# New Methods for Testing Recycled Fibres

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Felix Liebhold, Textechno H. Stein GmbH & Co. KG

# The Textechno Group:

Textechno
textile testing technology

LENZING INSTRUMENTS

*~ 60 Employees in Germany*
*~ 25 Employees in Austria*

*Very high production depth*

*Expertise coming from man-made fibre and yarn testing*

made in Germany

# Application Fields for Textechno Testing Instruments

We offer a comprehensive range of ~30 instruments for quality control in the textile industry

**Man-made Fibres**

Individual fibres and filaments

**Filament Yarns**

POY, FDY, DTY, ATY, IDY, BCF

**Spinning Mills**

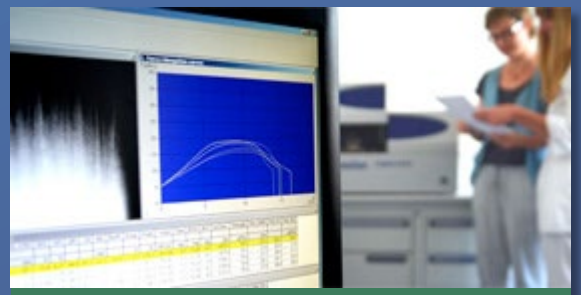
Natural fibres, blends, slivers, rovings, spun yarns

**Composites**

Reinforcement fibres and fabrics

**Recycling & Natural Fibres**

Any type of fibre, regardless of material and colour



**Complete Laboratories**

Layout and supply, training of operators, consulting

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# Critical Properties of Mechanically Recycled Fibres


