F

Automotive Part

DongSeo IT

AI PIPELINE

Model Inference
Tool

EDA Tool

Model
Deployment
Tool

Data
Preprocessing
Tool

Model
Training Tool

Dongseo Information Technology Co,.Ltd

01   MESone-Plus

02   Alone

03   Digital Twin

28

DongSeo IT

DongSeo IT

Company Name	**Dongseo Information Technology Co,.Ltd**
CEO	Jeong Seong geun
Name	Ham Hyoung Gi
Tel	+82-55-321-1515
Fax	+82-55-321-1514
E-mail	mgi@dsinfo.co.kr
URL	www.dsinfo.co.kr

Company Introduction

Dongseo Information Technology is an enterprise IT solution company founded by experts in factory automation, industrial automation, and system integration. Our focus is on delivering value-driven solutions and services to our customers by identifying their most critical business needs and selecting the best IT technology to reinforce them.

At Dongseo Information Technology, we are committed to excellence and innovation, and we have established three policies to become the most advanced IT provider, the best customer success generator, and the highest company value creator.

Our range of services includes software development, IT consulting, system integration, factory automation, and industrial automation, and we place a strong emphasis on customer satisfaction and value creation.

Our ultimate goal is to become a world-class information technology service company by consistently delivering innovative and ethical solutions.

01

MESone-Plus

Technology / Product	MESone-Plus
Detailed Genre	Integrated Production Management Solution 12 modules implementing the functions specified by MESA
Product Type	S/W
Target Company	Manufacturing industry
Technology/Product video link	

Contents Introduction

MESONE-plus is 100% developed with East-West information technology's own technology and is implemented with the latest technology.

We provide specialized technology for VISUAL LOT TRACKING to enhance the understanding of administrators and to identify and manage the structure of the LOT at a glance.

Software configurations include server/client, 3-Tier Architecture, mobile and C#.It is implemented on a NET basis.

FRAMEWORK combines the advantages of Client/Server with the advantages of Web clients to provide a powerful user interface, providing a convenient work and operational environment.

FRAMEWORK combines the advantages of Client/Server with the advantages of Web clients to provide a powerful user interface, providing a convenient work and operational environment.

No-Touch Deployment (NTD) technology has been developed to facilitate version management and updates.

Business logic is open to ensure easy maintenance of IT staff
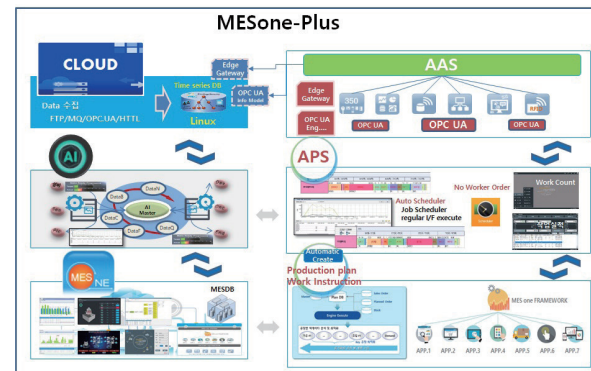
02

Alone

Technology / Product	Alone
Detailed Genre	AI, A²Lab
Product Type	S/W
Target Company	Manufacturing industry
Technology/Product video link	

Contents Introduction

Alone consists of the platform A²Lab and the visual analysis solution "A²".
A²Lab, an artificial intelligence platform, can collect, store, and process manufacturing data for not only training and validating AI models for quality prediction and process optimization, but also for developing quality image analysis models and conducting anomaly analysis based on various types of causes through streaming analysis.It enables data mining through the calculation of composite indices, execution of prediction models, mapping of case studies for alarm occurrence and action guidance, and provides trend prediction, tag trend inquiries, and visualization analysis using extracted data for detailed analysis.
The artificial intelligence visual analysis solution, "A²", is a visualization solution that can be visually analyzed. It helps discover hidden patterns and enables understanding of data and future predictions by visualizing analysis results from various perspectives. It combines and restructures different data for correlation analysis and visualization.
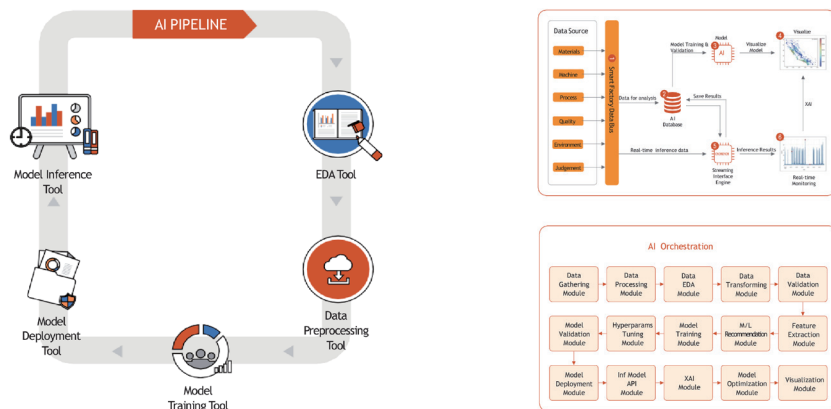
03

Digital Twin

Technology / Product	Digital Twin
Detailed Genre	
Product Type	S/W
Target Company	Manufacturing industry
Technology/Product video link	

Contents Introduction

Currently, in manufacturing sites, they are entering the era of the Digital Twin Factory, which incorporates 3D and simulation technologies on top of the existing IoT, Big Data, and AI technologies that form the foundation of the Smart Factory.
The goal of the Smart Factory is to apply ICT technology to domain knowledge of manufacturing sites to closely monitor (sensing) and analyze (analytics) production status and optimally control (control) it, and to make the manufacturing site intelligent. On the other hand, the Digital Twin aims to significantly increase the level of factory autonomy by connecting the increasingly complex real-world manufacturing environment to a virtual space in real-time, increasing the visibility of the production site and simulating it in a more sophisticated way.

• Management of generating and managing digital twin models that match the actual site through on-site photography and on-site 3D modeling.
• Customized dashboard linked to the system according to various KPI indicators
• Support for digital twin standard models for data integration.
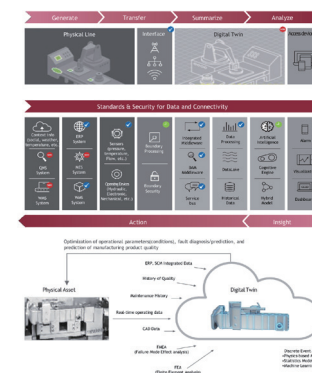
Intelligent Designing >>

AI solution to predict heat dissipation performance values before EGR Cooler designing and CFD analysis

AS-IS

It takes too much time to deliver the results meeting the client's requirements when designing products based on client's drawing specifications and analyzing CFD (Avg. 360 hours (5*72 hours per test))

CFD Analysis Time: Avg. 360hr (1EA ITEM)
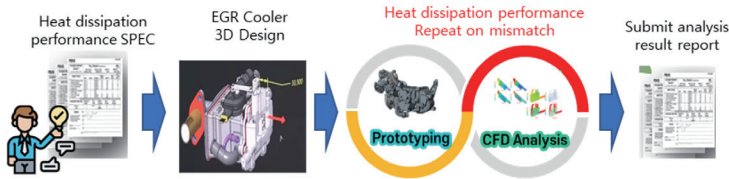
✓ Excessive waiting time(360Hr)
✓ Increasing repeat operations(Average 5 time)

