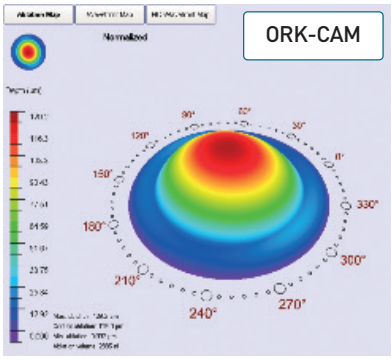
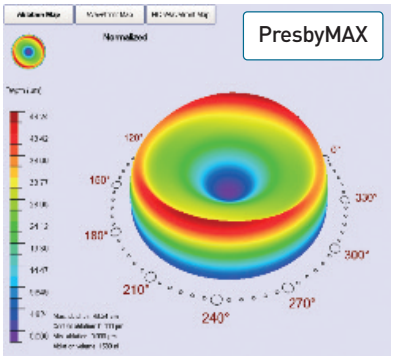
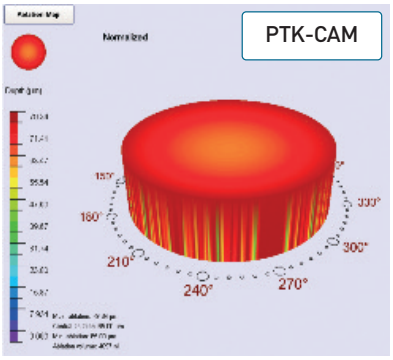
SCHWIND
eye-tech-solutions

