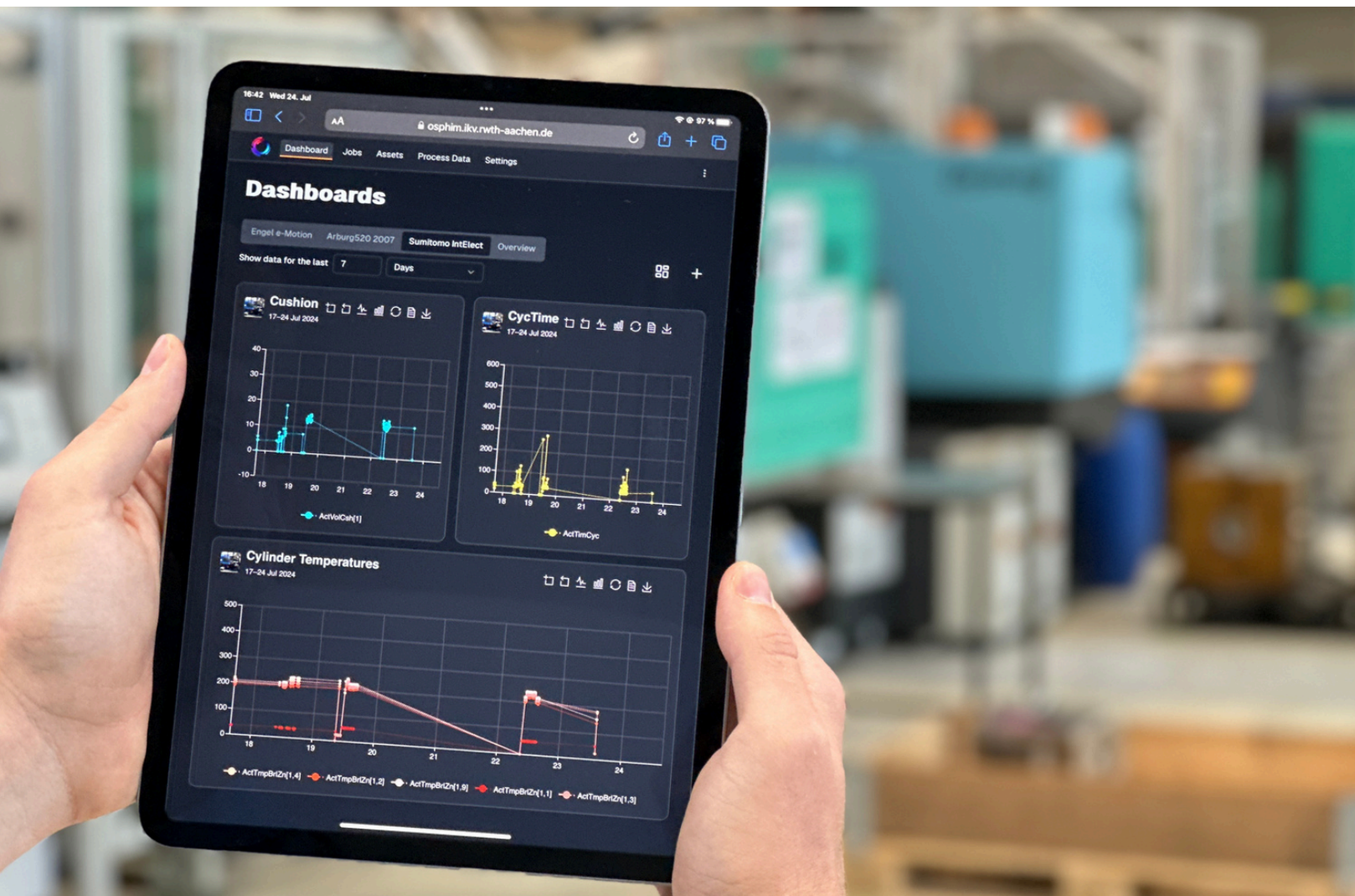
OSPHIM

#AI-ENABLED PLASTICS MANUFACTURING

Maximize Efficiency, Minimize Waste

JAN 2025



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Facing Common Challenges in Plastics Processing?

