Planetary thread rollers offer unbeatable performance when it comes to rolling small parts at high speeds. The working principle of these machines focuses on the rotating center (main) die and outer stationary segmented die/s enabling an uninterrupted thread rolling process at speeds of up to 1,800 parts per minute. The planetary machines offer unequalled productivity and cost benefits, especially in the manufacture of small screws. In cooperation with the German fastener producer Tweer & Lösenbeck GmbH & Co. KG, Schwer + Kopka managed to develop a reliable monitoring system for this important application in screw manufacturing. Always keeping in mind that quality is as important as top production speed!

"We need high output from our rotary thread rollers in order to be able to offer competitively priced products in the range of M1.6 to M6" explains Diedrich Klute who is the responsible manufacturing manager at Tweer & Lösenbeck. "We would have loved to run our rollers during unmanned shifts after the regular production period ends, which would reduce our costs even further. Unfortunately, a reliable monitoring solution for our high speed rollers was not available until recently. We had to sacrifice the idea of running unattended in favor of the quality aspects".

"The difficulty in monitoring the planetary rolling process in the past has been that typically, several parts are being rolled in between the dies at the same time. This has caused problems for conventional process monitoring systems when it came to detecting the different force readings for each rolled screw," summarizes the manufacturing manager. In addition, the traditional sensor concepts were not suited to deliver consistently strong sensor signals when rolling smaller diameter parts. The force signals were too weak and did not provide a good representation of the actual rolling process. "It took us a number of different approaches working with the technicians of Schwer + Kopka, but we have now developed a new sensor..."
Simple yet efficient: rolling machine with segmented dies

The blanks are being fed via feeding rails to the entry point. At defined points in time, the blanks are pushed into the gap between the roller die and the segment. The rotation of the central roller die transports the parts through the dies and forms the thread. At the end of the process, the finished parts automatically exit the gap.

Depending on tool layout and part size, up to 4 parts are in between the dies at the same time.

This process is very demanding in respect to sensor technology and signal processing.

Expansion to all planetary rollers is in progress

The excellent results achieved with the initial test system have led to the installation of eight (8) more SK 400 load monitors on other planetary rollers. The machine operators also value the new monitoring technique and the simplicity of operation. Shortly, all planetary rollers at Tweer & Lösenbeck will be equipped with SK load monitors.

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