SCHWIND CAM
Perfect Planning –
wide range of applications







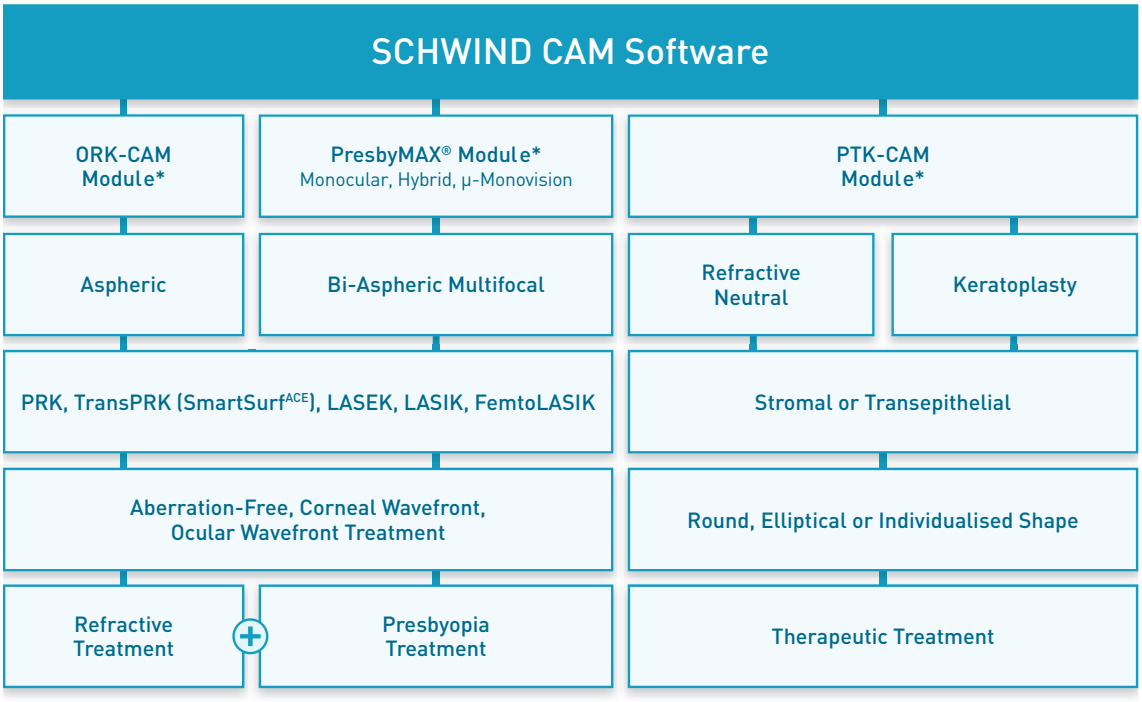
SCHWIND CAM – the system solution

The modular design of the SCHWIND CAM offers customised treatment planning for a uniquely broad range of applications. The ORK-CAM and PresbyMAX modules are used in refractive corneal surgery. The PTK-CAM is used for therapeutic treatments.

Whether corneal wavefront, ocular wavefront or corneal pachymetry, all of the necessary diagnostic data are included in the planning. Furthermore, the data can be conveniently imported from the diagnostic system into the software. This ensures that no important information concerning the individual ablation is overlooked. Practice-related default settings enable you to achieve optimal treatment results. Of course, you can also adjust individual parameters to suit your personal requirements and preferences. Each setting, for example the residual stromal thickness, is checked for plausibility, thus ensuring that each and every treatment is planned safely and conveniently.

Static cyclotorsion control can be performed with all of the modules and with each ablation profile. Parameters such as the expected postoperative corneal keratometry, colour coding of the refraction types and a virtual keyboard offer extra convenience.

The planning files can be created in advance with a minimum of time and effort. Treatment is planned either on the SCHWIND diagnostic systems or directly on the SCHWIND AMARIS laser systems.



*with Static Cyclotorsion Control

Refractive treatment

ORK-CAM module

The ORK-CAM is an intelligent planning tool for refractive laser treatment. Aspheric ablation profiles are employed for aberration-free and customised treatments based on corneal or ocular wavefront data. These profiles minimise the induction of aberrations and provide superb contrast vision.

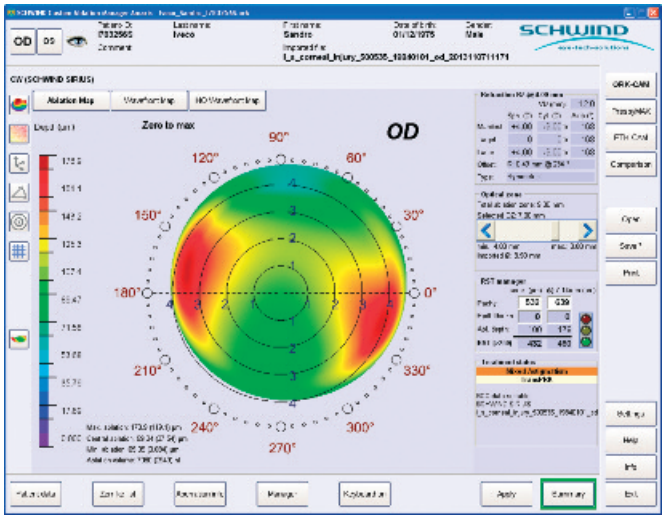
Aberration-free treatment: Only spherical and/or cylindrical refraction values are corrected. The patient retains his normal visual perception. This procedure is suitable for patients whose vision is not impaired by pronounced higher-order aberrations.

Customised treatment: Corneal or ocular wavefront data from the high-resolution SCHWIND diagnostic systems are directly integrated in the planning. This procedure is of particular relevance for patients with higher-order vision defects.

Centration strategies: You can already enter a treatment offset during planning for the centring of sphere and cylinder. You can choose between two strategies. The symmetrical option centres the treatment zone on the visual axis or corneal vertex. With the asymmetrical strategy, the treatment zone is concentric to the pupil. This means that it is no longer necessary to enlarge the optical zone, and tissue is saved. Both options can be used for aberration-free and customised treatments.

"Minimise" functions: The ablation volume and depth can be adjusted in customised treatments with the aid of "minimise" functions. The advantage: less tissue ablation and shorter ablation times.

