Clinical applications

Cataract surgery
Objective diagnosis and quantification of lens opacifications. Screening, selection, anticipation, refraction, multifocal, decision making.

Refractive surgery
Improvement, accuracy and optimization of post refractive results. Selection, anticipation, refraction, multifocal, decision making.

Tear film analysis and influence
Screening/Monitoring dry eye syndrome, tear film quality, drops efficiency, ...

Treatment efficiency objective measurement
Yag efficiency, beam heating, drops adapted to the dry eye, MF IOL or MF laser treatment...

Monitoring the eye transparency/heal during the patient life
Corneal opacification, cataract, vitreous ...

Diagnosis support complaints management
Hidros and glans, scattering light effects, objective visual acuity...

Optical evaluation of any intraocular and corneal lenses
IOL, ICL, Multifocal, contact lenses, corneal lenses, ...

OSI (Objective Scattering Index)

OSI < 0.5 Better than Normal
OSI = 0.5 Normal
0.5 < OSI < 1 In the Normal
OSI > 1 Abnormal

The OSI (Objective Scattering Index, NORMALIZED and UNIQUE in the world, related and proper to the OQAS technology) is an objective and also educational evidence that can be shared and described to the patient.

OSI (Objective Scattering Index)

PSF Point Spread Function - Spreading of the light intensity on the focus plane
Width (arc min) 50 %
PSF arc size at 50 %
Width (arc min) 10 %
PSF arc size at 10 %

MTF Modulation Transfer Function – Losing contrast (%) curve linked to the image detail level (spatial frequency - c/deg - cycle per degree)
MTF cut off (c/deg) 51.117
MTF cut off (c/deg) 39.256
MTF cut off (c/deg) 12.386

PVA Predicted Visual Acuity
PVA 100 % contrast level
PVA 20 % contrast level
PVA 9 % contrast level

Pseudo Accommodation curve Retinal image quality curve linked to the target position
Accommodative Range Residual of depth of focus calculation

Tear Film Analysis curve Retinal image quality curve as a function of time

Technical and general specifications

Class IIa
Technology OQAS (Optical Quality Analysis System)
Type Light Scatter Analyzer
Measurement range / Reproducibility / Accuracy +5 D to -8 D S.E. (higher ametropia including astigmatism can be neutralized with an additional lens)
+/- 0.25 D ; +/- 0.25 D

Natural pupil diameter measurement Automatic ; Accuracy: +/- 0.5 mm (for an 8 mm pupil)
Artificial pupil diameter 2 to 7 mm
Image capture time 240 ms
LASER wavelength 780 nm
Laser power selection Automatic ; Max LASER power at the pupil plane: 2.8 mW
Focus Automatic

Dimensions (cm) 41.5 (L)*35 (W) * 53 (H)
Weight (kg) 20
Recommended working space (m²) 2.5
External power supply Input: 100-240 VAC, 50-60 Hz, max. 1.0 A Output: 12 V DC, 3.5 A, 42 W
Operating temperature +10 ºC to +35 ºC
Operating relative humidity 30% to 90%

HD Analyzer

 Heard Generation of OQAS technology

HD Analyzer™ unit
PC or laptop with specific hardware and software installed and ready to operate the device.
Flat 15" or 17" monitor (only for PC).
USB cable / External power supply / Power supply cable

Optional
Electric elevating table
Printer
Network configuration

Conformity assessment:
Agencia Española de Medicamentos y Productos Sanitarios

Manufacturer:
Visiometrics S.L, c/ Argenters, 8 – Edifici nº 3, Parc Tecnològic del Vallès, 08290 Cerdanyola del Vallès, Barcelona, SPAIN

VISUAL ACUITY 20/20

www.visiometrics.com
+34 933 824 501

HD Analyzer

DYSFUNCTIONAL LENS SYNDROME MANAGEMENT & CATARACT SURGERY

DYSFUNCTIONAL LENS SYNDROME MANAGEMENT & CATARACT SURGERY

DATA ANALYSIS

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VISUAL ACUITY 20/20

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“Regardless of visual acuity and patient feedback, how could I measure the quality of the patient’s eye?”

The solution is HD ANALYZER

“Understanding visual performance limitations of the patient’s eye must be the necessary initial step before any surgery or treatment plan.”

