

LASIK

FOR PERFECT VISION

sehkraft<sup>o</sup>

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# LASIK

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experience a new dimension

# THE SPECIALITY OF sehkraft

As early as 1992, we were fascinated by the possibilities of modern laser technology, which today allows us to help our patients achieve perfect vision in just a few minutes, make them independent of glasses and contact lenses and thus significantly improve their quality of life. Doing this to the highest perfection is a passion that unites our entire team.

We have specialised in the use of innovative lasers in ophthalmology for 30 years, have helped to drive the development of these technologies and can look back on the experience of more than 70,000 successful LASIK treatments. As an international reference centre for leading companies in ophthalmology, we always have an innovative edge over others. For example, we are the only centre in Germany and Austria to have the complete REFRACTIVE SUITE from Alcon/WaveLight, currently the fastest laser combination in the world. We are also the first in the world to perform Femto-LASIK based on „InnovEyes/ wave-light plus“ - an AI-supported measurement and optimisation of the data required for LASIK.

In 2007, we added refractive lens surgery to our spectrum to be able to choose the optimal solution for you from all the available solutions. The range of treatments we now offer can only be found a few times in the world. We are therefore often able to help patients who cannot be treated in other centres.

**WE OFFER YOU THE RESULT-  
QUALITY AND SAFETY,  
YOU WANT FOR YOUR EYES.**

As an owner-managed family business, we are particularly proud of our exceptionally experienced and highly qualified team. This is unique in its constellation, and this does everything for the optimal result of each individual patient.

This is the only way we can live up to the trust you place in us, guarantee you excellent results and maximum safety, and fulfil your dream of life without glasses.

We look forward to seeing you!



# SOLUTIONS FOR A SPECTACLE-FREE LIFE

## **Our solutions for a glasses-free life at a glance**

Today, around 70% of the population is dependent on glasses and contact lenses. Modern refractive surgery offers a suitable solution for a glasses-free life for almost everyone.

## **For ametropia & astigmatism**

A natural and sustainable solution is the gentle laser eye treatment by means of individual modern Femto-LASIK. This enables us to correct from -12 to +6 diopters and additional astigmatism up to 8 dioptres. This procedure is the safest and most precise in all of medicine. It is 25 times more accurate than glasses and contact lenses and takes only about 7 minutes for both eyes.

To achieve the best possible optics and thus maximum visual acuity as well as a better quality of vision, we at sehkraft calculate a completely individual, tailor-made ablation profile for each eye instead of relying on standardised profiles as is usually the case. We use our own data and experience from more than 70,000 operations over more than 30 years as a basis. Since autumn 2019, we have been supplementing this expertise in the world's first AI application for refractive surgery, InnovEyes.

In the case of very high ametropia, the implantation of a special contact lens (Visian ICL) can be the best solution. With this lens, we can help people

with refractive errors from -18 to +10 dioptres to live without glasses. The treatment is performed on an outpatient basis in a twilight sleep and only takes about 15 minutes. Of course, the implanted lens cannot be felt or seen in the eye. If the refractive conditions of the eyes should change over time, the lens can easily be replaced.

**AMETROPIA & CORNEAL  
CURVATURE ARE PERMANENTLY  
REMOVED WITH THE HELP  
OF GENTLE FEMTO-LASIK.**



New quality of life  
after LASIK



**For presbyopia**

Presbyopia is a natural part of getting older. The natural lens becomes increasingly dense throughout life, making it less flexible and thus dysfunctional. From the mid-forties onwards, reading becomes more and more difficult, and no matter how young you feel, you will have to wear reading glasses at some point. But nowadays you no longer must put up with that.

**Monovision by Femto-LASIK for the correction of Presbyopia**

Monovision is an excellent method of refractive surgery to correct presbyopia and to make reading glasses superfluous as far as possible. This is a form of individual Femto-LASIK. The leading eye is optimised for distance vision and the non-dominant eye for near vision.

