Operation monitoring system

TOMAS TECH CO., LTD.

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Introducing Operation monitoring system

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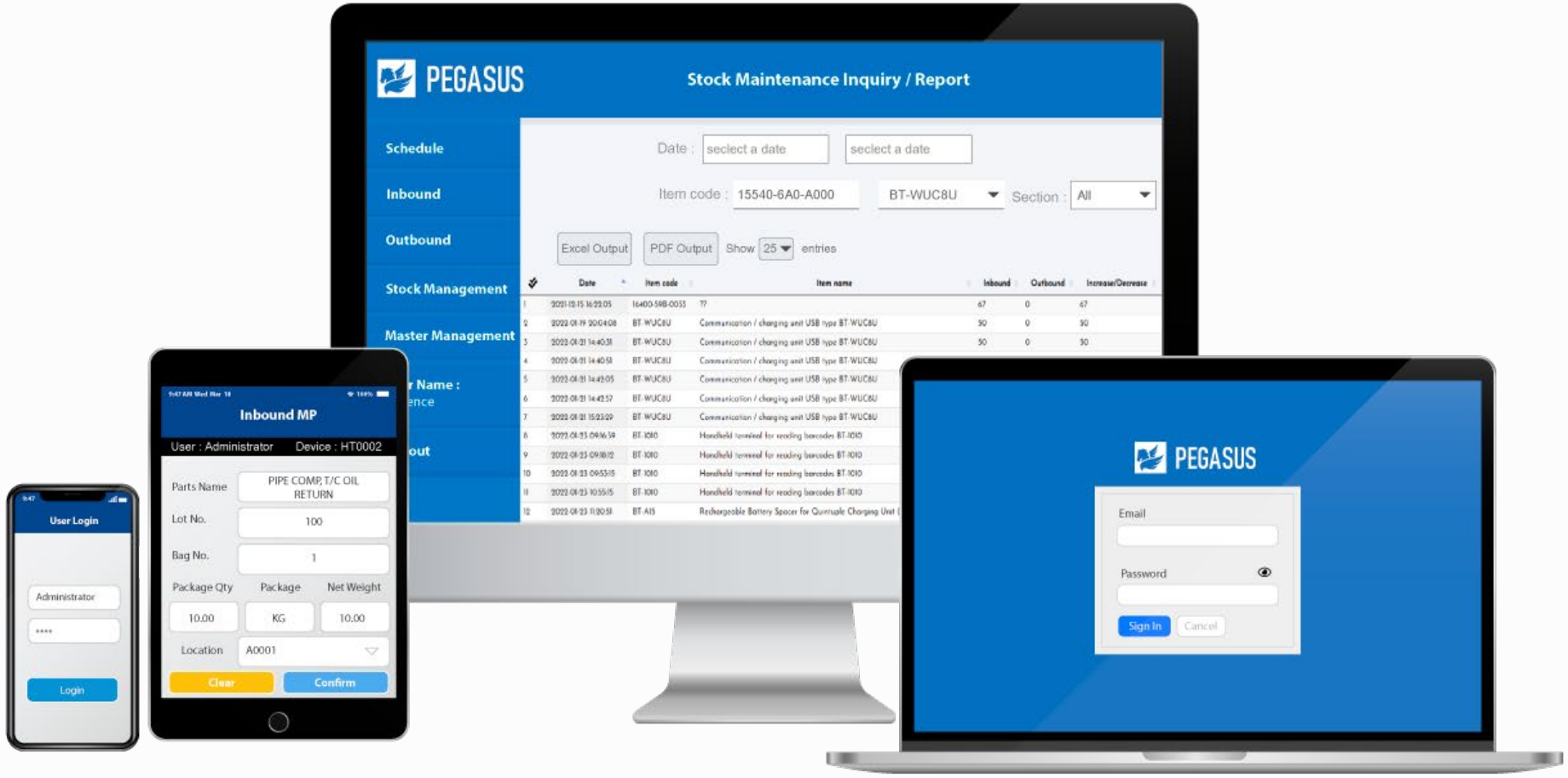
What is an operation monitoring system?

It is one of the modules of the package system PEGASUS. By collecting site information as data, it is possible to collect traceability data such as equipment operation information, abnormal ALARM, and measured values. **In addition to operation management, by installing various measuring instruments, it is possible to manage various information such as equipment frequency, temperature and humidity control, cutting oil and water management, and power consumption management**.
The PEGASUS operation management system visualizes the **situation at the site and visualizes the "Black box"**.