- Low Efficiency
- High Scrap Rates
- Slow Processes
- Lengthy Setups
- Lack of Experts
- Lack of Transparency
- No Data Management

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AI-enabled Plastics Manufacturing

OSPHIM offers an advanced digital ecosystem tailored for the plastics processing industry, using AI to optimize manufacturing processes to achieve significant efficiency gains. The OSPHIM solution comprises both hardware and software components: OSPHIM-BOX and OSPHIM-WEB

OSPHIM-BOX OSPHIM-WEB

Designed with a user-friendly interface and plug-and-play data acquisition, the platform effortlessly integrates into existing plants. It assists CAE, process, and quality engineers, as well as machine operators with an ergonomic and accessible solution. The platform provides comprehensive process information for accelerated decision-making.

OSPHIM makes modern and complex AI-driven methods accessible for injection molding, e.g. optimized process setup: Utilizing transfer learning and leveraging live process data, simulation results and information from past productions, OSPHIM efficiently builds process models and achieves over 70% savings in time and material.

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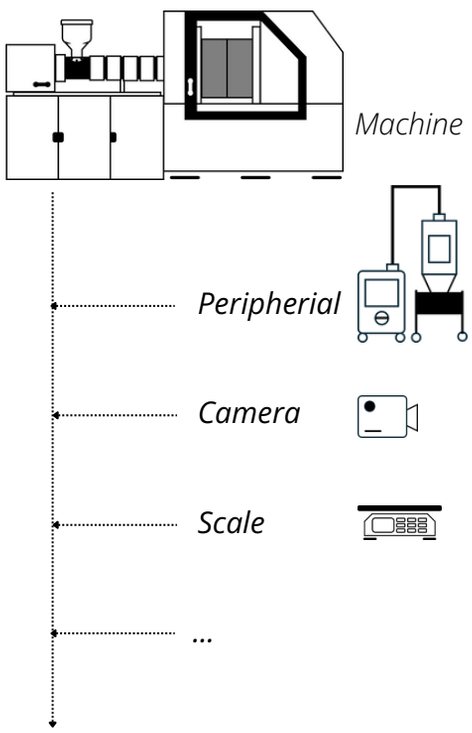
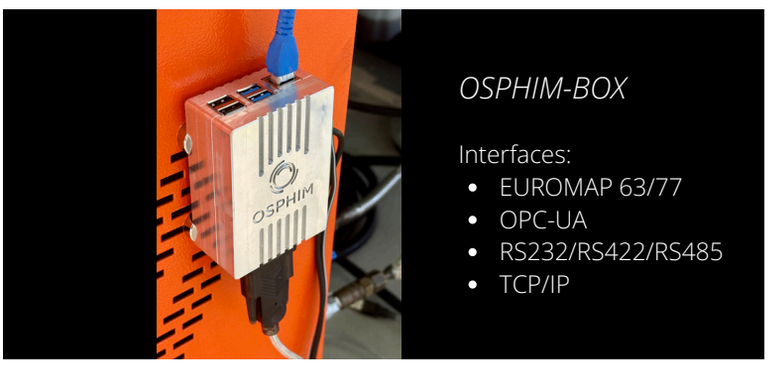
OSPHIM-BOX

Hardware

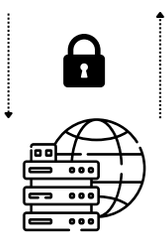




OSPHIM-BOX

Interfaces:

- EUROMAP 63/77
- OPC-UA
- RS232/RS422/RS485
- TCP/IP



State-of-the-art data encryption!