**AN EXCELLENT OPTION TO  
GET RID OF READING GLASSES  
IS MONOVISION.**

For this eye to see well at close range, it is adjusted to a slight myopia of -0.5 dpt to -1.5 dpt. A prerequisite for the success of this procedure is the perfect interplay of both eyes. This can be easily tested by simulating the result of monovision beforehand.

**The Refractive Lens Exchange**

Another wonderful way to permanently correct presbyopia. The best way to achieve this is refractive lens exchange. Here we replace the dysfunctional natural lens with a state-of-the-art multifocal premium artificial lens, e.g., from Carl Zeiss, which enables good vision at all distances. The procedure is performed on an outpatient basis in a twilight sleep and takes only about 15 minutes. Of course, if desired, we also use a special femto-second laser, which makes the procedure extremely precise and particularly gentle. The charming thing is that this procedure prevents the development of cataracts in old age.

**REPLACING THE NATURAL LENS  
OF THE EYE WITH A MULTIFOCAL  
LENS ENABLES GOOD VISION AT  
ALL DISTANCES.**

# FEMTO-LASIK

Femto-LASIK is considered the best researched and safest procedure in medicine and is internationally regarded as the „gold standard“ of laser eye surgery. Over 1,000 scientific publications (more than any other procedure in medicine) prove this in numerous long-term studies. The safety is significantly higher compared to wearing soft contact lenses and the stable positive long-term effects have also been known since the first long-term results were published in 1998.

Classic LASIK, in which the flap is still cut with a precision knife (microkeratome), has long been outdated, but is unfortunately still standard in many centres.

## ALREADY OVER 100 MILLION LASIK OPERATIONS WORLDWIDE.

With over 100 million procedures performed worldwide to date, it is the most common refractive surgical procedure in the western world. We have been using this procedure since 1995 and have the experience of more than 70,000 successful treatments.

In addition, we only use the most advanced procedures of individual Femto LASIK. This means that for each individual patient to calculate a unique

treatment regimen. As the first in the world, we have also been using AI for this since 2019. Therefore, in addition to the sustainable treatment of normal vision defects such as:

**Myopia up to approx. -12 dpt**  
**Hyperopia up to +6 dpt**  
**Astigmatism up to 8 dpt**  
**and in many cases even higher**

In addition, we can correct optical errors of a higher order and thus improve the quality of vision. We also reliably solve complicated problems, such as those that can occur with scars or irregularities of the corneal surface.



For this reason, we can also help patients for whom there are no treatment options in other centres. The US Navy and NASA have even approved LASIK for NASA jet pilots and astronauts after wind tunnel tests.

### EARLY LASIK PREVENTS DAMAGE FROM CONTACT LENSES AND STOPS THE PROGRESSION OF MYOPIA.

In the USA, recent studies show that early LASIK can reduce much of the damage, particularly the chronic dry eye syndrome, caused by decades of wearing soft contact lenses.

In addition, early LASIK stops the progression of myopia in many cases and the dry eye syndrome after LASIK usually only lasts a few days in young eyes.

Following the recommendations of the American Refractive Surgery Alliance, we therefore recommend having Femto-LASIK performed as early as possible, namely from the age of 18.



# THE TREATMENT STEP BY STEP

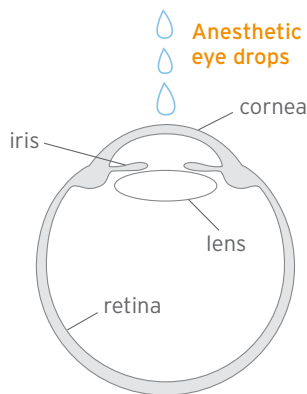
With Femto-LASIK, your refractive error is corrected in the uppermost corneal layer at a depth of only 0.1 mm, so that the treatment is completely painless. At the beginning of the laser treatment, the surgeon creates a flap with the femtosecond laser. This flap is carefully placed to the side like the cover of a book.