Dynamic transition zone: For every treatment, the ORK-CAM calculates the optimal size of the transition zone – depending on the refraction, the treatment method and the optical zone. This shortens the planning process for your treatment and ensures the smallest possible tissue ablation.



Hyperopic ablation profile with corneal wavefront

Myopic ablation profile with ocular wavefront

Wide range of treatments: All key treatment methods can be performed with the ORK-CAM. In addition to LASIK and Femto-LASIK, this also includes surface treatments such as TransPRK (SmartSurf^{ACE}), PRK and LASEK.

Enlargement of the optical zone: The optical zone can always be set optimally, even if the wavefront data available for a customised treatment are limited, as a result of small pupils, for example. This optimisation is ensured by a peripheral, aspheric enlargement of the treatment zone.

Ablation per pulse: The pulse efficiency of laser ablation is dependent on the tissue depth and cell structure. A LASIK procedure ablating deeper tissue layers requires different parameters from those needed for a surface treatment or treatment of the cornea after corneal collagen crosslinking.

For this reason, the ORK-CAM defines the ablation per pulse depending on the treatment method and the characteristics of tissue. No personalised nomograms are required.

Presbyopia treatment

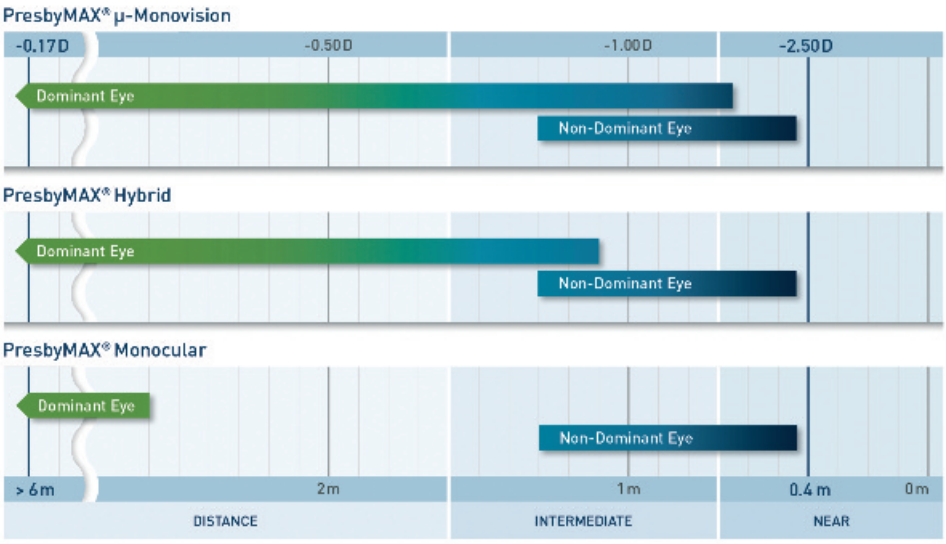
PresbyMAX® module offers three treatment types

PresbyMAX allows safe and efficient treatment of emmetropic, myopic and hyperopic patients as well as patients with astigmatism whose accommodative response is restricted.

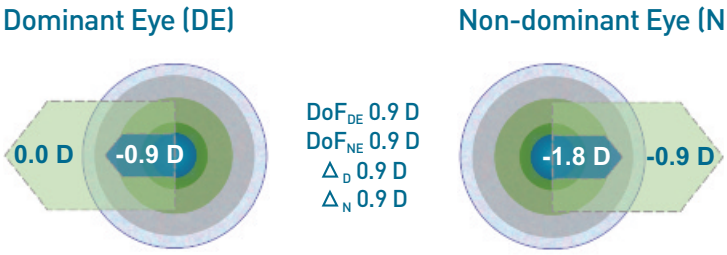
Bi-aspheric profiles: PresbyMAX is based on bi-aspheric, multifocal ablation profiles. For each of the patient's eyes, the central region of the cornea is optimised for near vision and the peripheral region for far vision.