1 • Length
4 • Tenacity
} FIBROTEST

2 • Yarn Content
3 • Nep Content
} MDTA 4 + CLIF

5 • Fineness → FIBROFLOW

6 • Colour → FIBROCOLOR

Order of importance in our experience



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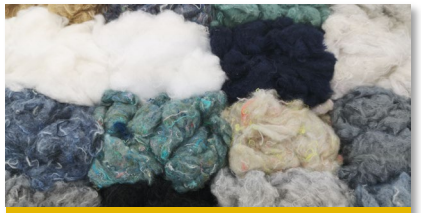
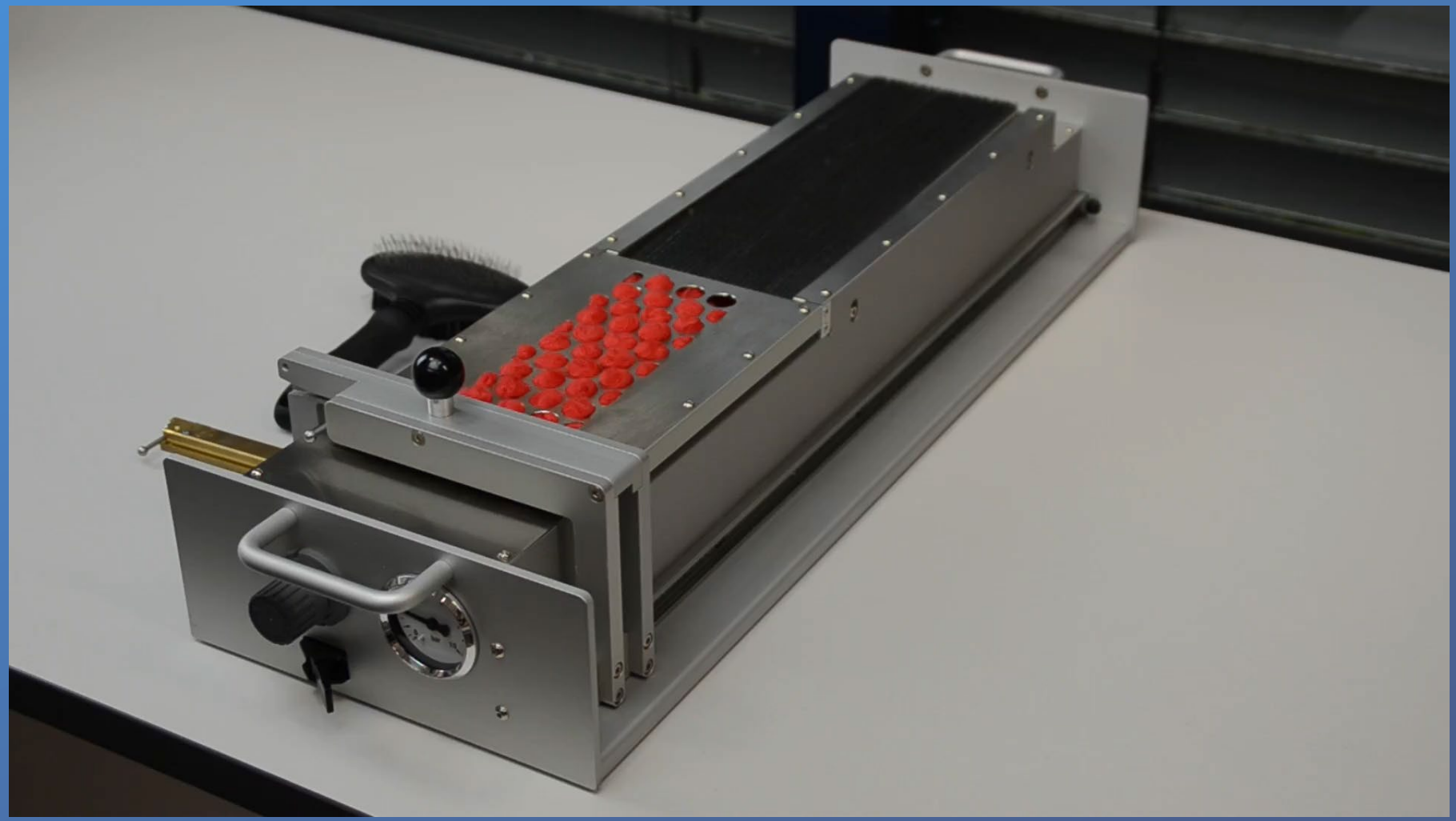
# FIBROTEST