With the help of an excimer laser (cold light laser), the cornea is then optimised so that it has the ideal refractive power. To correct short-sightedness (myopia), the cornea is flattened because the eye is too long for incoming light rays to reach a

focal point on the retina. Tissue is removed mainly from the centre of the cornea.

The treatment of farsightedness (hyperopia) is carried out in the opposite way. The cornea receives a stronger refractive power centrally by only removing tissue in the outer area.

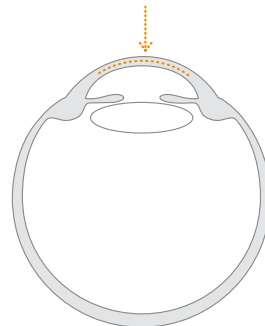
In astigmatism, the curvature of the cornea is more oval than round. This refractive error usually occurs in combination with short-sightedness or long-sightedness. The incoming light rays are then not bundled in a point, but on a line.



## 01 | Eye drops

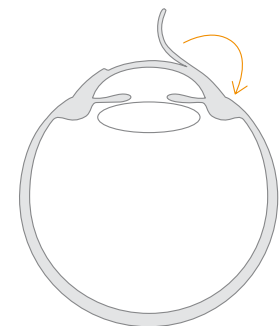
Administering of anesthetic eye drops.

## Femtosecond Laser Impulses



## 02 | Creation of the flap

The Femtosecondlaser creates a 0.1mm thin lamella (flap) in the upper layer of the cornea.



## 03 | Lifting of the flap

The very steady flap is carefully folded over (like a book cover).

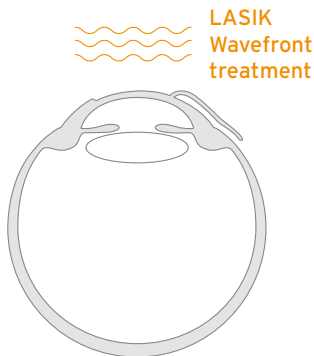
As a result, images not only appear blurred, but also slightly distorted. The laser is used to precisely correct the areas of the cornea that incorrectly refract the incoming light rays.

## THE AVERAGE TREATMENT TIME IS ONLY 7 SECONDS.

The average treatment time with our laser systems is only 7 seconds, which is extremely short. Afterwards, the corneal flap is gently repositioned, and sucks itself firmly into the cornea

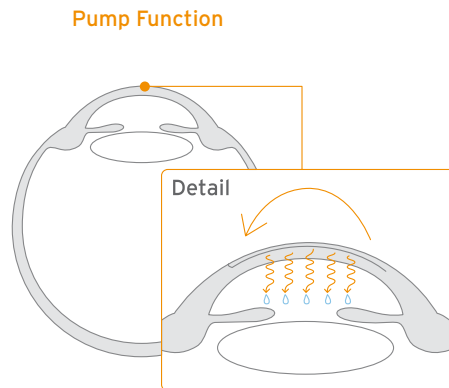
within a very short time due to the natural negative pressure and thus forms a body's own bandage at the same time. The flap edge is completely healed after only 4-6 hours.

Femto-LASIK is always performed on an outpatient basis and only takes about 7 minutes for both eyes. We are happy to give you a mild sedative beforehand to take away your anxiety and relax you. Anesthetic eye drops are completely sufficient to ensure that you do not feel a thing. And you will be fit again the same evening.



### 04 | LASIK

The refractive power of the cornea is changed in only 1.4 seconds per diopter by means of an excimer laser so that the refractive error is compensated.



### 05 | Completion

The flap is placed back onto the cornea. It attaches itself within minutes, due to the natural pump function of the cornea.

# GOLDSTANDARD

Your eye is as individual as your fingerprint. Different refractive powers of the cornea and lens, different curvatures in each point of the cornea and various optical defects of higher order make each eye unique. In addition, your personal wishes and demands on your vision play an important role.

Only with the help of the various procedures of individual Femto-LASIK can we take these factors into account when planning and calculating your very personal treatment profile.