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Benefits of operation monitoring system

By utilizing the operation monitoring system, it is possible to solve various problems and obtain effects.
It plays a very heavy role in achieving digitization.

Inefficient work

By managing with paper, it takes time to "collect", "organize", and "analyze" information.
- Records by workers and accurate numerical values cannot be collected.
- The recording method is different for each worker, and it is not unified.
- Detailed description of start, stop, idle, and setup times

I haven't been able to record it.

Management cost

By managing with paper, "cost" is created.
- Man-hours recorded by people, man-hours checked by the administrator
- Printing machine, ink fee
- Storage area and equipment for managing paper

Business black boxing

By managing with paper, the business situation is not visualized.
- Because the operation and stop times are roughly written on paper

It is not useful as data for analysis.
- Because it is written on paper, it becomes an administrator in real time Information did not arrive.

Improvement of business efficiency

By digitization, management man-hours can be reduced and efficient "collection", "organization", and "analysis" can be realized.
- Data can be viewed and modified from devices (PCs, smartphones, tablets).
- Data can be collected for operation, stop, idle, setup, OK number, NG number, stop factor, etc.
- Automatic data collection enables even data collection.

Reduction of management costs

By digitizing, "cost" can be reduced by reducing the management man-hours.
- Printing man-hours can be reduced because printing is not required.

Paper fee, printing machine, ink fee, printing labor cost
- Since data can be automatically collected from the site, the labor of the operator to record can be saved.
- The surplus time can be used for operation analysis.

Visualization of the entire business

By digitizing, the business situation can be visualized.
- The administrator can always grasp the situation at the site. Smooth response to production delays

Because it can be done, the risk of delay in delivery can be reduced.
- By collecting data for the entire process, bottlenecks can be found. Productivity can be expected to improve by improving the target process.

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Function of Operation monitoring system

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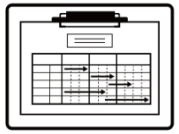
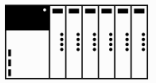
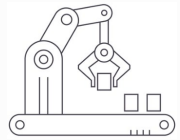
Operation monitoring system can be proposed Scope

Base system			ERP			
Application	Application		Scheduler		MES/WMS	
Analysis	Simulation		BI		Excel/CSV	
Accumulation	Server		Cloud		Excel/CSV	
Collect	Network		Tablet		PC	
Acquisition method	BRC/Camera		Tablet/RFID		PLC	
DATA classification	Worker		Products		Machine	

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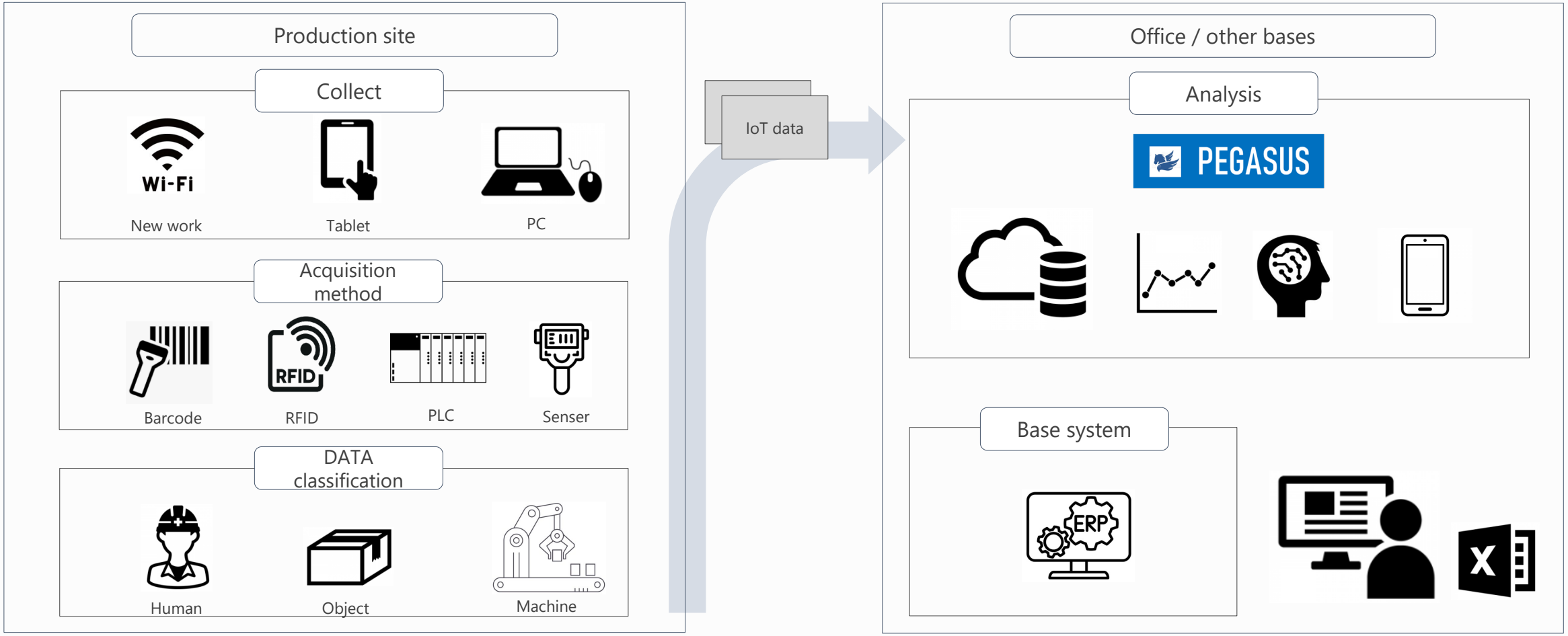
Operation monitoring system configuration diagram