## Fibre length and strength testing

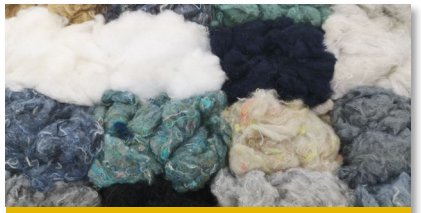


Recycling & Natural Fibres



Sample preparation and test procedure

# FIBROTEST: Testing of Recycled Technical Fibres




*Example: Recycled Para-aramid fibres*

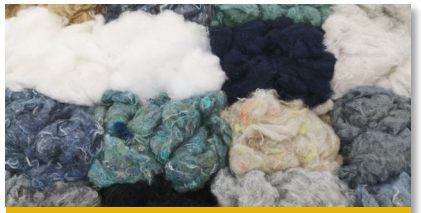
*photo of fibre bundle*

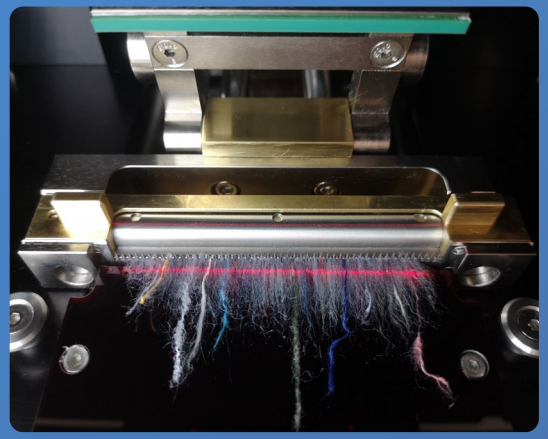
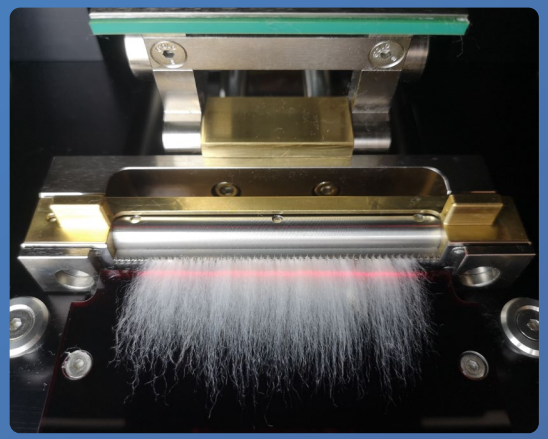
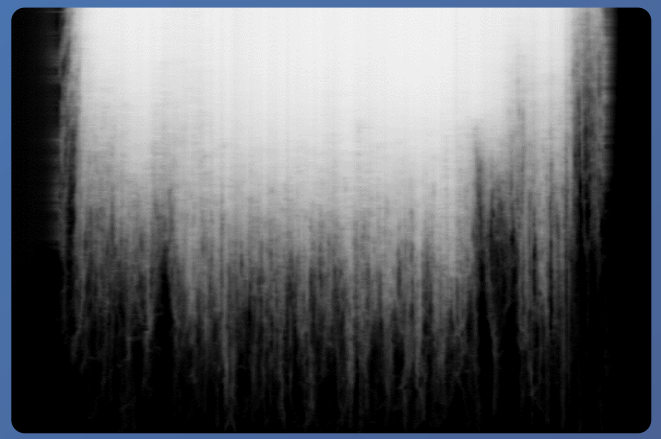
*line camera image*

*Fibre length distribution of any type of fibre*

*Lengths up to 200 mm*

# FIBROTEST: Recycled vs. Virgin Cotton




| | *photo of fibre bundle* | *line camera image* | *exemplary values* |
|---|---|---|---|
| *Mechanically recycled cotton:* |  |  | ▪ UHML: 19.5 mm<br>▪ UI: 73.3<br>▪ SFC: 42.7 %<br>▪ Rel. Strength: 17.1 g/tex<br>▪ $E_{max}$: 4.5 % |
| *Virgin cotton:* |  |  | ▪ UHML: 26.8 mm<br>▪ UI: 80.7<br>▪ SFC: 14.8 %<br>▪ Rel. Strength: 31.5 g/tex<br>▪ $E_{max}$: 9.6 % |