**YOUR EYE IS AS INDIVIDUAL  
AS YOUR FINGERPRINT.**

We want to optimise your eye so that you not only see clearly, but that the quality of your vision improves: better contrast vision, better night vision, better 3-D vision. Achieving this goal is very demanding in terms of thinking, planning and calculation and requires, in addition to innovative technology, above all highly qualified and very experienced staff. Since autumn 2019, we have been the first company worldwide to complement this expertise with the AI application WaveLight plus (InnovEyes), which we co-developed.

Therefore, after a detailed examination, the analysis of all data and an intensive counselling

interview, we select the optimal method for you from the procedures described below.

## **Wavefront-optimised Femto-LASIK**

Wavefront-optimised Femto-LASIK is the basis of all our high-end individual procedures. We perform all treatments with the EX500 excimer laser. Its unique wavefront-optimised ablation profile creates large optical zones that consider the optimal curvature profile of the respective eye right into the periphery, while at the same time minimising tissue ablation. This is of great importance for your night and twilight vision. It is the first procedure to be certified by the strict American approval authority FDA as improving night and contrast vision.

**ONLY THROUGH INDIVIDUAL  
FEMTO-LASIK CAN ALL DEFECTS  
OF THE EYE BE PRECISELY  
CORRECTED.**

## **wavelight plus | AI-assisted femto-LASIK**

Since November 2019, we are very proud to be the first centre worldwide to offer our patients AI-assisted Femto-LASIK with the application InnovEyes, which we co-developed.



This new technology uses ray tracing to create a unique virtual computer-simulated 3D model of the patient's eye and calculates the individual ablation profile in an iterative process (tens of thousands of successive calculations to get closer and closer to the perfect result). A virtual validation operation is then carried out with this calculated profile. The result of the virtual Femto-LASIK is optimised by a new iterative computer simulation based on ray tracing technology. It is compared with the calculated optimal result and the calculated ablation profile is optimised until both match and the result is perfect. In this way, values of a 100th of a diopter can be corrected to an accuracy of a thousandth of a millimetre. A precision that has never been achieved before.

#### **A-CAT | Wavefront-guided Femto-LASIK**

In addition to the refractive errors of short-sightedness, long-sightedness and astigmatism, we measure another 24 errors of higher optical order such as e.g. spherical aberrations or coma. These defects impair the quality of the retinal image and thus your maximum visual acuity. With the help of wavefront technology, we can also correct these defects up to a level of -6 dioptres and correct them. This is the first time in medicine that it has been possible to improve a human sensory organ.

#### **Custom-Q | Q-Femto-LASIK**

We were the first German centre to introduce the Q-Femto-LASIK technology. The Q-Value adjustment is a new tool that allows further individual adjustment of Femto-LASIK to the respective eye. In some cases, the reduced quality of vision is caused by an imperfect curvature of the cornea. Therefore, the incoming light rays are not bundled in an optimal focal point, especially in twilight. Due to the Custom-Q treatment, we can specifically change the shape of your cornea and its course of curvature or asphericity (defined by the so-called Q factor) to within a 100th of a dioptre, thus achieving an improved focal point.

**THE MOST EXPERIENCED  
SPECIALISTS AND THE MOST  
ADVANCED TECHNOLOGY  
FOR TREATMENTS AT THE  
HIGHEST LEVEL.**

#### **T-CAT | Topography-guided Femto-LASIK or Contoura Vision**

We have had the technology for topography-guided Femto-LASIK since 2001. It is used for patients with high astigmatism, for the treatment



of corneal scars and other irregular conditions. This is our method of choice for the treatment of surgically induced corneal irregularities, for example.

**OPTIMISED VISION QUALITY:  
BETTER CONTRAST VISION.  
BETTER NIGHT VISION. BETTER  
3-D VISION.**

Just as with all other procedures, the wavefront-optimised Femto-LASIK with all its advantages is the basis of the treatment. In addition, the data from the Topolyzer and the Oculyzer, which determine the surface and posterior surface of the eye, are used.

