

Glossary terms

Predictive Quality in Manufacturing

What is Predictive Quality Analytics?

Predictive quality analytics refers to the process of analyzing incoming data in order to recognize and solve problems in advance. This emerging category of AI enables manufacturers to decrease losses in both quality and waste by identifying root cause efficiently, preventing losses ahead of time. But predictive quality isn't limited to just quality-related losses. It also tracks production losses caused by inefficiencies in the process itself.

Preventive Maintenance

How are Industry 4.0 and Predictive Quality Related?

Luckily, manufacturing organizations can conquer various quality control issues by implementing the use of [Industry 4.0 technology](#), such as predictive quality. This technology provides factories with 3 main capabilities to upgrade their production process and eliminate losses related to quality control.

The three main capabilities of predictive quality are:

- **Automated root cause analysis** – predictive quality provides manufacturers with smart tools that can identify previously unknown root causes, and at the same time, continuously analyze mass amounts of data providing manufacturers with the exact [root cause analysis](#) to any problem.
- **Predictive insights** – predictive quality can also offer data-driven insights that enable manufacturers to minimize quality issues. [Predictive maintenance](#), for example, uses performance tracking tools to predict possible defects and fix them before they actually occur. This is unlike [preventive maintenance](#) which performs a daily maintenance routine to reduce the odds of downtime and machine failure.
- **Real-time alerts and notifications** – predictive quality provides real-time notifications that alert manufacturing teams as soon as any process inefficiencies appear enabling the team to fix the issue before it actually occurs.

What are the Steps of Implementing Predictive Analytics?

1. **Collect accurate and quality data** – it's simply not enough to generate tons of data. The more data you have doesn't mean you're better off. The data you're gathering must be valuable, and most importantly, accurate.
2. **Analyze and predict the best options for optimization** – by using quality (accurate) data to analyze and predict your manufacturing process, you can track and pinpoint the exact shortcomings and obtain data-driven insight on how to improve.
3. **Implement best practices across the organization** – combining quality data and data-driven predictions enable manufacturing organizations to plan and implement best practices efficiently.





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The Benefits Of Predictive Quality Technology and Management

- Enhanced Material Usage – by accurately predicting waste based on real-time insights and prediction, manufacturers can reduce wasted materials and increase usage.
- Prevent Quality Failures – real-time alerts and notifications allow manufacturers to adjust processes accordingly as soon as possible.
- Quickly Isolate Defects – isolate defects efficiently by quickly identifying when and where they occurred to limit the total scrap.

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