

# TwinIDE Platform **USE CASES**

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2022



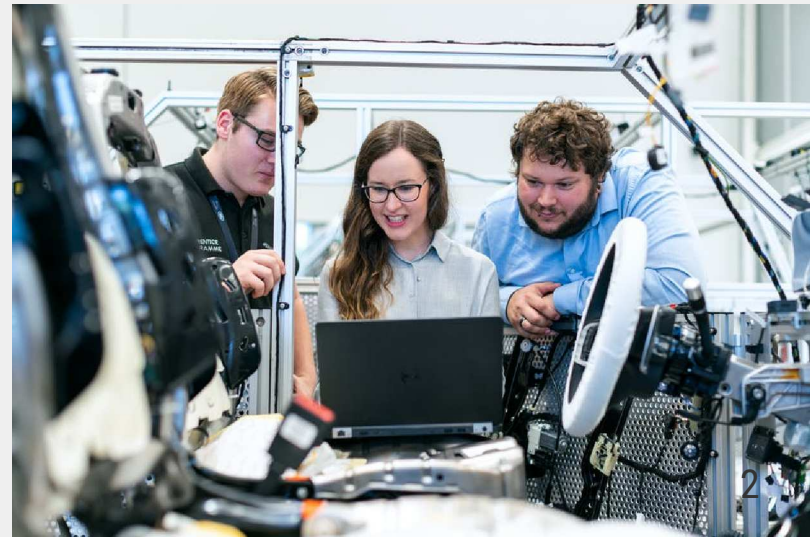
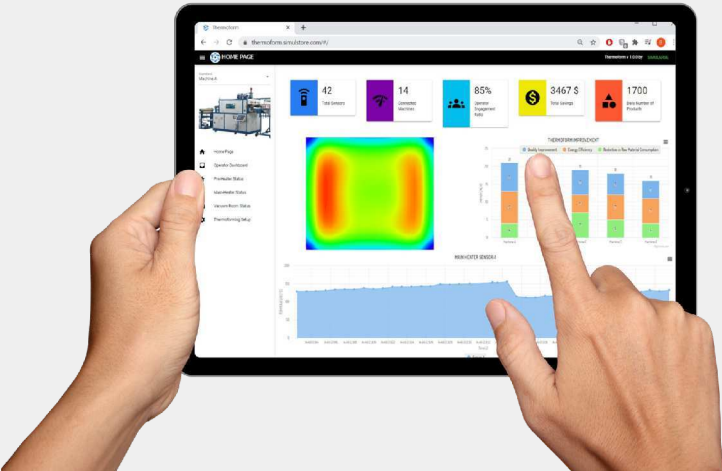
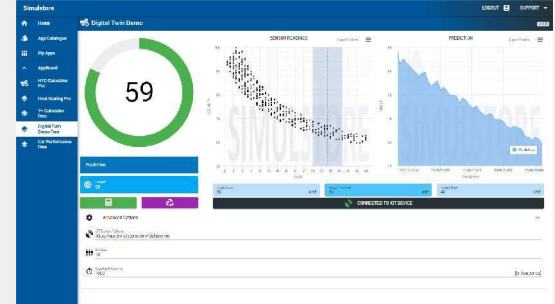
# Real-Time Data Monitoring and Warning System

**Solution:**

- **Connection to PLC and retrieve real-time data with I.P. number**
- Ruleset definition to set warnings
- Data recording and reporting

**Value:**

- Record, understand, analyze and correct inefficient actions
- Reduce downtime in the production line



# Thermoforming Process Improvement

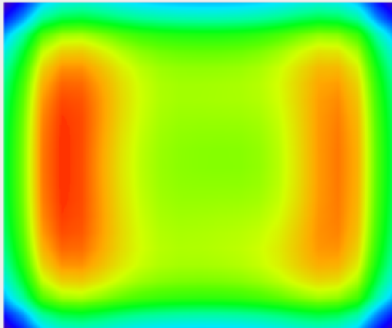
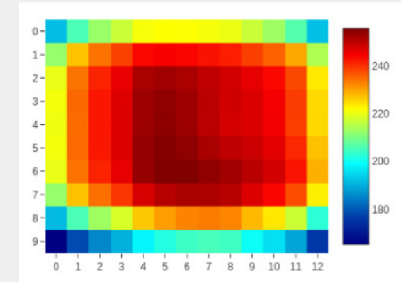
## Solution:

- Real-time simulation of **heating** and **sagging** of plastic sheet with FEM
- **Real-time testing** of plastic properties
- Sensor data monitoring (temperature, pressure, proximity)
- **Heating pattern optimization**
- AI to prevent defects

## Value:

- **Prevent defects with optimal set parameters**
- Reduction in scrap and rework by 50%
- Reduction in plastic consumption by 10%
- Virtual testing of different types of plastics
- Quick startup and optimized cycle time

