INDUCTRIAL IOT SOLUTION FOR SMART FACTORIES

Smart Factory AMA Group Ver. 1.0.1

Customer List

The management solution for a smart factory

MISSION OF DIGITAL TECHNOLOGY DEVELOPMENT

Opinion

To ensure sustainable development for a business, digitalization is indispensable. Recognizing this mission, AMA Group contributes by providing leading digital platform solutions and applying Industry 4.0+ automation technology in manufacturing, enabling businesses to have a comprehensive overview and evaluate internal production capabilities.
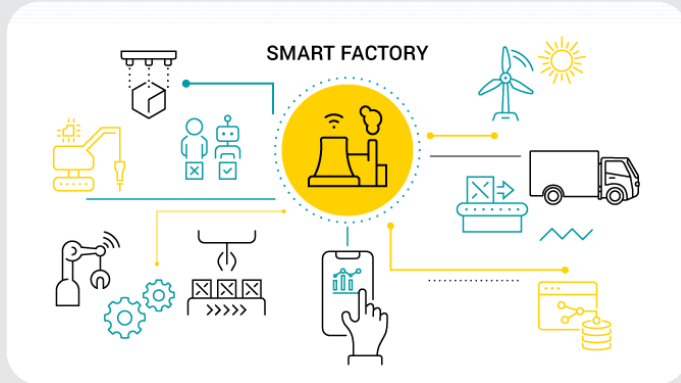
- **Resource Optimization:** Optimizing the use of resources such as energy, materials, and working time, contributing to reducing waste and enhancing resource efficiency.
- **Automated and Efficient Management:** Automating production processes flexibly and efficiently, minimizing errors and enhancing product quality.
- **Flexible Adjustment and Quick Response:** Early warning of issues, quickly making adjustments to match product quality, and enhancing production.
- **Enhanced Safety and Security:** Improving a safe working environment and enhancing security in the production environment, protecting both employees and business assets.
- **System and Data Integration:** Integrating systems and data from various sources to provide quick and accurate feedback, helping management make data-driven decisions.
- **Process Improvement**: Incorporating improved solutions and processes into manufacturing operations, contributing to creating a highly efficient production environment.
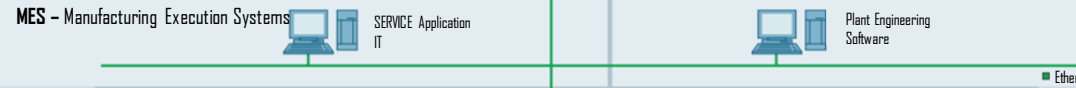
General ecosystem model of devices

Network of Devices Model

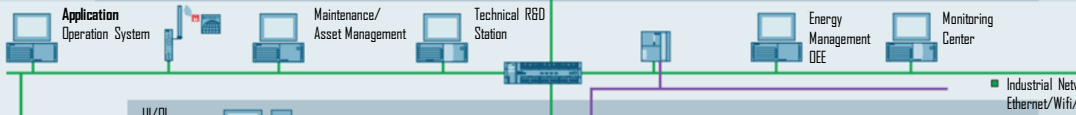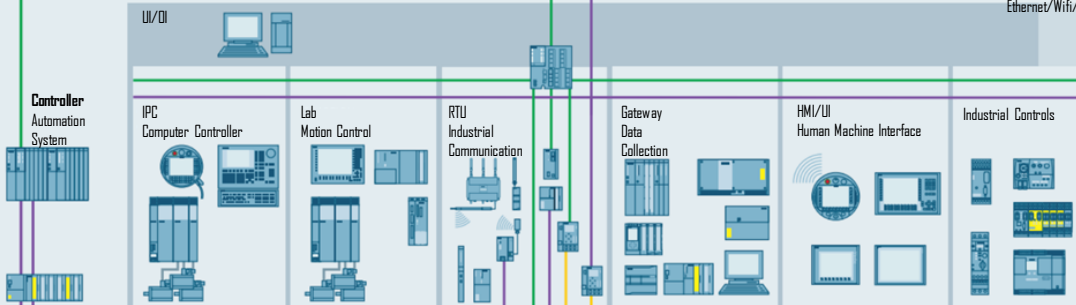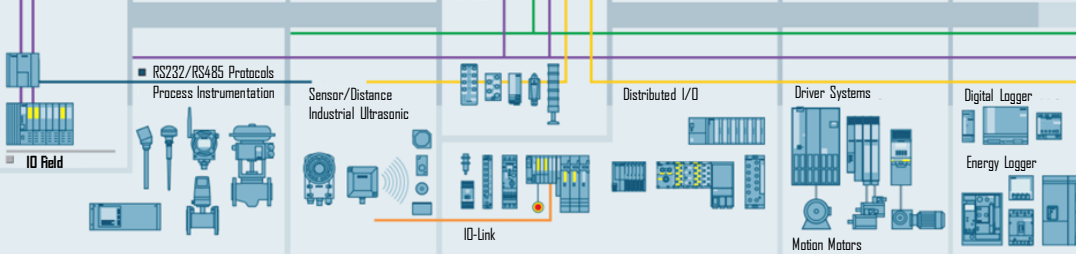REPRESENTATIVE PROJECTS