The operation monitoring system can collect various current information. In addition, since it is compatible with both on-premises and cloud, it is possible to access data from inside and outside the factory with PC, smartphone, and tablet devices.



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Operation monitoring system Function list

ERP cooperation	It is assumed to be automatically linked with the ERP system. The file formats are EXCEL, CSV, TXT, XML.
Cloud environment operation	We support various cloud environments such as AMAZON AWS and Google Cloud Platform.
Data collection function	Data can be collected by various methods such as control panels, sensors, PLCs, cameras, RFIDs, and barcodes.
Standard time calculation function	Data collection allows you to collect uptime, downtime, setup, and idle time. Since OK count and NG count can be collected, the actual standard time can be calculated.

Form issuing function	It is possible to output the data items that the user wants to analyze in a form. Output is possible in Excel and PDF formats.
Camera shooting function	It is possible to use the camera function to convert the data that you want to keep as an image, such as on-site troubles and NG products.
Progress management	By inputting the plan data, it is possible to manage the progress against the plan. By managing the status of each schedule, you can grasp the overall progress.
Management of other bases	By linking data with other bases, the system can be used at multiple bases.

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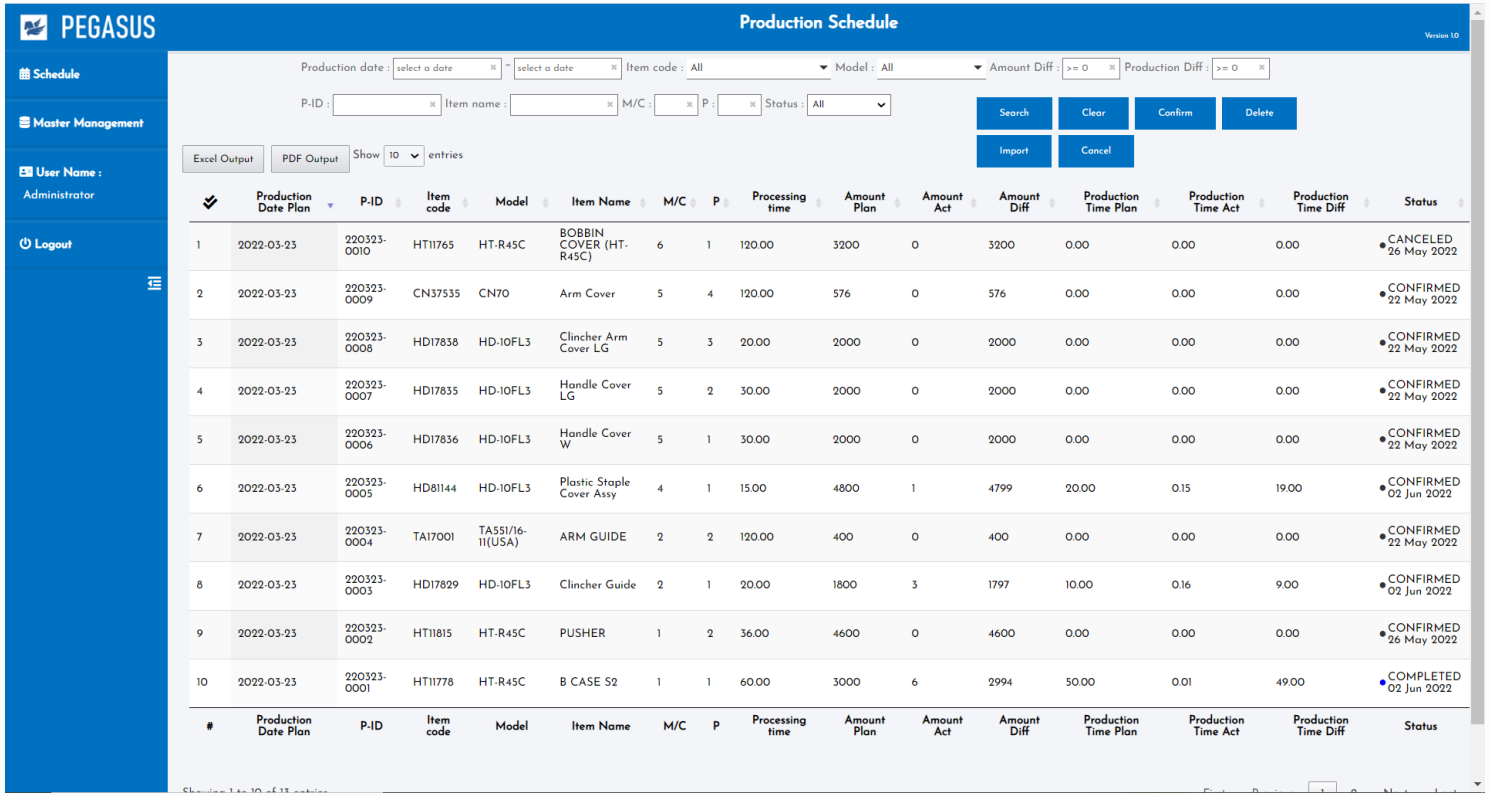
Operation monitoring system Function