The data, which analyse the shape of the cornea and its thickness in more than 22,000 measuring points, is used in the calculation and generation of the ablation profile. The further development of T-CAT/Contoura Vision received approval from the American FDA in 2014 and has since been successfully used for the correction of only minor optical deviations.

### **STREAMLIGHT C-TEN | Advanced Surface Ablation**

Occasionally, Femto-LASIK is not possible due to the thickness of the cornea or its surface condition. In these cases, we opt for a state-of-the-art, completely contact-free correction directly on the surface. However, healing takes 2-4 days and the increase in visual acuity is slower.

# FEMTO-LASIK EXPERIENCE

## Your consultation appointment

You do not need to take a contact lens break before this appointment. However, please remember your storage box and glasses if necessary. First, we will carry out a series of detailed preliminary examinations. These serve to precisely and accurately measure your eye and are important to exclude certain diseases that represent a contraindication to Femto-LASIK.

This includes checking your spatial vision, your colour and shape recognition and the visual acuity you subjectively perceive as optimal. Diagnostics of the corneal surface with the aid of a colour-supported video topography system at 22,000 points can detect certain optical defects.

We determine the thickness of your cornea three-dimensionally at 25,000 points to ensure its stability after treatment. Depending on the dioptre value, the eye is measured with the aberrometer to check the quality of your visual perception. This determines the total of all optical defects of your eye, and we can then evaluate them individually. For this measurement, your pupil may need to be dilated with eye drops, but it will constrict again within 3-4 hours after the examination. Finally, we talk about it. We will discuss your personal expectations of the treatment result in detail with you and select the best solution for you, considering all the measurement results.

## Planning your Femto-LASIK

Once you have decided on Femto-LASIK, we will arrange a treatment date with you.

Please note that you should not wear hard contact lenses for 6 weeks and soft contact lenses for 2 weeks before your appointment, because they deform your cornea. In the case of Ortho-K lenses, this can even take several months. We are of course happy to provide soft lenses for hard lens wearers for the transitional period. Do not apply make-up to the eyes during the first week after the treatment. Those who like should schedule an appointment for eyelash tinting beforehand.

In the first few hours after the treatment, you are not allowed to drive a vehicle and using public transport can also be exhausting. Many of our patients therefore find it very pleasant to be picked up. You should plan about 4-6 hours for your Femto-LASIK day.

You can eat and drink normally on the day of treatment. You should only avoid make-up, tinted day cream, perfume or aftershave. It is also a good idea to protect your eyes with sunglasses for the first few hours after surgery.

Please also plan for the follow-up examination on the next day. As a rule, you can then come with your own car.



### Your individual Femto-LASIK

Before the actual treatment begins, we carry out a whole series of preliminary examinations. These are at least as important as the laser treatment itself and serve to precisely determine your medical values and for quality control. We check, evaluate, select and validate the currently acquired data once again. Our team of experienced master opticians, engineers and doctors then decide together which form of Femto-LASIK is best for you. We then use this selection to calculate a customised treatment scheme for each of your eyes using special software and transfer this data directly to the laser system's control computer via a shielded network.

If you like, we can give you a mild sedative tablet to help you relax. Of course, your companion can

stay with you the whole time and hold your hand.

After you have made yourself comfortable on the couch, we disinfect the eye environment, and you are given the anaesthetic eye drops. Then one eye is covered. So that you do not have to permanently hold the eye to be treated open during the procedure, a small spring takes care of this for you. If you wish, we can explain each step of the treatment to you so that you always know what to expect next. You will see a flashing green light above you, which you simply look at during the treatment. At this point we can assure you that you can't go wrong at all. When you move your eye, the laser moves with it.

We work with a unique fast-track technology that can track 1,050 times per second.

IF YOU WISH, WE CAN EXPLAIN  
EACH STEP OF THE TREATMENT TO  
YOU SO THAT YOU ALWAYS KNOW  
WHAT TO EXPECT NEXT.