TO-BE

During design and CFD analysis, the designing time is reduced with AI, meeting the client requirements by minimizing the measurement of heat dissipation performance (360 hours→216 hours, 40%▼, '22) (216 hours→72 hours, 67%▼, '23), Increase in the number of items that can be developed by 70 (year)

CFD Analysis Time: Avg. 72hr (1EA ITEM)
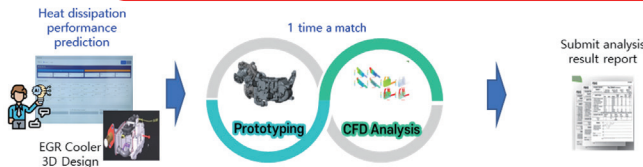
✓ Increase new ITEM designs(70EA)
✓ Increase work efficiency (72Hr Shorten)
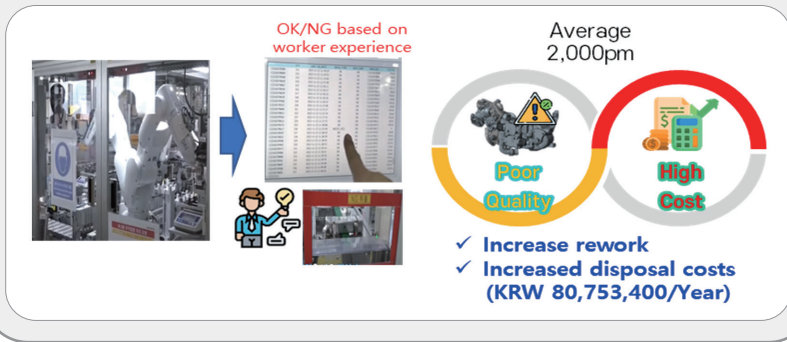✓ Expect sales growth(81.2 billion/Year)

Category	AS-IS	TO-BE	Expected Effects
Product test time (per item)	360 hours (5 * 72 hours per test)	216 hrs (3 * 72 hrs per test, '22) 72 hrs (1 * 72 hrs per test, '23)	• To reduce the test time by 67% (144 hours)
Number of items that can be developed per year (as of '21)	264 days / 15 days = 17.6 (Approx. 18 item designs)	264 days / 3 days = 88 (Approx. 88 item designs)	• To increase the number of items that can be developed a year by 70
Increase in annual sales with more development items	-	KRW 81.2 billion	• Unit cost of MPC EGR Cooler: KRW 29,000/EA • If we proactively respond to the client's order of one item, the calculation is as below: 1,400,000/year * KRW 29,000/EA * 2EA/ITEM = KRW 81,200,000,000(KRW 81.2 billion)
Notes	* CFD fluid analysis program: 72 hours per operation (Program operating hours: 24 hours * 3 days = 72 hours) * Annual working days: 264 days (Annual test days: 264 days / (3 days per test) = 88) - AS-IS (Annual test days: 264 days/ (15 days per test) = 17.6 item designs tested) - TO-BE (Annual test days: 264 days/ (3 days per test) = 88.0 items designs tested)		

Intelligent inspection >>

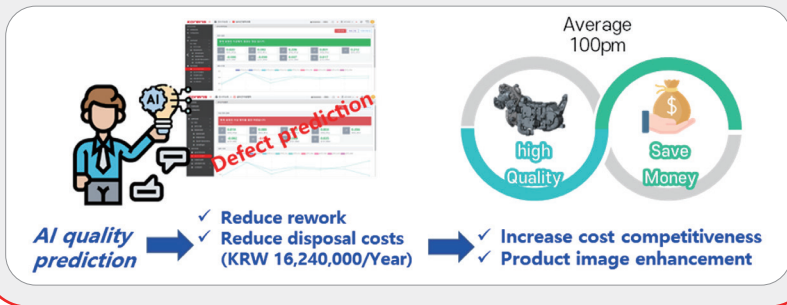AI solution to predict defects before MPC EGR Cooler leak tests

AS-IS

During leak tests, inspectors monitor servers and determine product quality based on their experiences, leading to inconsistencies in product quality.
It increases defect rates, re-operation costs and product disposal costs (Average defect rate: 1,986ppm, Product disposal cost: KRW 80,753,400/year)


OK/NG based on worker experience

Average 2,000pm

Poor Quality

High Cost

✓ **Increase rework**
✓ **Increased disposal costs (KRW 80,753,400/Year)**

TO-BE

AI determines the product quality by collecting server data with the AI inference server, securing consistency in product quality. It reduces defect rates (by 1,500ppm, 75%▼, 1st round)(additionally by 400ppm, 80%▼, compared to 1st round), re-operation costs and product disposal costs (Approx. KRW 61m saved, 1st round)(Approx. KRW 4m saved, 2nd round)

Average 100pm

Defect prediction

high Quality

Save Money

AI quality prediction ➡ ✓ **Reduce rework**
✓ **Reduce disposal costs (KRW 16,240,000/Year)** ➡ ✓ **Increase cost competitiveness**
✓ **Product image enhancement**

Category	AS-IS	TO-BE	Achieving Effects
Defect rate	1,986ppm	505ppm ('22) 100ppm ('23)	• To reduce by 74.57% (1,481ppm reduced), 2022 • To reduce by 80% (400ppm reduced), 2023

Product disposal cost	KRW 80,753,400/year	KRW 20,503,000 ('22)
		KRW 4,060,000 ('23)
			• To save KRW 16,240,000 in disposal cost
			 - Calculation of Reduction Cost
			  : KRW 20,300,000 –
			  KRW 4,060,000 = KRW 16,240,000 saved

Improvement rate in OEE productivity indicator (Korens internal operating report)	-	5.97% ('22) 6.4 ('23)	• Calculated based on TTA testing indicator (Improvement rate) - Test field: Product defect rate (PPM) - Improvement rate (based on indicator): 80% - Contribution rate: 8% - Improvement rate (based on company): 6.4%
Notes			• Calculation of product disposal cost - Defect rate reduction X annual amount of coolers X unit cost of cooler - Calculation of savings from defect rate reduction (2022): 500PPM X 1,400,000 X KRW 29,000 = KRW 20,300,000 - Calculation of savings from defect rate reduction (2023): 100PPM X 1,400,000 X KRW 29,000 = KRW 4,060,000 • Calculation of OEE productivity indicator - Improvement rate (based on indicator) = (data before adopting AI – data after adopting AI) / data before adopting AI - Improvement rate (based on company) = Improvement rate (based on indicator) * contribution rate
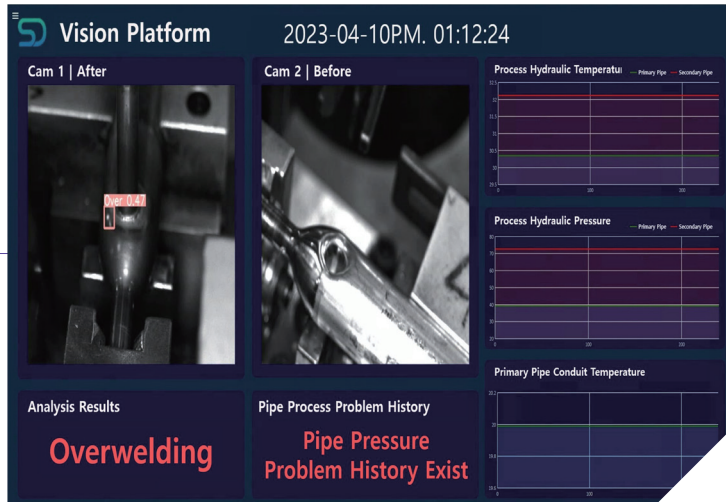
BIG Ai

