



APISYSTEMS

Your partner in the industry



PRODUCTION MONITORING AND REPORTING SYSTEM |

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APISystems Sp. z o. o. is a company offering the latest solutions in the field of Industrial Informatics, mechanical engineering and production sites.



We form a group of experts dealing with the complex investment implementation.



We offer high quality services. Every day we support our clients with knowledge and experience.



We treat our clients as partners for long-term cooperation.



Over 11 years of operation, we have completed over 300 projects in the field of Industrial Informatics and production automation.



Since 2011, we have been a **Wonderware Certified System Integrator**.



We run projects in **Polish, English** and **German**.

MISSION:

Achieve the leading position in Europe as the Wonderware Integrator System



POLICY:

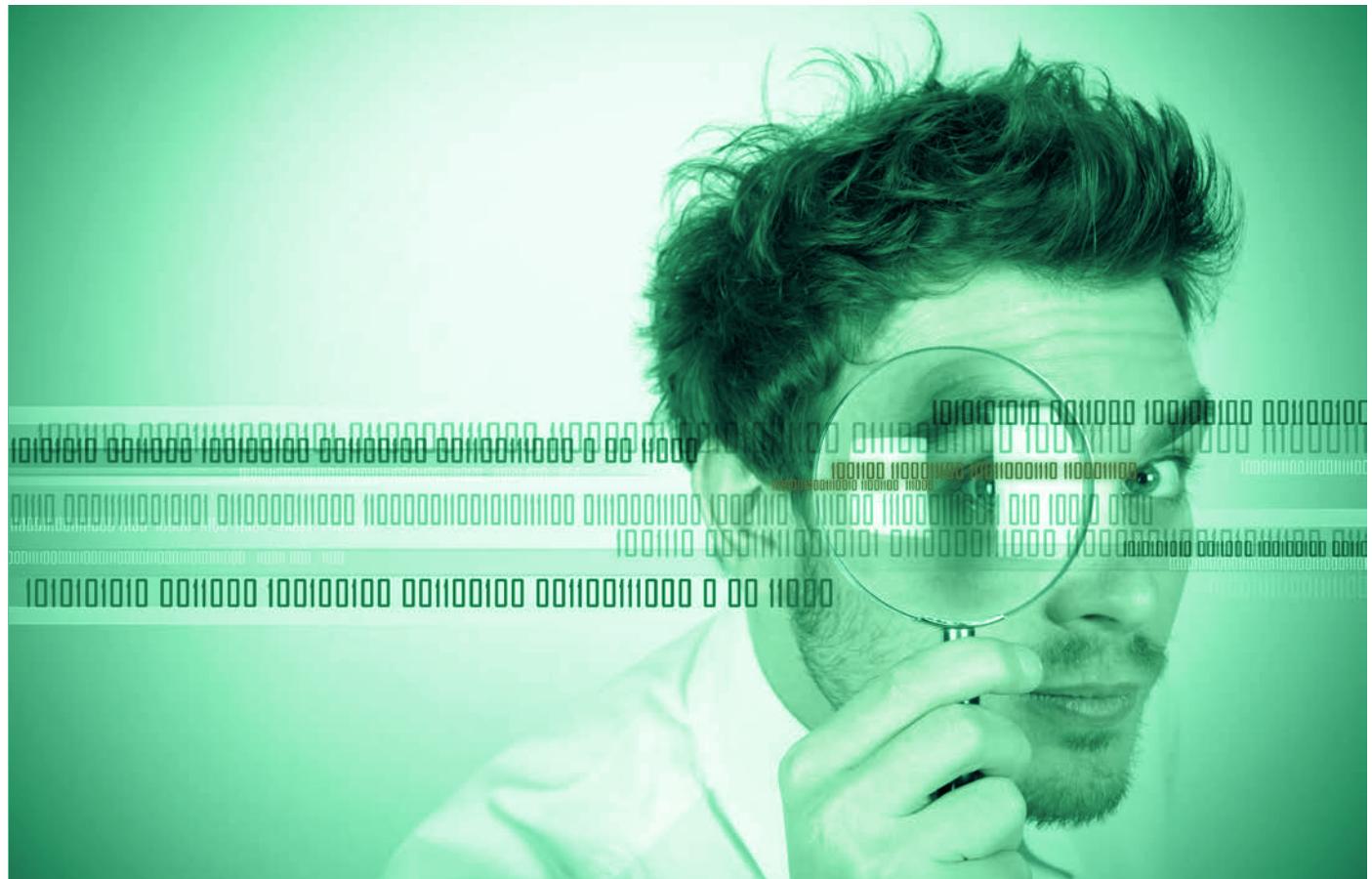
- ✓ Provide the highest quality offer for the industry.
- ✓ Maintain good relations with partners.
- ✓ Get new knowledge and competences every day.
- ✓ Be ready for new challenges, join new markets and industries.
- ✓ Run the company so that employees eagerly come to work



Production monitoring and reporting system

- ☐ Do You know everything about Your production process?
- ☐ Do you know how many times the production line has stopped in the last hour?
- ☐ Do you know what is the most common reason for downtime the production line?
- ☐ Do you know the performance level of your machines?