Progress management

By inputting the plan data, it is possible to manage the progress against the plan. By managing the status of each schedule, it can grasp the overall progress.

PC screen



#	Production Date Plan	P-ID	Item code	Model	Item Name	M/C	P	Processing time	Amount Plan	Amount Act	Amount Diff	Production Time Plan	Production Time Act	Production Time Diff	Status
1	2022-03-23	220323-0010	HT11765	HT-R45C	BOBBIN COVER (HT-R45C)	6	1	120.00	3200	0	3200	0.00	0.00	0.00	CANCELED 26 May 2022
2	2022-03-23	220323-0009	CN37535	CN70	Arm Cover	5	4	120.00	576	0	576	0.00	0.00	0.00	CONFIRMED 22 May 2022
3	2022-03-23	220323-0008	HD17838	HD-10FL3	Clincher Arm Cover LG	5	3	20.00	2000	0	2000	0.00	0.00	0.00	CONFIRMED 22 May 2022
4	2022-03-23	220323-0007	HD17835	HD-10FL3	Handle Cover LG	5	2	30.00	2000	0	2000	0.00	0.00	0.00	CONFIRMED 22 May 2022
5	2022-03-23	220323-0006	HD17836	HD-10FL3	Handle Cover W	5	1	30.00	2000	0	2000	0.00	0.00	0.00	CONFIRMED 22 May 2022
6	2022-03-23	220323-0005	HD81144	HD-10FL3	Plastic Staple Cover Assy	4	1	15.00	4800	1	4799	20.00	0.15	19.00	CONFIRMED 02 Jun 2022
7	2022-03-23	220323-0004	TA17001	TA551/16-11(USA)	ARM GUIDE	2	2	120.00	400	0	400	0.00	0.00	0.00	CONFIRMED 22 May 2022
8	2022-03-23	220323-0003	HD17829	HD-10FL3	Clincher Guide	2	1	20.00	1800	3	1797	10.00	0.16	9.00	CONFIRMED 02 Jun 2022
9	2022-03-23	220323-0002	HT11815	HT-R45C	PUSHER	1	2	36.00	4600	0	4600	0.00	0.00	0.00	CONFIRMED 26 May 2022
10	2022-03-23	220323-0001	HT11778	HT-R45C	B CASE S2	1	1	60.00	3000	6	2994	50.00	0.01	49.00	COMPLETED 02 Jun 2022

