COPRA® RollScanner

The COPRA® RollScanner is a high precision measuring device for the quality control of roll tools as well as an entry point towards a fully integrated Roll Management Solution.

data M
Sheet Metal
Solutions

www.copra.info/en/crs/

The Fully Integrated Roll Management Solution

The Field of Application of the COPRA® RollScanner is not just limited to the quality control of roll sets in fusion jointing or roll forming arrangements. With the Roll Management Solution by data M it is easy to keep track even of a large number of rolls. All scanned tools will be stored in the COPRA® data base after an automatic and fast scan. Thus it is possible to keep an eye on your roll sets even with frequent reworking.

Fast and Automatic Quality Control of Roll Sets

But also without the optional Roll Management Module, the COPRA® RollScanner meets all demands of a highly accurate optical measuring device for quality control. The applied technology represents the quickest way to completely measure profiling rolls and thus the contouring accuracy of their active surfaces.

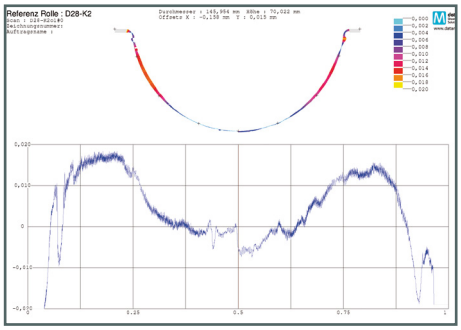
The handling of the machine is as easy as it gets. No further instruction is necessary. The roll is placed on a quick-release nut while inserting the roll number. The COPRA® RollScanner will then automatically start the scanning process without any teach-in procedure at a defined point and follow the outer contour. A time consuming programming of a predetermined contour is not required. During the process, the machine captures thousands of measuring points that are condensed into arcs and lines. The data can be saved as a vectorized Polyline in DXF-format and further processed by a CAD system. Depending on the roll size, the scanning process will be finished in less than a minute.
After the scanning, a comparison of the roll contour with the constructed one will be displayed immediately as a deviation diagram. It is thus possible to get information about the condition of the roll with one view. The variance is visualized in a brush chart. Hence it is possible to keep track of increased attrition on the roll tools. The data can of course be exported for further processing, e.g. as an Excel table.

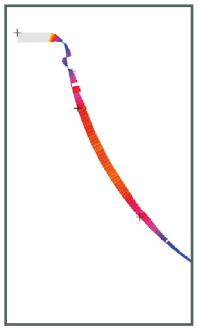
Optimize your Production Process

A roll tool set is always subject to attrition, depending on the respective product. The quality of the rolls will be constantly supervised. Attrition can thus be addressed beforehand. Cost-intensive tolerances will therefore be prevented because roll tools can be reworked or replaced before respective problems even occur. Reworked rolls can be reinserted to the construction after another quick scan.

Quality Control of Newly Produced Rolls

Hundreds of rolls are often delivered for the production of new profiles. These are usually manufactured with modern NC-spinning machines, thus the quality will not be questioned. But even if the roll contours have been programmed accurately, there can still be form deviation, e. g. through attrition of flipping plates or by tolerances or stiffness of the engine lathe. Particularly with calibrating rolls for the production of circular tubes, there may be deviations that lead to insufficient product quality. It is thus necessary to measure the roll sets regarding their quality. COPRA® RollScanner will evaluate if the contours have been produced accurately in less than five minutes.



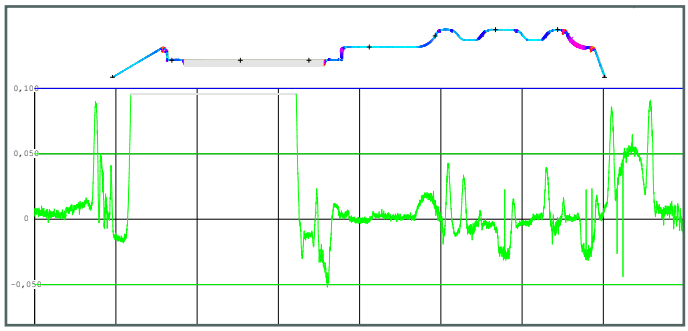


Reverse Engineering

Extract reshaping concepts easily out of existing roll sets. The new set will be built from the scanned contours with COPRA® RF, whereby the existing reshaping strategy can be traced back.
The construction can be simulated and optimized thereafter.

