



TÜBİTAK TEYDEB 1509 IN

**DIGITAL TWIN BASED MULTI-SENSOR DATA ANALYSIS PLATFORM FOR
NEAR-ZERO DEFECT MANUFACTURING - **WAND****

Participants



WAND: Digital Twin based Multi-sensor Data Analysis Platform for Near-Zero Defect Manufacturing

Project Consortium

Countries Involved



Project Leader



Project Participants



Project lider

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Tekkan Plastik Sanayi ve Ticaret A.Ş. [TR]



Application sectors: Automotive / Consumer goods / Capital goods

Research and innovation domains: Advanced manufacturing processes / Smart & adaptive manufacturing systems / Digital, virtual and efficient companies / Sustainable manufacturing

Funded by



Total cost: M€ 1.36

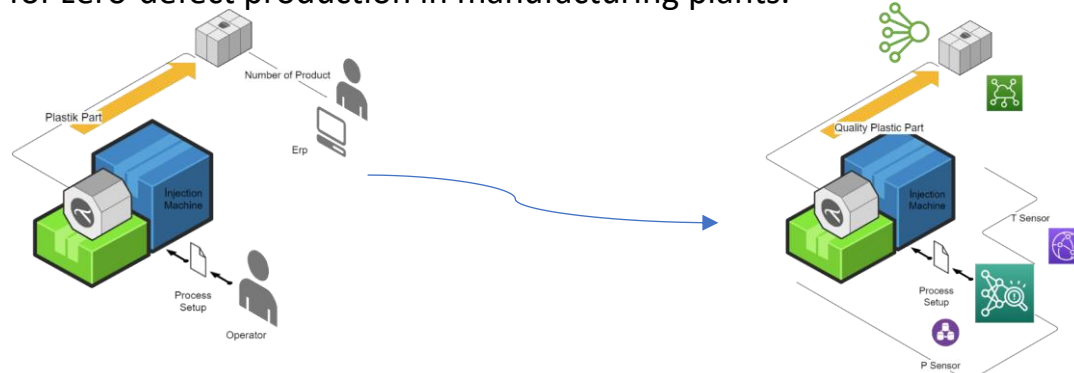


Starting date: 1/01/2024

Duration (in months) 24 months

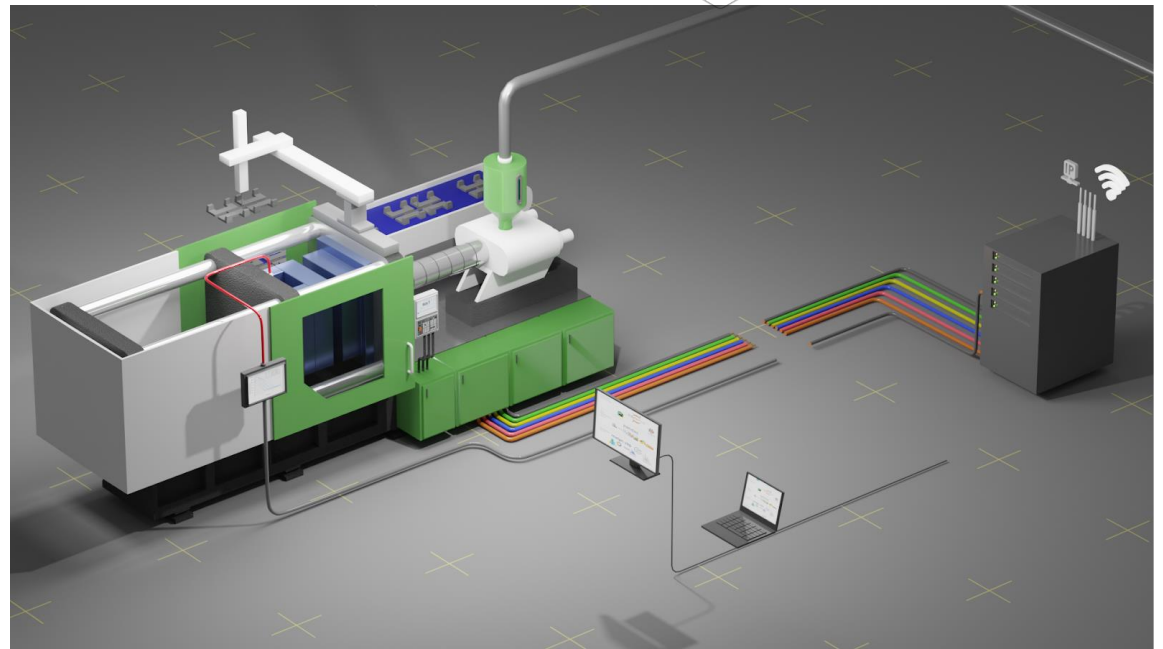
WAND - Abstract

WAND aims to ensure zero-defect and high performance production by using real-time and periodic data gathered from injection moulding machines and their components. The targeted system will support decision-making process of the operators for zero-defect production in manufacturing plants.



