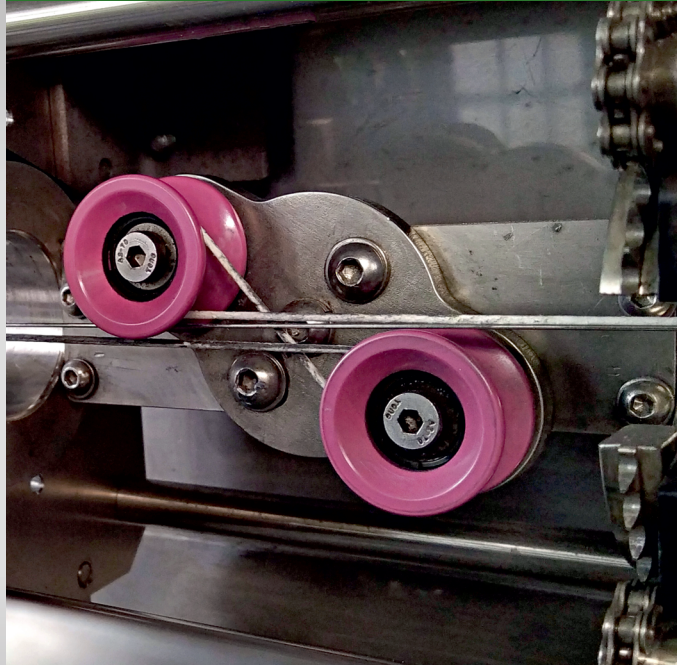
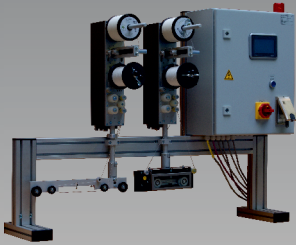


Boockmann
Engineering GmbH



2022



Digital Microscope
for
Wire Surface Examination

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I. Labtech

1 Digital Microscope for Wire Surface Examination

Target

Surface damages on wire, such as

- roughness from rod or strip
- scratches from pulley flanges
- scratches from precision winding
- micro cracks due to too high deformation ratio or slippage of the wire on capstan rolls

are generated in different steps of the production process.

In order to avoid this and systematically improve the wire surface quality, raw material quality and process conditions, especially of drawing and rolling, must be adjusted. To do so, it is necessary to examine and evaluate the wire surface carefully in each production step.

Solution

The digital microscope provides, at reasonable cost, the possibility to visually inspect the wire surface on sample pieces or directly on spools (figure 48). Comparing the surface after different stages of production, ideally the particular process during which a specific type of surface damage is generated, can be verified.

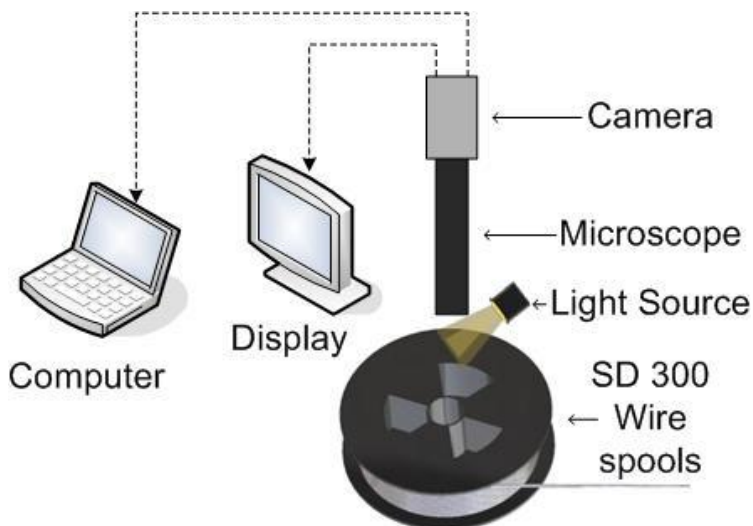


Fig. 45: Schematic

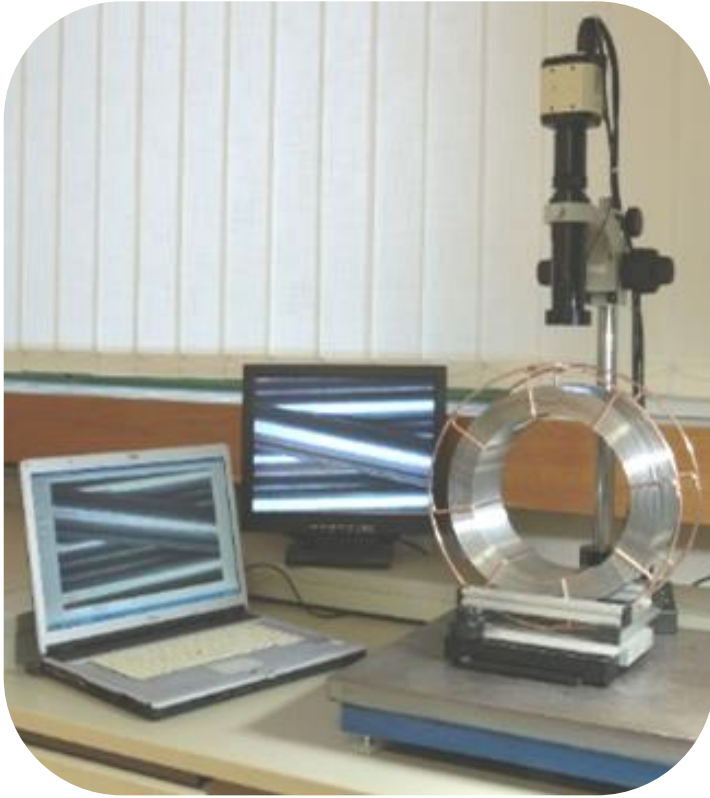


Fig. 48 photograph of the setup

The digital microscope setup consists of

- Reflected-light microscope with 11-fold optical zoom
- 15" XGA color monitor
- Object table with stand column
- Precision xy-cross table with additional holders for
 - a. wire spools (up to dimension of SD 300, see fig.: 48) and
 - b. wire segments \varnothing 0.5 to 3 mm and 200 mm length; 360° observation by wire rotation around its longitudinal axis
- LED ring light for vertical lighting
- LED spot light (2.3 W) for inclined lighting
- High resolution camera with direct and USB video output

and comes with a CD with basic PC software that allows storing individual pictures and short videos.

Options

- Two additional lenses providing magnifications 90x - 1,000x (about 45 mm focal distance) and 22x - 250x (about 180 mm focal distance) available. [Remark: The higher the focal distance, the higher is the depth of sharpness.]
- Software for enhancement of depth of sharpness
- PC or notebook with Microsoft Windows operating system

Technical Data

Microscope		
Magnification (with respect to a 15" monitor)		45x to 500x
Focal distance (microscope to object) (mm)		90
Video Camera		
Resolution	Direct video output (pixel)	1,024 × 768 (XGA)
	USB output to PC (pixel)	1,600 × 1,200 (UXGA)
Power supply		100 - 240 V / 50 – 60 Hz (P + N), max. 1.0 A
Monitor		
Screen size (inch)		15
Resolution (pixel)		1,024 × 768
Power supply		100 - 240 V / 50 – 60 Hz (P + N + PE), max 1.5 A
Object table		
Lateral dimensions (mm)		400 × 400
Height of stand column (mm)		about 560
Precision xy-cross table		
Lateral dimensions (mm)		180 × 155
Lateral working range (mm)		65 × 76

Table 19



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