29

BIG Ai

BigAI

Company Name	*BigAI*
CEO	ByungHo Jang
Name	ChangSoon Kim
Tel	+82-10-8875-0117
Fax	+82-55-264-6599
E-mail	ee.cskim@big-ai.kr
URL	http://www.big-ai.kr/

Company Introduction	BigAI is an AI solution company that specializes in helping manufacturing companies become more intelligent by utilizing AI technology. We comprise a team of experts in various fields, including manufacturing facility management, IoT, big data analysis, AI solution, and Real-time monitoring platform. Our main goal is to provide innovative solutions that improve energy efficiency in factories, reduce equipment maintenance and defect rates, and drive sustainable growth for our customers. In 2021, we successfully developed AI solutions that reduced energy consumption in 30 factories by more than 5%. At BigAI, we have expertise in renewable and distributed power generation fields, such as solar power, wind power, and ESS, and provide solutions to many domestic customers. Our dedication to creating a better future is reflected in our commitment to providing innovative AI solutions to various industries.

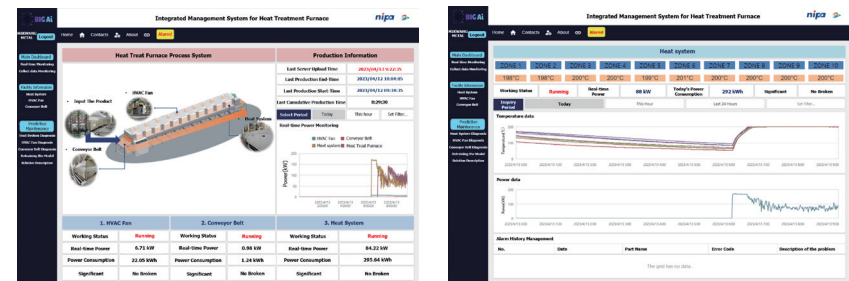# 01

Facility Predictive Maintenance Solution

Technology / Product	Facility Predictive Maintenance Solution
Detailed Genre	Solution
Product Type	S/W
Target Company	Manufacturing company
Technology/Product video link	

Contents Introduction

This solution utilizes artificial intelligence technology by collecting various data generated in the manufacturing process in real-time. It collects and analyzes data such as power, vibration, and temperature of facilities through sensors to monitor facility conditions and predicts when maintenance is required in advance. This helps businesses avoid unplanned failures, minimize downtime, improve productivity, and reduce maintenance costs.

In addition, we continuously provide re-learning of artificial intelligence models by utilizing increased sensor data after providing solutions and provide artificial intelligence model re-learning systems so that solutions of the models can be applied. This allows companies to further improve productivity by automating facility management and increasing accuracy.

These solutions have a positive effect on improving corporate reliability and can grow into a more competitive company due to improved efficiency in facility management.

# 02

Product defect Detection and Cause analysis Solution

Technology / Product	Product defect Detection and Cause analysis Solution
Detailed Genre	Solution
Product Type	S/W
Target Company	Manufacturing company
Technology/Product video link	

Contents Introduction

This solution utilizes sensor data and image data such as temperature, power, and flow collected from facilities within the plant to identify product defects. Defects that occur during the production process affect product quality, so prompt treatment and prevention are important. To this end, this solution first analyzes data collected from facilities in the factory and uses artificial intelligence algorithms to identify product defects.

Once a defect is identified, the cause of the defect is notified to the operator through analysis of the collected sensor data and artificial intelligence algorithms. This allows the operator to take appropriate action on the machine to prevent further faults from occurring.

This solution utilizes data to quickly and accurately identify product defects, and workers can quickly identify the cause of the defect and take action. This is of great help in increasing efficiency on the production line and maintaining product quality.
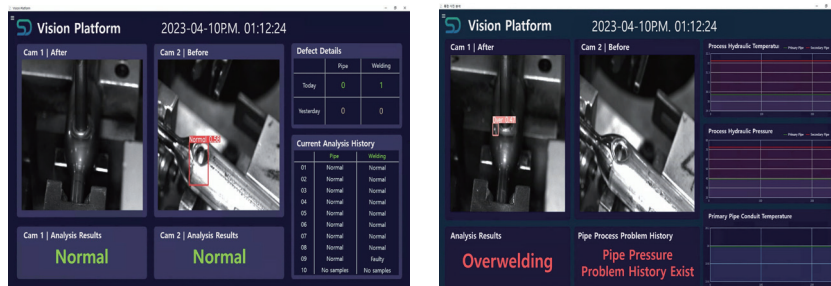
03

Factory Energy Efficiency Solution

Technology / Product	Factory Energy Efficiency Solution
Detailed Genre	Solution
Product Type	S/W
Target Company	Manufacturing company
Technology/Product video link	

Contents Introduction

This solution utilizes AI technologies to analyze the energy use status of the manufacturing factories and improve the energy efficiency based on the collected energy data of each facility such as voltage, power, energy consumption, power factor, and environment data.

By integrating the bigdata and IoT technologies, large-capacity energy data is collected and processed. AI-based analysis models are developed such as predicting the peak power and energy consumption; optimal scheduling of the operation of the manufacturing process; HVAC system control; classification and management of standby loads and power factor; and carbon emissions management. To increase the accuracy, reliability, and flexibility of the solutions, we also develop additional models such as continuous AI learning, and data preprocessing.

This solution provides guidelines, energy improvement, and saving plans in energy consulting for customers; therefore improving efficiency and reliability in facility management.
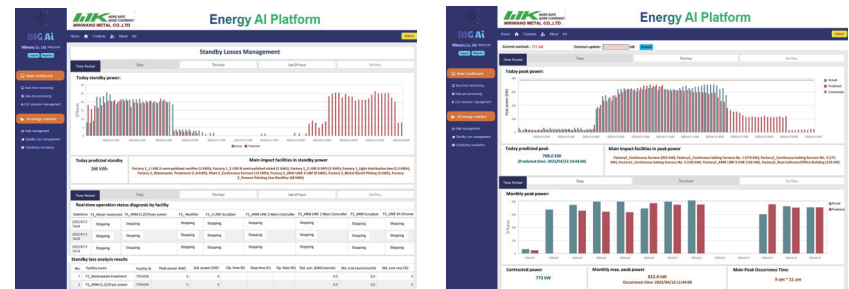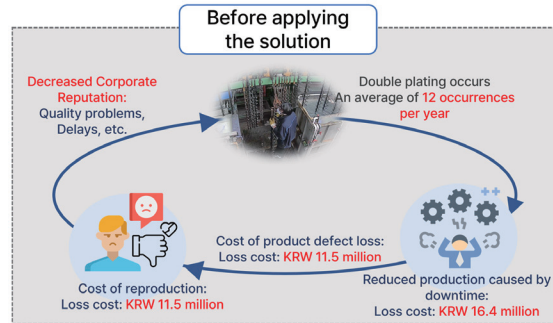
Intelligent processes >>

Vision AI Double-plating prevention solution in the process of electroplating
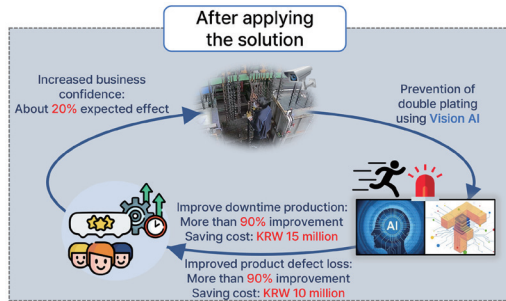
AS-IS

If double plating occurs due to workers' mistakes, it is difficult to identify the error. It can be detected by visual inspection after the process is done.
It incurs re-purchasing expenses and undermines corporate credibility → Product defects: avg. 1-2 a month, Annual loss cost: over KRW 36 million

Before applying the solution

Decreased Corporate Reputation:
Quality problems, Delays, etc.