The answer to these questions is provided by the production monitoring and reporting system development by APISystems. The system operates on the basis of Wonderware MES Performance software and the Wonderware System Platform. When designing the system, we used the latest industry trends from the Situational Awareness Library (SAL), which is one of the Wonderware software add-on.



I. Visualization of the production line states:

The graphic representation of the production line is presented on the visualization below. Current machine states are illustrated by means of colors, e.g.

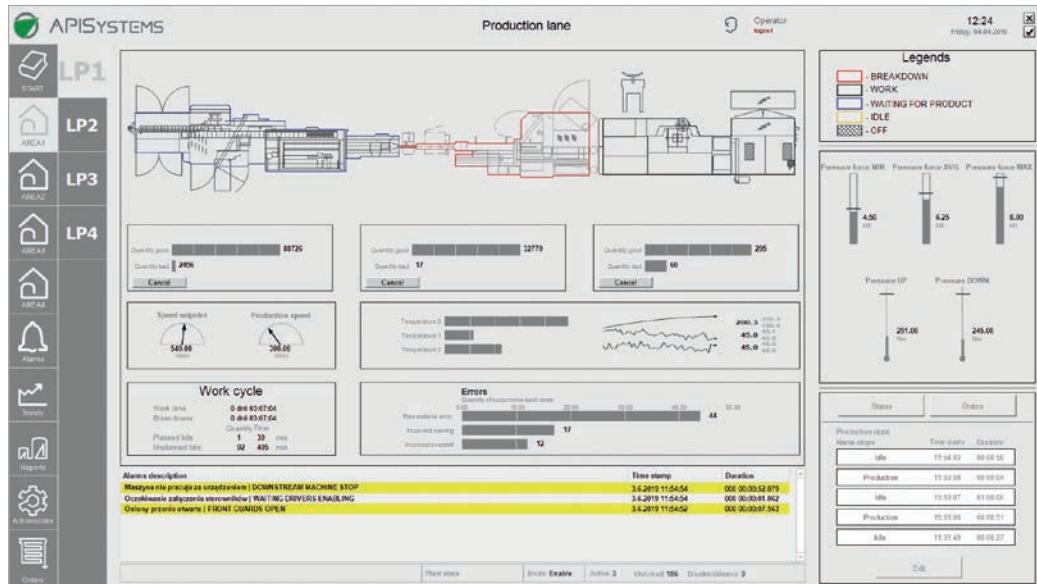
-  **Running,**
-  **Idle,**
-  **Downtime,**
-  **Turn off.**

Owing to the graphic presentation, system users receive online information about devices, production lines, processes, etc.

II. Visualization of production process parameters

The system collects data from PLC controllers and sensors located on the production line. The data is presented in the form of graphic tags provided from the Situational Awareness Library. The data presentation used allows:

-  **Intuitive production / process management,**
-  **Quick interpretation of changing parameters by operators,**
-  **Clear and legible information of operators about the state of production/machines/processes,**
-  **Intuitive system operation,**
-  **Implementation of the system in accordance with the idea of Industry 4.0.**



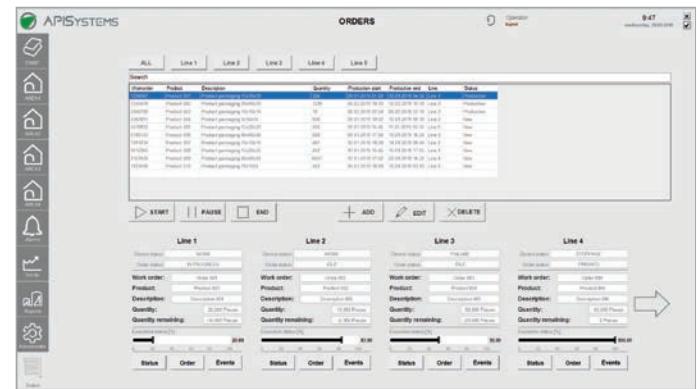
An example of a system screen containing information on the state of machinery in the production line and process parameters of the system. The screen is divided into several sections. On the left we have available an intuitive navigation menu, which reflects the structure of the production plant. In the central part, there is a layout of the production line with information about the status of the device, production counters with process parameters and information about current alarms. On the right side there is a list of production states and buttons for managing the downtime matrix and production orders

III. Production orders management

Using the Wonderware Enterprise Integrator communication module, we get the possibility of two-way data exchange with ERP systems. From the parent system, production orders are automatically exported to the Wonderware system.