10%  
ENHANCEMENT IN OEE



# Optimization of Industrial Furnaces

## Solution:

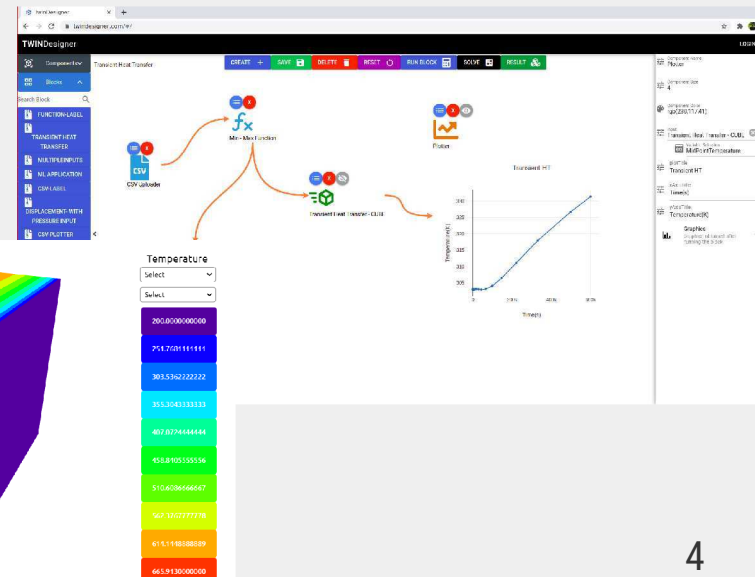
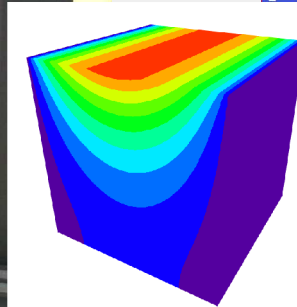
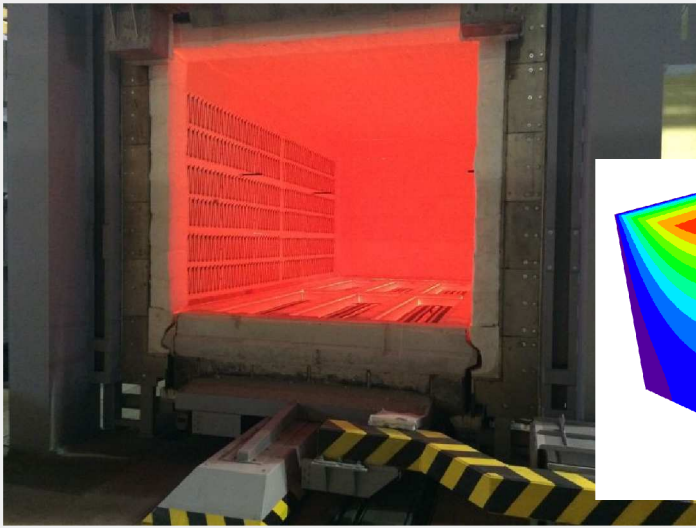
- Digital Twin of heating process in ovens and furnaces
- Transient behavior is analyzed with FEM
- Sensor connectivity for calibration of FEM
- 3D visualization of the process

## Value:

- Optimize energy consumption and cycle time

3D

THERMAL MONITORING





# Predictive Maintenance

## Solution:

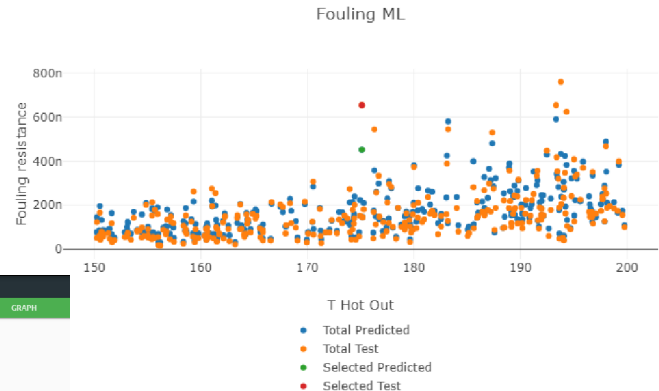
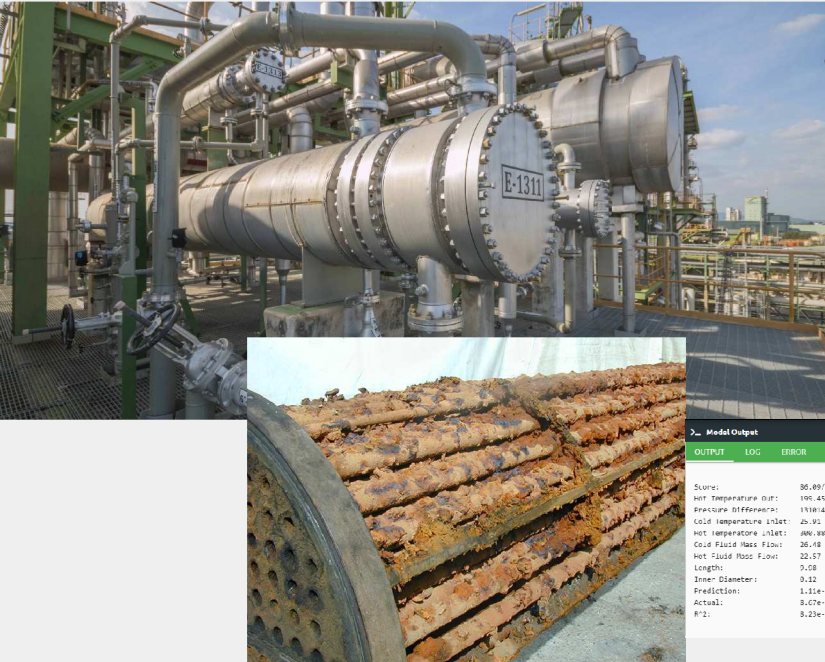
- Prediction of fouling level in Heat Exchangers with Heat Transfer Physics and Machine Learning