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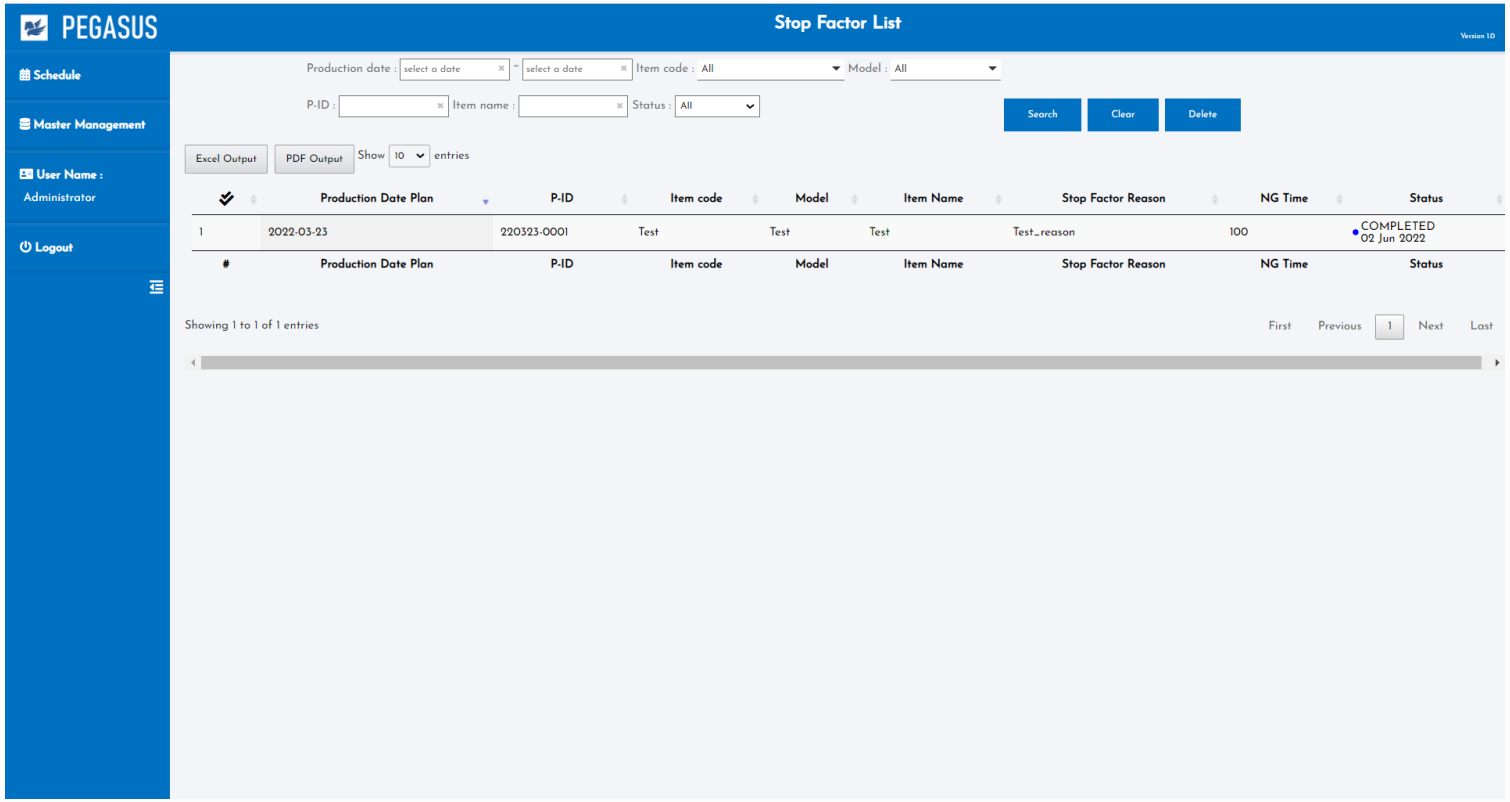
Operation monitoring system Function

Data collection function

Data can be collected by various methods such as control panels, sensors, PLCs, cameras, RFIDs, and barcodes.
Since it is possible to collect time and factors for NG information and STOP information, analysis for improvement is possible.