SCRUBBER MONITORING AND CONTROL SYSTEM

AMA SMART
Industrial IoT Solutions for Smart Factories

❖ THE ISSUES AT HAND

- Large production data
- Managing the exhaust gas treatment system, the criteria of output gas before being discharged into the environment.
- High operation and maintenance costs of the exhaust gas treatment system.
- Monitoring and operating the exhaust gas treatment system often involves exposure to hazardous factors.
- Quarterly scheduled monitoring time cannot accurately monitor the air quality. The preparation work, resources, finances, or unforeseen incidents are difficult to anticipate.

Dashboard PC

App Mobile

❖ SOLUTIONS AND TECHNOLOGY

- Implementing a SCADA system combined with IIoT to monitor and automatically collect data on computers and mobile devices.
- Real-time monitoring of operations, real-time pump activities.
- Sampling periodic parameter settings over time.
- Recording error occurrences, statistics, and reporting.
- Setting remote parameters for station control.
- Controlling devices through an intuitive user interface.
- Instant alerting in case of incidents.

❖ RESULTS AFTER PROJECT IMPLEMENTATION

- Monitor the operational status of the exhaust fans, chemical pumps, chemical flow rates, chemical usage, remaining chemical levels in tanks, in real-time.
- Provide immediate alerts for any incidents.
- Remote control of operating equipment.
- Create historical charts, store settings, data, and log files. Analyze indicators to improve management efficiency.
- Monitor and control the quality of outgoing emissions anytime, anywhere.

❖ SAVINGS

- High accuracy, environmental protection
- Time, manpower, management costs...
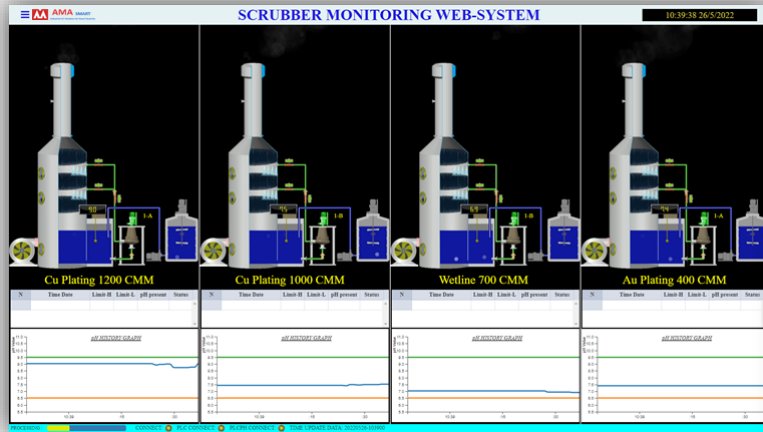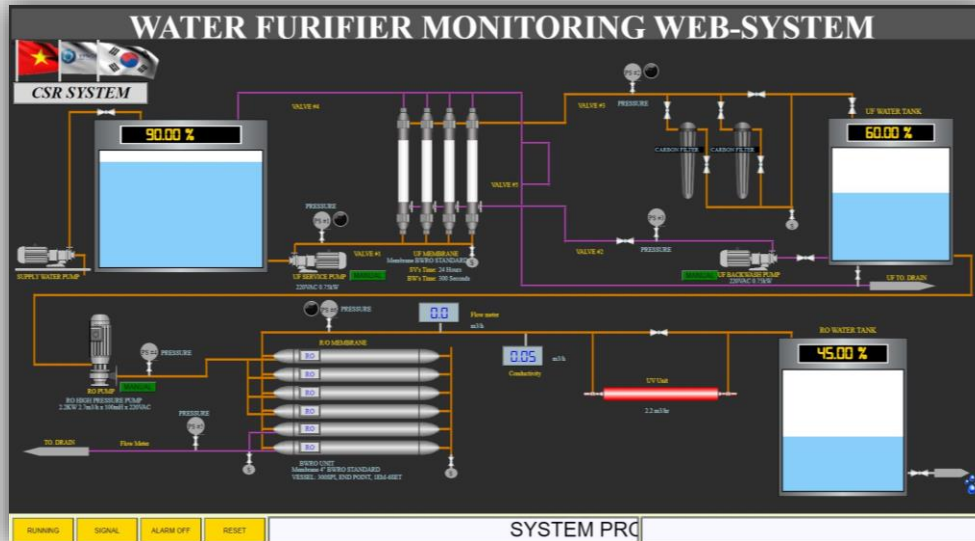
CSR MONITORING AND CONTROL SYSTEM

❖ **THE ISSUES AT HAND**
- This can be considered a special project with a community-oriented nature, as the system is located far from the factory area.
- The operation of the system is managed by the plant, including maintenance and monitoring of clean water quality.
- The water at the site is heavily polluted. Continuous water quality monitoring is absolutely necessary and ensures the safety of children.

