



Peter Kirchhoff,
Production Manager at
ITW Fastener Products GmbH,
Shakeproof Division, Iserlohn (Germany)

Company portrait

ITW Fastener Products GmbH is a leading manufacturer of fastening elements used in automotive engine applications, specializing in solutions for pre-assembly, fixing of plastic components, and for decoupling of noise and vibration.

The fasteners developed and produced in Iserlohn are used world wide by all leading OEM's in parts such as cylinder head covers, intake manifolds, oil sumps, and direct injection systems.

Being pre-assembled into critical functional applications, all parts are subject to stringent quality requirements which, amongst other measures, are maintained by using in-process load monitoring systems.

ITW Fastener Products in Iserlohn is part of the North American stock listed ITW corporation which generates an annual turnover of more than 14 billion US\$ with it's worldwide 50.000 employees, and is proud of a successful history of more than 100 years.



Foxmatic detects cracked heads and eliminates costly sorting!

Cracked heads often occur when producing cold formed parts, and they typically represent a costly unresolved problem for many manufacturers. All past attempts to reliably detect the cracks by measuring and monitoring the forming force signals have failed. Results were very inconsistent using very tight envelope limits because of frequent and unnecessary machine stops. Previously, the requirement for 100% crack-free production was achieved through time consuming and expensive sorting operations. However, ITW Fastener Products GmbH has now found an alternative to post-production sorting using the recently introduced Foxmatic monitoring technique.

"Consistently producing 'crack-free' parts is essential when supplying top quality parts for the automotive industry since a crack-free part is one of the most important quality features of any part made for the automotive industry" emphasizes Peter Kirchhoff, Production Manager at the ITW Shakeproof Division's plant in the German city of Iserlohn. "We produce about 70 million pieces per year of a critical part which are then distributed by our customer from a central warehouse to production facilities all over the world. When a problem occurred in the past, it was virtually impossible for us to track suspect batches and allocate them to a certain production lot. Therefore, ITW was forced to have their annual production sorted by an external supplier to ensure 100 % crack-free products. The sorting cost for just this one part is approximately € 140.000 per year!"

Many machine stops due to extremely tight envelope limits

It was imperative for Peter Kirchhoff to identify a more economical crack detection solution. "For years, we have been using the Schwer + Kopka load monitoring systems on our cold forming and thread rolling machines, and we have been seeing excellent results with them" reports the Production Manager. "Working with the S+K technicians, we had been looking at the cracked head problem for quite some time trying to detect them with our existing monitoring systems. By installing the sensors closer to the tools and by developing more sensitive algorithms, we were able to detect more and more cracks at the expense of more frequent nuisance machine shut downs. Eventually, the operators would just widen their envelope settings to

keep their machines running. We had to admit that the extremely tight envelope limits necessary for good crack detection could not be run economically on our machines." This is exactly why reliable detection of cracked heads was impossible in the past.



SK 800 load monitoring system with Foxmatic technology on a cold header at ITW



100 % crack free parts waiting for the thread rolling operation.



Typical cracked parts that were detected

Foxmatic detects errors inside the envelope - even with less sensitive control limits

The new Foxmatic approach developed by S+K created new opportunities because it is capable of detecting very small changes in the force signal pattern even when inside the envelope band. Extensive tests carried out on a number of different machines revealed where the typical small changes in the force pattern occurred caused by the cracked heads. The new Foxmatic software tracks the changes in the force patterns and ensures the reliable detection of cracked heads. Peter Kirchoff adds: "Although we were able to detect the bigger cracks with the previous system, since we implemented the use of Foxmatic, we know that we are producing 100 % crack-free parts. To verify our findings, we took several production lots which were monitored by Foxmatic and had them sorted for cracks. And do you know what? - We did not find a single crack in those lots. Since then, we have entirely eliminated the costly outside sorting operation!"

Pay-Back in a few weeks

By being able to eliminate additional crack sorting, the future path became clear. "The investment into the SK monitoring systems with Foxmatic paid for themselves in just a few weeks" says Peter Kirchoff about this economical decision. "The new SK monitoring systems with Foxmatic offer highly reliable capabilities in error detection, and we will equip more machines with this technology. The next machine targeted for a new SK System is a recently rebuilt 3-die cold former."



ITW Production Manager
Peter Kirchoff and
Tool Design Manager
René Wennehorst



General view on the
ITW production floor