The laser system checks the position of your eye, senses any positional change and compensates with a reaction time of 2 milliseconds so quickly that the laser pulse is placed exactly where you want it.

First, we position the guide ring for the femtosecond laser. In a few seconds, an approximately 0.1 mm thin flap is created. You will only feel a slight pressure. During this time, it will be dark for you for a short time. A few seconds later you will be able to see again, but the green light will be slightly blurred. The flap is now gently put to the side. Your vision will now become blurrier.

The excimer laser has been checked beforehand and programmed to your individual ablation profile. Only now does the actual correction begin.

Only now begins the actual correction of your refractive error, which lasts on average only 7 seconds due to the speed of our systems. You feel absolutely nothing, only hear a buzzing sound, can smell the tissue dust in the air and see colourful lights.

The flap is then gently placed back into its original position. The flap will attach itself to your eye and will be blink-proof after just one minute, while at the same time providing the body's own protection. In addition, we protect your eye with a soft contact lens. Your Femto LASIK is now complete. Your vision is still a little milky, but you can already see your surroundings more clearly than before without glasses.

After a rest period of about half an hour, during





which you can relax a little, we will examine you again and remove the soft contact lens. You will receive a care package with everything you will need for the next few hours: Antibiotic eye drops and tear substitute as well as eye protection for the night so that you do not accidentally rub your eye. In the next 4-6 hours, you will have a foreign body sensation and your eyes may water and burn. It is best not to expose your eyes to visual stimuli during this time. Just try to relax or sleep. Afterwards, you can already perceive the world around you with new clarity and usually go out again in the evening. The next morning, you will have another check-up with us and you will receive your individual eye drop regimen for the next few days.

**„THE RESULT OF THE OPERATION IS AWESOME! I SHOULD HAVE DONE IT MUCH EARLIER AND CAN ONLY RECOMMEND IT TO EVERYONE“,**

**says Fabian Hambüchen, Gold medallist in Rio de Janeiro, who wore glasses and contact lenses for 20 years.**

### **After your LASIK**

The healing process is very fast. After just one day, you can return to work, jogging, walking, tennis, golf, weight training, aerobics, skiing, cycling and flying with protective goggles. After one week, surfing, sunbeds and saunas are allowed. You should refrain from swimming in public pools for 2 weeks, and you may return to scuba diving after 4 weeks. During the healing phase, your eyesight may still fluctuate, but is usually stable after about 3 months. We would then like to check your eyes again. Of course, this can also be done by your local ophthalmologist.

# TEAM sehkraft

Precision, perfection, attention to detail, quality awareness, joie de vivre, empathy, reliability, responsibility - these are the qualities that unite our team.

We all share the same passion for the fascinating possibilities of modern refractive surgery, combined with high ethical standards in our work.

## THE HIGHLY QUALIFIED AND EXPERIENCED TEAM IS THE KEY TO OUR SUCCESS.

Our high-performance team consists of more than 50 employees, including, in addition to ophthalmologists, graduate engineers in ophthalmic optics, Master of Science in ophthalmic optics/optometry, Bachelors of Science in optometry, optometrists, master opticians and ophthalmic opticians, who are responsible for all measurements and, above all, for the validation of the collected data as well as the implementation of international studies. Furthermore, they explain competently, understandably and with time.

Our qualified medical and reception staff are specially trained in their fields to ensure adequate counselling and care for our patients.

## OUR PASSION, EXPERIENCE AND EXPERTISE FOR YOUR EYES.

The creative head and medical director of this team is Matthias Maus, founder and sole owner of sehkraft. He has been a practising ophthalmologist since 1991 and has been working in the field of photorefractive corneal surgery since 1992. He is one of the pioneers in the technical development of lasers and applications and is one of the most experienced surgeons internationally, having performed more than 70,000 LASIK operations.

All our surgeons have been intensively trained by Matthias Maus and of course operate according to the same high "sehkraft" standard.