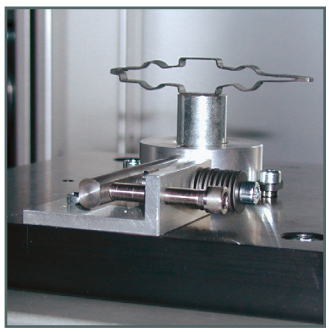
Roll Gap Measurement

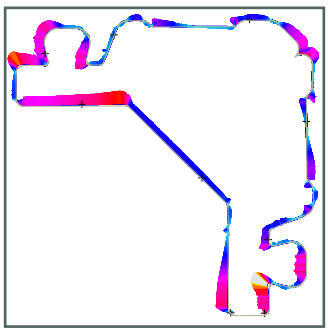
With this field of application, we've addressed a frequent problem in the production of tubes and pipes. Even with precise roll tool manufacturing, insufficient product quality may occur because the tolerance field is adverse, meaning that both rolls are not exceeding the required tolerances. There will most likely still be deviations during the roll forming process. For these purposes, we developed a corresponding feature for our Software.
At first, each tool of the roll pair is measured. There is a so called roll gap between them. After the process, your staff members can either manually adjust the contours or let the software calculate the optimal roll gap.



Profile Measurement

Although the measuring of profiles is not among the primary domain of application, the measuring principle of the COPRA® RollScanner also allows quality control of profiles with high accuracy. For this purpose, the profile is placed on the magnet holder. The integrated software module provides the respective auxiliary function and the user gets a deviation diagram for evaluation.





COPRA® RollScanner – Entry Point towards a Fully Integrated Roll Management Solution

Together with our complementary software modules, COPRA® RollScanner can be the first step towards a fully integrated Roll Management Solution. The machine offers a direct link to our data base supported Roll Management RLM (Roll Lifecycle Management). A consistent cataloguing of existing roll tools is especially essential in large production sites.
For equipment of roll forming machines, roll tools are usually reworked several times, while the changes are not documented. COPRA® RollScanner quickly captures the contours, which can then be reloaded when needed. Cost and time will be saved in case of an incident such as a roll fraction. Also, it allows to book out a worn off roll and mark it as a recycling roll in order to use it again. The reworking of an existing roll is in most cases cheaper than a newly made tool. According to our data, the savings potential can be up to 80 %. Instead of a tedious manual search or even the production of new rolls, hundreds of tools with the required contour can be compared. The COPRA® database can identify the required contours with a similarity function.

COPRA® RollScanner – Worldwide only Optical Roll Measuring System

For the new generation of COPRA® RollScanner, we significantly increased the accuracy with the established measuring method and the use of new components. With an optical resolution of 4 µm, we achieve accuracies of 0,01 mm by now.
The scanning process is conducted by a transmitted light procedure, meaning that the silhouette of the object and not its actual contour is measured. This allows quality control even of small items. For a secure measurement of rolls, the focus of horizontal surfaces is set outside the mid area. The accuracy is therefore increased once again and distortions are prevented.
With the separation of the x- and y-axis, we furthermore reduced possible measuring errors multiple times. Calibration of the COPRA® RollScanner is only necessary on the entry into service.

COPRA® RollScanner – more than just Quality Control

- Database-supported, intelligent Roll Management – digitisation and cataloguing
- Contactless measuring without attrition
- Automatic contour tracing – no programming necessary
- Consistent Quality Control of roll contours
- Reverse Engineering - analysis and reworking of existing rolls
- Cost reduction through recycling of used rolls
- Early identification of flaws in the production process
- Third axis for measuring of complex contours (autofocus)
- Coloured visualization of deviation
- Intelligent measuring features

Technical Data

- Computer: Industry-PC
- Operating system: Windows
- Software: Coroma 2015
- Measuring accuracy: +/- 0,01 mm of scanning points
- Interfacae: COPRA® RLM, DXF
- Power supply: 110/230 V, 50/60 Hz

(subject to alterations)

COPRA® RollScanner		
Type	**300**	**500**
Measuring accuracy	+/- 0,01 mm	+/- 0,01 mm
Max. roll diameter [mm]	300	460
Max. roll width [mm]	280	500
Approx. Dimensions [m]	1,4 x 0,8 x 1,8	1,7 x 1 x 2
Approx. Weight [kg]	750	1300
Number of axes	3	3

Integrated Roll Management with COPRA® Software Solutions:

- COPRA® RF / Design Software Module
- COPRA® FEA RF / Analysis Software
- COPRA® RF / RLM

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