❖ **SOLUTIONS AND TECHNOLOGY**
- Implementing a SCADA system combined with IIoT to monitor and automatically collect data on computers and mobile devices.
- Real-time monitoring of operations, real-time pump activities.
- Sampling periodic parameters at set intervals.
- Recording error occurrences, statistics, and reporting.
- Setting remote parameters for station control.
- Controlling devices through an intuitive user interface.
- Instant alerting in case of incidents.

❖ **RESULTS AFTER PROJECT IMPLEMENTATION**
- Real-time monitoring of the system's operating status.
- Immediate alert for any incidents.
- Remote control of operating equipment.
- Creating historical charts, storing settings, data, and log files. Analyzing indicators to improve management efficiency.
- Monitoring and controlling the quality of outgoing emissions anytime, anywhere.
- Ensuring the history of material replacements, water quality.

❖ **SAVINGS**
- High accuracy, environmental protection
- Time, manpower, management costs...

FIRE ALARM CENTER MONITORING SYSTEM

❖ THE ISSUES AT HAND

- The fire protection system is complex, extensive, and divided into multiple different areas.
- Fire alert information needs to be sent to the management as quickly as possible, anytime and anywhere.
- The central fire alarm panel is usually located in a protected area, and processing information when a fire alarm occurs can be time-consuming.
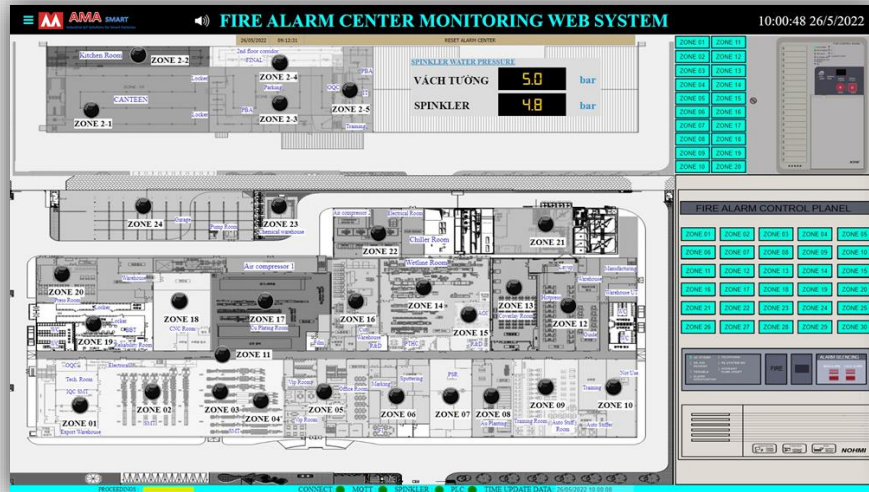
Dashboard

❖ SOLUTIONS AND TECHNOLOGY

- Implementing a SCADA system combined with IoT to monitor and automatically collect data on computers and mobile devices.
- Real-time monitoring of fire alarm activities in different zones.
- Storing core fire alarm information in the monitoring history.
- Reporting detailed location information of fire incidents in real time to the management.
- Remote control of fire pumps, system error alerts.

❖ RESULTS AFTER PROJECT IMPLEMENTATION

- Real-time monitoring of the fire protection system's operational status.
- Alerting when there are any incidents.
- Setting control parameters and remote control settings.
- Creating historical charts, storing settings, data, and log files.

❖ SAVINGS

- Time, manpower, management costs... ensuring fire safety for the factory at all times and in all locations.

