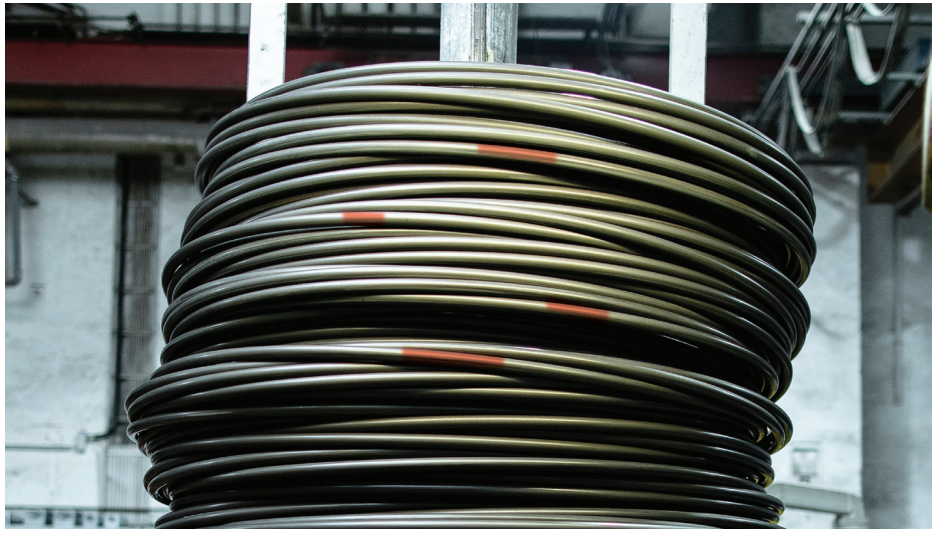
Finkernagel

Detection of surface defects and colour marking

The demands of complex cold heading parts and cold extrusion parts are increasing constantly. Therefore, our processes are aimed at achieving the target of “zero defects”. Despite careful processing, however, this is not always the case with the available raw material because scattered surface defects can result in faulty parts. Although these defects are extremely rare, (< 0.2%), they neverthe-less lead to extra costs.

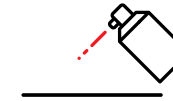


Defects on wire rod can be removed by machining processes such as grinding, peeling or scraping. However, these processes remove the surface along the entire length of the wire, which considerably increases the material price on the one hand and wastes resources on the other. It is far more efficient if defective areas on the wire are detected inline, marked and then sorted out during subsequent processing.

Process flow

Inline eddy current testing is carried out during the drawing process

When a surface defect is detected, a colour-marking pulse is transmitted



Colour marking is applied via marking nozzle

Benefits

- Significant reduction in the quantity of defective parts transferred to subsequent process steps
- Cost-effective alternative for surface inspection upstream from the cold former
- Significant reduction in slip-through in the final inspection of finished components

Requirements

- Wire Ø 6.0-12.5 mm (supplied in layered coils)
- Depth of surface defects in diameter ≤ Ø 10.0 mm min. 0.05 mm; min. 0.08 mm for diameter > Ø 10.0 mm
- An optical sensor integrated into the process monitoring of the cold former is required in order to sort out the defective parts
- The surface inspection is carried out by means of a static eddy current equipment with the inherent application limits of the testing technique. It is therefore not possible to guarantee the freedom of defects.

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