The pioneering Dry Eye treatment

Scientifically proven technology for the treatment of Meibomian Gland Dysfunction.

E-Eye

Looking for a long-lasting treatment solution for Dry Eyes?

Discover the difference

With the advent of the health-aware patient and the increasing demand for effective, long-lasting, and hassle-free solutions comes an opportunity for eye care practitioners to offer game-changing Dry Eye Management treatment.

Since 2016, E-Eye from ESW vision has been leading the Dry Eye treatment market when it comes to Meibomian Gland Dysfunction (MGD). E-Eye has been developed to provide the first techno-logical treatment suitable for the 80% of Dry Eye Disease cases due to MGD. Clinically proven in research, but excitingly for us, also proven successful in practice, more than 1.500 Dry Eye experts worldwide rely on the break-through results of E-Eye. Addressing unmet needs in this segment, E-Eye is making patients' eyes happy again: painless, safe and reliable.

E-Eye has set a new standard in Dry Eye treatment in Ophthalmology, Optometry and also in the Optical market, delivering therapy in a less time-consuming manner and with a high rate of satisfied patients: 96% of treated patients recommend the E-Eye treatment. [1]

Our mission is to focus solely on developing technological innovations to manage Dry Eye Disease. We aim to support eye care experts all over the world with innovative solutions to improve the visual comfort and quality of life of Dry Eye patients.

Discover the difference in treating Dry Eye patients with E-Eye: easy, fast and highly efficient, with long-lasting benefits.

Yours,
Petra BRUCKMUELLER
President Group E-SWIN | CEO ESW vision

Dry Eye Disease

Dry Eye Disease (DED) has become recognised as **one of the most common eye diseases in the world**. Due to a growing and aging population and changes that our modern-day lifestyle brings about, cases of Dry Eye Disease are on the rise worldwide. There are two types of Dry Eye Disease – aqueous-deficient (ADDE) and evaporative (EDE). EDE is more common than ADDE, with MGD accounting for the majority of cases.

The Tear Film and Ocular Surface Society's second Dry Eye Workshop (**TFOS DEWS II**) defines Dry Eye Disease as "a **multi-factorial disease of the ocular surface** characterized by a loss of homeostasis of the tear film, and accompanied by ocular symptoms, in which tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neurosensory abnormalities play etiological roles. [2]

The increase in Dry Eye cases

Every 5th person today suffers from Dry Eye Disease globally. The vast majority of cases of Dry Eye Disease (86%) are due to Meibomian Gland Dysfunction (MGD). Risk factors include women and aging, but due to changes in our digitally-dependent lifestyles, more and more cases of Office Dry Eye and Dry Eye in Youth have also been emerging. Working on digital screens, driving through the night, artificial lights, air pollution, and wearing contact lenses are all environmental factors driving up the incidence of Dry Eye Disease. [3, 4]

Why manage Dry Eyes?

Dry Eye Disease is on the rise with an increasingly aging population, a growing rate of Dry Eye Disease among youth, as well as our modern lifestyles that are more then ever dependent on digital screens.

There is as well an increasing demand for targeted, non-invasive and faster treatment methods to alleviate the condition.

Patients with well-treated Dry Eyes, providing a lasting benefit, enjoy a higher quality of life with improved visual comfort in their professional and private lives.

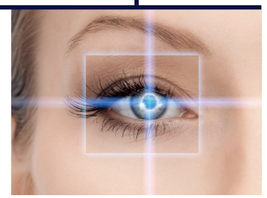
Patients also experience greater comfort in wearing contact lenses without recurring symptoms.