Double plating occurs
An average of 12 occurrences per year

Cost of product defect loss:
Loss cost: KRW 11.5 million

Cost of reproduction:
Loss cost: KRW 11.5 million

Reduced production caused by downtime:
Loss cost: KRW 16.4 million

TO-BE

The Vision AI double plating prevention solution detects double plating in real time, and sounds the alarm if it detects the error. It minimizes downtime in the plating line and loss from defects → 90% reduction in the annual loss cost (over KRW 32.4 million), Corporate credibility enhanced

After applying the solution

Increased business confidence:
About 20% expected effect

Prevention of double plating using Vision AI

Improve downtime production:
More than 90% improvement
Saving cost: KRW 15 million

Improved product defect loss:
More than 90% improvement
Saving cost: KRW 10 million

Category	AS-IS	TO-BE	Expected Effects
Occurrence of double plating	Difficult to conduct visual inspection(Errors can be detected after the process is done)	To detect double plating	To detect double-plated products with Vision AI
Low productivity from downtime	Downtime occurs after double-plated products are detected(Loss cost: over KRW 16.4 million)	To reduce downtime	To minimize downtime by detecting double-plated products and sounding the alarm(Saving cost: over KRW 15 million)
Disposal cost of defective products	If it fails to detect double-plated products, all products are discarded(Loss cost: approx. KRW 11.5 million)	To minimize the disposal cost of defective products	To detect and discard the double-plated products only(Saving cost: over KRW 10 million)
Re-purchasing cost of raw materials	Unnecessary product disposal incurs re-purchasing costs of raw materials(Loss cost: KRW 11.5 million)	To manage flexibly with the integration platform	To check and manage the situations in the field with the integration platform regardless of time and place
Lower corporate credibility	Serious problems can occur to undermine the corporate image such as total recall, delivery delay and quality issues	To enhance corporate credibility	To enhance corporate credibility by improving product quality and meeting the delivery date

Intelligent energy management >>

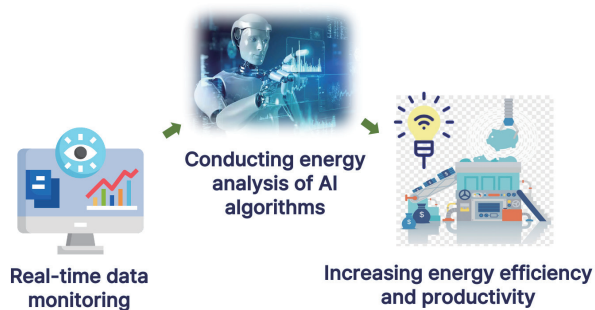AI energy management system for factory energy efficiency

AS-IS

Lack of the ways to utilize equipment data, difficulty monitoring big data, and lack of professionals to analyze factory energy efficiency for energy consulting → Number of collected datasets: 47 million a year, Analysis time: 1 hour to 1 week, Professional consulting cost: approx. KRW 50-60 million a year per person

Difficulty using data + **Difficulty analyzing power data** + **Lack of energy efficiency measures**
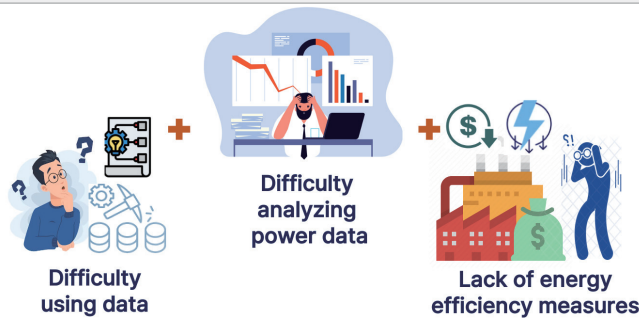
TO-BE

Provision of the AI solution that enables effective energy consumption for all processes and equipment → Peak power management: 7%, Standby power management: 1%, Manufacturing process scheduling: 4%, Man hour saving: 10%, Productivity improvement: more than 7%


Real-time data monitoring **Conducting energy analysis of AI algorithms** **Increasing energy efficiency and productivity**

Category	AS-IS	TO-BE	Expected Effects
Utilization of equipment data	Lack of the ways to utilize equipment data (power datasets: 47 million a year → Lack of utilization methods → Waste of infrastructure and resources)	To optimize learning of the AI analysis models through data mining and pre-processing → Coming up with the solution for energy consumption management	To provide the solution for effective energy consumption
Data monitoring	Difficulty monitoring the enormous amount of data (1,327 datasets are collected every 15 minutes at 82 measurement points)	To build the database server, collect, store and manage data, and monitor them in real time (To search data every 15 minutes according to day/month/year, and visualize data in real time)	To monitor the operating status of all processes and equipment, and the energy consumption, regardless of time and place → Error detection and provision of optimal energy utilization methods
Analysis of energy consumption	Difficulty analyzing data continuously by the manager(Small amount and simple types of (structured) data only can be analyzed, Analysis time: hours to weeks)	To provide effective energy utilization methods through the AI analysis solutions based on the past data (Large amount and various types of (unstructured) data can be analyzed in real time)	To increase productivity 7% by utilizing the AI solutions and saving energy costs
Cost of energy consulting	Lack of energy management professionals → Lack of energy efficiency methods(Avg. annual salary of consulting expert: approx. KRW 50-60 million per person)	To improve the understanding of energy management through the AI solutions and automatically manage energy → Saving man hours (consulting cost)	To provide consulting instead of professionals and prevent personal errors → Increase in client trust(expected to save 10% of man hours)

Predictive maintenance >>

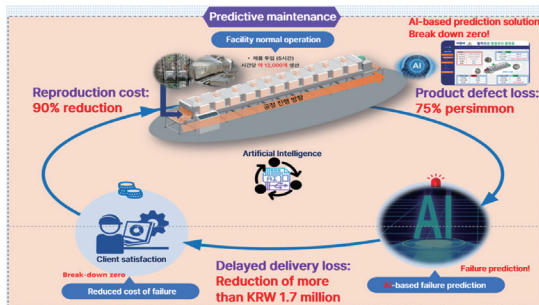AI management system to check the status of thermal processing equipment and predict failures

AS-IS

The existing equipment monitoring system sounds the alarm after operation is failed. It undermines productivity due to loss and repair of defective products, and clients can make complaints→ Defective products: approx. 60,000 per failure, Loss cost: approx. KRW 46 million per failure
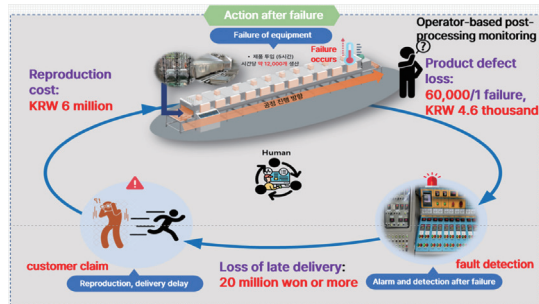

