



Microscan Visum

New-generation excimer ophthalmic system

LASIK, The Epi-LASIK, Femto-LASIK

PTK, PRK, transepithelial PRK

Wavefront/Topography guided treatment

optohellas[®]

Europe & Middle East Representation

Innovative technologies

Laser pulse repetition frequency 500 Hz

Along with effective ablation procedure, it reduces surgery duration significantly.

Super-Gaussian spot

Laser pulse energy is reduced without reducing the volume of the ablated tissue. Super-Gaussian spot reduces peak ablation depth per pulse, thereby reducing the ablation roughness.

Efficient ablation algorithm

The algorithm ensures high optical precision of the ablation profile at a high correction speed. The low energy density during the entire surgery procedure reduces heat load on the cornea.

Preserving the natural corneal shape in the correction of primary ametropia

The ablation algorithm, optimized for conic constant, restores spatial contrast sensitivity, visual acuity at glare as well as blinding glare and under low light conditions.

Multifocal correction technology

Multifocal ablation profile is a single aspheric surface with a flattened central area for looking at distance and myopic periphery for looking at near. It enables patients to do without correction spectacles for near vision, while maintaining satisfactory long-distant visual acuity at the same time.

Tissue-saving ablation

It saves about 20% of tissue during myopia correction. Visual acuity in mesopic conditions in patients with tissue-saving scanning algorithm is slightly lower than in standard ablation, but higher than before surgery with the usual spectacle correction.

Ultra-high ablation stability

- corneal energy stability
- stability in the ablation spot size

Monitoring is carried out using two types of energy measuring sensors:

- sensor at the exit of the aperture of the system – to measure the energy output of the optical system and subsequent absorption compensation in the optical path of the laser
- sensor in the corneal plane – to calibrate the sensor at the exit of the aperture



Customized ablation

Allows for customized correction of irregular visual disorders using data obtained from aberrometer or corneal topographer. It also allows to carry out a more accurate correction of the sphere and cylinder, improve visual acuity in the daytime and at night.

Transepithelial operation

During transepithelial PRK, the epithelium is removed with excimer laser beam in PTK mode with variable profile, taking into account the uneven epithelial thickness. For tissue-saving purposes, the operation is stopped when stroma elements appear and continued in PRK mode. In the treatment of various pathologies – dystrophies, degenerations, opacity and recurrent corneal erosions – standard flat PTK is used.

Efficient aspiration system

Removes ablation products generated by the influence of laser radiation on the cornea, smell and fumes from the operating area without corneal drying. Adjusts the height of the laminar flow over the eye from 3 cm to 5 cm.

Slot-type illumination block

Illumination made of two slits, converging at the top of the cornea, allows to:

- diagnose the postoperative state of the corneal flap
- carry out 3-dimensional corneal focusing and eye tilt control

Platoscan

Wavefront-guided treatment optimized algorithm.

Wavefront-guided optimized personalized correction software allows to maintain the natural balance of aberrations, minimize defect in the original corneal shape and correct unwanted aberrations in the correction of refractive disorders. The program issues ready-to-use operational files for the excimer laser.

Wavefront-guided treatment for myopia and myopic astigmatism on Microscan Visum platform using calculation program Platoscan yield high refractive result and excellent visual acuity. This is the result of optimized ablation profile, large optical zone, upgraded tracking system, precise centering and high ablation stability.

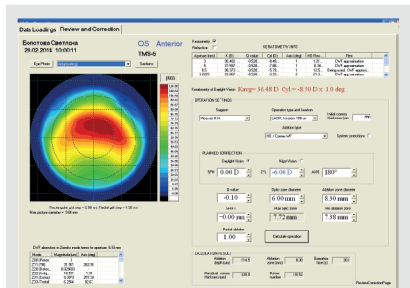
Platoscan program. Correction of oblique astigmatism
Cyl -2.37D Ax=45 with high level of higher-order aberrations

Kerascan

Algorithm for restoration of the natural corneal shape in the correction of induced refractive disorders

Depending on the severity of corneal irregularities and the presence or absence of surface haze, topography-guided ablation can be superficial (topo-PRK) or sublamellar (topo-LASIK). Topography-guided ablation is the most effective way of performing refractive surgery in severe corneal irregularities. This became possible after development of the Kerascan software for custom correction using corneal topography data.