Additionally, treatment of Dry Eye Disease is a major prerequisite to refractive and cataract surgeries, for improved post-surgical outcomes in terms of safety, comfort and quality of vision. [5]

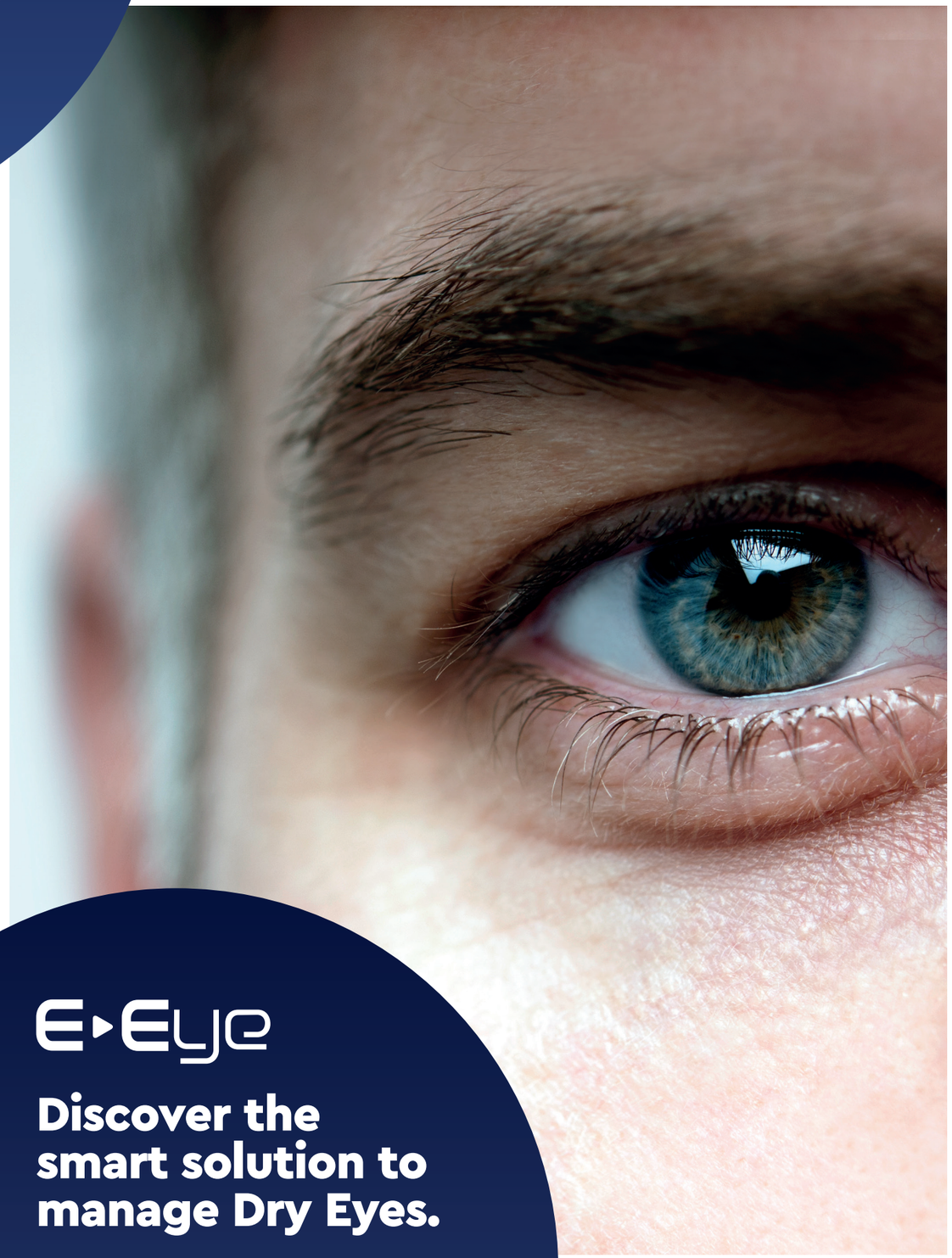
Improvement of visual comfort in professional & private life

Higher quality of life

Wear of contact lenses comfortably without recurrent symptoms



Better outcomes in refractive and cataract surgeries



E-Eye

Discover the smart solution to manage Dry Eyes.

