

### What does it do?

The CutiScan measures the lateral skin displacement during circular suction/relaxation by video (optical flow). It offers a new dimension of looking at the mechanical properties of the skin (viscoelasticity & anisotropy).

### The Principle

The probe combines mechanical force with imaging. It consists of a suction which draws the skin uniformly in all directions with a constant negative pressure provided inside the CutiScan-device for some seconds. Then it releases the applied pressure completely again for some seconds. During the suction and recovery time a high resolution CCD camera inside the probe monitors the displacement of each pixel by an optical flow algorithm (Horn-Schunk method) in a video. From that video an overall graph is made.

From these graphs interesting measurement parameters can be calculated. Each direction in the graph leads to a curve of suction vs. relaxation (related to those known from other mechanical measurement methods for the skin).

The higher the skin's ability to resist the displacement, the firmer the skin. According to its elastic/viscoelastic properties skin cannot get back to the original position immediately after the pressure has stopped.

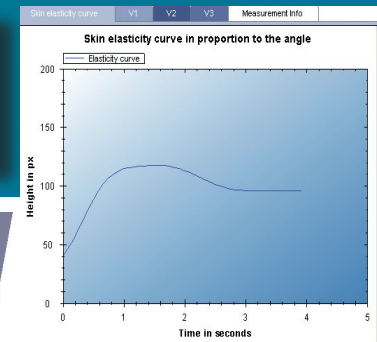
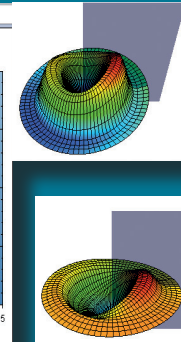
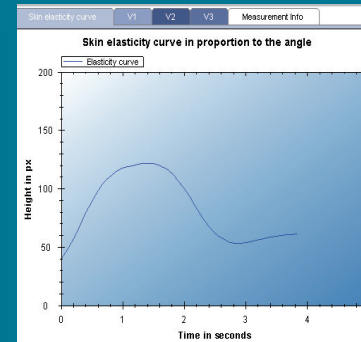
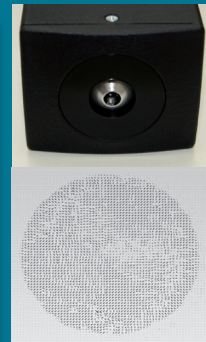
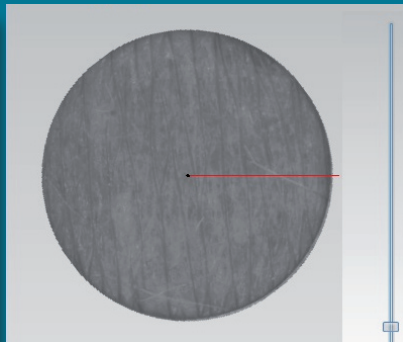
When looking at the skin displacement in all directions, it becomes visible that in some directions the displacement and the returning rate are higher than in others depending on the linearity of the skin (anisotropy).

### Fields of Application

There are no limits to applications in efficacy testing and dermatology wherever skin aging and elastic properties play a role.

### Advantages

- Completely new & promising approach
- Information not only about the elastic & viscoelastic properties but also on anisotropy and directionality of the skin
- For each measurement a complete video is available
- From that video 360 elasticity curves can be seen and a curve per 10° is saved in Excel®.
- Overall measurement graphs are available for maximum and minimum amplitude as well as for viscoelasticity. They can be easily transferred into Excel®.



### Technical Data

Device: Dimensions: 39 x 22.5 x 7.6 cm, Weight: 4.1 kg, Power supply: external 100-240 VAC, 47-63 Hz, DC 12V/4A, Port: USB; Probe with integrated camera unit: Dimensions: 14.5 x 5.5 x 4.7 cm, Weight: approx. 370 g, Suction ring: 14 mm Ø, Connections to device: pneumatic & USB, Cable length: 150 cm; Camera module: Image area: 5 mm Ø, Resolution: 1280 x 1024 pixel (approx. 1.3 Megapixel), Illumination: 20 UV-LEDs, (395nm - 400nm)  
Measurement principle: suction (pressure setting up to 500 mbar) with simultaneous video of the displacement of the single image pixels, Units: displacement in pixel. Technical changes may be made without prior notice.

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