TO-BE

The solution for predictive maintenance is provided to check the status of equipment with AI and report the failure predictions. It minimize loss from defective products and delivery delay, and reduces reproduction costs → Compared to the adoption of solution, the loss cost can be reduced 75% (approx. KRW 35 million)

Category	AS-IS	TO-BE	Expected Effects
Checking of equipment status	Periodic regular inspection (Not constantly managed)	The status can be checked every 15 minutes	To check the equipment status in real time
Loss from defective products from equipment failure	A loss of 60,000 defective products occurs every 5 hours (Loss cost: over KRW 6 million)	There is no defective product by proactively responding to unusual signs	To prevent personal errors caused by experts and increase client trust (Results vary according to skills of experts)
Delivery delay due to repairing	Too much time to repair or replace components (at least 4 days)	Predictive maintenance is carried out by predicting failures (Within 1-3 days)	To increase client trust
Damage cost of equipment failure	Equipment fails one or two on average every 2 years (A failure incurs KRW 46 million)	There is no equipment failure except for accidents by natural disasters	To reduce damage cost by securing the stability of equipment operation
Cost of management and replacement of old components	Replacement cost is incurred by wrong inspection or reliance on manuals	The cost from unnecessary replacement is reduced	To reduce 10% of unnecessary expenses in the budget

WellsTech

30
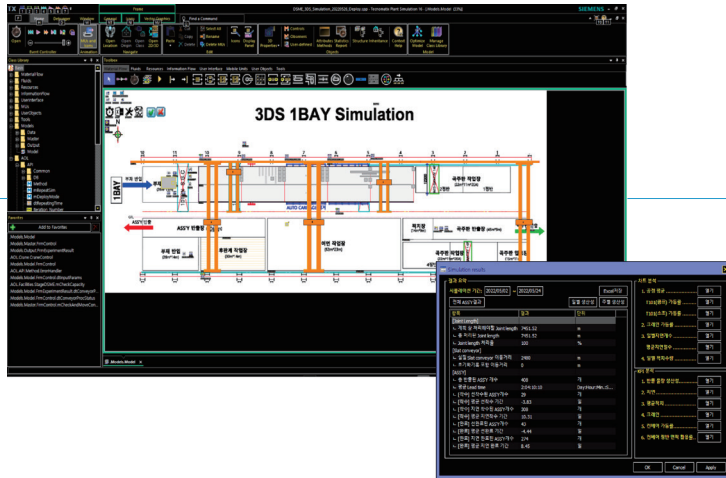
WellsTech

Wellstech Inc.

WellsTech

Company Name	*Wellstech Inc.*
CEO	CK Hwang
Name	CK Hwang
Tel	+82-31-609-8800
Fax	
E-mail	ckhwang@wellstek.com
URL	https://wellstek.com

Company Introduction

Digital Transformation is a key strategy to ensure your company's growth and sustainability. However, many businesses, especially midsize/small and medium-sized manufacturing & logistics companies, are struggling with digital transformation due to their lack of expertise, skills and experience, and high complexity and cost structures.

WellsTech has an intelligent production planning/scheduling solution (i-Scheduler) and that combines artificial intelligence (Reinforcement Learning) and digital simulation technology, an intelligent IoT edge computing platform (WellQ) based on CEP(Complementary Events Planning).

And WellsTech actively support customers' digital transformation based on their experience in digital simulation development and consulting, data transfer consulting and implementation for large companies such as Samsung Display, Hyundai/Kia Motors, and Hanwha Ocean (formerly Daewoo Shipbuilding & Marine Engineering).

01

i-Scheduler

Technology / Product	i-Scheduler
Detailed Genre	
Product Type	Software: Application
Target Company	Medium and SMB manufacturing and logistics companies
Technology/Product video link	

Contents Introduction

With the rapidly changing market environment and diversifying customer needs, the manufacturing industry is becoming more responsive to small-scale production of many varieties. However, many companies are facing problems such as poor accuracy and excessive time being spent due to manual production planning. As a result, it is impossible to predict due to non-operating factors such as waste and defect in the production process. In addition, inaccurate predictions are increasing waste factors and repeated failure to meet delivery dates.

Inaccurate production planning, a chronic problem in the manufacturing industry, can be solved through big data-based analysis and learning systems. Automation and reinforcement learning technologies can be combined to maximize production planning accuracy and efficiency. This advanced production planning system enables rapid decision-making on a variety of customer needs and urgent orders, and enables accurate predictions by analyzing the impact of non-operating factors. This leads to minimizing waste and meeting deadlines.

WellsTech's intelligent production planning solution(i-Scheduler) is a production planning solution that is more reliable than the existing APS(Advanced Planning Solution) by combining its own reinforcement learning and digital simulation expertise.
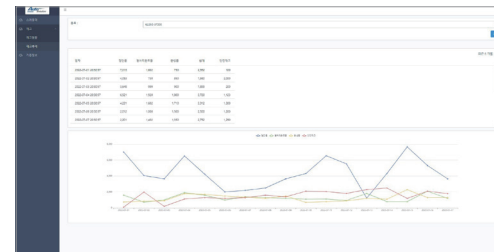
02

Well Q

Technology / Product	Well Q
Detailed Genre	
Product Type	Software
Target Company	Industrial Safety, Smart Factory and Smart Farm
Technology/Product video link	

Contents Introduction

Data throughput exploded as well as the need for distributed processing of large amounts of data, overcoming the limitations of real-time response in cloud environments, leading to the emergence of Edge Computing.

WellsTech's Intelligent Edge IoT Platform, WellQ, is a platform designed to enable real-time data processing based on Events Drive Architecture, support various hardware, and facilitate application distribution and execution. And by supporting AI, Edge supports emergency tasks in real time. WellsTech has established a ventilation control system by optimally maintaining the breeding temperature of pig farms using WellQ, and plans to launch an AI thermal imaging camera-based fire prevention solution within 2023.

Wellstech Inc.
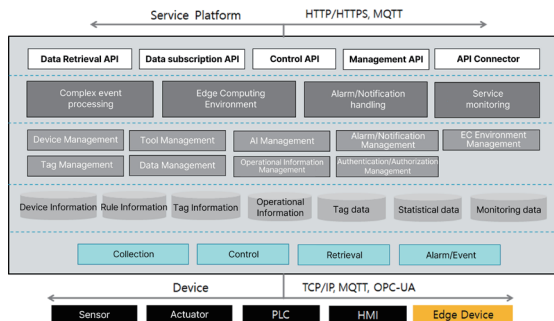
Intelligent supply chain management >>

Integrated supply chain-supporting system with production planning from AI combined with simulation
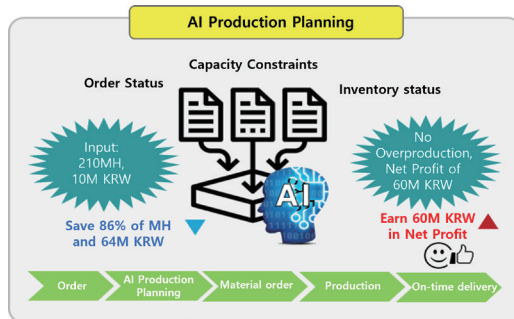
AS-IS

Production planning by workers requires 1500MH, incurring a planning cost of KRW 75 million. An extra cost of KRW 60 million is additionally incurred by errors in production planning 2-3 times annually.