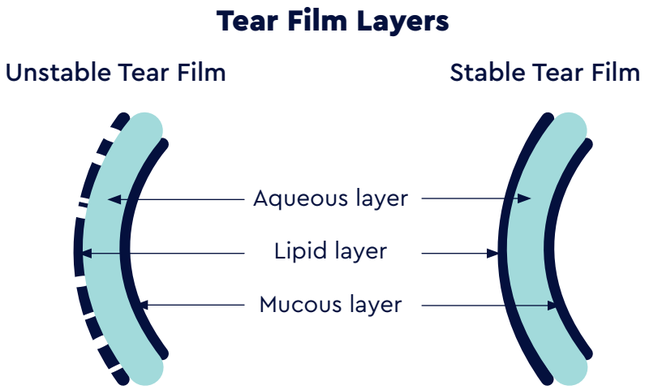
Meibomian Gland Dysfunction

There are 60–80 Meibomian Glands located in the upper and lower eyelids.[6] These glands produce the oils that form a lipid layer on the outermost part of the tear film, aiding to protect the eyes from tear evaporation. The tears serve to overcome the micro-irregularities of the eye's surface and offer an optically smooth surface.

Dry Eye Disease, which can arise from multiple factors, starts off with tear film instability that is accompanied by increased tear osmolarity which activates stress signalling pathways in the ocular surface and immune cells.

This in turn triggers production of innate inflammatory molecules that initiate a vicious self-repeating cycle that may lead to further deterioration in tear function and worsening of symptoms. The numerous environmental and internal factors that can contribute to this inflammatory cycle make Dry Eye a multifactorial Disease. [7]

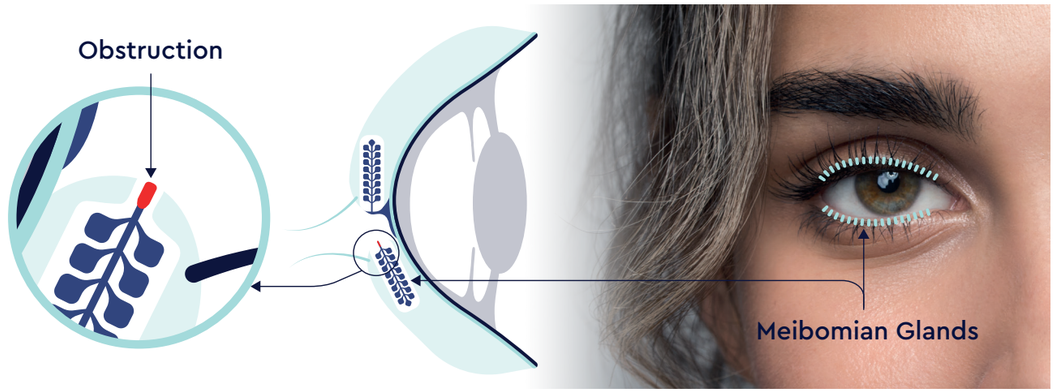
Tear Film Layers



It is recognized that at least 80% of Dry Eye cases are caused by the evaporative form of Dry Eye Disease, mainly due to an insufficiency of the outer lipid layer of the tear film secreted by the Meibomian Glands.

A reduction in the lipids produced by the Meibomian Glands – the meibum – can lead to excessive evaporation of tears, an unstable tear film and an inflammatory reaction of the conjunctiva. The result is unstable vision during long periods of near-distance tasks (work on computer screens for example) with a feeling of "eye-burning" that, in turn, may hinder any visual work.

