German premium tool brand buys into digital quality assurance

Success Story

A well-known German manufacturer of hand tools has worked with Wheelabrator to digitize its shot blast processes and make real-time process data available for quality assurance and production optimization. Initial results show a rework rate in freefall, with digital data revealing a maintenance error that regularly led to abrasive overconsumption and process instability.

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Towards a self-correcting blast process

Shot blasting is the focus of digital ambitions at a premium German tool brand. The goal: use data-driven process optimization to tightly control and stabilize the blast process and improve quality. This was delivered on the IIoT platform Monitizer | DISCOVER, which features tools and dashboards tailored to the shot blast process.

The project team at the tool brand has long been on a mission to control the blast process ever more precisely to significantly reduce rework. Between 2014 and the start of this project, rework had already been reduced by 80%. Since the introduction of Monitizer | DISCOVER, the rework rate has come down further and the goal is to push it as close to zero as possible. In the short term, the team is aiming to keep it between 0 and 5%.

The only way is digital

The head of the digital project at the toolmaker explains: "The blast process has a major influence on the quality of our products. These are forged parts that are then coated, so we need a very clean surface for a perfect coating. The blast process must be extremely stable. We have made great progress in this area in recent years, but we have reached the point where only data-driven insight can unlock further improvements."

The aim of the digitization project was to make the blast process "visible", so it can be monitored in real time to spot any deviations from the permitted range and countermeasures can be initiated immediately.

One of the most important goals for the team was to constantly optimise the abrasive mix which has a major influence on the blast quality, intensity and stability.

> "Keeping an eye on the operating mix has been easy to neglect, because you still have to go up the ladder on the machine and look inside to check the filters. You don't have real-time control over a very important blast parameter. When something goes wrong, you often only see it at the end; and that means rework. Monitizer changes that."

More about Monitizer

From pilot project to digital self-sufficiency

"The great thing about Monitizer | DISCOVER is that you can quickly create your own dashboards using widgets and templates, and everything is designed to enable me and my team to develop our own digital tools."

In 2022, a pilot project saw the first blast machine digitized, a Wheelabrator MB400G tumblast machine from 2018. Working closely with the Wheelabrator team, dashboards were created that generate and track meaningful metrics and KPIs from the gathered data. A traffic light system alerts operators and managers if target values are exceeded.

As of January 2023, the project is no longer in the pilot phase. Convinced by the results from the first few months, the tool manufacturer decided to fully implement Monitizer and expand it to other blast machines.

Catch problems early

The team is currently capturing power use, turbine speeds, operating status and more - in real time and over time. From this, Monitizer calculates key parameters and displays them on dashboards, which can be used to monitor the blast process minutely. This extends the service life of blast wheels and ensures emerging issues are detected early on.

For example, the team discovered unexplained spikes in abrasive consumption that seemed to occur periodically. It turned out the rotary screen regularly clogged due to incorrect maintenance. In consequence, a considerable amount of abrasive flowed directly into the waste via the overflow and the machine then had to be refilled with new abrasive. Every time this happened, it threw the process off track and it took several days for the process to stabilise again. Discovering and correcting this error has significantly improved process stability and reduced the rework rate.

See the road ahead

"Thanks to Monitizer, we are finally driving with a clear view of the road ahead. For example, based on the load on screens and filters, we can now easily tell whether something is wrong with the abrasive mix. With a glance at the dashboard, we can see when maintenance is needed and can intervene before the blast process runs off course. The great thing about Monitizer | DISCOVER is that you can quickly create your own dashboards using widgets and templates, and everything is designed to enable me and my team to develop our own digital tools."

Next stop: automation and AI

The project team is already working on the next phase of process optimization. One area of focus is ever more accurate, real-time analysis and monitoring of the abrasive.

In a separate project with Wheelabrator, they are developing a completely new technology that employs image analysis to automatically recognise abrasive particles that are a bit "rough round the edges". Monitizer makes it easy to integrate and adopt new tools like this one to give an ever better live picture of the blast process.

In addition, the project team at the tool manufacturer has its sights set on dialling up automation and, closely related to this, moving towards completely automatic, digital process control.

The project manager concludes: "We have big ambitions for our digital initiatives. By sharing knowledge and working closely with the team at Wheelabrator, we've made huge strides in a short amount of time. But I know that the Monitizer platform can do much more. And we now want to fully exploit that. From built-in AI capabilities to automatic corrective measures that kick in when set values are exceeded – we are not that far away from a self-correcting blast process."

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