

FORXAI

ASSEMBLY
QUALITY
INSPECTION

Giving Shape to Ideas

DO YOU OPERATE A FACTORY WITH AN ASSEMBLY LINE?

All the changes in modern industry forcing factories to rethink their manufacturing strategies. Labour shortage is a challenge that's not going away anytime soon and quality matters like never before. Quality control in manufacturing helps to maintain customer satisfaction and loyalty and reduce the risk and cost of replacing faulty goods. Companies can build a reputation for quality by gaining accreditation with a recognized quality standard. Inspection is called a process that checks whether the product meets assumed, at the designing stage, quality standards.

During manufacturing processes, inspection locates anomalies, which otherwise cause problems at the final stage. The cost of quality is an area that many businesses target for improvement. Konica Minolta offers FORXAI, an imaging IoT platform. This platform combines imaging technology, which is Konica Minolta's strength, with cutting-edge IoT and AI technologies. In-house developed solution, Assembly Quality Inspection (AQI), monitors any missing or incorrect bolts, screws, flanges, or any other essential manufacturing components on an assembly production line.

HOW DOES IT WORK?

The Assembly Quality Inspection application serves to track, detect and identify any missing or incorrectly positioned manufacturing parts, and notifies the human operators or connected systems. A self-governing AI application scans items, passing through an assembly line and displays the status in real time on the dashboard or optionally, manage integrated parts of production via it's outputs or communication protocols. Sophisticated AQI technology can also be combined with other Konica Minolta's technologies, to identify the type of product & evaluate if correct assembly parts were used.

YOUR DATA, DIRECTLY FROM OUR DASHBOARD

Detection snapshot
Displays an image of the last detected item on the production line along with highlighted sections of all parts that are missing or are misplaced

Missing assembly parts
Displays the number of missing parts on the most recently scanned item

Statistics
Displays the statistics for how many products had missing parts

Total checked
Displays the number of products that were checked in total

SYSTEM INTEGRATIONS

In parallel to the real-time dashboard for visualization of the detection results, the system can be configured to provide generated data to another application via an integration interface or it's physical outputs.

Everything is based on the detection results or optionally, user inputs. The endless range of supported integrations depends on the specific deployment and can also be a subject of custom development if required.
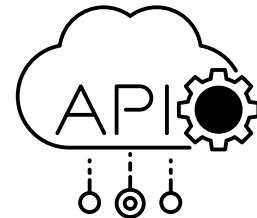
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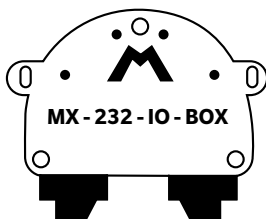
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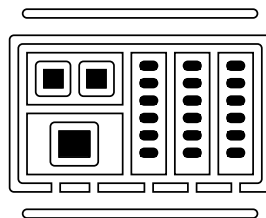
API

WHAT ARE YOUR BENEFITS?

More accurate production planning based on reports

Reduce the manufacturing costs

Production report by product type

Number of inspectors needed is less

Production report by hour/day/week/month

Workers and inspectors do not come in contact with each other

Intuitive Graphic User Interface available for system administrator

Solution requires no supervision and can run 24/7

Flexibility in adding new products by Machine Learning model retraining

Increased production efficiency

Flexibility in extension in further use cases

Generate more profit

Limiting the chances of error

WASHING MACHINE FACTORY

During the pandemic reshuffling, jobs that require in-person attendance and traditionally have lower wages, presented staff retention challenges to employers. This and other factors are constantly threatening different businesses across the world. This manufacturer knew that there were some repetitive tasks in their assembly processes. The lack of qualified manpower opened a new discussion about the possibilities and solutions we are providing. The customer's goal was to increase productivity to keep up with an increasingly competitive market. The success o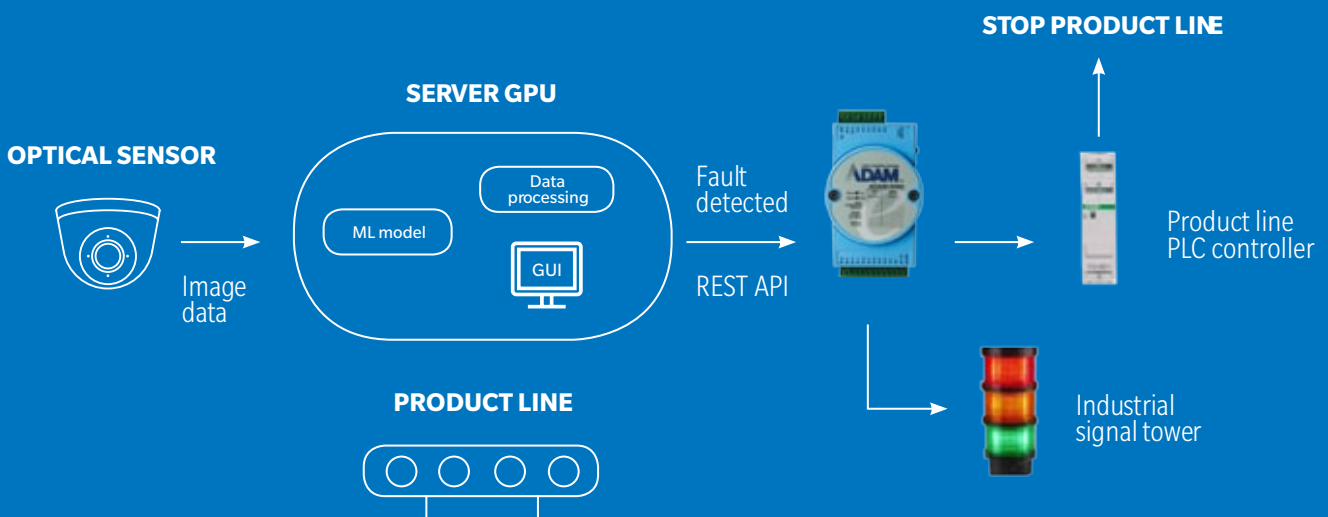f upgrading one of their production lines with our solution, will lead to the company's decision to roll-out the technology across all its production lines. The result was an increased output volume and product quality while decreasing manufacturing costs and required production space.