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↑

Order of importance
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# CLIF

## Classification of Impurities in Fibres


# CLIF

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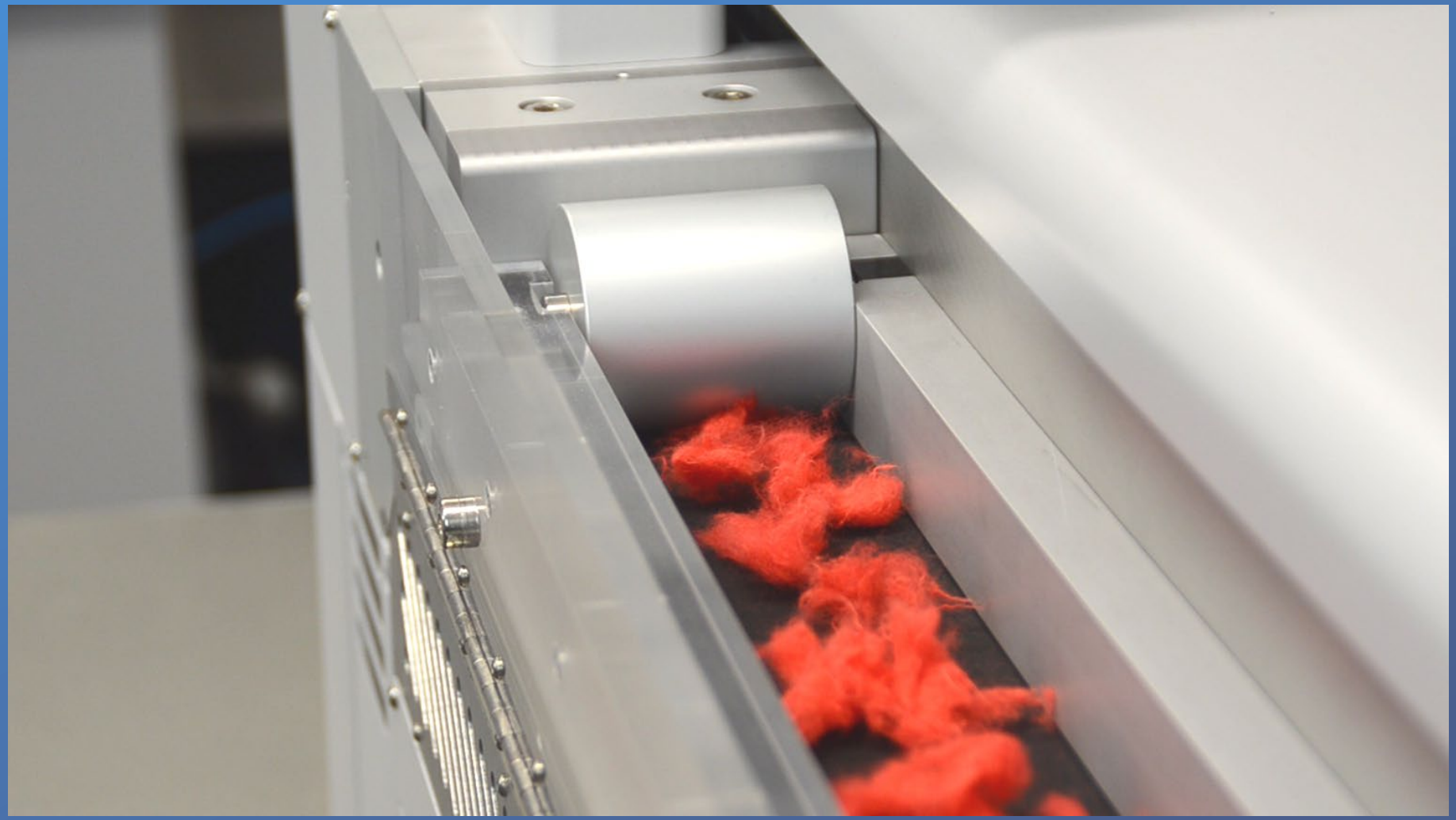