Binocular vision: Both eyes contribute to visual acuity at all distances. In other words, both eyes are active in the visual process and ensure binocular perception.

Comfortable vision at all distances: Your patients obtain comfortable vision at all distances because PresbyMAX, according to the selected type of treatment, optimally increases the depth of focus and minimises contrast losses.



Range of vision at all distances after treatment with PresbyMAX



PresbyMAX µ-Monovision: Planned refractive outcome in dioptres (D)

PresbyMAX Hybrid: Planned refractive outcome in dioptres (D)

PresbyMAX Monocular: Planned refractive outcome in dioptres (D)

Legend:
Addition: +1,75 D
D: Dioptre
DoF$_{DE}$: Depth-of-Focus Distance Eye
DoF$_{NE}$: Depth-of-Focus Near Eye
Δ_D: Anisometropia for Distance
Δ_N: Anisometropia for Near

Cornea | Transition Zone | Distance area | Intermediate area | Near area

Uniquely wide range of treatments: Every visual condition can be corrected with an Aberration-Free treatment – the options are: PRK, TransPRK (SmartSurf^{ACE}), LASEK, LASIK, FemtoLASIK or Re-Lift.

Combined, high-precision ablation profile: PresbyMAX creates a highly accurate ablation profile, which includes sphere, cylinder, corneal vertex distance and addition alongside an adequate optical zone.

Ablation in just one step: The SCHWIND AMARIS ablates the combined ablation volume gently by the flying spot method – in just one step.

Treatment types: With PresbyMAX treatment, you can choose from three different types.
PresbyMAX µ-Monovision creates the same depth of focus in both eyes. However, the dominant eye focuses slightly more towards far vision and the non-dominant eye more on near vision.
PresbyMAX Hybrid, like µ-Monovision, is based on the same refractive target values. But in contrast, a different depth of focus is created in the dominant and non-dominant eye. Patients benefit from fast recovery of visual acuity and excellent vision at all distances.
With **PresbyMAX Monocular**, no depth of focus is created in the dominant eye. The same depth of focus as with the other proven PresbyMAX types is achieved for the non-dominant eye. This results in a particularly high quality of distance vision.

"Presby Reversal": This function makes it possible to remove the induced multifocality partially or entirely.

Therapeutic treatment

PTK-CAM module

The PTK-CAM module provides support for therapeutic treatments: both superficial and deep corneal scars and corneal degeneration can be corrected precisely. You can choose between superficial refractive-neutral or deep ablation for keratoplasty. PTK-CAM is based on the method of photo-therapeutic keratectomy (PTK).

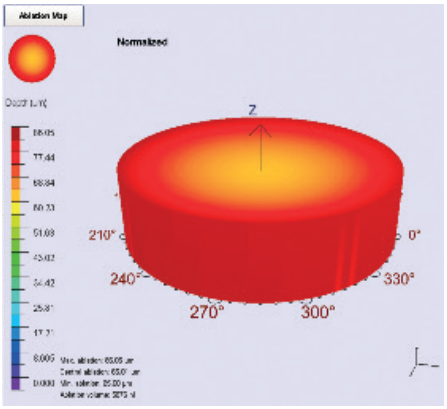
Two offset options: PTK-CAM offers two positioning options for laser correction. The so-called ablation offset allows the entire profile to be shifted in accordance with the cornea findings. The laser ablation can be moved to the corneal vertex by means of the pupil offset.

Simultaneous use of both options ensures the highest possible precision, thus enabling exact, topographical correction of superficial scars.