SHRIMP POND MONITORING AND CONTROL SYSTEM

❖ **THE ISSUES AT HAND**
- The shrimp pond is large, with scattered machinery, making it difficult to manage.
- Operation and monitoring require a significant amount of manpower and costs.
- Manual inspection, maintenance, and monitoring consume a lot of time and effort.
- Using traditional methods, farmers take water samples 1 to 2 times a day and use traditional sampling methods to determine water quality. This method does not timely identify poor water quality, posing the greatest risk to aquaculture farmers.
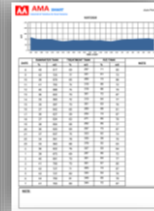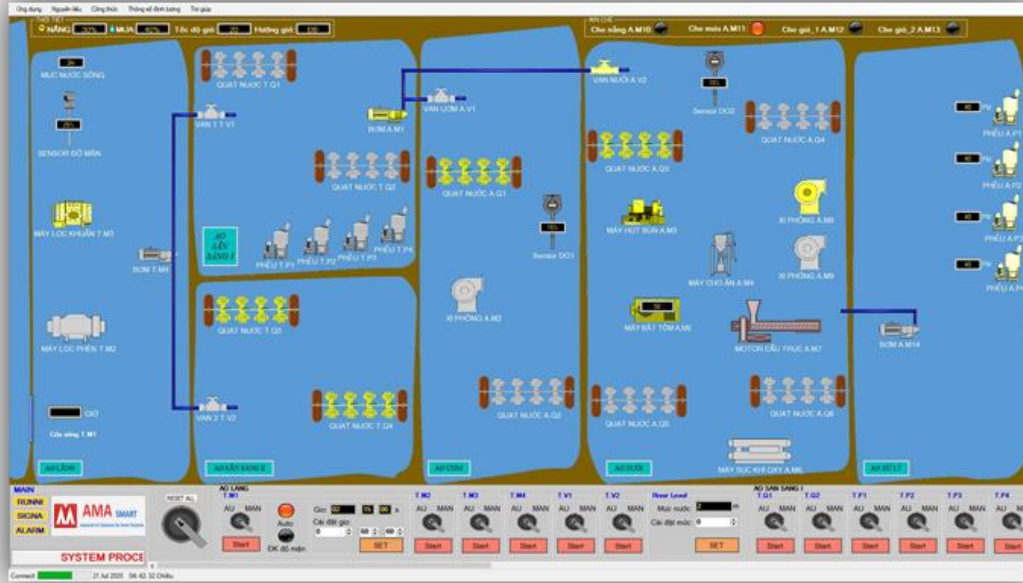

❖ **SOLUTIONS AND TECHNOLOGY**
- Implementing a SCADA system combined with IoT to monitor and automatically collect data on computers and mobile devices.
- Remotely control and set operating modes.
- Setting up a database to store the system's operational status and parameters.
- Monitoring the pond water quality online 24/7 via the Internet.
- Providing accurate oxygen levels in the water to save electricity for running the oxygenation fans.
- Storing water environmental parameters for future reference and export planning.
- Creating graphs and generating reports quickly.

❖ **RESULTS AFTER PROJECT IMPLEMENTATION**
- Real-time monitoring of the operational status of pumps, aerators, feeders, and shades.
- Immediate alert for any incidents.
- Remote control of operating equipment.
- Creating historical charts, storing settings, data, and log files for analysis to improve management efficiency.
- Smart IoT can read data from various sensors such as ORP sensors, pH sensors, water temperature sensors, oxygen concentration sensors, and salinity sensors. Thresholds can be set and pumps, and oxygenation fans can be automatically activated when the thresholds are reached.
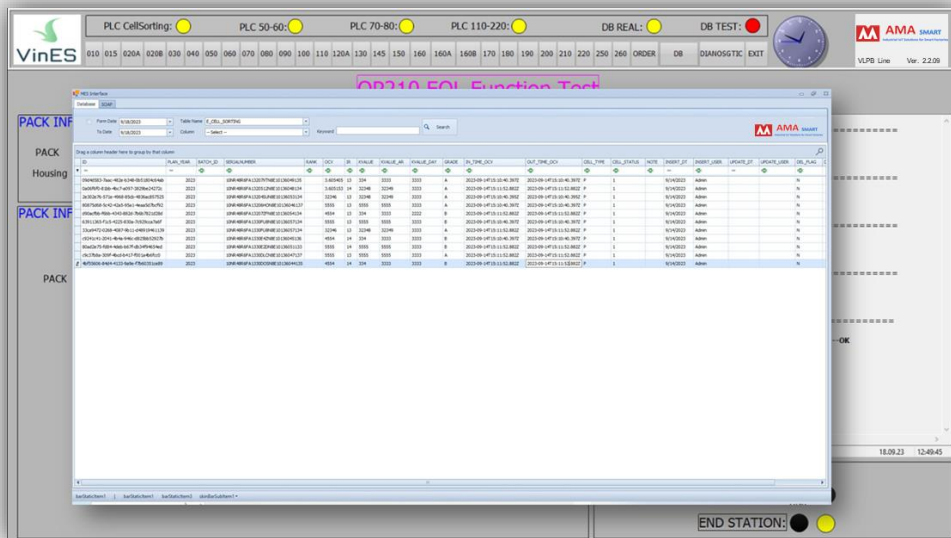
❖ **SAVINGS**
- Time, manpower, management costs...

CONTROL OF ELECTRIC CAR BATTERY ASSEMBLY LINE OPERATION

❖ **THE ISSUES AT HAND**

- Large-scale production data
- 100% product control, no allowance for defects or missed stages.
- Product identification must not be duplicated within 10 years, without mixing with NG products.
- Production data must be stored for a minimu

❖ **SOLUTIONS AND TECHNOLOGY**

- Propose a solution using a Computer Integrated Manufacturing (CIM) operating system, receiving encoded data from the factory's production management system.
- Plan internal station production, manage and store internal production history.
- All production steps are queried and managed by the system.
- Separate the Rework product stream.
- Encode and package production data.