If this process is allowed to continue untreated, the discomfort can become permanent, prompting a paradoxical increase in reflex tear production. Wearing contact lenses often becomes impossible. [3]



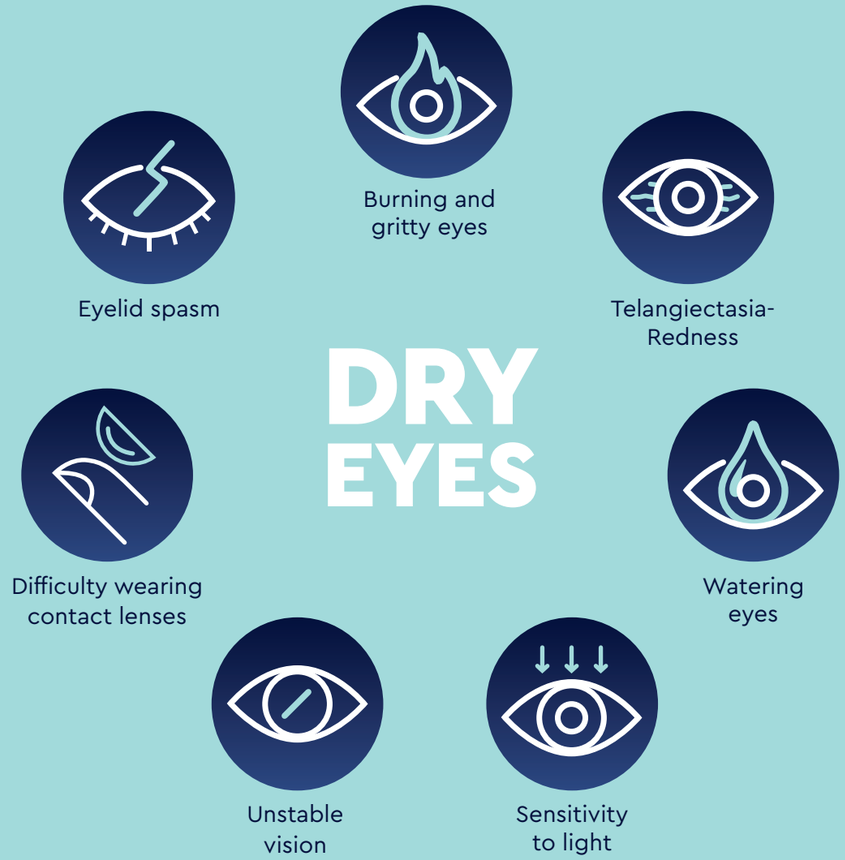
Increasing lifestyle risk factors

Negative environmental influences and modern work and life conditions facilitate the development of Dry Eye Disease.

It is also important to note a rapidly increasing number affected by Dry Eye in Youth and Office Dry Eye.

The multifactorial nature of the disease means it can arise from several risk factors which mainly include:

- Aging
- Sex, females are more prone
- Race, Asian race is most prone
- Heavy use of screens
- Contact Lens Wear
- Dry Environments
- Air conditioning
- Allergies and infections
- Eye surgeries
- Some medications
- Hormonal imbalances



Signs & Symptoms

Dry, burning, red, permanently fatigued, and – paradoxically – also watery eyes are symptoms of Dry Eye Disease. Patients might also face problems with wearing contact lenses and have pronounced sensitivity to light. Apart from experiencing eye pain, your patients may have more serious complications such as infections, styes, or corneal ulcers.

Signs of Dry Eye Disease include reduced non-invasive tear break-up time, elevated or large inter-eye disparity in osmolarity, and ocular surface damage indicated by dye staining.

Conventional therapies

The common problem of tear film dysfunction has resulted in the development of multiple therapeutic options.

Standard treatments are mainly substitutions for the natural tear film and are often insufficient to overcome the discomfort felt by patients.

Conventional, palliative therapies:

- Drops/artificial tears
- Eye masks
- Moisture chambers
- Lid massages
- Warm compresses
- Gland expression
- Heating/pressure

>>> temporary solutions for short-term reduction of symptoms

Technological Dry Eye treatment

Intense Regulated Pulsed Light Technology (IRPL®) with E-Eye provides a long-lasting solution to improve visual comfort by restoring the Meibomian Gland function, improving the secretion from the glands and stabilizing the lipid layer of the tear film: a state-of-the-art treatment with time-efficiency and a modern way to manage Dry Eye.