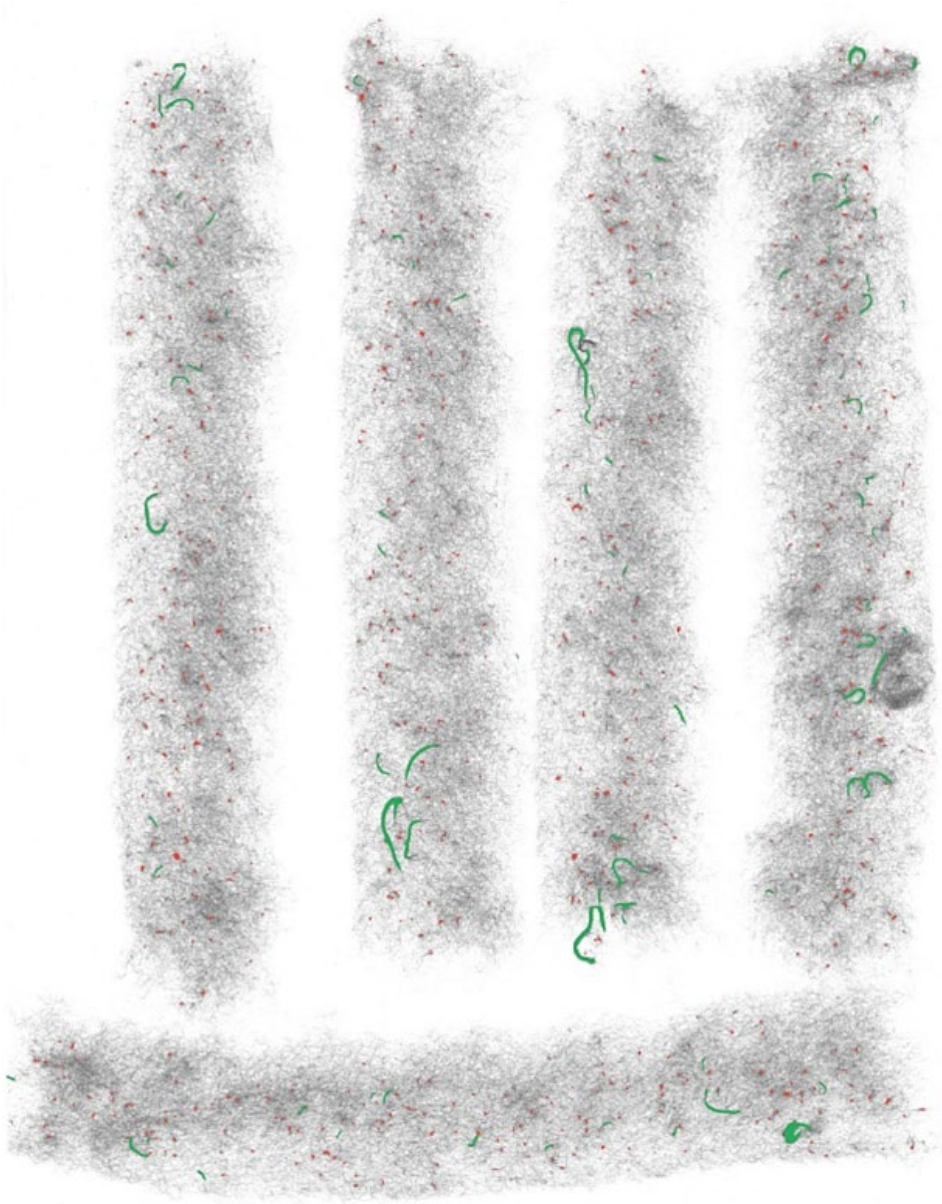
MDTA 4 sample placement

# CLIF

## Classification of Impurities in Fibres

- Step 1: Placement of Impurities collected in the Waste-Box Container on transmitted-light Scanning Device
- Step 2: Placement of Sliver Specimen on transmitted-light Scanning Device
- Scanning into High-Resolution Image
- Analysis of Impurities by AI-based Image Processing