Manual Production Planning
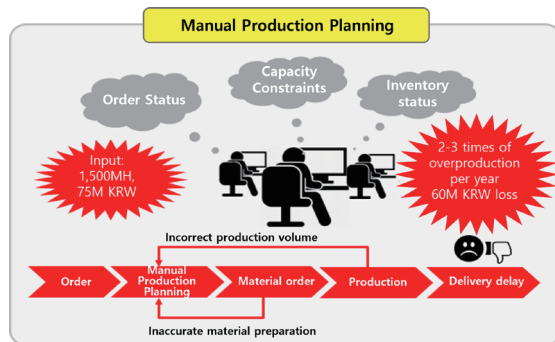
TO-BE

Automatically generated AI production planning takes 210MH (KRW 10.52 million), reducing the cost 86%, or KRW 64.48 million and eliminating the possibility of planning errors. KRW 60 million is added to the net profit every year

AI Production Planning

Category	AS-IS	TO-BE	Expected Effects
Man hours for production planning	5 workers are allocated for 60 hours every business day = 5 MH	2 workers are allocated for 20 hours every business day = 0.7 MH	To save man hours 86%
Reduction in production planning costs and increase in productivity by worker reallocation	5 MH*25*12=1,500MH **=187.5MD** If 1MD is considered KRW 200,000, KRW 37.5 million a year opportunity cost considered-> KRW 75m	0.7MH*25*12=210MH **=26.3MD** If 1MD is considered KRW 200,000, KRW 5.26 million a year opportunity cost considered-> KRW 10.52m	To improve productivity by reducing the cost by KRW 64.48 million a year (KRW 75m – KRW 10.52m = KRW 64.48m)
Frequency of production planning errors	2-3 times on average per year	0	To eliminate the causes of errors on manual production planning
Cost of production planning errors	It generates KRW 15-20 million in loss per error (faulty product disposal cost, worker/equipment operation cost, loss cost for safety stocks and materials, opportunity cost, etc.) -> generating up to KRW 60 million in loss cost per year	0	KRW 60 million is added to the net profit every year

Cubictek

31

Cubictek

Cubictek Co., Ltd.

![Cubictek logo]
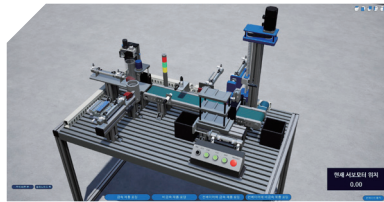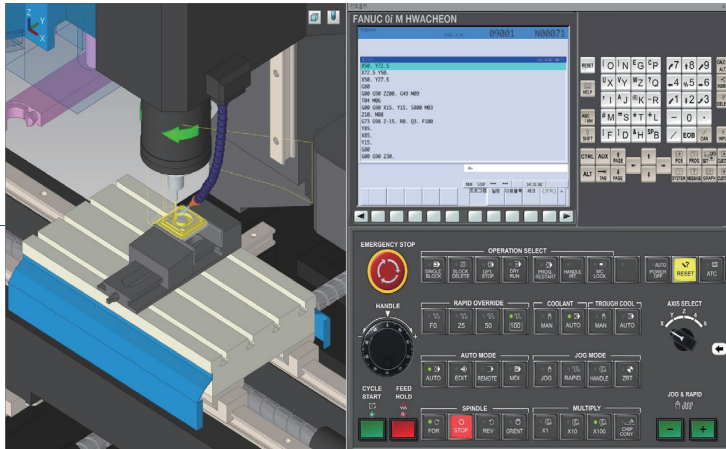
Company Name	**Cubictek Co., Ltd.**
CEO	Boo Sup Kim
Name	Yong Soek Jin
Tel	+82-2-1600-0121
Fax	+82-2-2108-6112
E-mail	ysjin@cubictek.co.kr
URL	http://www.cubictek.co.kr/

Company Introduction	"Make your Field smarter! Leading solutions for field-centered operations, Cubictek Co., Ltd."
	Cubictek took its first step into the global manufacturing automation market with CAM software developed using in-house technology in South Korea in the 1990s. Since then, Cubictek has developed and distributed various solutions for digitalization in the manufacturing industry. Additionally, the company has successfully entered the smart factory industry by utilizing technologies such as big data, artificial intelligence, and IoT. As a result, Cubictek's technological capabilities have been recognized, receiving the award for Outstanding Smart Factory Solution Company(Minister of Trade, Industry, and Energy) in 2017.
	Based on Cubictek's unique technological capabilities and know-how, the company provides solutions that are most suitable for each customer's environment. Cubictek will join in creating a more intelligent field and leading the digital innovation of the manufacturing environment."

01

GV-CNC

Technology / Product	GV-CNC
Detailed Genre	CNC Simulator
Product Type	Software
Target Company	
Technology/Product video link	https://youtu.be/rjnsQJ1RhQY

Contents Introduction

"A new configuration of CNC simulation software, GV-CNC, capable of excellent reality and accurate NC analysis"

GV-CNC (Global Virtual - Computer Numerical Controller), a CNC machine simulation solution developed in-house by Cubictek's technological capabilities, provides a highly immersive virtual environment by maximizing the on-site reality as a simulator. In addition, it provides separate NC programming and CNC controller operation training for professional training. It provides a controller, tool library, and origin setting tool similar to the actual equipment, allowing for the same environment configuration and simulation as the actual equipment through MPG handle linkage.

Try using GV-CNC to quickly and accurately interpret NC code, check real-time machining results, print user-generated drawings, and use the grading function.
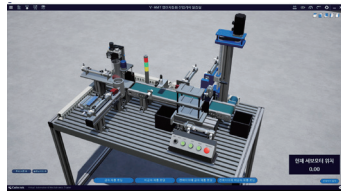
02

V-AMT

Technology / Product	V-AMT
Detailed Genre	AMT Simulator
Product Type	Software
Target Company	
Technology/Product video link	https://youtu.be/hrvjXtzvcEc

Contents Introduction

"Training simulation solution for pneumatic/hydraulic system, electrical sequences, and PLC using full 3D virtual practice equipment, V-AMT."

V-AMT (Virtual - Automation & Mechatronics Trainer) is an automation simulation software designed for training in pneumatic/hydraulic systems, electrical sequencing, and PLC programming. It provides practice rooms with different equipment setups for pneumatic, hydraulic, automation, and electrical training. With the help of the pneumatic and electrical wiring verification functions, it is easy to check the wiring. All of V-AMT's practice rooms use Full 3D virtualization equipment for realistic education and training experiences. Additionally, users can simulate the circuits they have created and wired in the software, just like in real-world practice.

Experience practical training for various national technical qualification exams, such as those in pneumatic/hydraulic systems and automation, through V-AMT.

03

C-Live

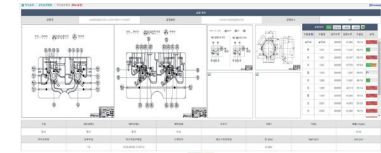| Technology / Product	C-Live
Detailed Genre	Smart Factory Solution
Product Type	Software
Target Company	
Technology/Product video link	

Contents Introduction

"C-LIVE, broadcasting manufacturing sites in real-time"

C-LIVE is a smart manufacturing ICT platform for managing and real-time monitoring various areas of manufacturing such as planning, sales, engineering, procurement, logistics, outsourcing, production, quality, equipment, and cost. It acquires signals from various equipment and allows for immediate real-time monitoring of production equipment.