IPL has become firmly established as favourable treatment option for MGD in recent years, with remarkable growth in its usage within the Dry Eye community. [8]

The pioneering Dry Eye treatment

E-Eye is dedicated to the treatment of eye dryness in its evaporative form, resulting from Meibomian Gland Dysfunction (MGD). As 86% of Dry Eye cases are known to be evaporative, E-Eye is effective in those 86% of Dry Eye incidence.

E-Eye - More than just an IPL treatment

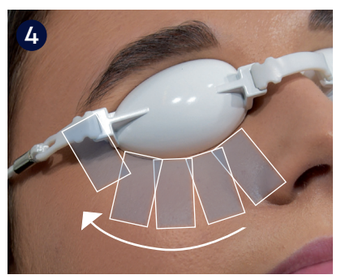
Not only is E-Eye a modern IPL solution, it has the added enhancement of the patented IRPL® technology.

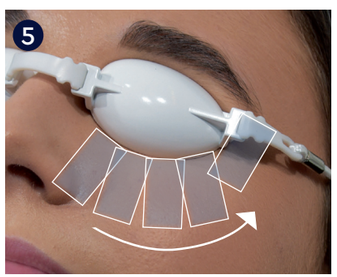
E-Eye generates polychromatic pulsed light by producing perfectly calibrated and homogenously sequenced light pulses. The sculpted pulses are delivered as a regulated train of pulses. The energy, spectrum, wavelength and duration are precisely set to target the nerves connected to the Meibomian Glands in order to encourage their return to normal function.

The E-Eye treatment technology is non-invasive, entirely painless and harmless to the eye.

Simple, fast & highly efficient

- The treatment only takes a few minutes per session.
- Patients are comfortably seated on a treatment chair, preferably reclined.
- The protective white metallic eyemask is adjusted on the patient's eyes. 1
- Then, a specific treatment gel is applied on the cheekbone and the temporal areas. 2
- A series of 5 flashes is applied under each eye. 3
- Four flashes are applied in the lower zone – starting on the inner canthus – and one flash in the temporal area to stimulate the upper glands. 4
- The same process is repeated under the other eye. 5
- The gel is wiped off and the treatment is complete. 6





> « Already after my first treatment, I felt a great improvement and I do recommend everyone suffering from Dry Eyes to have the E-Eye treatment. »

Rana A.
Dry Eye Patient, Dubai

Scan to watch Rana's full testimonial.

Instant & cumulative improvements

The E-Eye treatment is performed within a short, efficient protocol of 3–4 sessions. **The effect of the treatment is cumulative** and lasts at least 6 months up to 3 years. In 60% of cases no follow-up treatment would be required within 3 years. In order to improve the achieved results and to avoid returning discomfort, it is recommended to repeat single maintenance sessions on demand, with usually one single session per year.

This treatment protocol consists of 3 sessions (and a fourth optional session) as follows:

Day 1 / Day 15 / Day 45 / Day 75 (optional)

Patented technology inside

IRPL® (Intense Regulated Pulsed Light) technology developed by E-SWIN introduces an entirely new dimension to conventional IPL: **« regulation »**.

Regulated flash technology permits the generation of flashes, the instantaneous luminous power output of which remains constant throughout the duration of the flash concerned. The uniformity permits the **complete control of heat generated** in the target area. Accordingly, this control further enhances the safety of flashes emitted. It should be noted that IRPL® can go further still in the fine control of flash configuration. It is possible, within a single flash, to combine a train of sub-pulses, each pulse of different intensity and structure. This offers **unprecedented therapeutic possibilities**, which are inconceivable with conventional IPL systems.

IRPL® technology has been proven to significantly decrease both subjective symptoms and objective clinical signs. Effects have been shown to be superior to conventional IPL in managing TBUT results. [9]

The exclusive **Air Cooling System®** designed by E-SWIN provides additional user and patient comfort and allows to benefit from the full outcome of the transferred light pulses. Conventional water-cooling IPL systems, on the other hand, absorb part of the emitted flash source.