PC screen



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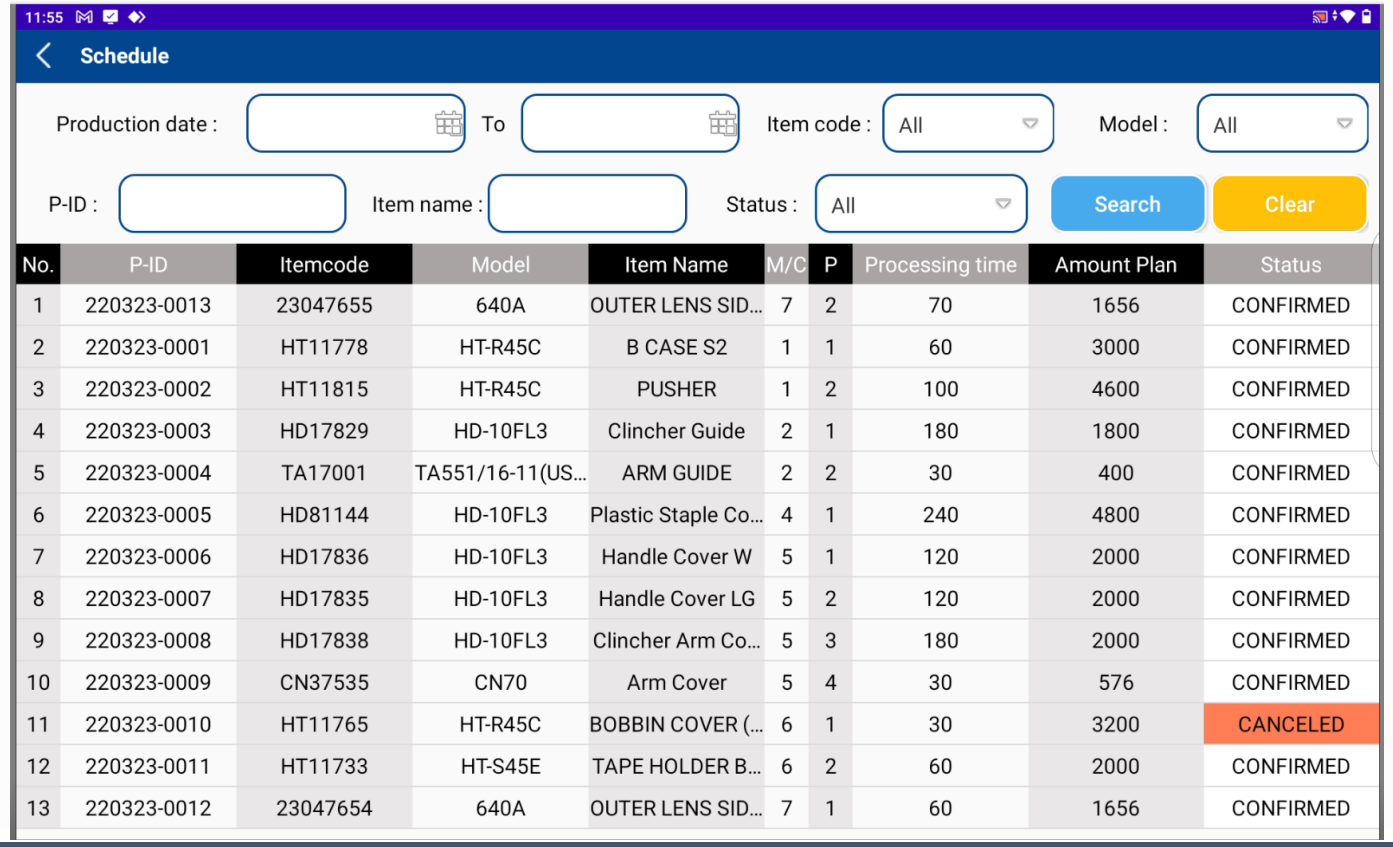
Operation monitoring system Function

Data collection function

Data can be collected by various methods such as control panels, sensors, PLCs, cameras, RFIDs, and barcodes.
Since it is possible to collect time and factors for NG information and STOP information, analysis for improvement is possible.

Tablet screen



No.	P-ID	Itemcode	Model	Item Name	M/C	P	Processing time	Amount Plan	Status
1	220323-0013	23047655	640A	OUTER LENS SID...	7	2	70	1656	CONFIRMED
2	220323-0001	HT11778	HT-R45C	B CASE S2	1	1	60	3000	CONFIRMED
3	220323-0002	HT11815	HT-R45C	PUSHER	1	2	100	4600	CONFIRMED
4	220323-0003	HD17829	HD-10FL3	Clincher Guide	2	1	180	1800	CONFIRMED
5	220323-0004	TA17001	TA551/16-11(US...	ARM GUIDE	2	2	30	400	CONFIRMED
6	220323-0005	HD81144	HD-10FL3	Plastic Staple Co...	4	1	240	4800	CONFIRMED
7	220323-0006	HD17836	HD-10FL3	Handle Cover W	5	1	120	2000	CONFIRMED
8	220323-0007	HD17835	HD-10FL3	Handle Cover LG	5	2	120	2000	CONFIRMED
9	220323-0008	HD17838	HD-10FL3	Clincher Arm Co...	5	3	180	2000	CONFIRMED
10	220323-0009	CN37535	CN70	Arm Cover	5	4	30	576	CONFIRMED
11	220323-0010	HT11765	HT-R45C	BOBBIN COVER (...	6	1	30	3200	CANCELED
12	220323-0011	HT11733	HT-S45E	TAPE HOLDER B...	6	2	60	2000	CONFIRMED
13	220323-0012	23047654	640A	OUTER LENS SID...	7	1	60	1656	CONFIRMED

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Operation monitoring system Function

Standard time calculation

Data collection allows you to collect uptime, downtime, setup, and idle time. Since OK count and NG count can be collected, the actual standard time can be calculated.

