01 // Predictive quality and maintenance Die-casting

TASKS
Data analysis
Anomaly detection
Prediction

INDUSTRY
High Pressure aluminium Die-Casting

TECHNOLOGIES
detectiv.ai
Invariant.ai®

REQUEST
To realize an **anomaly detection system on data coming from heterogeneous sensors** placed all over the high pressure die-casting cell. **Predict the quality and the porosity** at the end of casting **with only the machine's input parameters available.**

STARTING POINT
Currently maintenance is carried out when a fault is detected (i.e. after a downtime on the production line). Interpreting the data collected by the sensors in not easy because **the anomaly and the final quality of the casting is not detectable using a single sensor but only through the interaction between some variables.** Moreover, the frequent production changes (i.e. die, product or part number change) make the data non homogeneous.

RESULTS

Increased OEE from 5% to 15%
(availability, performance, quality)

Reduced Unplanned Downtime from 15% to 30%
Improved forecasting of planned shut-downs
Reduce time for maintenance (by helping users to understand what is happening)

Improved Quality from 10% to 35%
Increased customer satisfaction with improved ability to make deliveries on-time and to improve quality

Reduced Maintenance Costs from 20% to 30%
Enhanced spares planning and inventory optimization

Increased Throughput and OTD from 10% to 20%
Reduced buffer WIP due to increased reliability

Source: Deloitte, "Asset Monitoring & Predictive Maintenance"