« IRPL® is better than other therapies. It provides valued addition to DED & associated issues. Easy, safe & patients recommend it. »

Nick DASH
Optometrist Midland Eye, UK

Mechanism of action

What truly sets E-Eye apart is its neurostimulatory component thought to be possible through IRPL® technology.

The flashes emitted are directed to the parasmpathetic nerve which is located in the zygomatic and bulborbital area and supplies the Meibomian Glands.

A neurological stimulation of the parasympathetic nerve:

- leads to the regeneration of the Meibomian Glands
- improves the quality of the glandular secretion
- stabilizes the lipid layer

Additionally, the following effects have been proposed to explain the clinical benefits observed with IPL: [10]

- Warming and liquifying effect facilitating meibum expression
- Photomodulation stimulating mitochondria of Meibomian Glands, also enhancing collagen synthesis
- Vascular thrombosis aiding in decrease in inflammation
- Antibacterial and antiparasitic effects
- Connective tissue rejuvenation with fibroblast–collagen synthesis and remodelling reducing eyelid- epithelial turnover and decreasing gland obstruction.

Scan to view the video about the mechanism of action of E-Eye.

Efficacy quantified

Since 2013, **more than 16 clinical studies related** to E-Eye have been conducted on over 550 patients in Europe, Asia and Australasia. These studies have shown:

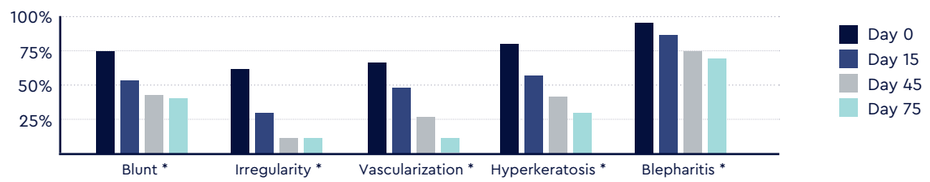
A **considerable improvement in the symptoms** perceived by patients with a 90% satisfaction rate after the first 2 treatments. This improvement may be clearly felt from the initial session for the first couple of days and increases with time after the following treatments.

A **correlation between this perception and clinical measurement** was executed. 45% of patients originally classified as level 2 (Oxford classification) have, after instillation of fluorescein, had improved by one or two levels. 81% of patients from level 1 improved by 1 level.

Non-invasive, affordable with fast and long-lasting results, E-Eye is a revolution in lots of different aspects.

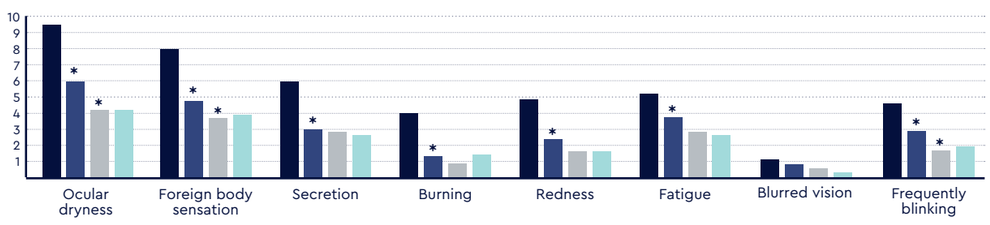
Clinical percentage measurements. Source: Clinical Study [11]

* Significant margin of improvement.



Perceptions of patients, rated from 1 to 10.

* Significant margin of improvement.



Clinical studies

Professor Dr. Jennifer P. Craig, who leads investigator-initiated randomised placebo-controlled clinical trial research at the University of Auckland in New Zealand, has confirmed clinical benefits of IRPL®.

