



Diedrich Klute,
Manufacturing Manager at
Tweer & Lösenbeck GmbH & Co. KG,
Lüdenscheid

Company portrait

"Producing the smallest screws in huge quantities at consistently high quality" - this is the philosophy of Tweer & Lösenbeck GmbH & Co. KG located in the heart of the German fastener industry in Lüdenscheid. The family owned company with nearly 100 years experience in fastener production always puts the highest emphasis on quality. Every part of the more than 15 million produced each day must meet the requirements of the demanding customers in the automotive, electrical and medical industry.

There are 70 employees in the Lüdenscheid factory striving each day to satisfy customer's needs. Fast order processing, extraordinary service and tight cooperation ensure a close and successful relationship with their clients.



Reliable Monitoring of Planetary Thread Rollers at 1800 parts/min.!

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".

Improving quality and productivity at the same time

It came as a logical step to sit down with the experts of Schwer + Kopka (SK) to try to find a reliable and practical solution for this problem. "We have been using the SK



load monitors for many years on all of our cold heading machines and know what we can achieve. Hence, we wanted to transfer the good results into the thread rolling department as well" describes Diedrich Klute regarding his motivations to expand the use of monitoring.

SK 400 load monitor in operation on a E. W. Menn planetary roller

"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



Product range of
Tweer & Lösenbeck

concept which works very reliably, and it is very easy to retrofit to all our existing machines" says Diedrich Klute. "The new SK system has been tested extensively over a period of several months. The measured roll force signals are stable and repetitive allowing us to run the monitor with very tight envelope limits. Quality is further supported using our specially designed sorting gates which are connected to the **SK 400** load monitors. Whenever the monitor detects a "suspicious" force signal, the gate is activated to separate the defective part/s. Since the monitor has been installed on this machine, we have not found any undetected bad parts, nor have we had a single customer complaint."

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.

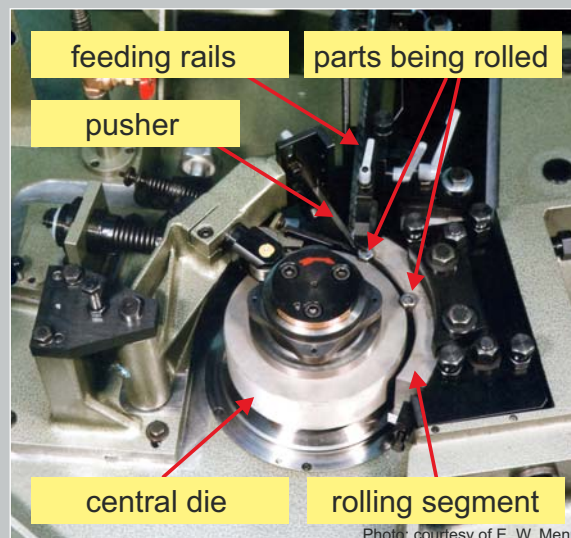


Pleased about producing top quality: Diedrich Klute (r.) and Thomas Kopka (l.)



View into the heading and rolling
department

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.

Photo: courtesy of E. W. Menn