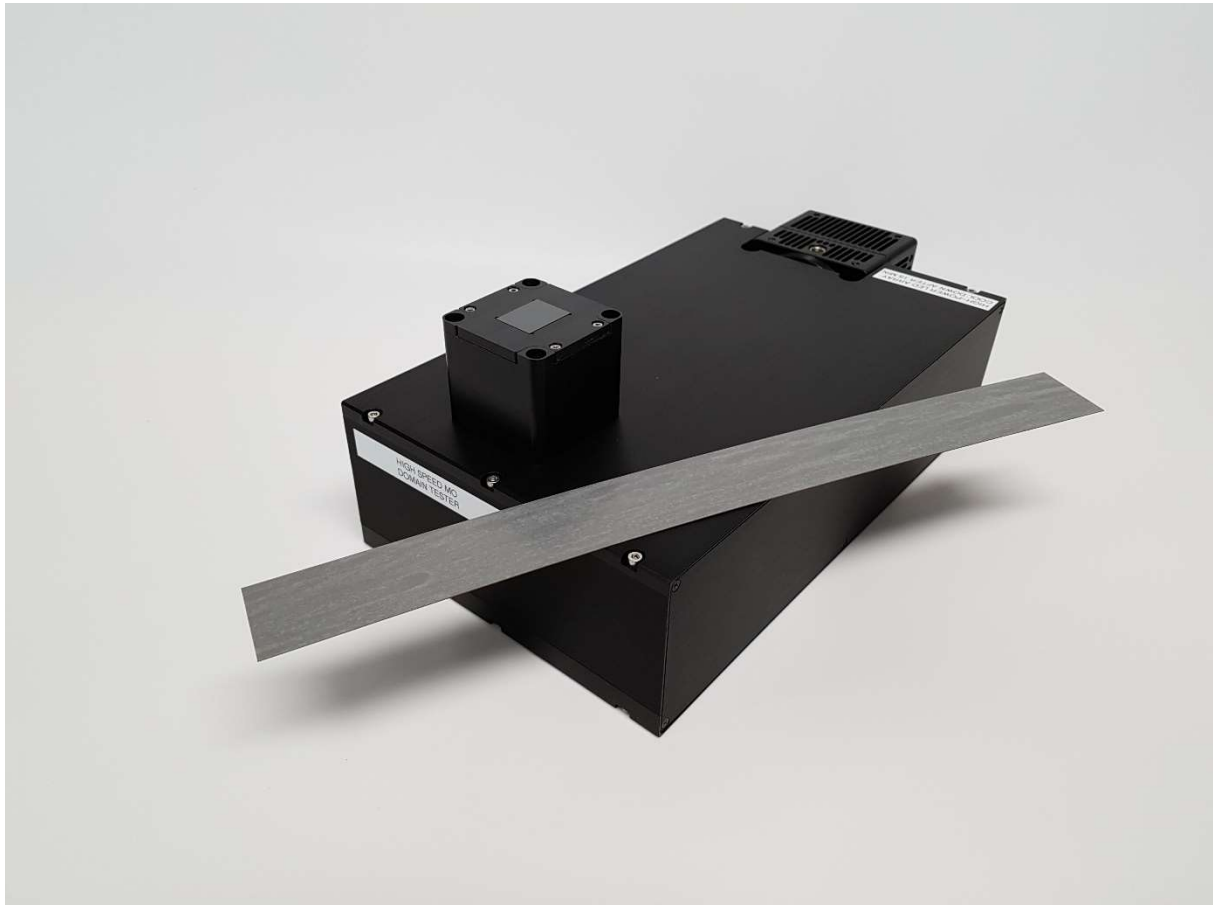# *Domain Tester*
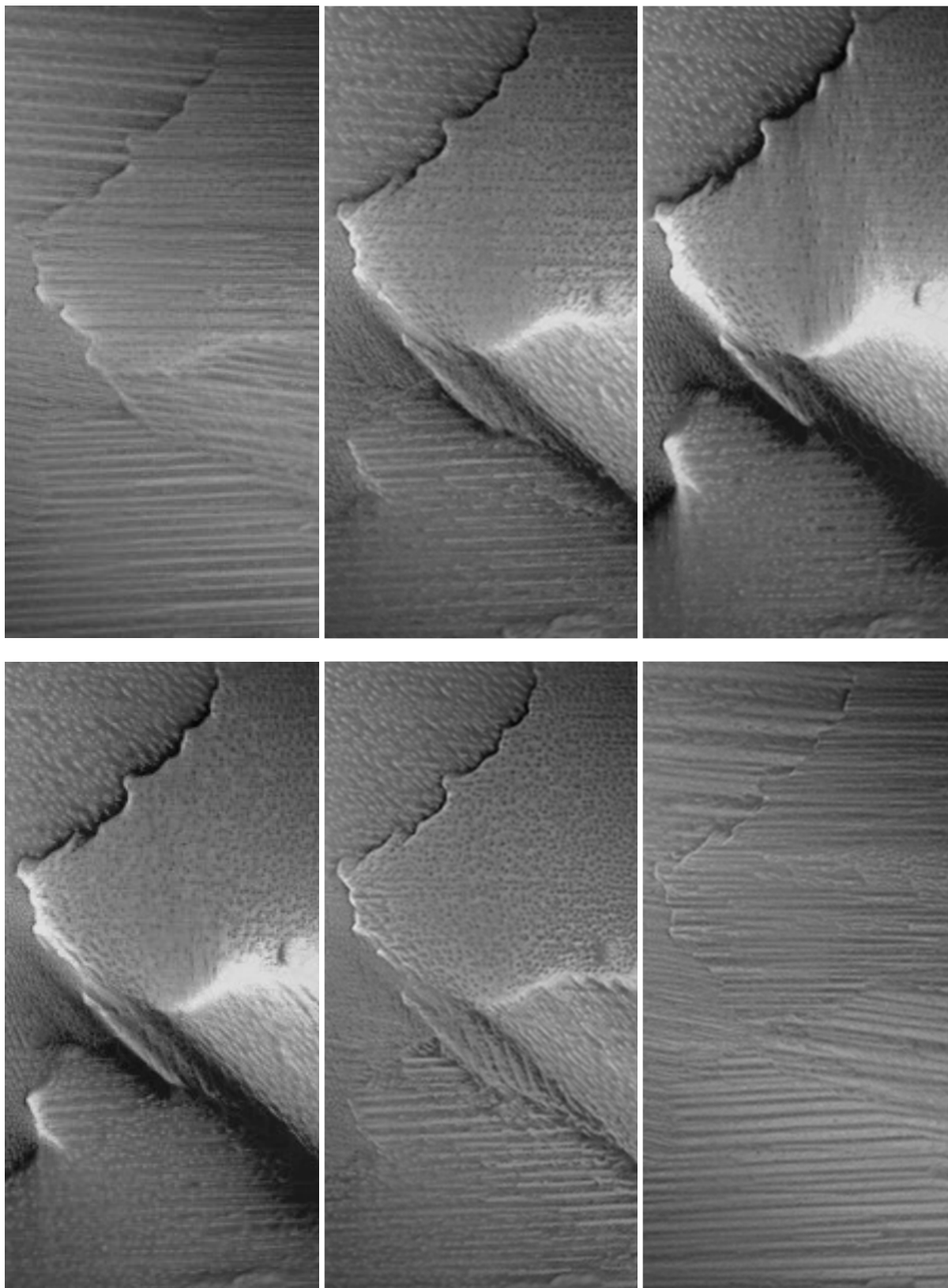## *Domain observation of grain-oriented electrical steel sheets*