The basic modules of C-LIVE include production schedule management, comprehensive production management, lot tracking and management, and performance management based on planned duration and product, etc. Specialized modules include big data and AI analysis(C-Insight), AI-based QMS solutions, predictive maintenance for equipment, and energy monitoring, etc.

About 250 companies in Korea and abroad are using C-LIVE and have shown results such as increased sales, improved productivity, reduced defect rates, and reduced document preparation time after implementing C-LIVE.

04

C-Insight

| Technology / Product	C-Insight
Detailed Genre	A.I. Solution
Product Type	Software
Target Company	
Technology/Product video link	

Contents Introduction

"Extracting hidden business value from manufacturing data"

The AI analysis solution C-Insight provides optimal data analysis algorithms suitable for solving the problem at hand. It is designed and developed with an intuitive UI structure for anyone to easily use, and provides data analysis-based solutions to solve manufacturing issues.

C-Insight analyzes manufacturing data through the process of acquiring and structuring manufacturing/management data, and preprocessing the data, and through establishing analysis models tailored to problem types such as quality classification and demand forecasting, it can achieve system optimization.

C-Insight has built analysis templates based on various manufacturing fields and distributes analysis workflows that can be integrated into smart factory systems.
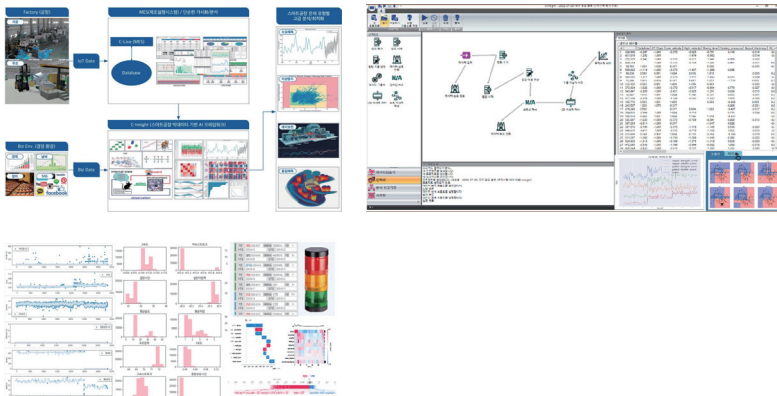
Predictive maintenance >>
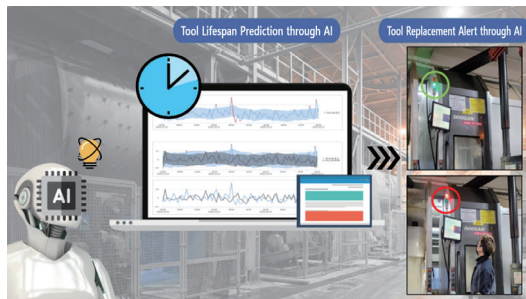
AI-based tool life prediction system

AS-IS

Replacing tools daily, regardless of their remaining life, results in the wastage of 4,500 tools per year. Moreover, it leads to the equipment being non-operational for 107 days, causing an annual economic loss of KRW 70 million.

TO-BE

By implementing an AI solution that accurately predicts tool life, it is possible to achieve a 90% increase in tool lifespan. This not only saves 2600 tools but also extends the equipment's operational period by 62 days, resulting in an 8% improvement in overall productivity. As a result, it generates annual profits exceeding KRW 70.3 million while simultaneously enhancing the work efficiency of unskilled workers.

Category	AS-IS	TO-BE	Expected Effects
Hours of tool use	**25 hours**	**50 hours**	To increase hours of tool use by **100%**
Accuracy of tool replacement time	None	**95%**	A new performance indicator
Number of tools used	**4,500 a year**	**1,900 a year**	To reduce tool use by **58%**
Equipment operation rate (Downtime for tool replacement)	30 mins * 4,500 = 2,250 hours (107 days)	30 mins * 1,900 = 950 hours (45 days)	62 working days (1,302 hours) can be added every year. Yearly, KRW 70.3 million is additionally generated in financial benefits.
Notes	• Average tool replacement time: 30 mins - Tool replacement and original point setting. On the initial processing, the quality of each processing part can be checked using the optional stop. • Equipment rate: approx. KRW 15 per second (approx. KRW 54,000/hour) • Daily operation hours: 21 hours		

MT엠티데이타

32

MT엠티데이타

Mtdata.co.kr

∧MT 엠티데이타

Company Name	*Mtdata.co.kr*
CEO	0k Jeong won
Name	Cho Yeong Woo
Tel	+82-10-6605-5670
Fax	+82-53-591-1902
E-mail	ywcho@mtdata.co.kr
URL	www.mtdata.co.kr

Company Introduction

MT Data is a comprehensive IT solution provider with the management philosophy of "Growing Together with Customers." Our main business areas include SI Business, IT Outsourcing, Cloud/VDI deployment, Big Data, AI Solution/Service, and Smart Factory.

We provide specialized services such as systematic system integration and development, maintenance, and IT outsourcing. We utilize specialized personnel and state-of-the-art technology to enhance our customers' business competitiveness. We also provide AI solutions such as AI learning data construction, AI defect detection system, and AI traffic accident prediction platform.

We always strive to provide optimal solutions that meet our customers' requirements with a customer-centric mindset. MT Data pursues continuous innovation and development for our customers' success, responding actively to the rapidly changing era, and achieving continuous growth.

01

AI Defect Detection System

| Technology / Product	AI Defect Detection System
Detailed Genre	Object Detection
Product Type	System S/W
Target Company	aSHIN Corporation
Technology/Product video link	

Contents Introduction

The AI defect detection system was developed to reduce worker error during defect inspection of parts.

Defective inspection operations should minimize these inspection errors because the test results may vary depending on the examiner's proficiency or health status. In addition, we would like to solve this problem because long-term visual inspections increase the fatigue of workers and increase the risk of impaired vision. To solve these problems, we developed an AI defect detection system.

The AI Defect Detection System is a vision-based Object detect system, which can improve parts appearance inspection time by approximately 66%, and improve the average number of inspections per month by 40%. You can also increase the efficiency of your work by redeploying. Increased productivity in production and quality of parts can increase the competitiveness of demand companies.
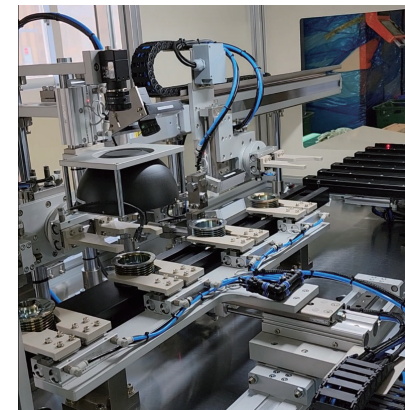
02

T-Safer

Technology / Product	T-Safer
Detailed Genre	Traffic Accident Perdiction System
Product Type	WEB Platform
Target Company	Korea Transportation Safety Authority
Technology/Product video link	

Contents Introduction

T-safer is a cutting-edge traffic accident prediction platform that uses various data sources, such as traffic accident data, vehicle operation data, risky driving behavior data, road facility data, telecommunication data, and national standard node link data. The platform leverages a CNN-based accident prediction model and a DNN-based accident prediction index to provide users with accurate and timely predictions of potential traffic accidents.

The platform preprocesses road data based on latitude and longitude values from the TASS dataset, and then maps the processed data to nodes for use in analysis. Additionally, the platform uses an XGBoost model to predict traffic accidents.