Kerascan allows you to plan surgery in large irregular visual defects based on all corneal topography information and create large centered optical zone with a symmetrical aspheric corneal surface.



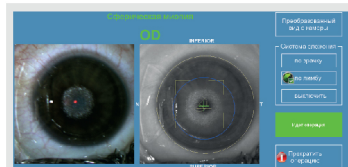
Kerascan program. Topography-guided correction of higher-order irregular astigmatism Cyl -6.0 D, Ax 180.

Control system

The control program supports a full range of spherical and astigmatic correction operations, including correction of mixed astigmatism. The modern software and user-friendly interface have been developed specifically for convenience of doctors and precise planning and performance of operations.

The control program performs the following functions:

- data entry, calculation and storage of treatment data in the archive
- preliminary calculation, loading of calculation before surgery
- automatic recording of parameters of suddenly interrupted surgery
- resumption of interrupted surgeries through any period of time
- selection of ablation zone center by the doctor
- registration of the initial value of cyclotorsion
- tracking selection by pupil or limbus
- formation of postoperative surface with a given conic constant
- possibility of any set of operations during multi-stage operation. PTK is usually chosen for transepithelial PRK as the first stage, while standard or tissue-saving aspherical or personalized PRK is chosen as the second stage

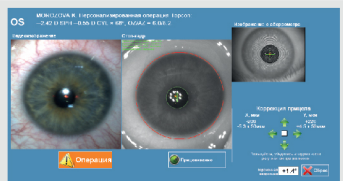


Tracking by limbus in the correction of higher level myopia Sph = 11.0 diopters (pupil boundaries are blurred under the strong roughness of the ablation zone).

Multidimensional active tracking system

The tracking system (pupil or limbus) tracks the position of the eye 750 times per second. The total latency time is 3 ms. Tracking does not depend on the size and shape of the pupil and allows to detect the following:

- slow longitudinal displacements of the eye (1st and 2nd axis)
- fast vertical and horizontal eye turns (3rd and 4th axis)
- initial torsional rotation value (5th axis)
- simultaneous capture of the limbus, pupil and coaxial corneal reflex
- position of the visual axis after aiming in standard operations and custom treatment based on corneal topography data
- automatic shift compensation in the narrow pupil in the operative field with respect to the wide pupil in custom treatment based on aberrometer data



Aiming procedure

- capture of the center of the pupil
- identifying the position of the coaxial corneal reflex in the center of the ring of coaxial illumination system
- automatic shift of the ablation center to the corneal reflex with possibility of manual correction
- detection of torsional rotation – automatic comparison of iris images from corneal topographer and on freeze frame

Technical specification of ophthalmological excimer laser system Microscan VISUM

Excimer laser	ArF, 193 nm Metal-ceramic camera solid-state switch
Pulse repetition frequency	500 Hz
Laser spot diameter	0.9 mm, Super-Gaussian profile
Beam forming system	flying spot technology
Operation time in high myopia	2.3 s/D, OZ/TZ=6.5/7.9 mm
Tracking system	750 Hz, pupil and limbus
Surgical microscope	Leica, high-contrast, stereo microscope
Aspiration system	in-built
Gas system	in-built block with excimer mixture
Dimensions	1350(l) × 1475(w) × 1540(h) mm

CORRECTION:

- myopia and myopic astigmatism
- hyperopia and hyperopic astigmatism
- mixed astigmatism
- presbyopia

RANGE OF OPERATIONS

	PRK	LAZIK
Myopia	max. -20* diopters	max. -14* diopters
Myopic astigmatism	max. -10* diopters	max. -6* diopters
Hyperopia	max. +10* diopters	max. +6* diopters
Hyperopic astigmatism	max. 10* diopters	max. 6* diopters
Mixed astigmatism	max. 10* diopters	max. 6* diopters
Presbyopia	max. 4 diopters	max. 4 diopters
Wave front	from +4 to -11 diopters	from +4 to -11 diopters
Therapeutic use	PTK from 3 to 120 µm, Optical zone from 3.0 to 10.0 mm	

* Depends on optical zone and Q-factor

PERFECT COMPATIBILITY WITH THE FEMTOSECOND LASER

Excimer ophthalmic system Microscan Visum can be used in combination with femtosecond laser system Femto Visum for Femto-LASIK refractive surgeries.





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