❖ **RESULTS AFTER PROJECT IMPLEMENTATION**

- Real-time monitoring of the operational status of the entire 28-station production line.
- Immediate alert for any incidents.
- Remote control of operating equipment.
- Creating historical charts, storing settings, data, and log files for analysis to improve management efficiency.
- Controlling the entire line's operations, communicating data with the factory's production management system, meeting all data requirements of a complete product.

❖ **SAVINGS**

- High accuracy, minimizing manual management and product defects.
- Time, manpower, management costs...

(AHU) MONITORING AND CONTROL SYSTEM

❖ THE ISSUES AT HAND

- Controlling temperature and humidity in manual cleanroom production is challenging and requires a lot of effort to collect measurements.
- Delayed detection of machinery malfunctions can harm product quality.
- It is difficult to ensure operating conditions and a suitable working environment.

❖ SOLUTIONS AND TECHNOLOGY

- Implementing a SCADA system combined with IIoT to monitor and automatically collect data on computers and mobile devices.
- Real-time monitoring of operations, real-time pump activities.
- Sampling periodic parameters at set intervals.
- Recording error occurrences, statistics, and reporting.
- Setting remote parameters for station control.
- Controlling devices through an intuitive user interface.
- Instant alerting in case of incidents.

❖ RESULTS AFTER PROJECT IMPLEMENTATION

- Real-time monitoring of the system's operating status.
- Immediate alert for any incidents.
- Remote control of operating equipment.
- Creating historical charts, storing settings, data, and log files for analysis to improve management efficiency.
- Monitoring and controlling the quality of outgoing emissions anytime, anywhere.

❖ SAVINGS

- Time, manpower, management costs...

WATER SYSTEM MONITORING AND CONTROL SYSTEM

❖ **THE ISSUES AT HAND**

- The water storage tank's water volume status for production and fire protection purposes.
- Monitoring the water usage for production across different departments on a daily and monthly basis is challenging.
- Manpower and costs are incurred for monitoring and operating the water pump system.
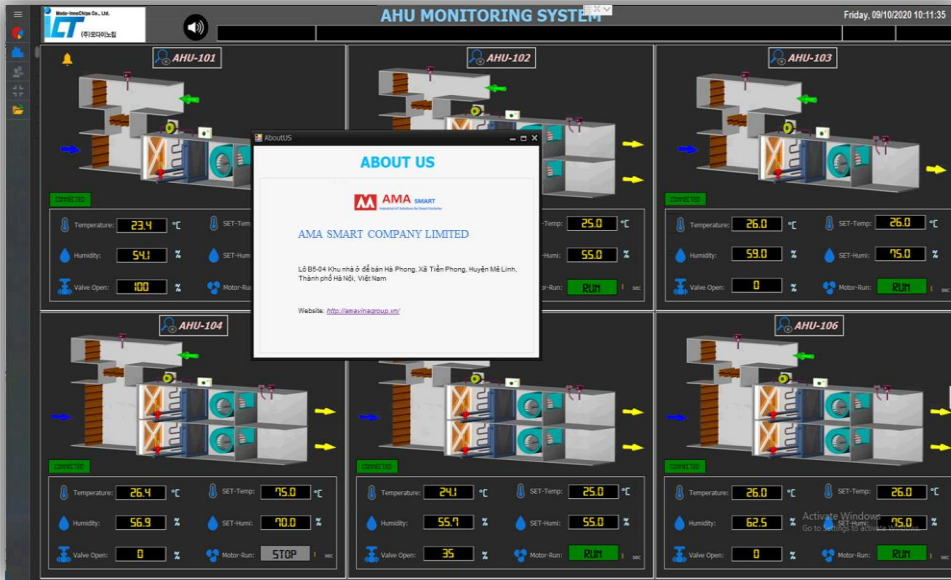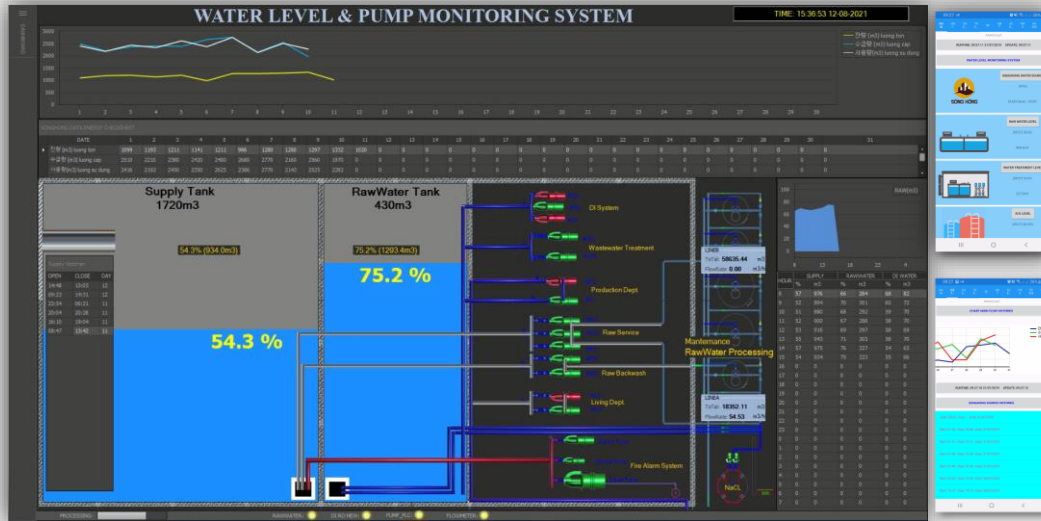