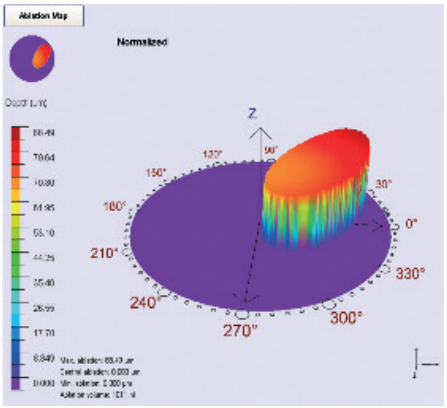
Circular, elliptical or individualised: The PTK-CAM module can ablate the tissue in circular, elliptical or individualised shapes within a maximum diameter of 10 millimetres. You can freely select the profile and appropriate ablation depth according to your clinical requirements.

Two ablation types: The epithelium is removed manually, followed by laser ablation. Alternatively, the tissue can be ablated through the epithelium. With this option, TransPTK ensures optimal ablation.

The profile takes into account the differing ablation behaviour of the epithelium and stroma.



Circular ablation profile



Elliptical ablation profile

Refractive-neutral: With the PTK treatment method, the length of the eye between the anterior corneal surface and the retina is shortened. This shifting of the focus in relation to the retina is included in the ablation profile. Refractive changes such as hyperopisation or astigmatism are avoided. The result is refractive neutrality in the ablation.

PTK-CAM module with keratoplasty option

The KPL (keratoplasty) option in the PTK-CAM module ensures safe and precise planning of corneal transplants. This method is suitable for all patients for whom keratoplasty is indicated: for example for treating deep corneal scars following injuries, corneal dystrophies and advanced keratoconus. No eye suction is required with laser-assisted KPL.

Ablation depth: With KPL, corneas can be treated up to a maximum depth of 999 micrometres.

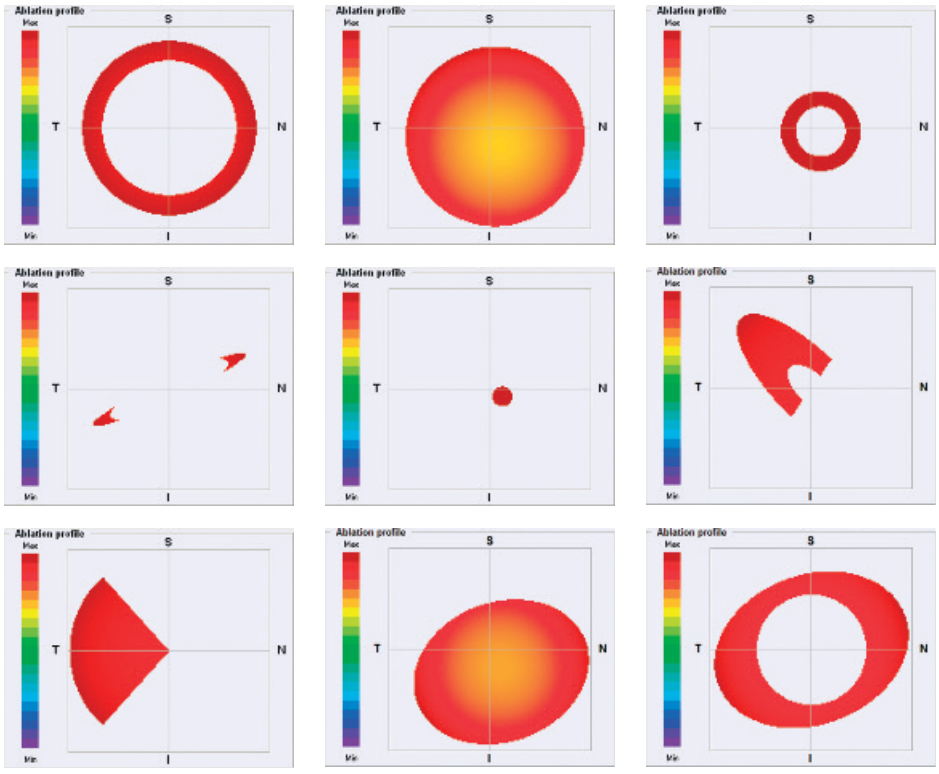
Application area: Depending on the indication, KPL can be used for both lamellar and penetrating treatments.

