Using Data for Higher Profits

WAGO Analytics

Using Data for Higher Profits: Analytics

With the control system and WAGO Edge Computer, WAGO not only makes it easy to connect to all data sources, but also provides options for data analysis and evaluation with artificial intelligence.

WAGO provides you the following options:

- WAGO Library Analytics: The ready-to-run package for fast integration of analytics functionalities directly into the control system
- Tailored solution with WAGO Analytics:
  Work with our experts to design a customized solution tailored to your process.

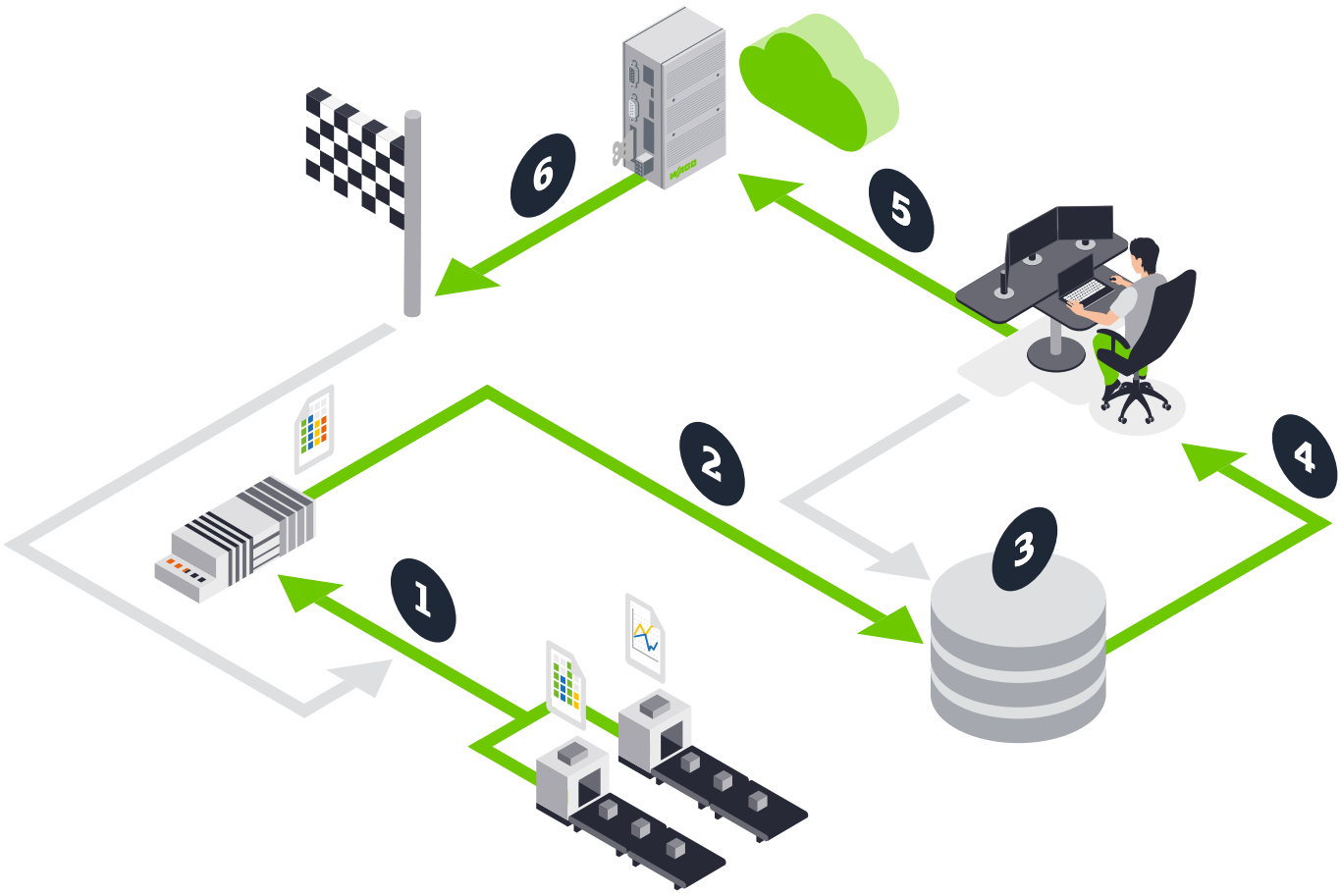
The analysis of process data allows:

- Increased OEE
  (Overall Equipment Effectiveness)
- Transparency throughout the entire production process
- Fewer disruptions and lower maintenance costs
- Increased energy efficiency

The Tailored Solution: WAGO Analytics

Six Steps from Data Acquisition to Profitable Use

1. Gathering raw data from the various data sources
2. Processing the data
3. Continuous data acquisition
4. Explorative data analysis and selection of the right representation
5. Integration into the operating process
6. Utilizing relationships and optimization potentials



- Use the WAGO Library Analytics and get a tool to support you at every step of the project.
- Or benefit from the experience of our experts and design a tailored solution with WAGO Analytics in a collaborative project.

More information about WAGO Analytics

WAGO Library Analytics by Automation Engineers for Automation Engineers

Direct Integration into the PLC Program

Connecting WAGO Library Analytics without leaving the familiar PLC programming environment: Quick and easy with WAGO Library Analytics! You can use the application without entering the IT and Linux® environment directly; numerous function blocks support data acquisition, analysis, and evaluation. The analysis, evaluation and optimization functions run in the background on powerful WAGO Edge Computers, for which an executable installation package is available. All the data stays within the local network, so no Internet connection to additional systems is necessary.

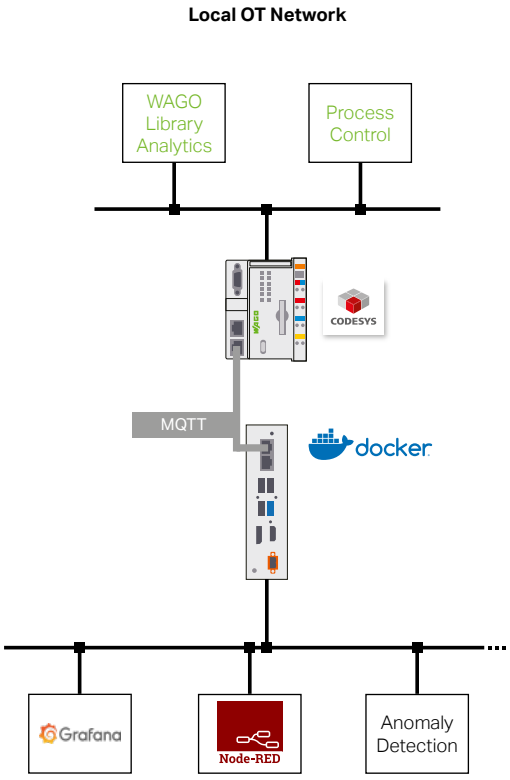
Your Benefits with WAGO Library Analytics:

- Direct integration into CODESYS
- Ready-made function blocks for WAGO Library Analytics available immediately
- Integration of own machine learning models possible
- Automatic outsourcing of computationally intensive operations to WAGO Edge Computers without additional load on the PLC
- Can be operated in an IT network or stand-alone in an OT network; no cloud communication required
- Easy commissioning in three steps (download installation package, run installation file, integrate CODESYS library)

Functional Scope of the WAGO Library Analytics:

- Anomaly detection
- Trend/drift detection
- Prediction of time series and critical values
- Integration of machine learning models (ONNX)
- Integration of custom Python code
- Data visualization with Grafana
- Connecting other data sources and data processing with Node-Red

Scan QR code for data sheet and downloads!



System Architecture
WAGO Application Analytics automatically starts and links function blocks on the controller to Docker® containers on the Edge Device (alternatively hosted in a cloud).

The Optimal Hardware Combination

WAGO Controllers and WAGO Edge Computers

WAGO's controllers support all standard interfaces and protocols and offer a wide variety of I/O modules for virtually any application. They are the optimal hardware for data acquisition and control of your processes.