Randomised double-masked placebo-controlled trial of the cumulative treatment efficacy profile of intense pulsed light therapy for Meibomian Gland Dysfunction. The Ocular Surface.

Xue A. L., Wang M. T. M., Ormonde S. E., Craig J. P. (2020).

Findings:

IPL therapy effected improvements in Dry Eye symptomology, tear film lipid layer thickness and Meibomian Gland capping in participants with MGD.

Intense pulsed light therapy: A promising complementary treatment for Dry Eye Disease. Archivos de La Sociedad Española de Oftalmología (English Edition).

Mejía L. F., Gil J. C., & Jaramillo M. (2019).

Findings:

IPL treatment has excellent results regarding both: Dry Eye Disease symptom improvement and in-office objective tests such as TBUT, Schirmer test and Van Bijsterveld score; IPL could be considered as an effective adjunct for treating Dry Eye Disease.

Ocular Surface Workup in Patients with Meibomian Gland Dysfunction Treated with Intense Regulated Pulsed Light.

Vigo L., Taroni L., Bernabei F., Pellegrini M., Sebastiani S., Mercanti A., Di Stefano N., Scorcia V., Carones F., Giannaccare, G. (2019).

Findings:

IRPL® for the treatment of patients with Dry Eye owing to MGD improved NIBUT (non-invasive tear break up time), LLT (lipid layer thickness), and tear osmolarity, as well as subjective symptoms.

Scan to view further clinical studies online.

E•Eye

Global user network

Supported by Dry Eye experts in more than 70 countries.

In 2017, we implemented E•Eye first in our Köln center. Thanks to very positive patient feedback, we decided very soon to offer the treatment in all our 3 locations.

Dr Matthias Maus
sehkraft Eyelaser Centre, DE

Dry Eye Treatment with IRPL® has been a great success in my practice.

Mr Erik ROBERTSTAD
Interoptik Holt, NO

For 2 years now, I have been using the IRPL® E•Eye device which has helped greatly with the Dry Eye treatment for MGD patients.

Prof. Yingying GAO
2nd Affiliated Hospital of Fujian Medical University, CN

E•Eye not only allows us to help patients prevent progression of their disease but also helps provide relief for our severe cases too. Our patients are very happy!

Dr Ritesh PATEL
See & Be Seen Eyecare, CA

I have been using E•Eye since January 2016. E•Eye is the best solution to treat evaporative Dry Eye, especially in women of menopause age with MGD.

Dr Luca VIGO
Carones Vision, IT

E•Eye has provided long-term relief to patients of varying eye dryness, even the toughest cases.

Dr Wassim ALTROUDI
Ebsaar Eye Surgery Center, UAE

E•Eye combined with premium cataract/IOL surgery improves visual outcomes in my practice.

Dr Aloysius Joseph LOW
Vista Eye Specialist, MY

I'm very happy to have E•Eye in my clinic, because my patients are improving their ocular surface, quality of vision, and quality of life as well.

Dr Liliana NOBREGA
Oftalmocenter Victoria, BR

E•Eye IRPL® is my therapy of choice in all patients with Evaporative DED by MGD.

Dr Alfredo CARBAJAL
Usyplas, Cuenca, EC

I regard treating the ocular surface as key to my success and the E•Eye device as an important therapeutic modality.

Dr Johann KRUGER
Tygervalley Eye and Laser Centre, ZA

IRPL® is my treatment of choice for obstructive Meibomian Gland Disease.

Dr Denise LEE
EyecarePlus Springvale, AU

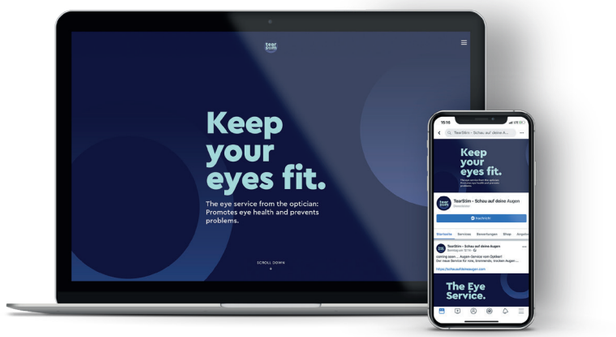
E•Eye is registered in the main Dry Eye markets: ANVISA (Brazil), CE (Europe), CFDA (China), FDA (USA), HC (Canada), TGA (Australia), ...