❖ **SOLUTIONS AND TECHNOLOGY**

- Implementing a SCADA system combined with IIoT to monitor and automatically collect data on computers and mobile devices.
- Real-time monitoring of water supply and water filtration operations, real-time pump activities.
- Monitoring water supply time, water flow, and the history of water supply to the supplier's tank.
- Detailed reporting of the incident location, timely maintenance, and system repair or replacement.
- Remote pump control, system error alerts.

❖ **RESULTS AFTER PROJECT IMPLEMENTATION**

- Monitoring the status and timing of water supply from the industrial zone to the factory, as well as the percentage volume of water in the storage tank for production activities.
- Monitoring water usage during each time frame, storing data, and displaying water consumption levels on charts to plan and arrange production for the factory.
- Setting control parameters and remote control settings.
- Creating historical charts, storing settings, data, and log files.

❖ **SAVINGS**

- Time, manpower, management costs...
- Ensure proactive monitoring of reserve water levels and water consumption at all times, calculating the most appropriate water usage.
- Provide an overall view for managers, arranging the factory's production activities.
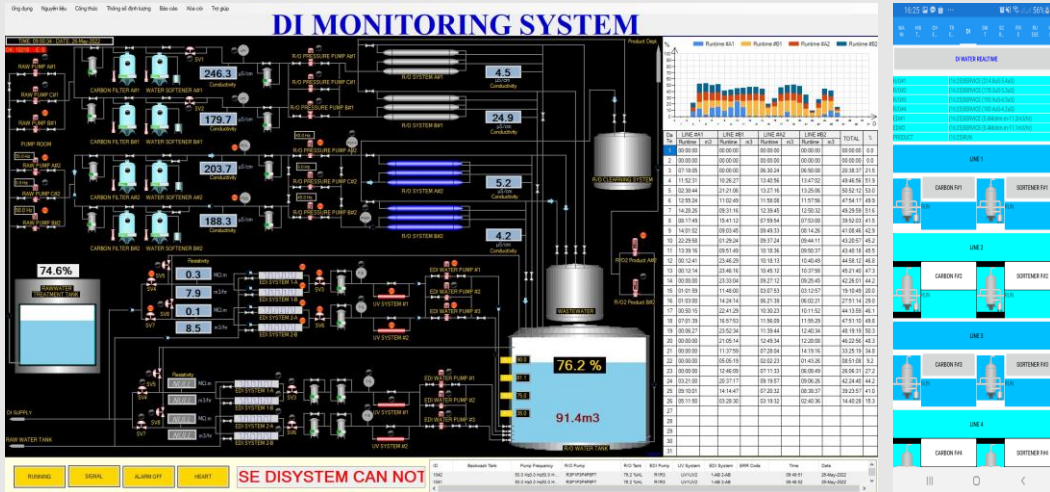
DI MONITORING SYSTEM

❖ THE ISSUES AT HAND

- The pure water source for electronic circuit board production is a critical factor for the survival of the business.
- Monitoring the water usage for production across different departments on a daily and monthly basis is challenging.
- Manpower and costs are incurred for monitoring and operating the water pump system.

❖ SOLUTIONS AND TECHNOLOGY

- Implementing a SCADA system combined with IIoT to monitor and automatically collect data on computers and mobile devices.
- Real-time monitoring of water supply and water filtration operations, real-time pump activities.
- Monitoring water supply time, water flow, and the history of water supply to the supplier's tank.
- Detailed reporting of the incident location, timely maintenance, and system repair or replacement.
- Remote pump control, system error alerts.

❖ RESULTS AFTER PROJECT IMPLEMENTATION

- Real-time reporting of incidents.
- Monitoring water usage by the hour, storing data, and displaying consumption levels on charts to facilitate arrangement and production planning for the factory.
- Setting control parameters and remote control settings.
- Creating historical charts, storing settings, data, and log files.

❖ SAVINGS

- Time, manpower, and management costs.
- Ensuring proactive monitoring of reserve water levels and water consumption at all times, calculating the most appropriate water usage.
- Providing an overall perspective for management and arranging the production activities of the factory.