Scope of the Study

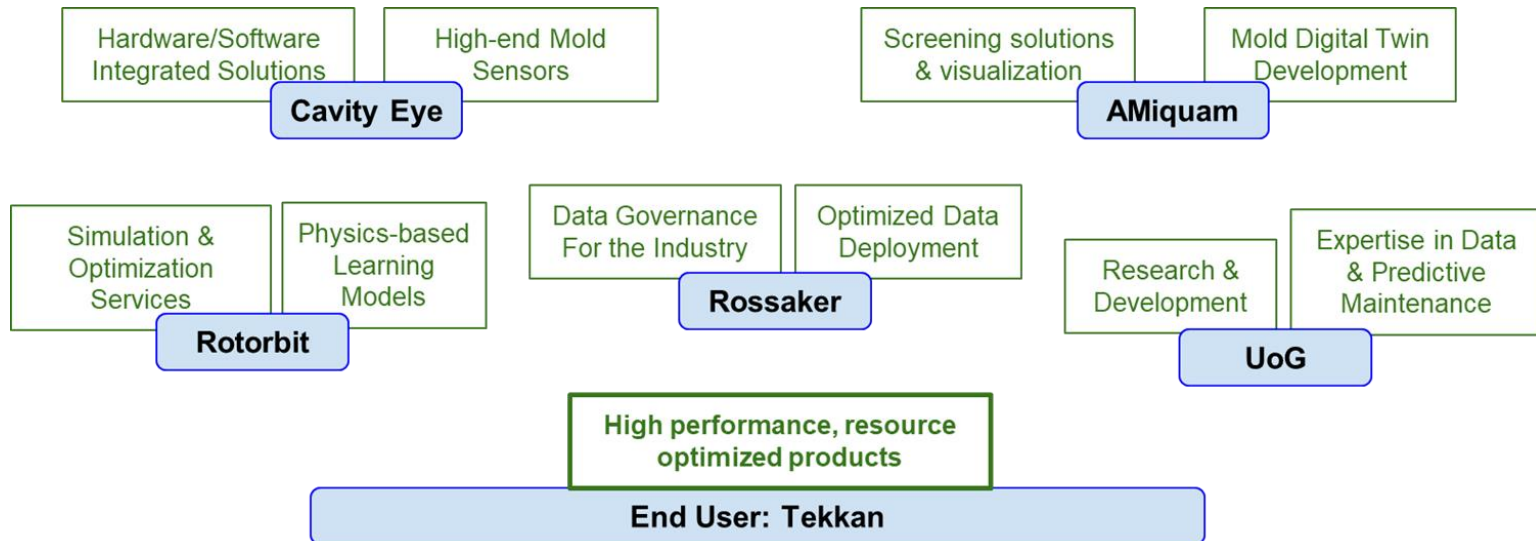
In this study, a Haitian brand injection molding machine will be used to optimize the production process of a hinge part made of glass-fiber reinforced plastic. The machine supports data transfer through industrial communication protocols like OPC UA and Keba EasyNet. Data collected from in-mold pressure and temperature sensors will be analyzed using advanced data analysis techniques.



Demonstration of General Design

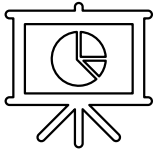
Main Objectives of the Study

- Resolving Short Shot Problems:** The common short shot problem in glass-fiber reinforced plastics will be addressed by optimizing process parameters.
- Improving Mechanical Properties:** By controlling fiber orientation and optimizing other parameters, the mechanical properties of the part will be improved.
- Ensuring Process Stability:** The process will be continuously monitored using sensor data, and potential deviations will be detected early.
- Reducing Production Costs:** By optimizing the process, waste will be reduced and energy efficiency will be increased.



Relative business positions and solutions of the WAND partners

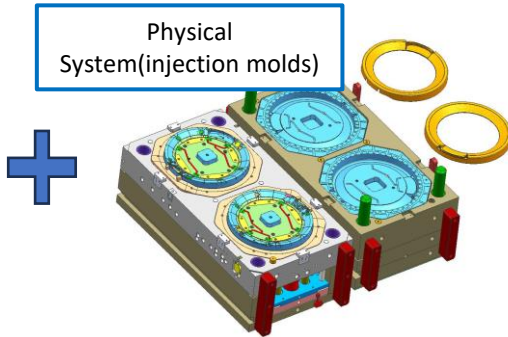
Conclusion



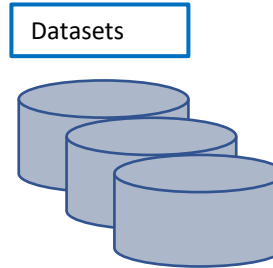
Analyzing data collected from injection molding machines enables a better understanding and optimization of production processes, leading to improved product quality, reduced production costs, and increased competitiveness. This study aims to make significant improvements in the production process of glass-fiber reinforced plastics using a Haitian brand injection machine and advanced data analysis techniques.



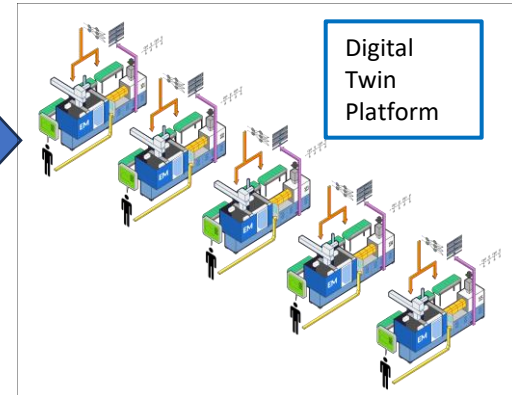
Physical System(injection molding machines)



Physical System(injection molds)



Datasets



Digital Twin Platform



Tekkan Plastik Sanayi ve Ticaret A.Ş.



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