Server/Cloud

Dataflow

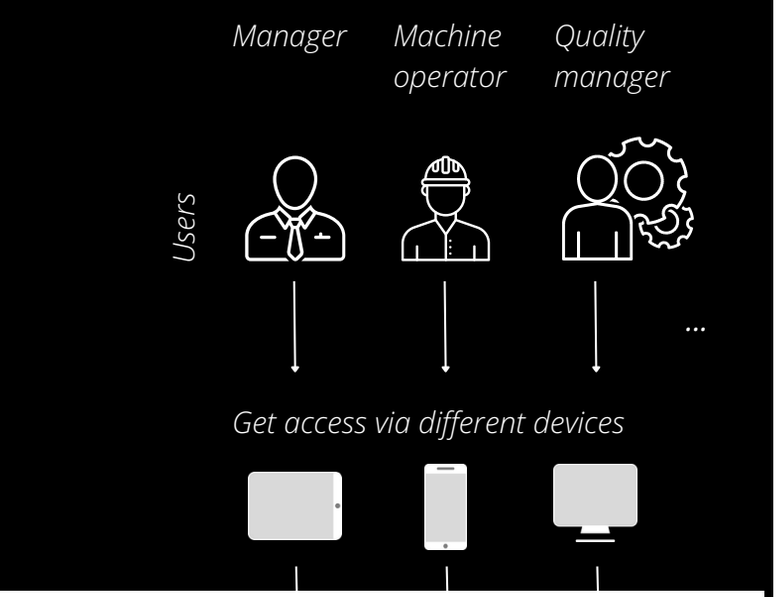
OSPHIM-BOX is a plug-and-play solution designed to seamlessly enable machine access and data acquisition in your production. This advanced edge-device connects to both injection molding machines and peripherals effortlessly, making it ideal for modern manufacturing setups. With quick and easy installation, the OSPHIM-BOX enables you to focus on optimizing your production. Experience the efficiency, simplicity, and reliability the OSPHIM-BOX brings to your industrial environment.

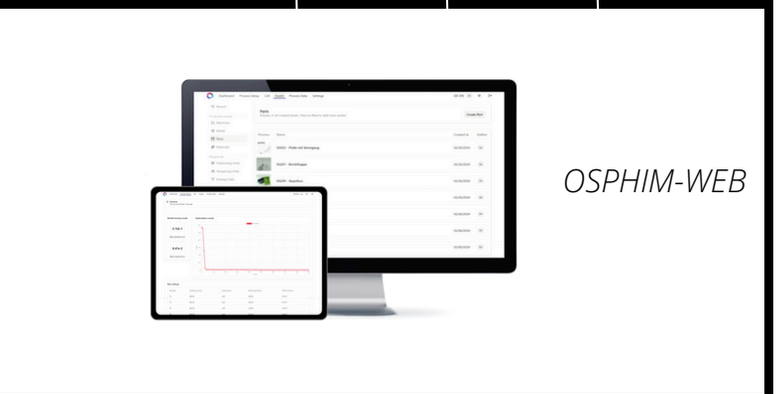
Key Features and Benefits:

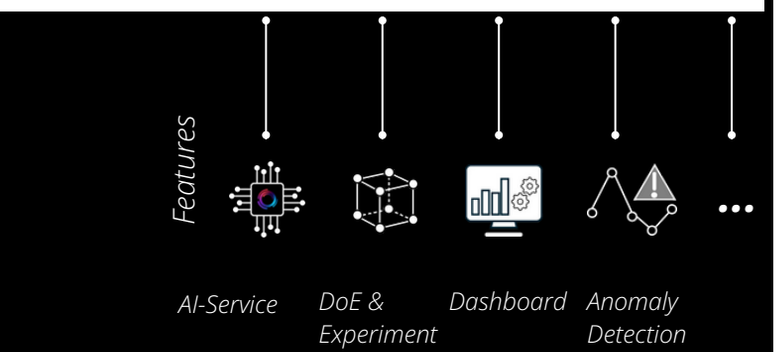
- **Rapid Deployment:** The hardware can be operational in under 2 minutes, ensuring fast and easy installation without specialized technical knowledge
- **Data Theft Protection:** Your production data is safe through data transport encryption and structural measures
- **Enhanced Connectivity and Integration:** The OSPHIM-BOX functions as a communicator for machine and data interfaces, seamlessly connecting to a wide variety of machines, peripherals, and other data sources
- **Robust Data Acquisition:** Our Edge Device provides an additional level of connectivity robustness. Even when the external connection is lost, the data will be held until connectivity is restored