Red: Neps
Green: Yarn sections



# CLIF

## Classification of Impurities in Fibres

Scanned and processed image of sliver specimen, prepared by ROTORRING of MDTA 4

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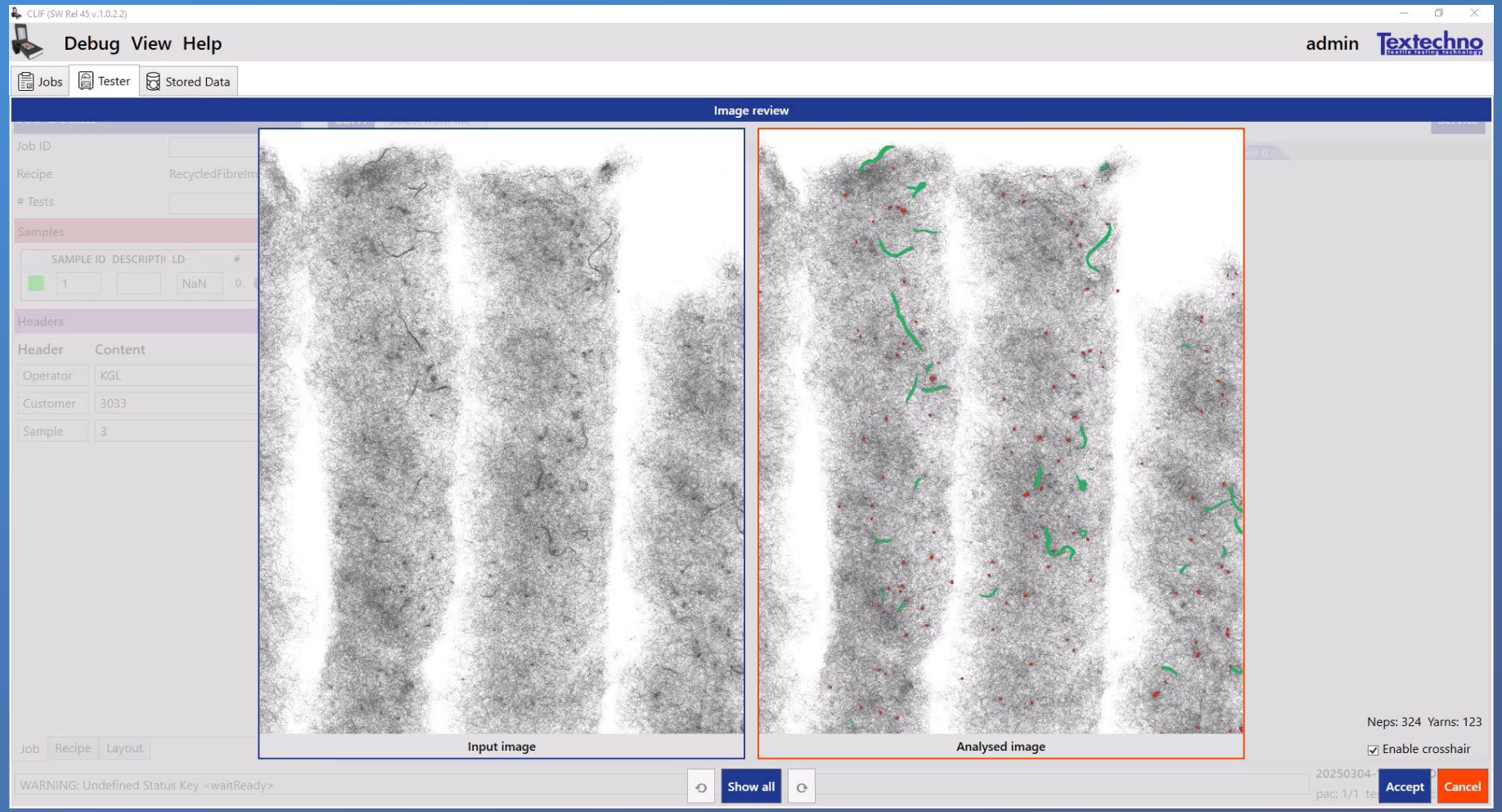
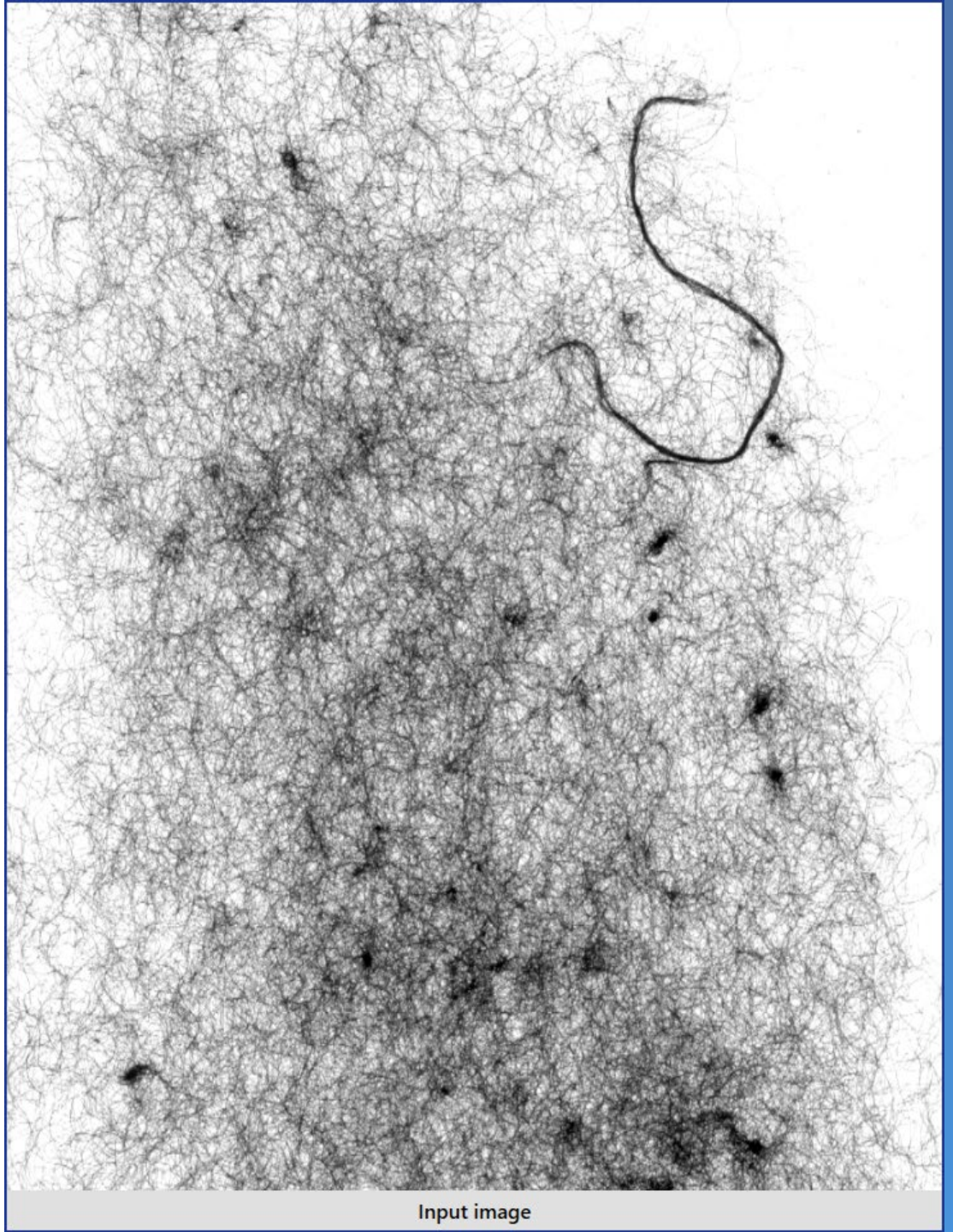
# CLIF