“From the tear film to the retina, everything could impact the optical quality of the patient’s eye…”

Clinical cases

- **Cataract** (without vitreous or corneal issues)
  - OSI = 1.5: Starting cataract
  - OSI = 2.0/2.5: Surgical criteria
  - OSI = 4: Mature cataract
  
  Independent of the subjective LOCS III classification and lens appearance through the Slit Lamp. Correlated to the clinical assessment of the presence of a cataract.

- Surgery plan management
  - Patient complains, Slit lamp examination is not revealing, visual acuity at 6/10. HD AS measurement shows a cataract on OD and a cataract in early stage on OS. The OS will be tracked and re-checked many months later.

- Refractive surgery – post-op residual cylinder management

  - Influence of a residual astigmatism measured by the device

  - Retreatment needs

- Night vision evaluation

  - Study and measure of the optical quality of the eye in different light conditions.

  - Decrease of the optical resolution and scattering light increase.

- With corrected cylinder (post OP)

- Without the corrected cylinder

- Dry eye screening/monitoring, quality issues, drops efficiency, …

- Dry Eye

  - Tear Film Quality issue (if the variation between the lowest point and the highest point of the curve is more than 0.8)

- Normal Tear Film

- Optical Quality

  - Direct consequence of any optical transparency disturbance is SCATTERING LIGHT

- Direct impact on quality of vision

  - Vision quality issues
    - Diffraction
    - Aberrations
    - Loss of transparency
    - Pathologies

- Patient Complaint

- Patient’s quality

- Optical Quality

- PSF Measurements done by the defocus of the target with a 0.5 D step

- Depth of focus determination

- Pseudo accommodation

- Patient A
  - Excellent quality of vision (better than normal) with the actual corrective equipment
  - Probably high expectations about the post-op results

- Patient B
  - Average quality of vision (in the normal)
  - Probably better tolerance about the post-op results

- Objective

  - Understand
  - Anticipate
  - Select
  - Monitor
  - Manage

- Subjective

- Wavefront Analysis

- OSI

- OSI = 1.5: Starting cataract

- OSI = 2.0/2.5: Surgical criteria

- OSI = 4: Mature cataract

- Objective

  - vs

- Subjective

  - Understand
  - Anticipate
  - Select
  - Monitor
  - Manage

- Refraction diagnosis evolution to increase of patient’s life quality

- Auto-refraction

- Wavefront Analysis

- OSI

- OSI = 1.5: Starting cataract

- OSI = 2.0/2.5: Surgical criteria

- OSI = 4: Mature cataract

- Objective

  - vs

- Subjective

  - Understand
  - Anticipate
  - Select
  - Monitor
  - Manage

- Vision quality issues

  - Diffraction

  - Aberrations

  - Loss of transparency

  - Pathologies

- Patient Complaint

- Patient’s quality

- Optical Quality

- PSF Measurements done by the defocus of the target with a 0.5 D step

- Depth of focus determination

- Pseudo accommodation

- Daytime optical quality

- Without the corrected cylinder

- Night optical quality

- Tear film analysis

  - Analysis of the Tear Film influence on the image quality. TF OSI variation measurement during 20s

  - Dry eye screening/monitoring, quality issues, drops efficiency, …

  - Dry Eye

    - Tear Film Quality issue (if the variation between the lowest point and the highest point of the curve is more than 0.8)

    - Normal Tear Film

  - OSI = 1,5

  - OSI = 2,0 / 2,5

  - OSI = 4

  - Starting cataract

  - Surgical criteria

  - Mature cataract

- Past (1968) / Now

  - Wavefront Analysis

  - OSI

  - OSI = 1.5: Starting cataract

  - OSI = 2.0/2.5: Surgical criteria

  - OSI = 4: Mature cataract

- Now / Tomorrow

  - MAPPING Aberrometry

  - OPTICAL QUALITY Measurement

- Now / Tomorrow

  - MAPPING Aberrometry

  - OPTICAL QUALITY Measurement

- OSI = 1,5

- OSI = 2,0 / 2,5

- OSI = 4

- Starting cataract

- Surgical criteria

- Mature cataract

- OSI = 1,5

- OSI = 2,0 / 2,5

- OSI = 4

- Starting cataract

- Surgical criteria

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- OSI = 2,0 / 2,5

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