Tablet screen

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Case study of introduction effect

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Introduction of case studies Part 1

The analog business centered on “Paper forms" has been renewed with an operation management system.

Since it was mainly managed by paper, it was a lot of analog work, and it took a lot of man-hours. By automating the collection of operation data and converting the form into data, we were able to realize a significant reduction in man-hours.

Task

- The work time varied depending on the maturity of the worker, which affected the delivery date calculation.
- Paper was lost, rework occurred, and it took a lot of man-hours to deal with it.
- The situation became a black box due to paper management, and the progress could not be grasped.

Solution

- All business work related to the site situation can now be realized within the system.
- All the forms used in business have been converted into data so that they can be converted to PDF from the system.
- Collect OK, NG, operation / stop time from equipment, and input NG / stop factor from tablet did. The progress is managed by changing the status.

Country	Thailand
Scale	51-500 people
Industry	Molding company
Purpose / Effect	Visualization of work Reduction of work man-hours

Effect

- By using the system, we were able to grasp the work time for each worker, analyze and review the work, and improved workability.
- Since the input quantity, manufacturing quantity, and NG quantity of materials could all be converted into data, waste of materials could be reduced.
- Since the status can be monitored in real time, the work status can be visualized.

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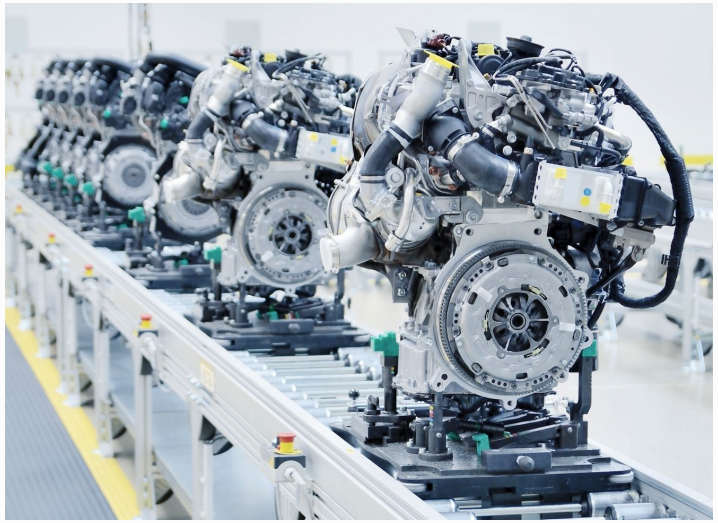
Introduction of case studies Part 2

Strengthen product risk management and improve reliability through traceability management

Instructed to realize trace forward and trace back against the background of quality improvement by the intention of the Japanese head office.
Trace forward: Identify the route by which the shipped product is on the market and make it recoverable.
Traceback: Retroactively investigate the manufacturing process and machinery of products for which defects have been found. If it know the lot and process, it can identify the cause and improve it.



Country	Thailand
Scale	501-1000 people
Industry	Auto engine manufacturer
Purpose / Effect	Quality improvement Improved workability

Task

- The quality record was kept in the machine and could not be used.
- The work serial number was recorded on paper for each shipping lot, and there were many omission mistakes.
- It was not possible to make improvements using the recording results of the processing machine.

Solution

- Data is collected from about 250 machines (200 processing machines and 50 measuring machines).
- Processing results, operating time, stop time, and stop factors are collected from the processing machine.
- Measurement results and measurement information are collected from the measuring machine.