The Domain Tester is specially designed for an effective investigation of the domains of electrical sheets (SiFe alloys) under AC field conditions. The grains of electrical sheets form different magnetic domains. Depending on their crystallographic orientation, different types of domains are formed, which are characteristic for core losses.


Domain tester with elevated MO sensor head for AC testing of electrical sheets.

With the Domain Tester, the domain structure can be observed and documented statically as well as dynamically (during remagnetization). The following properties of electrical sheets can be investigated:

- Domain structure,
- Grain structure,
- Grain sizes,
- Crystallographic orientation of grains in the plane,
- Local defects,
- Domain behavior during remagnetization.

Change in the domain structure of a grain-oriented electrical steel sheet (GOES) during magnetization (increasing flux) and demagnetization (decreasing flux, 1st quadrant): Based on the individual images, the different domain behavior within the different grains is clearly visible, which is indicative of a grain misorientation.
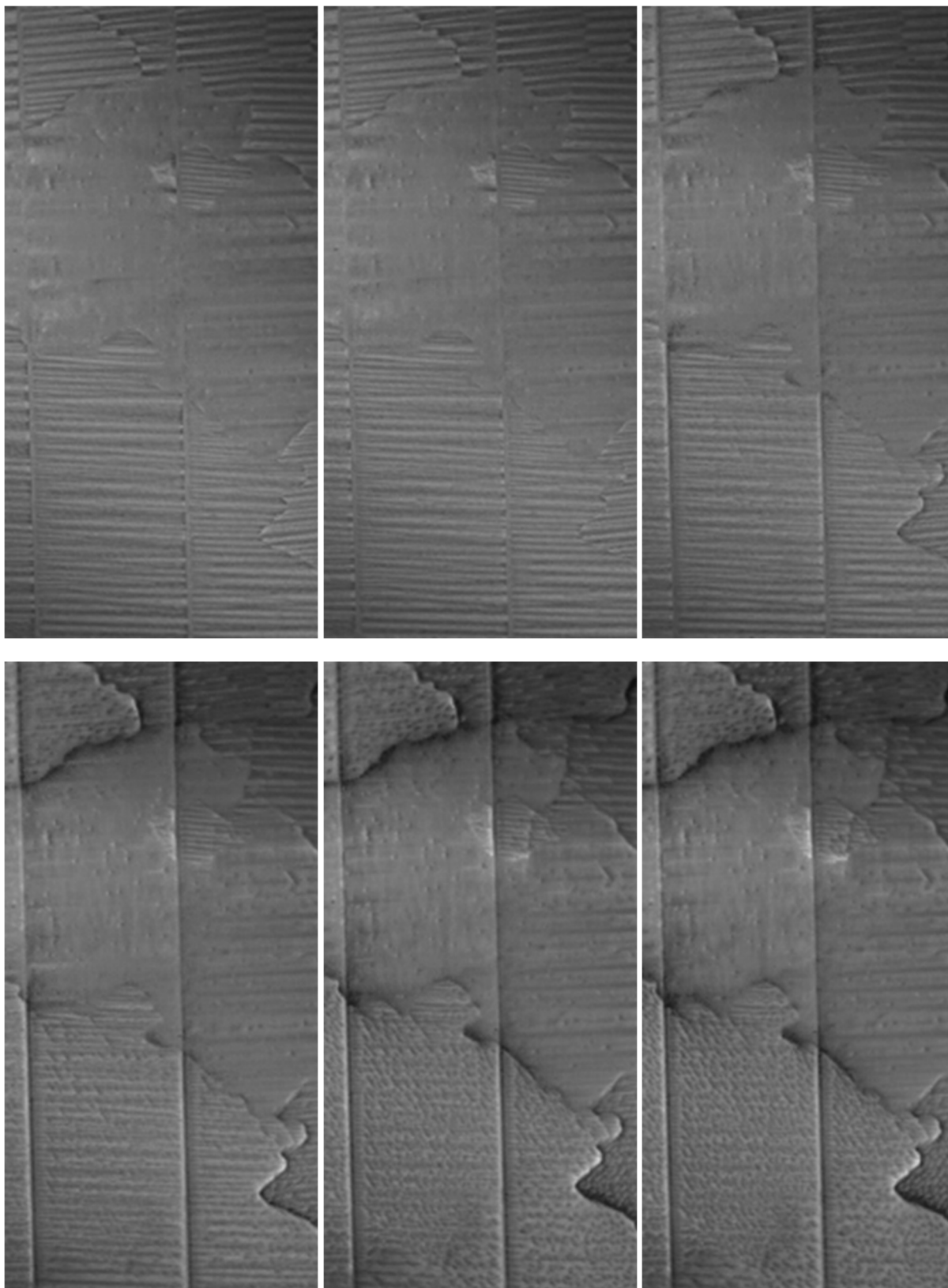
Change in domain structure during magnetization of a refined GOES electrical sheet: Based on the individual images, the different domain behavior within the various grains under increasing flux is clearly evident, which indicates misorientation of the grains (even after laser refinement).

The great advantage is that time-consuming specimen preparation is no longer necessary. The electrical sheets can be examined non-destructively without having to mechanically remove the insulation layer and polish the surface. Thus, in contrast to Kerr microscopy and MPI (magnetic particle inspection), a fast and high-resolution method is available to investigate the magnetic properties of electrical sheet.

Instrument configuration

Domain Tester

Active sensor area domain tester:	18 x 13 mm
Resolution:	1 pixel = 14 µm
Image acquisition frequency for dynamic testing:	8 kHz
Video sequence (output):	MP4 format, 30 s at 60 frames / s
Alternating field frequency:	up to 400 Hz (yoke-supported), sinusoidal, triangular
Number of frames per single period:	160 frames at AC field = 50 Hz

For further information please contact us directly

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