T-safer also provides monthly reports on traffic accident risk, causes, and alternative solutions to help users make informed decisions and improve safety. With its state-of-the-art technology and comprehensive data analysis, T-safer is the perfect solution for organizations looking to enhance their traffic safety management.

03

PMS

| Technology / Product	PMS (process management system)
Detailed Genre	Platform
Product Type	Process management
Target Company	WEB Platform
Technology/Product video link	

Contents Introduction

At our quality control platform, we provide a process for collecting, refining, processing, validating, and training a variety of artificial intelligence learning data.

We handle various types of data such as audio, video, image, and text, which are collected from various fields such as dialects, fire scenes, traffic accidents, driving videos, park CCTV footage, legal documents, parliamentary documents, tourist site reviews, and more.

Once collected, this data is refined and processed using annotation tools by workers called "labelers" on our platform, and then undergoes quality checks before being composed into a training data set for artificial intelligence learning.

Labelers can also track their progress and workloads on our platform, enabling efficient work.

Our platform employs state-of-the-art technology and systematic processes for stable and efficient data collection and processing, while also providing customized data collection and processing solutions tailored to our customers' needs.
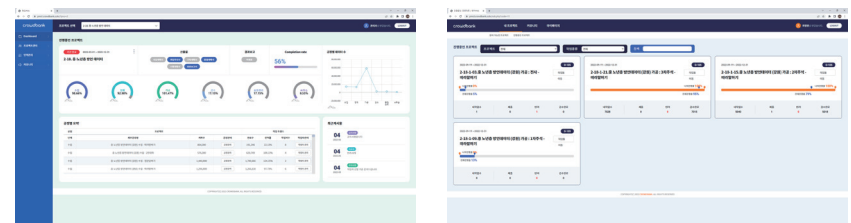
Intelligent inspection >>

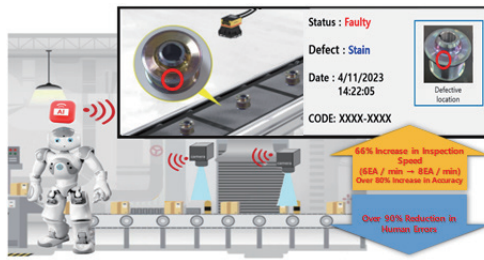AI appearance inspection and defect analysis system for motor pulleys of xEV electric cars

AS-IS

As professional inspectors take 100 percent charge of the visual inspection of finished products, the results can vary according to the inspectors' skills and condition. Five inspectors show 98 percent accuracy and ship 15,000 products per month.
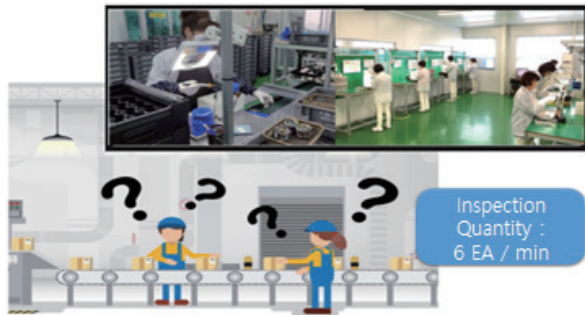
TO-BE

Adopting the AI appearance inspection system for motor pulleys reduces inspection time so that 10 products can be inspected per minute, increasing from 6 (approx. 66%), ships about 21,000 products (increasing by 40%), and increases sales (15%) due to a rise in production speed and client satisfaction. Also, it improves work efficiency by reducing workers' fatigue and re-assigning inspectors to other tasks.

| Category	AS-IS	TO-BE	Expected Effects
Time of appearance inspection on motor pulleys	Analysis speed of professionals approx. 6 products per minute	Analysis speed of artificial intelligence approx. 10 products per minute	To increase inspection speed by 66%
Accuracy of appearance inspection on motor pulleys	Accuracy of appearance inspection 98%	Accuracy of appearance inspection more than 99%	• To avoid personal errors and increase reliability • To improve accuracy continuously by using machine learning of the accumulated data
Average monthly number of appearance inspections on motor pulleys	Approx. 15,000 per month	Approx. 21,000 per month	To increase the average monthly number of inspections by 40% (based on one inspection system)
Increase in sales	Approx. KRW 20 billion in 2022	Approx. KRW 23 billion in 2023	To increase sales 15% due to rise in production speed and client satisfaction
Increase in employment	73 in 2022	78 in 2023	To increase the number of employees due to rise in sales and production, and employee reassignment
Notes	• Inspectors' skills and condition affect test results • Repetitive work makes workers more exhausted • Using heavy components constantly causes muscle pain and inflammation • Due to the bad condition of the inspector, products can be shipped without defects detected • There is no system to record and categorize defects	• To improve working conditions to prevent workers from getting injured • To reduce appearance inspection time and workers' fatigue • To build the system to categorize and record defects, inspections and defect rates.	• To increase work efficiency through inspector reassignment • To reduce personal errors over 90% • To increase sales due to rise in production speed and client satisfaction

Intelligent inspection >>

AI appearance inspection and defect analysis system for motor pulleys of xEV electric cars
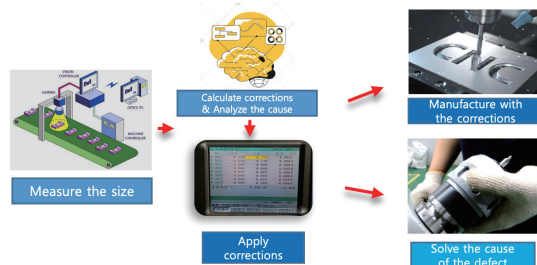
AS-IS

Errors are detected in the sampling test on finished product, and corrected measurements are entered into the CNC equipment. During this process, defects can occur due to sampling errors. (2000-2500 defective products out of 100,000 products).

If defects are found, product quality inspection is conducted.
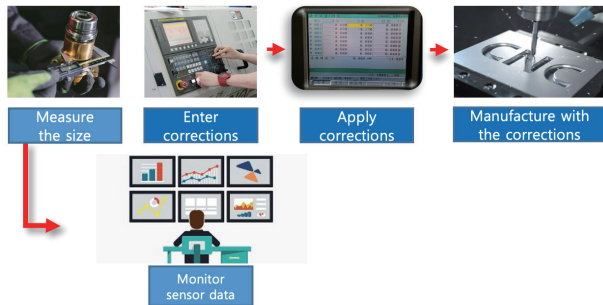
TO-BE

With AI learning, corrected measurements are calculated and automatically applied. Every time products are manufactured, measurements can be corrected, which can reduce defects (less than 100 defective products out of 100,000 products). Also, defective products are automatically classified by conducting detailed inspections on measurements.

Category	AS-IS	TO-BE	Expected Effects
Decrease in defect rates	2,000 out of 100,000 products = defect rate: 2%	Less than 100 out of 100,000 products = defect rate: 0.1%	* To reduce quality inspection costs and improve product reliability due to decrease in defect rates and automated classification
Analysis of the causes of errors	Even if data of CNC machining equipment is accessible, it is difficult to figure out how the data affect the machining process	The process is improved so that errors can be reduced by analyzing sensor data of the CNC machining equipment, and figuring out how the data affect errors	• To improve the quality by solving the causes of errors
Notes	• Inspectors conduct sampling tests on products and correct measurements according to the test results • Errors are detected at least once a month due to personal errors. If errors occur, the total inspection on products is conducted	• It is possible for one worker to manage the automated measurement correction equipment	• To improve work efficiency by reassigning inspectors to other tasks