Effect

- Strengthen product risk management and improve reliability through trace forward / back.
- Realization of quality improvement by being able to analyze quality trends.
- Realization of improved operating rate by visualizing the operating status. (Machine maintenance support by ABC analysis)

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Appendix

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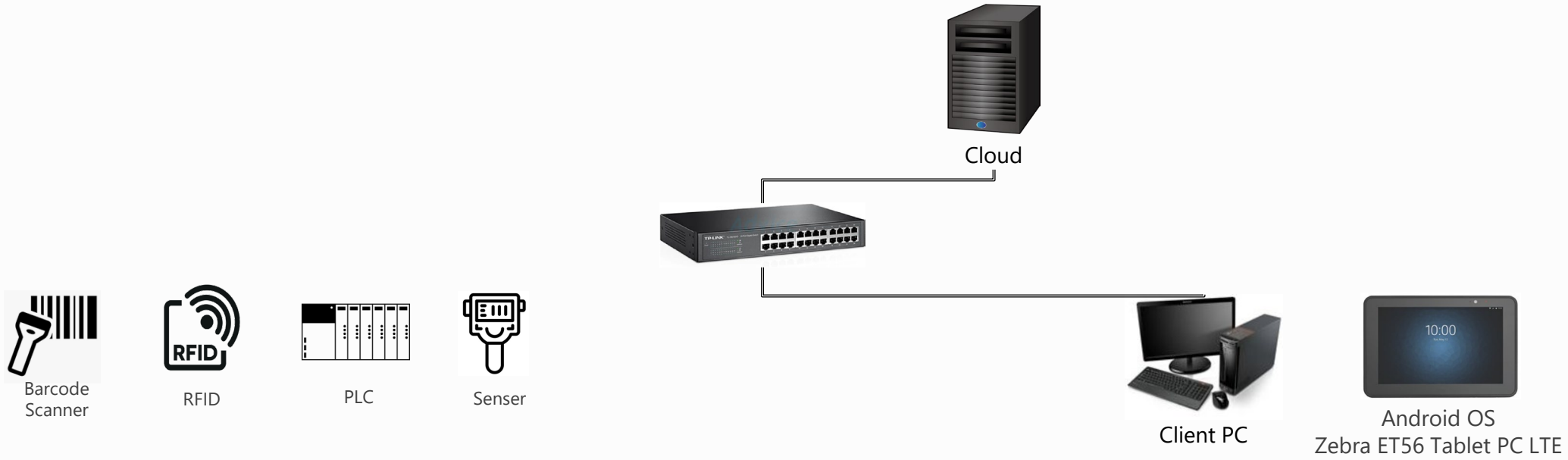
System configuration



No	Item	Recommended specifications and models
1	Cloud Server for AWS, Google	OS: Windows Server 2019R2 Standard / Memory: 8GB or more / Hard disk: Free space 50GB or more / Display: Resolution 1366 x 768 or more / Browser: Google Chrome (latest Ver) * Server machine with recommended model specifications or more
2	Client PC	OS: Windows 10 / Memory: 4GB or more / Display: Resolution 1366 x 768 or more Browser: Google Chrome (latest version) * PC machine with recommended model specifications or higher
3	Zebra ET56 Tablet PC LTE	Android OS type

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Maintenance

#	Software maintenance		Standard / Option
1	Operation support / recovery support	We will open a support window and provide operational support by phone and email, and recovery support in the event of a software failure.	Standard*1
2	Upgraded software provided	We will provide an upgraded version when the software functions are improved. We provide the latest software compatible with the latest OS free of charge. It can reduce your life cycle cost by eliminating the need to purchase software when updating the server.	Standard*1
#	**Software re-setup**		
1	Software re-setup	If it need to re-set up the software after repairing a server failure Perform restoration work. (Repair of inventory data is not included in software re-setup)	Standard*1

* 1) Service is provided at the system purchase fee in the first year of the contract. Contract on a yearly basis from the second year onwards

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Schedule | Go live schedule

1. Current situation analysis	We will inspection the current business and the system being used, confirm the requirements, and analyze the customer's current situation. And will make an estimate based on customer requirements.	**Within sales**
2. Requirement definition	Detailed requirement definition will be performed based on the analysis result. Check the detailed requirements so that the system can be implemented in a manner that matches actual operation.	**1-4 weeks**
3. Design	While a process meeting, we will perform basic design, detailed design, and preparation for transfer based on the requirements.	**1-3 weeks**
4. Development / Test	Perform the test that fits with customer work and start the test. We will consider a transfer every method for let smooth working process.	**1-20 weeks**
5. Introduction support	We will have an operation training to introduce the system that is currently being used or work in parallel with the work, and after confirming the usability, etc., And the final acceptance will be continue to process.	**1 week**
6. Production operation	When start operation. We will provide a long-term support for safe and comfortable system by providing operation maintenance support, information provision, and revision edition.	**Min : 4 weeks** **Max : 28 weeks**

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