Where demands on computing power and memory are high, the powerful and compact WAGO Edge Computer provides sufficient computing power directly in the control cabinet – saving space and money, conserving resources and ensuring security.

The WAGO Library Analytics uses the comprehensive WAGO I/O System and uses the computing power and memory of the WAGO Edge Computers.

Item Number: 752-9400, 750-8212

Getting Started in Using Data Profitably

WAGO Application Analytics, Starter Kit Base (Item Number 2849-7000/0000-0029):

- WAGO Library Analytics, Item Number 2759-2320/0211-1000
- WAGO PFC200, Item Number 750-8212
- WAGO Edge Computer, Item Number 752-9400
- WAGO Power Supply, Item Number 787-1616
- Accessories

WAGO Application Analytics, Starter Kit IO-Link (Item Number 2849-7000/0000-0030):

- WAGO Library Analytics, Item Number 2759-2320/0211-1000
- WAGO PFC200, Item Number 750-8212
- WAGO Edge Computer, Item Number 752-9400
- WAGO Power Supply, Item Number 787-1616
- 4-Port IO-Link Master Class A; EtherNet/IP™, Item Number 765-4503/100-000
- SICK Condition Monitoring Sensor
- Accessories

Looking to the Future

With the help of predictive WAGO Analytics developed in-house, WAGO has significantly reduced the maintenance effort for housing production. The system also provides valuable services in early fault detection and process optimization.

A variety of plastic granules forms the base material for the housings; these granules are transported to the injection molding machines by a tube system. This occurs using vacuum pumps, which produce a negative pressure. Like the good old pneumatic tubes, the pumps transport the different granulates to where they are needed immediately. However, the airflow inevitably also carries some dust. To prevent this from damaging the pumps, filters are installed in the exhaust air pipes.

These filters must be carefully cleaned repeatedly; otherwise, the conveying capacity suffers "It's like a vacuum cleaner: the fuller the filter, the worse its performance and efficiency," explains Sebastian Pscheidt, technical engineer for injection molding technology at WAGO. In the worst-case scenario, the tube is not completely emptied when another granulate is conveyed, mixing the two materials. WAGO staff have so far prevented this by cleaning the filters at fixed intervals. Often, however, this would not have been necessary because the filters still allow sufficient air to pass through – annoying because the cleaning is labor- and cost-intensive. In addition, the material distribution system must be shut down during this time, which can disrupt housing production.

»Our predictive maintenance solution ensures that we thoroughly clean the filters as required. With such predictive planning, we significantly reduce maintenance costs – while increasing process reliability.«

Dr. Jan Jenke, Product and Project Manager at WAGO

As Much Effort as Necessary, as Little as Possible

Good reasons for WAGO to develop a condition monitoring system – using WAGO technology, of course – to enable predictive maintenance. “As much effort as necessary, as little as possible,” is the strategy as Dr. Jan Jenke (Product and Project Manager Analytics at WAGO) sees it. The filters are only cleaned when it is expected that the output will fall below an acceptable level. For this, WAGO primarily uses data from sensors that measure the pressure upstream and downstream of the filter. Sophisticated analytics methods can then derive forecasts on pollution trends. The system then automatically triggers a maintenance order in the SAP system for just-in-time maintenance. This ensures that the cleaning always occurs at the optimum time. “Our predictive maintenance solution ensures that we thoroughly clean the filters as required. With such forward-looking planning, we reduce maintenance costs considerably while increasing process reliability,” Jenke concludes. A bonus is that the system also saves energy because the filters are cleaned earlier when more dirt is present, so that the pumps need less power. It is not possible to exactly project how high the savings will be because this depends on many factors, explains Pscheidt. “But since our pumps often work with several kilowatts of power, the savings are quite significant.”

»With the WAGO Analytics solutions and the dashboard, we have provided employees with a digital toolbox that simplifies their work significantly. They will gain a better understanding of cause-and-effect relationships of their actions.«

Sebastian Pscheidt, Technical Engineer for Injection Molding Technology at WAGO

Read the full customer application story and watch the customer application video.

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