Anomaly detection in the
Manufacturing Industry

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In manufacturing, intricate data conceals potential disruptions, making it challenging to spot anomalies. But with proactive anomaly detection It's all in the past. With powerful algorithms, proactively searches for the unexpected, ensuring smooth industry operations and catching hidden problems before they cause trouble.
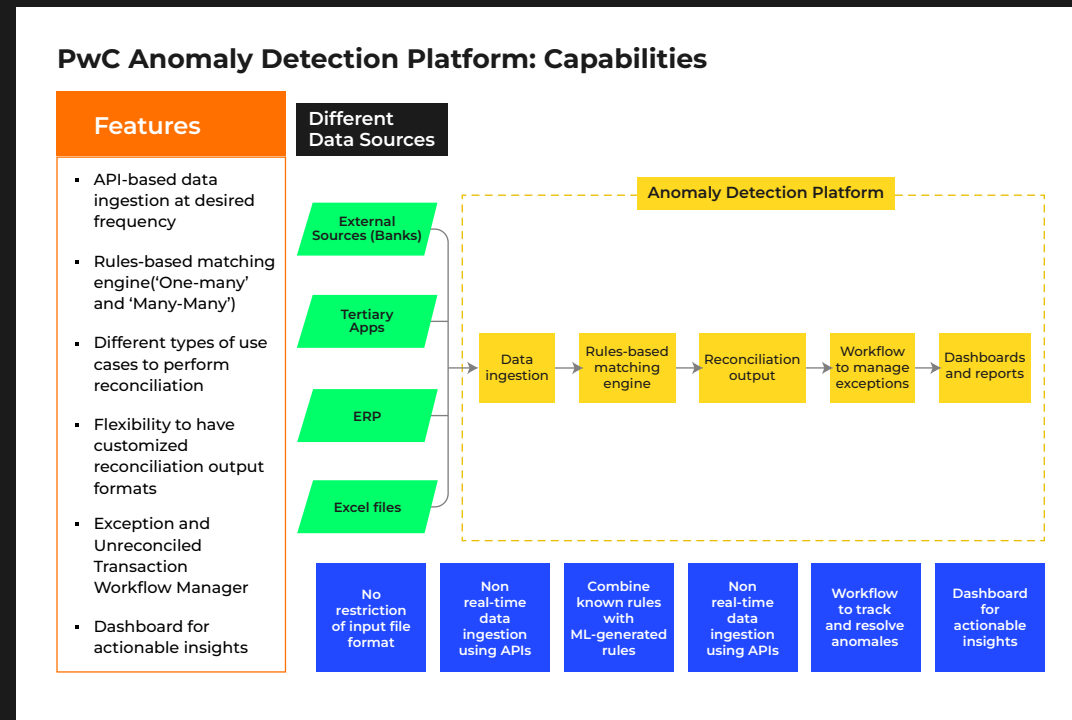
Curious to know how? Explore the types, use cases, KPIs, and more in our datasheet to find out the potential of anomaly detection.

Types of Anomalies

In manufacturing, there are typically three types of anomalies that may impact production quantities, output quality, and plant efficiency:

Point Anomaly — Single deviations from the rest of the same dataset

Contextual Anomaly — Similar to point anomalies except they are usually only cause for concern within a specific context

Collective Anomaly — These result from combinations of multiple measurements that, while within tolerance, when taken together can indicate a problem

Anomaly Detection process flow

PwC Anomaly Detection Platform: Capabilities

Features
- API-based data ingestion at desired frequency
- Rules-based matching engine('One-many' and 'Many-Many')
- Different types of use cases to perform reconciliation
- Flexibility to have customized reconciliation output formats
- Exception and Unreconciled Transaction Workflow Manager
- Dashboard for actionable insights

Different Data Sources
- External Sources (Banks)
- Tertiary Apps
- ERP
- Excel files

Anomaly Detection Platform
Data ingestion → Rules-based matching engine → Reconciliation output → Workflow to manage exceptions → Dashboards and reports

- No restriction of input file format
- Non real-time data ingestion using APIs
- Combine known rules with ML-generated rules
- Non real-time data ingestion using APIs
- Workflow to track and resolve anomalies
- Dashboard for actionable insights

Stuck on any of these problems?

Data Silos
- Do you have data scattered across different systems and databases, making it difficult to get a holistic view?
- Do you struggle to access and combine data from various sources for analysis?

Manual & Fragmented Approach
- Do you lack real-time monitoring and miss critical deviations that could impact production or quality?
- Is it challenging to connect anomalies to their root causes without a comprehensive view of your operations?

Lacking Analytical Capabilities
- Do you rely on basic reporting tools that lack the power to handle complex data and sophisticated algorithms?
- Do you struggle to identify subtle anomalies hidden within vast datasets and translate them into actionable recommendations?

Lack of Scalability & Flexibility
- Are your existing systems unable to handle increasing data volumes and evolving needs as your operations grow?
- Do you find it difficult to adapt your anomaly detection approach to new processes or equipment?

If you answered YES to any of these questions, then your manufacturing operation urgently needs analytical integration for anomaly detection.

Here's why, with anomaly detection you can see:

30%-50% reduced downtime

20%-40% Increased machine life

10%-20% Improved reulatory compliance

~70% reduction in breakdowns

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Anomaly detection use cases and KPIs:

Reactive problem-solving? Not anymore! Anomaly detection is transforming manufacturing, empowering industries to proactively ensure quality and efficiency. Curious about the implementation and how they're measuring success? **Let's dive in!**

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Sectors	Pharmaceutical	Automotive	Building Materials	Consumer Good Manufacturing
Use Cases	• Predictive maintenance for equipment • Bioprocess monitoring, • Raw material quality assurance • Energy consumption monitoring	• Tooling health monitoring • Predicting autonomous vehicle failures • Detecting fraudulent insurance claims • Optimizing logistics and delivery routes	• Mixing Process Monitoring • Quality control in molding • Curing process control	• Packaging quality assurance • Product assembly verification • Predicting product recall
KPIs	• Batch Acceptance rate • Raw material rejection rate • Mean time to detection rate • Adverse event reporting rate	• Tool changeover time • Warranty claim rate	• Material mix consistency • Curing time compliance • Mold rejection rate	• Packaging defect rate • Customer complaint rate per product defect • Packaging waste per unit product • Assembly line efficiency
	FIRST PASS YIELD, SUPPLY CHAIN LEAD TIME, EQUIPMENT DOWNTIME,INVENTORY TURNOVER RATE			

Curious to know more? Get a detailed overview and approach to start your Anomaly detection Journey >>>