Trust your eyes.
SCHWIND SIRIUS
The SCHWIND SIRIUS combines a 3D rotating Scheimpflug camera with an integrated Placido disc topographer.

- This “two in one system” allows for a fast and complete analysis of both, the entire cornea and the anterior segment in one step.
Tyndall effect

Tyndall effect is a phenomena of light scattering by coloidal particles or particles in suspension.

http://en.wikipedia.org/wiki/Tyndall_effect

This principle is commonly used in slit biomicroscopy.
Why a double technology?

SIRIUS merges data by the Arc-Step (Placido disk) reconstruction to the ones by Scheimpflug image, taken at the same time by 2 different cameras

The integration of the two technologies allows to obtain the accurate measurement in elevations, curvature and power terms for the entire cornea

Scheimpflug images give accurate corneal elevation data for the complete anterior segment

Arc-step reconstruction gives better results on the representation of curvature and refractive powers
Based on a rotating Scheimpflug Camera a 3-dimensional Analysis of the Anterior Eye Segment is obtained.

25 Scheimpflug images and 1 Placido disc image are acquired in less than 1 sec

- 22 placido rings
- >100 000 analysed points
- Coverage up to 12 mm

Providing 2-D corneal maps (Topography) and a 2-D Pachymetry map of the Cornea.
SCHWIND SIRIUS
Static Cyclotorsion for Corneal Wavefront

Static Cyclotorsion for Corneal Wavefront (SCC) (optional)

„in combination“ with SCHWIND AMARIS
With the integrated pupillometer the diameter of the pupil can be captured either in static or dynamic conditions under defined light conditions.

Scotopic: 0.04 lux

Mesopic: 4 lux

Photopic: 40 lux
SCHWIND SIRIUS
APPLICATIONS overview

Anterior Segment Analysis
(Integrated Scheimpflug camera)
• Corneal and anterior segment analysis
• Posterior corneal topography
• Anterior chamber analysis
• Tangential and axial curvature for the posterior corneal surface
• Corneal pachymetry up to 12 mm diameter

Topography
(Combined with Placido disc)
• Anterior corneal topography
• Tangential and axial curvature for the anterior corneal surface
• K-readings and asphericity
• Corneal wavefront analysis and visual quality simulation
• Keratoconus screening
Comprehensive information for treatment planning of Corneal Wavefront or Lamellar Keratoplasty

Maps

- Refractive power for the anterior and posterior corneal surface and equivalent power
- Altimetric maps referred to various surfaces
- **Tangential** and axial curvature for anterior and posterior corneal surfaces
- **Corneal thickness map** and anterior chamber depth
- **Corneal wavefront**
- Differential maps of up to 3 maps
- Comparison of up to 4 maps
SCHWIND SIRIUS
Clinical example of a keratoconus patient (OD)
SCHWIND SIRIUS
Clinical example of a keratoconus patient (OD)

map summary
SCHWIND SIRIUS
Clinical example of a keratoconus patient (OD)
**Rbf**: (Best-Fit Radius) is the millimeter measurement of the apical curvature radius of a best-fit ellipsoid. This value tends to decrease in those eyes affected by keratoconus.

**BCV**: (Baiocchi-Calossi-Versaci index) the corneal thickness thinning causes a bowing of the temporal-inferior corneal zone with the following symmetry-loss of the topographic map. The BCV index is used to evaluate, by the analysis of the coma and trifoil terms. The evaluation of the presence and of the status of any ectasia in the zone in which statistically the keratoconus is growing.

**C(4.0)**: the statistical analysis shows that in advanced (or central) keratoconus a statistical conspicuous alteration in direction of the primary Spherical Aberration.

**TL**: Minimum thickness is a worth screening parameter used in the evaluation of the compatibility and follow-up.

**KPI** shows the compatibility “keratoconus probability index”  
**PPI** shows the compatibility with “pellucida probability index”.
SCHWIND SIRIUS
ORK-CAM Export (clinical example)
**SCHWIND SIRIUS**  
PALK-CAM Export (clinical example)

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**Maps**
- Thk = 506 μm
- Curv = 59 D

**Pachymetry**
- Central = 490 μm
- Min = 480 μm
- Max = 743 μm

**K-Readings (Sim.K @ 3.0 mm)**
- K1 = 50.46 D @ 30°
- K2 = 53.23 D @ 120°
- Avg K = 51.81 D

**Topographic pupil**
- Ø = 4.45 mm
- Offset to vertex = 0.15 mm @ 32°

**Additional information**
- Maximum exported Ø = 7.89 mm
- Acquisition date: 07.05.2009
- Acquisition time: 17:21

**Min required export diameteter 7.25mm**
The perfect combination for refractive and therapeutic corneal surgery

“In combination“ with SCHWIND AMARIS and CAM 4.3
SCHWIND SIRIUS
System Combinations

Single Workstation
SCHWIND SIRIUS
Panel PC

Combi Workstation
SCHWIND SIRIUS
Ocular Wavefront Analyser (IRX3)
Panel PC
SCHWIND SIRIUS
Benefits at a glance

**Unique data quality**
- Precise corneal data up to 12 mm diameter
- High resolution for corneal wavefront
- High repeatability of the measurements

**Practical features – easy to use**
- Two diagnostic systems in one
- Easy and fast handling
- Support for data interpretation
- Simulation of visual quality
- Keratoconus screening

**Precision/Repeatability**
- Comprehensive Anterior Segment Analysis

**Usability**
- Customization

**Broad range of Applications:**
- Information of the entire cornea (curvature and thickness)
- Information of the anterior and posterior corneal surfaces
- Information of the anterior segment

**Valuable for data export**
- Export to SCHWIND CAM:
  - Export of corneal Wavefront to Module ORK-CAM
- Export of pachymetric data to Module PALK-CAM
- Export to AMARIS with Static Cyclotorsion for Corneal Wavefront (SCC)

The perfect combination for refractive and therapeutic corneal surgery
...Thank U!

Thomas Magnago
Dipl.-Ing. (FH)

Head of Division Customer Support

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