The users have the option to:

- ✓ Assign orders to the production line,
- ✓ Start the order,
- ✓ Hold (Pause) the order,
- ✓ End the order,
- ✓ Change the order parameters,
- ✓ Transfer the order to another production line,
- ✓ Split orders into parallel production lines,
- ✓ Create a new order (in case of lack of communication).

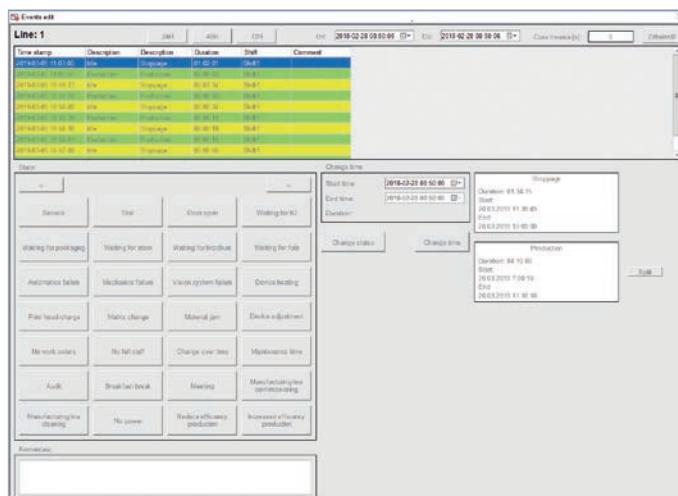


Production order management module. In the central part there is a list of all production orders. Below are buttons used to manage orders. Under the buttons we have a preview of the status of production orders running on all production lines.

IV. Downtimes Matrix

The Wonderware system downloads available alarms from PLCs. Based on alarms, we could create a downtimes matrix. Thanks to this, operators will be able to assign the reason code of the production downtime.

Data regarding times and reason codes of downtime are saved in the database and presented in the form of reports. It allows to determine the causes of unplanned downtime, to identify the number and frequency of occurrence of micro-accidents and to determine the effective use of planned downtime (washing, changeover, calibration, tests, etc.). Using the system allows to optimize the production process.



Module for managing the downtime matrix. The upper part contains a list of production line conditions. Below is a system to change/assign the reason code of downtime, change times and break down and split production downtimes.

V. KPI Key Performance Indicators

Using the data collected by the system and the adopted methods of calculating the indicators in force at the production plant, we are able to determine:

- ✓ Availability,
- ✓ Performance,
- ✓ Quality,
- ✓ OEE.

The data is presented in the form of visualizations, reports and dashboards.



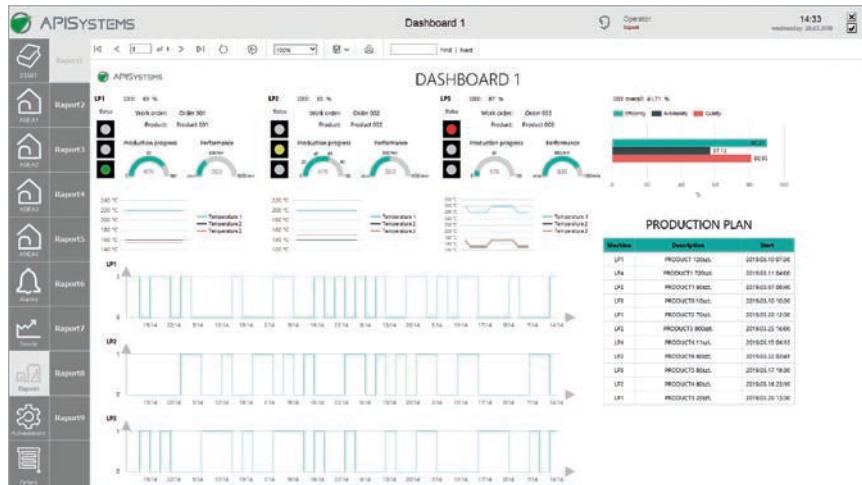
Module presenting key production indicators. The user has the opportunity to view key parameters for the selected production order, for the selected change, weekly and monthly.

VI. Presentation of the data

Data aggregated in the system are presented in the form of: The most commonly used are:

- ✓ reports
- ✓ dashboards,
- ✓ dedicated graphics view.

- ✓ Production line status graph in time,
- ✓ Production plan - assumed vs real,
- ✓ Top 5 downtimes,
- ✓ Production progress in time
- ✓ OEE indicator



Example report containing OEE and other key performance indicators for production lines, preview of process parameters (temperature), machine status diagram (when the machine was working and when it was turned off), and production plan.

Benefits resulting from the implementation of the system:

- ✓ Online data in real time.
- ✓ Electronic document flow (production orders, reports).
- ✓ Possibility to analyse data about downtimes, the course of the production process and process parameters.
- ✓ Optimization of the production process.
- ✓ Settlement of online production costs.
- ✓ Automatic data exchange with other systems



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INDUSTRY 4.0

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