Practice Management support

ESW vision supports eye care practitioners in practice management with trainings, marketing, webinars, and patient-oriented resources.

The provided support includes:

- Product training
- User network and webinars
- connect® Experts Round Tables
- Educational brochures and Leaflets
- Educational videos
- Patient-oriented marketing
- A dedicated patient eye fitness resource website **www.keepyoureyesfit.com**
- Social media content



References:

(1) Veale J. E>Eye IPL Dry Eye Treatment Customer Satisfaction Results, July 2015.
(2) Craig JP, Nelson JD, Azar DT, et al. TFOS DEWS II Report: Executive Summary. Ocular Surface 2017 Oct;15(4): 802–812. doi: 10.1016/j.jtos.2017.08.003
(3) Lemp MA, Crews LA, Bron AJ, Foulks GN, Sullivan BD. „Distribution of aqueous-deficient and evaporative dry eye in a clinic-based patient cohort: a retrospective study." Cornea. 2012 May;31(5):472–8. doi: 10.1097/ICO.0b013e318225415a. PMID: 22378109.
(4) Dalton, M. Understanding Prevalence, Demographics of Dry Eye Disease, Ophthalmology Times, 1 July 2019, www.ophthalmologytimes.com/view/understanding-prevalence-demographics-dry-eye-disease.
(5) Grand View Research, Inc., Dry Eye Treatment Devices Market Size Worth $400.8 Million By 2027, 24 November 2020, Eyewire News
(6) Abelson, Mark B., et al. "The Form and Function of Meibomian Glands." Review of Ophthalmology, 10 May 2016, www.reviewofophthalmology.com/article/the-form-and-function-of-meibomian-glands.
(7) Pflugfelder, Stephen C, and Cintia S de Paiva. "The Pathophysiology of Dry Eye Disease: What We Know and Future Directions for Research." Ophthalmology vol. 124,11S (2017): S4-S13. doi:10.1016/j.ophtha.2017.07.010
(8) Wolffsohn JS, Travé Huarte S, Jones L, Craig JP, Wang MTM; and TFOS ambassadors. "Clinical practice patterns in the management of dry eye disease: A TFOS international survey." The ocular surface vol. 21 (2021): 78–86. doi:10.1016/j.jtos.2021.04.011
(9) Dash N, Midland Eye Clinic, UK. 20 months experience with IRPL®. Data on File.
(10) Giannaccare G, Taroni L, Senni C, Scorcia V. Intense Pulsed Light Therapy In The Treatment Of Meibomian Gland Dysfunction: Current Perspectives. Clin Optom (Auckl). 2019;11:113–126 (https://doi.org/10.2147/OPTO.S217639)
(11) Third Hospital of Peking University. Evaluation of the Safety and Effectiveness of the Controlled Discharge Xenon Flash Lamp Device in the Treatment of Meibomian Gland Dysfunction Caused Dry Eye. 2014. Data on File.

E-Eye

Technical data

Made by E-SWIN

Medical certification

IRPL®
INTENSE REGULATED PULSED LIGHT technology

Patented technology

Dimensions	345 × 320 × 440 mm
Weight	11,5 kg
Dimensions packaging	740 × 460 × 610 mm
Wavelength	> 580–1200 nm
Technology	IRPL® (Intense Regulated Pulsed Light)
Manufacturer warranty	2 years
Device service	Maintenance-free
Installation type	Desktop unit, mobile use
Registrations	ANVISA, CE, CFDA, FDA, HC, TGA, ...

Make your patients' eyes happy!