

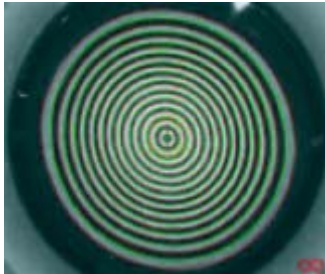
Corneal Wavefront

Definition

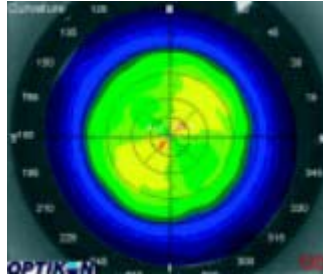
The unique corneal wavefront offered by SCHWIND documents the type and size of each and every optical error generated on the anterior corneal surface, allowing a more selective and tissue-saving correction compared to topo-link-based systems. The majority of aberrations of the human eye occur in the corneal area. The defects are corrected at exactly the location where they occur – the anterior corneal surface. In this context, exact localization of defects is decisive in achieving optimal results in laser surgery. The corneal wavefront allows for a very precise diagnosis, thus providing an individual ablation of the cornea in order to obtain perfect results. Using an eye model, any aberrations of the optical path are mathematically described by means of so-called Zernike polynomials and converted into individual, customized ablation profiles with the SCHWIND Custom Ablation Manager.

Advantages of Corneal Wavefront

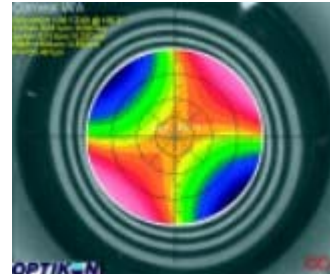
- Pupil dilation of the patient not necessary for measurement
- Reliable measurement results, especially with irregular cornea and high astigmatism
- Selective simulation of corneal aberrations: Point Spread Function (PSF), acuity chart or Modular Transfer Function (MTF – which relates to the contrast sensitivity)
- Individual treatment planning with decentrations and re-treatments (e.g. zone enlargements)
- Extended diagnostic possibilities by comparing the complete aberrometry of the eye with corneal aberrations
- Accommodation does not influence measuring results
- Treatment zone is not limited by the pupil



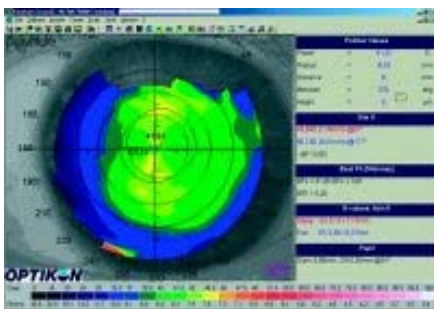
Placido Ring



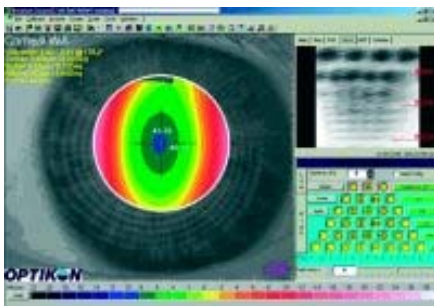
Curvature Topography



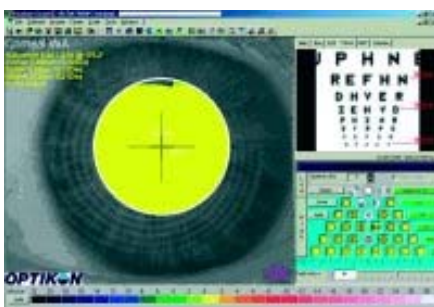
Corneal Wavefront



Corneal Topography (Elevation profile – high astigmatism). Measurement with Corneal Wavefront Analyzer



Corneal Wavefront: vision simulation uncorrected vision s.c.
Conversion of the corneal elevation profile into corneal wavefront data (Zernike polynomials)



Corneal Wavefront: visual improvement through laser treatment with corneal wavefront data
Visual simulation of corneal aberrations via PSF (Point Spread Function), acuity chart, MTF (Modulation Transfer Function – which relates to the contrast sensitivity) or presentation of the particular Zernike polynomials.