Method: With penetrating keratoplasty, the donor and recipient cornea are treated, without contact, using the AMARIS laser system. In the case of lamellar keratoplasty, only the recipient cornea is prepared for the graft using the laser. As a rule, the physician employs special ring masks in order to achieve sharp cornea edges and a perfect fit.

Results: Whilst separation of the tissue with the excimer laser takes somewhat longer compared with a femtosecond laser, the results in terms of centration and alignment are considerably more precise. Result: less astigmatism, a more homogeneous cornea and an improved vision outcome[1].

Safety: The KPL application is activated separately for your AMARIS laser system. Prior to each application, you receive a safety notice allowing you to check whether corneal perforation is indeed desired.

[1] **PKP for Keratoconus From Hand/Motor Trephine to Excimer Laser and Back to Femtosecond Laser.** Seitz B, Szentmáry N, Langenbucher A, Hager T, Viestenz A, Janunts E, El-Husseiny M. Klinische Monatsblätter für Augenheilkunde. 233(6):727-36. June 2016.



Examples for different ablation profiles in the PTK-CAM module

Specifications (General)

Pre-op and Post-op Keratometry	7.50 to 60.00 D; 5.63 to 45.00 mm
Pupil Diameter [in mm]	2.00 to 8.00
Pupil Offset Radius [in mm]	0.00 to 1.00
Total Ablation Zone [in mm]	Up to 10.00
Epithelial Thickness (Surface Treatments) [in µm]	Central: 40 to 75, Peripheral: 40 to 100
Add-On	Static Cyclotorsion Control (SCC)

Specifications (Refractive) ORK-CAM

Aspheric Treatment Methods	Aberration-Free; Corneal Wavefront; Ocular Wavefront
Refractive Treatment Methods	PRK, TransPRK (SmartSurf^{ACE}), LASEK, LASIK, FemtoLASIK, Re-Lift
Refraction (VD = 0) [in D]	SEQ: -15.00 to +8.00; Ast: -7.00 to +7.00
Vertex Distance [in mm]	0.00 to 24.00
Optical Zone [in mm]	4.00 to 9.50
Transition Zone [in mm]	0.50 to 2.00 (automatic)
Residual Stromal Thickness Safety Limits [in µm]	250 to 500
Flap Thickness [in µm]	50 to 250
Add-On	Post-CXL, Extended Ablation Zone, Filtered Aberrations, Tissue Saving

Specifications (Presbyopic) PresbyMAX®

Refraction (VD = 0) [in D]	SEQ: -12.00 to +8.00; Ast: -7.00 to +7.00; Add: +0.25 to +3.00
Pupil Offset Radius [in mm]	0.00 to 0.75
Anisometropia (VD = 0) [in D]	0.88
Optical Zone [in mm]	6.00 to 7.50
Types	Monocular, Hybrid, µ-Monovision, Presby Reversal

Specifications (Therapeutic) PTK-CAM

Ablation Depth [in µm]	5 to 150 (PTK); 151 - 999 (KPL)
Ablation Zone [in mm]	0.50 to 10.00
Transition Zone [in mm]	0.00 to 0.50 (automatically)
Definition of Ablation Zone	Circular, Elliptical or Individualised Shape
Ablation Offset Radius [in mm]	0.00 to 4.00
Residual Stromal Thickness Safety Limits [in µm]	300 to 500 (PTK)
Add-On	KPL, TransPTK, Selection of Sector (within 360°)

Optimal functionality, reliability and compliance with all legal regulations can only be assured through the use of products supplied by SCHWIND – whether as single items or as system combination.

SCHWIND eye-tech-solutions GmbH · Mainparkstrasse 6-10 · D-63801 Kleinostheim, Germany
fon: +49 (0) 60 27/5 08-0 · fax: +49 (0) 60 27/5 08-208 · email: info@eye-tech.net · www.eye-tech-solutions.com