Our solution included the installation of MOBOTIX IoT camera with FORXAI Quality Assembly Inspection. This product delivers the benefits of AI technology directly to the production line, in the form of increased efficiency and accuracy.

WHAT IS THE SETUP?

The optical sensor from S74 camera is located above the production line for high resolution and image quality. All to enable real time image acquisition. The high resource server with GPU and performing real time detection tasks. Algorithms trained by our professionals directly on-site are looking for any missing screws or assembly parts in real time, while the washing machines are moving on a conveyor belt. If an error occurs (e.g. missing bolt), the system activates a dedicated signal light and/ or even sends a STOP signal to the production line controller.
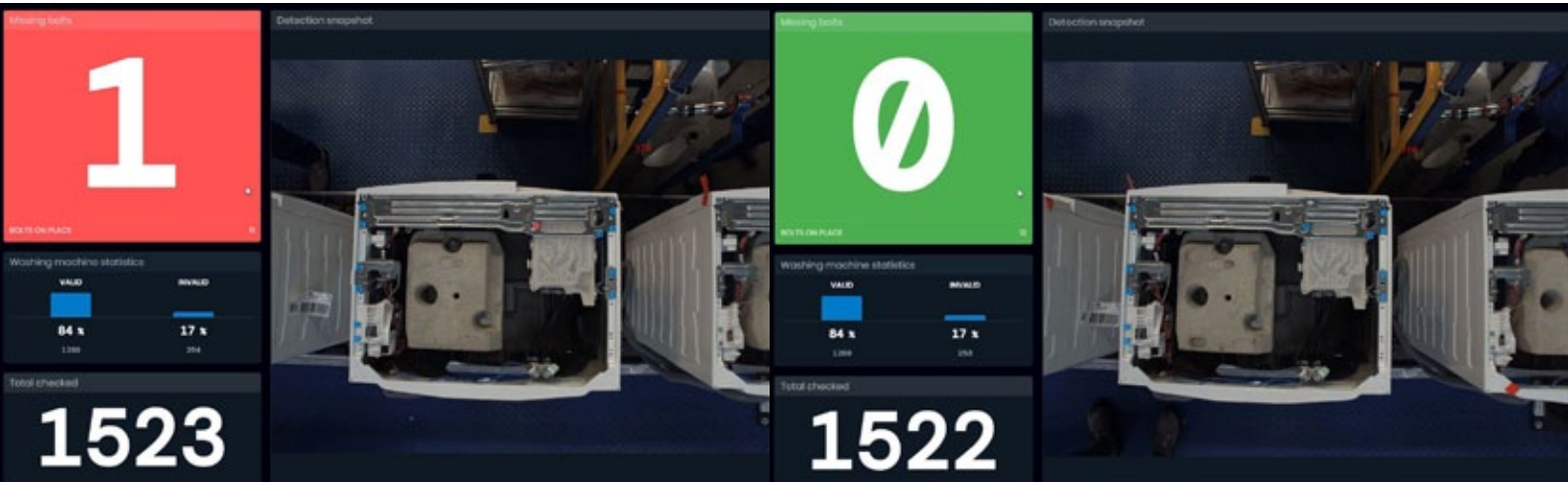

OPTICAL SENSOR

Image data

SERVER GPU

Data processing

ML model

GUI

Fault detected

REST API

PRODUCT LINE

STOP PRODUCT LINE

Product line PLC controller

Industrial signal tower

ASSEMBLY QUALITY INSPECTION PICTURES FROM PRODUCTION

AQI dashboard missing screw

AQI dashboard

PRICING EXAMPLE

ASSEMBLY QUALITY INSPECTION	
Assembly Quality Inspection annual licences	
Camera and components	
Server GPU and 3rd party integration solutions	
SLA	
SW, Implementation, ML models	
TOTAL COST + 1 YEAR LICENCES INCLUDED	**16.000 – 19.000 EUR**

BENEFITS EXPRESSIBLE IN NUMBERS	
Manual inspection costs cut	
Increased production speed	
TOTAL SAVINGS PER 1 YEAR	**25.000 – 30.000 EUR**

BENEFITS NON-EXPRESSIBLE IN NUMBERS	
Production space savings	
Reduced risk of injuries	
More reliable products output	
Better reputation due to increased quality	

FOR MORE INFORMATION, PLEASE VISIT OUR WEBSITES OR CONTACT YOUR LOCAL KONICA MINOLTA SALES OUTLET.