●The standard DCS system applies smart factory concepts in training university faculty, guiding the direction of digital transformation in the field.

ENERGY MONITORING SYSTEM

- Applying SCADA system combined with IoT, establishing a monitoring system and collecting data on electricity sources to serve the production for the entire factory.
- Helping businesses make accurate decisions for production planning.
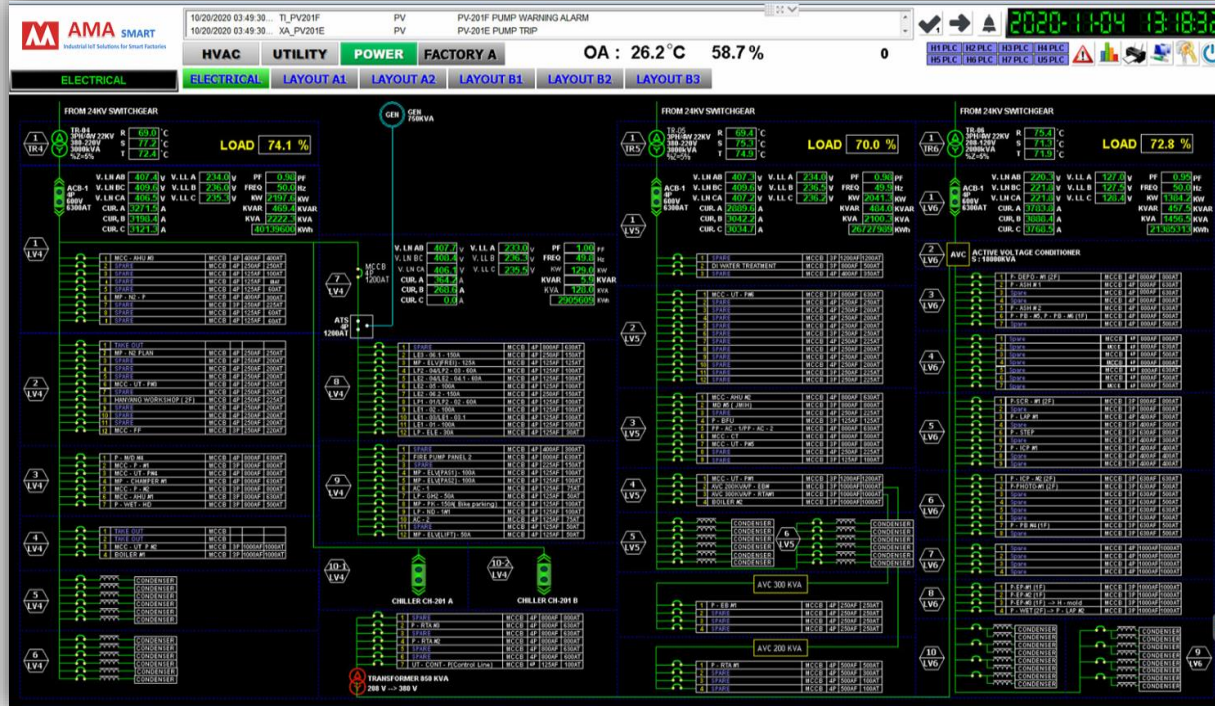
AHU, CHILLER MONITORING SYSTEM

TEMPERATURE & HUMIDITY MONITORING SYSTEM

ELECTRICAL MONITORING SYSTEM

AMA GROUP

ANDON SYSTEM MONITORING

Wednesday, 25/11/2020 11:46:35

Line 1#10.2		Line 2#10.2		Line 3#10.2		Line 4#10.2		Line 5#10.2		Line 6#10.2	
Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1
Schedule:	50.000	Schedule:	50.000	Schedule:	50.000	Schedule:	50.000	Schedule:	50.000	Schedule:	50.000
Productivity per hour:	12	Productivity per hour:	12	Productivity per hour:	12	Productivity per hour:	12	Productivity per hour:	12	Productivity per hour:	12
Production per day:	82	Production per day:	82	Production per day:	82	Production per day:	82	Production per day:	82	Production per day:	82
Cumulative production:	3.500	Cumulative production:	3.500	Cumulative production:	3.500	Cumulative production:	3.500	Cumulative production:	3.500	Cumulative production:	3.500
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Line 7#10.2		Line 8#10.2		Line 9#10.2		Line 10#10.2		Line 11#10.2		Line 12#10.2	
Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1
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Line 13#10.2		Line 14#10.2		Line 15#10.2		Line 16#10.2		Line 17#10.2		Line 18#10.2	
Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1
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Production per day:	82	Production per day:	82	Production per day:	82	Production per day:	82	Production per day:	82	Production per day:	82
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Line 19#10.2		Line 20#10.2		Line 21#10.2		Line 22#10.2		Line 23#10.2		Line 24#10.2	
Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1	Lot Code:	ABC#1
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Productivity per hour:	12	Productivity per hour:	12	Productivity per hour:	12	Productivity per hour:	12	Productivity per hour:	12	Productivity per hour:	12
Production per day:	82	Production per day:	82	Production per day:	82	Production per day:	82	Production per day:	82	Production per day:	82
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Cumulative error count:	60	Cumulative error count:	60	Cumulative error count:	60	Cumulative error count:	60	Cumulative error count:	60	Cumulative error count:	60