## Classification of Impurities in Fibres




- Analysis of neps and yarn sections

Red: Neps
Green: Yarn sections




# CLIF

## Classification of Impurities in Fibres

Zoomed scanned image of sliver specimen, prepared by ROTORRING of MDTA 4

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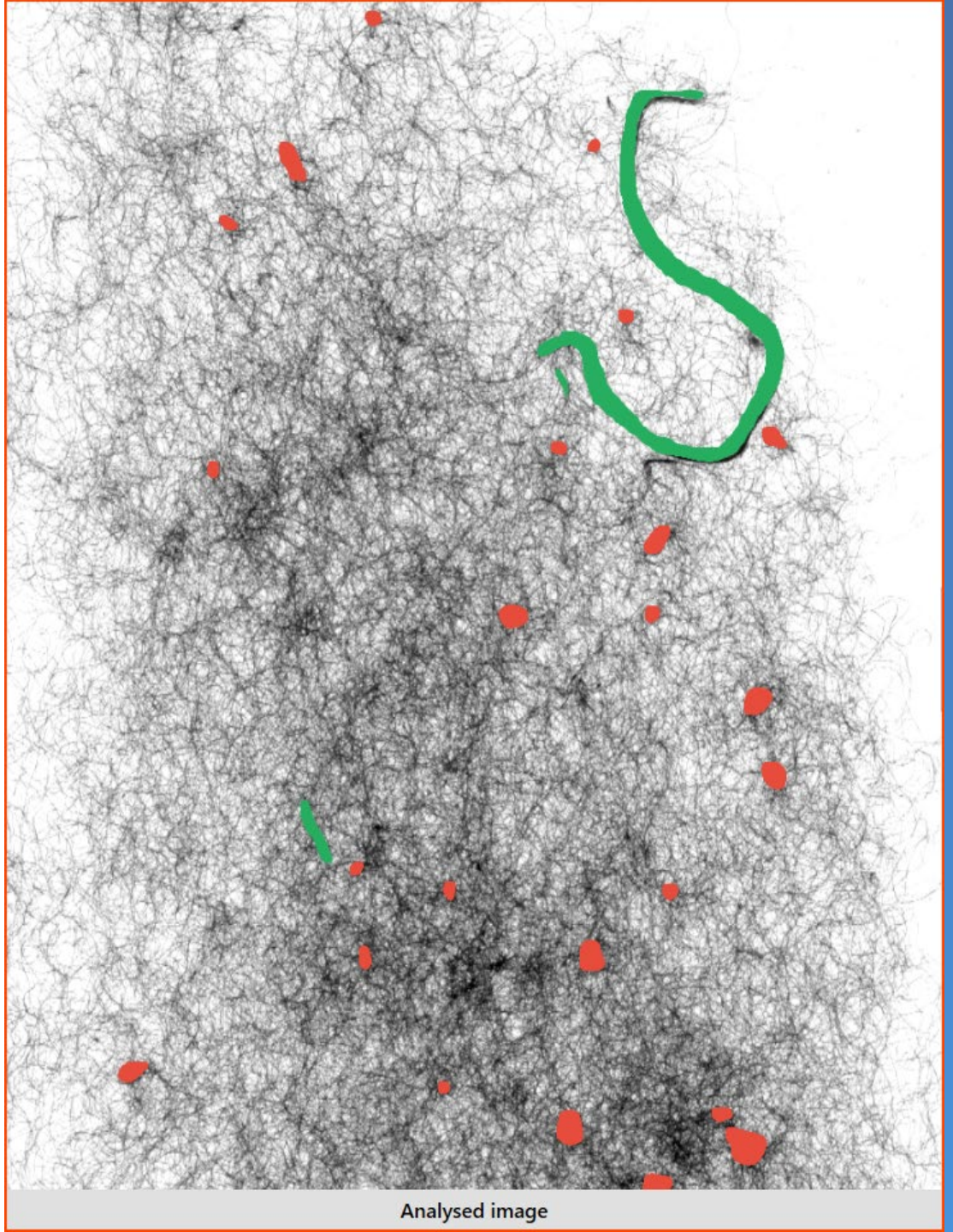
Red: Neps
Green: Yarn sections



Analysed image

# CLIF

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Zoomed processed image of sliver specimen, prepared by ROTORRING of MDTA 4

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YouTube

Check out Textechno's YouTube channel for detailed product videos!



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# What's next? Let's talk!

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