## Value:

- Prevents unexpected downtime which causes loss of millions of dollars

95%

ACCURATE PREDICTION



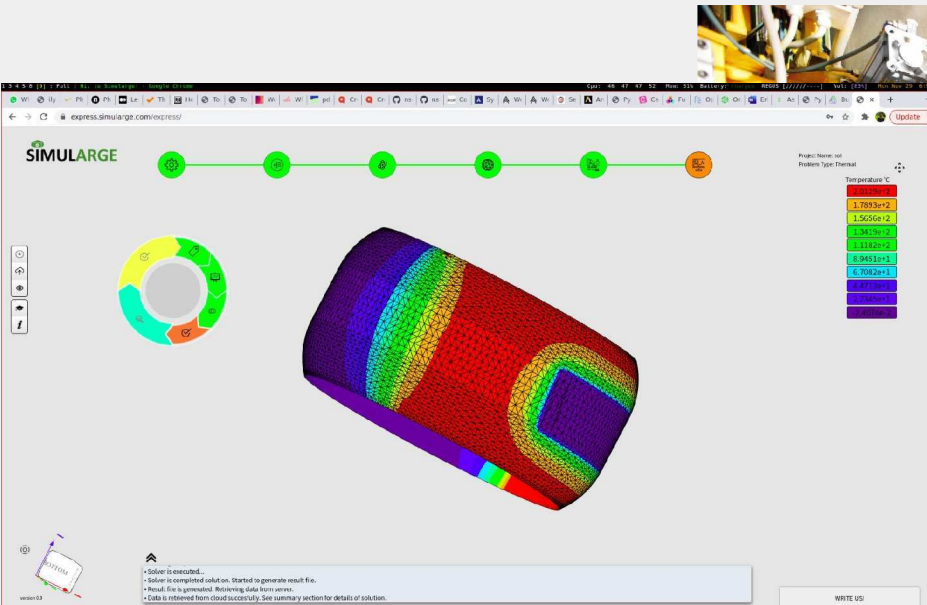
# Virtual Testing of Production Process

## Solution:

- Time-dependent thermal simulation of the process
- FEM modeling matched and validated with measured data
- 3D visualization of the forces and temperatures

## Value:

- **Reduction in number of real-life testing** by the use of the digital replica of the process



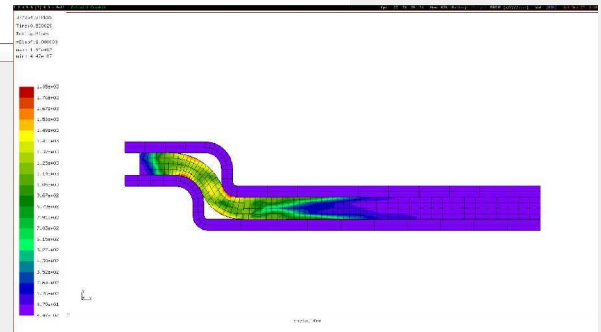
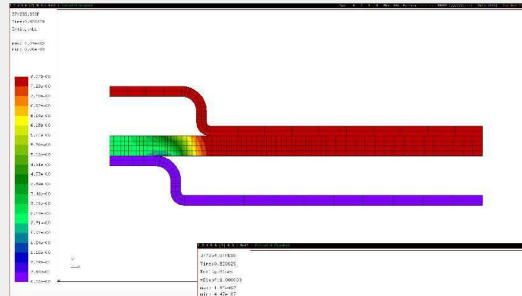
# Metal Forming Digital Twin

## Solution:

- Real-time simulation of Metal forming process in the press
- FEM modeling coupled with sensor data
- 3D real-time visualization of the process
- Determination of stress locations on the metal part

## Value:

- Process optimization and design change evaluation for more profitable manufacturing
- Virtual testing for change in material type





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