Running	Material Shortage	Machine Technician	Product Technical	Call AGV	No Plan

Panasonic

AMA SMART
Industrial IoT Solutions for Smart Factories

ABOUT US, AMA GROUP

Vĩnh Phúc Established in April 2020

Bắc Ninh Established in April 2022

Hà Nội Established in October 2019

CONTACT INFORMATION

Address: AMA VINA CO., LTD., Co Dien Village, Hai Boi Commune, Dong Anh District, Hanoi, Vietnam.

Headquarters: Ha Phong Urban Area, Me Linh District, Hanoi, Vietnam.

Factory 1: Co Dien Village, Hai Boi Commune, Dong Anh District, Hanoi, Vietnam.

Factory 2: C3, Ba Thien 2 Industrial Zone, Binh Xuyen, Vinh Phuc.

Factory 3: CN12-01, Yen Phong Industrial Zone, Bac Ninh.

Chairman: AMA VINA CO., LTD., Vu Van Manh (M) 097 683 5774, (Email) amavina0610@gmail.com

Chairman: AMA HOLDING INVESTMENT., JSC Vu Van Truong (M) 0982681998, (Email) ceo@amavina.vn

Business Director: Chihun Woo (M) 038 508 2660, (Email) chwoo7044@gmail.com Fax: (84-24) 7302 6678

Web: http://amavinagroup.vn/

AMA
Advanced Manufacturing & Automation

VISION
To become a leading mechanical company in Vietnam, reaching out to the world

MISSION
Provide customers with the best optimization for production. Get customer satisfaction back.

CORE VALUES
- Quality
- Delivery
- Cost
- Service

- AMA is seeking creative ideas and new materials through partnerships. We are researching to ensure long-term, high efficiency with minimum cost and highest quality.
- AMA specializes in development, design, mold, extrusion/injection, processing, painting/plating, controlling, assembling, installation, etc.
- In order to become an expert in each field of production facilities and automation, we are trying our best until our customers are satisfied.

Design
Checking
Production
Packaging
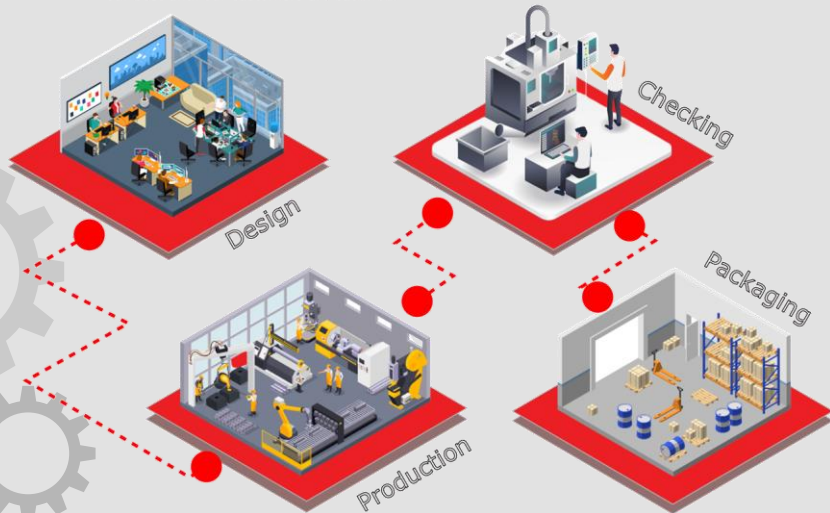
Technology and software solutions
1. Smart Factory
2. Scada, Andon system
3. Distributed control system (DCS)
4. IIoT Solution
5. AI/VISION

Automation
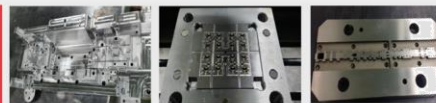1. PLC programming
2. Automation Machine
3. Turnkey

CNC Machine
1. CNC milling
2. CNC lathe

Die Casting
1. Injection Mold
2. Die casting
3. Forming mold

Casting
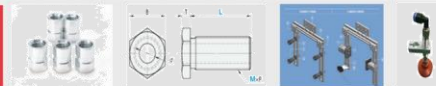1. Aluminum casting
2. Plastic casting

Sheet Metal Fabrication
1. Lazer cutting
2. Bending
3. Forming/ Forging

Standard Product
1. Fasterner
2. Consumables

THANKS!