OSPHIM-WEB

Software







OSPHIM-WEB is the digital ecosystem for data-based applications in your production. As a user, you interact with OSPHIM-WEB through the web browser at your desktop, from your tablet or on your phone. It serves as your central access point to configure, visualize and optimize your production. The software platform supports daily operations of setup and quality engineers, plant managers, technicians and many more concerned with the production of injection molded parts. OSPHIM has integrated features such as master data management, asset connectivity, data storage, report generation as well as advanced functionalities like AI-recommender modules and data analyses to increase your efficiency in typical production tasks.

Use Cases

- Production Data Acquisition
- AI-based Mold Trial Process
- Process Monitoring
- Machine Status Visualization
- Process Comparison

... and many more

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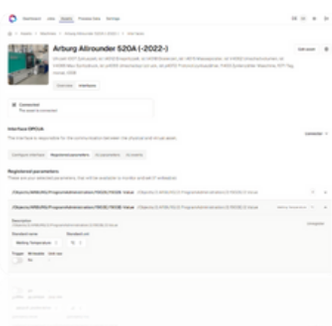
Use Cases

Production Data Acquisition



CUSTOMER SITUATION:

- Produced data from machine on the production floor is unused
- Customer wants to acquire and store the data and use it for process optimization

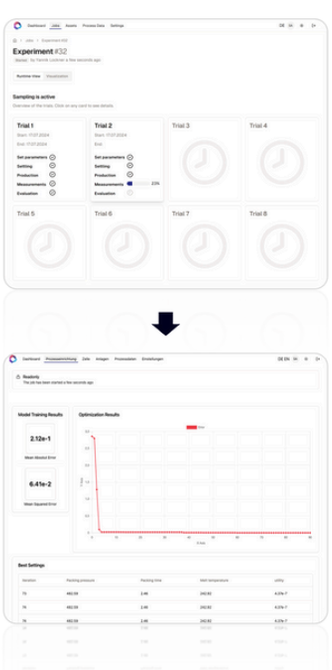
SOLUTION:

- Connect to your machines and peripherals with the OSPHIM-BOX effortlessy
- Acquire process data from both assets with ethernet-based interfaces (e.g. via OPC-UA or Euromap63) and local interfaces (e.g. RS232/485/422)
- Synchronize data from multiple assets such as injection molding machines, tempering units and scales

BENEFITS:

- Store and use your valuable production data
- Access your data anywhere and anytime

AI-based Mold Trial Process



CUSTOMER SITUATION:

- Mold characterization and process analysis is required
- A process window or optimal setting parameters needs to be identified

SOLUTION:

- Collect structured process and quality data by guided sampling on OSPHIM-WEB
- Use your own trial settings or run the trials with OSPHIM's suggested configuration
- Train a process model and quickly optimize the settings for low cycle time and high product quality
- Manage your process and directly install the optimized setting parameters on the production cell

BENEFITS:

- Easy execution of DoE for the process setup
- Use the data later, e. g. for AI-based setup

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Use Cases

Process Monitoring

CUSTOMER SITUATION:

- Injection molding processes are subject to changing conditions and quality fluctuations
- Selected process parameters and further relevant KPI need to be observed

SOLUTION:

- Create a custom Dashboard tailored to your specific monitoring needs
- Use our Anomaly Detection feature to automatically identify process deviations
- Stay up-to-date with changes in the production by getting notified immediately

BENEFITS:

- Constant supervision of product and process quality
- Swiftly detect process deviations to prevent rejects and stillstands

Machine Data Visualization

CUSTOMER SITUATION:

- Injection molding machines of different vendors
- No insight into current, past production as well as current machine status

SOLUTION:

- Use predefined dashboards for each machine registered on OSPHIM-WEB
- Build your own dashboard with the most relevant parameters and information
- Explore different time ranges or just subscribe to updates with the real-time function

BENEFITS:

- Fast and easy checks on performance of machines
- Track your machine status from everywhere

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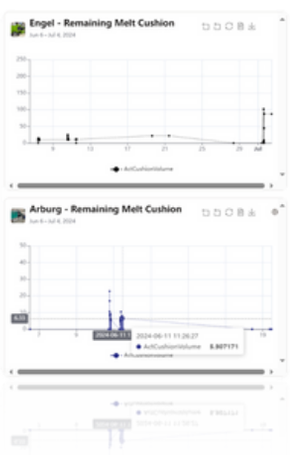
Use Cases

Machine Comparison



CUSTOMER SITUATION:

- Several machines running in parallel or repetitively
- Customers wants to compare processes

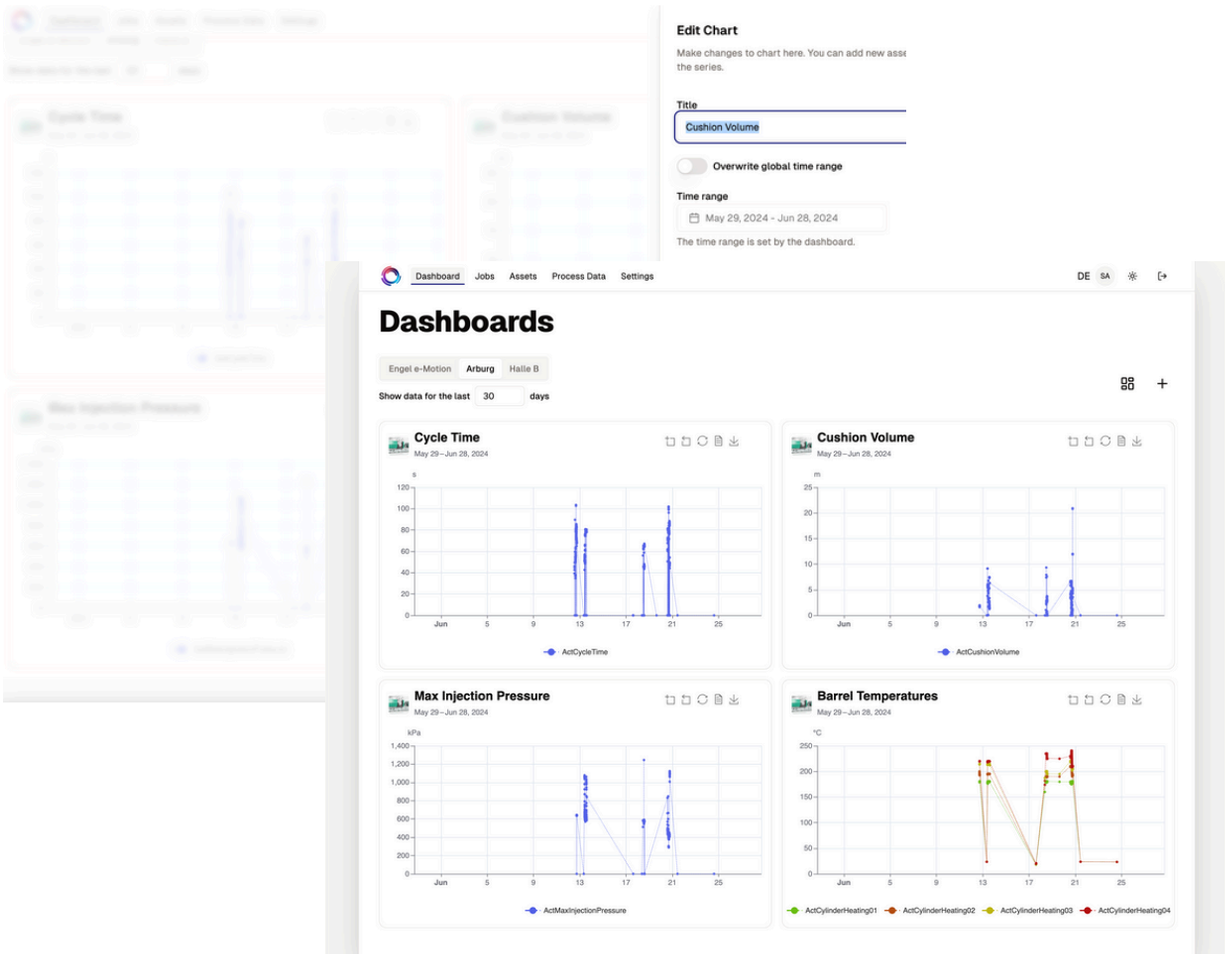
SOLUTION:

- Build a dashboard upon the registered machines in OSPHIM-WEB
- Compare the process parameters, e. g. cycle time or energy consumption, of several machines
- Download the visualizations or data for further detailed analysis or reports

BENEFITS:

- Easily identify performance potential between machines
- Raise efficiency and accelerate troubleshooting

... many more



OSPHIM Dashboard

OSPHIM's new Dashboard is designed to provide valuable insights into your production. You may want to create a Dashboard per machine to monitor its status, for a couple of machines with the same or similar products to compare their performances, or for all machines that you operate as production engineer! There are various options to organize and arrange the Dashboards to fit your requirements! You can choose between multiple widgets to suit your unique needs, ensuring the most critical information is always easily accessible. One of the key components is the Process Data Widget: You can display data such as cycle times and temperatures within a specified time frame for selected machines or peripherals, giving you the detailed information you need to make informed decisions and optimize your production processes.

Anomaly Detection

OSPHIM's anomaly detection for injection molding involves identifying deviations in the manufacturing process like outliers and trends that could lead to higher scrap rates. Utilizing state-of-the-art statistical methods and self-developed algorithms, our system monitors parameters such as maximum injection pressure, melt cushion or dosing and cycle time to detect unusual patterns. Early detection of anomalies helps prevent defective products, reduces waste, and enhances overall production efficiency. Implementing effective anomaly detection ensures consistent quality and optimizes your injection molding processes!

Reference Projets

Clients

“ agathon MOULDING INNOVATION · **QUALITY** · DESIGN

> *We use OSPHIM's services to **train process models** and **optimize setting parameters** in order to **generate intelligent suggestions** for our injection molding processes. The aim is to maximize component quality while minimizing cycle times in the process. This enables us to achieve **efficient production**!“*

Japanese multi-industry group

- Implementation of 7 edge devices for local machine access
- Deployment and setup of the OSPHIM platform
- Integration of a customer module into the platform infrastructure

American plasticware company

- Deployment and setup of the OSPHIM platform
- Development of a report-module for automatic data driven reports
- Remote connectivity to a production machine

German hidden champion

- Deployment and setup of the OSPHIM platform
- Setup of data acquisition of two production lines including 20+ assets
- Guided evaluation of the AI-driven approach for special processes

BENEFITS:

- Improved process setup and optimization
- Extended functionality due to own module
- Data acquisition and automatic reporting
- Evaluation of the AI-driven process setup methodology
- Initial digitalization of the production environment
- Improved process analysis and setup

... many more

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