In order to ensure and permanently improve our high-quality standard and to promote the motivation and personality of our employees, regular internal and external training and further education, feedback meetings, audits and consistent coaching take place.

Together we have only one goal: that you can enjoy life without glasses and contact lenses and see better than ever before - and that is our motivation!





# OUR COMPETENCE FOR PROGRESS

Due to our qualifications, sehkraft has been an international reference centre for leading companies in the field of ophthalmology for years. We have an active exchange of experience with their development departments to promote and support innovations. The core of these relationships is, on the one hand, active product development and, on the other hand, the training and further education of international ophthalmologists.

For example, we contributed significantly to the approval of the WaveLight ALLEGRETTO excimer laser by the US Food and Drug Administration (FDA). The nomograms used for the approval were based on our data.

The WaveLight CONCERTO and the REFRACTIVE SUITE were also developed in close cooperation with us.



The latest innovation, „InnovEyes“, is based on data that we already published in 2011 as part of the famous ray tracing study.

## MORE THAN 70,000 PATIENTS HAVE ALREADY PLACED THEIR TRUST IN US.

This function as a reference centre guarantees us continuous access to state-of-the-art technologies and a permanent innovative edge over other surgical centres.

### Training centre

We have 70 to 100 ophthalmologists from all over the world with us every year for further training. At sehkraft, we don't teach them how to do surgery, but rather the complex analysis of the measurement data and its implementation in the best possible treatment options.

### Quality standards

It is our own claim to be the international quality leader. For years, we have been committed to the international definition and control of quality and safety standards in the field of refractive surgery to provide patients with objective decision-making criteria. The requirements for our own internal sehkraft quality standards go far beyond this.

### Trust

To date, more than 70,000 patients have placed their trust in us. Due to our range of services, we enjoy a special position in top-class sport. More and more athletes are aware of the effects of perfect vision on their performance and rely on our expertise. Among them Fabian Hambüchen, Michael Greis, Tobias Angerer, Jochen Behle, John Kostecky, Jonas Reckermann, Katrin Holtwick and Ilka Semmler - to name but a few. As an official partner of the „PGA of Germany“ and the „PGA of Austria“, we have already lasered many playing and teaching pros. We are also proud to have been the official and exclusive partner of the German and Austrian Sports Aid in the field of refractive surgery for years.

## OUR DEVELOPMENT WORK GUARANTEES OUR INNOVATIVE EDGE.

# OUR DIAGNOSTIC TECHNOLOGY

Our technology in the areas of diagnostics and treatment is unique in Germany and Austria. There are only a few centres worldwide that work at this level. This technological advantage, in combination with our decades of experience, is the basis for maximum safety and ensures the high satisfaction of our patients. Individual femto-LASIK treatment has only been made possible by the development and perfection of modern diagnostic equipment. Correct and reliable diagnostic data, perfect adjustment of the devices to the laser system and permanent dynamic quality assurance are the basis for successful treatment.

This means that it can be optimally adapted to the individual needs of each patient. For this purpose, we have our own department for apparatus-based diagnostics, where our highly qualified staff use only the most modern equipment.

## **InnovEyes**

The world innovation InnovEyes is the result of a joint development project of the two German companies WaveLight and Oculus, in which the Cologne sehkraft team around Matthias Maus has been involved since 2010. For the first time, AI and ray tracing are being used to develop a virtual computer-simulated 3-D model of the patient's eye is created. In only 15 minutes, an ablation profile is calculated - which is completely unique and

personalised. This is important because each eye is as individual as a fingerprint and only through this precision can better vision be achieved than is possible with contact lenses or glasses. Visual acuity, contrast vision, night vision and 3D vision are also optimised through this.

Instead of using a schematic model eye for the calculation, each eye can now be considered specifically.

The software simulates over 2,000 beam paths in the individual 3-D model of the patient's eye by iterative calculation. Iterative calculations require very powerful computers, as they come closer and closer to the perfect result through tens of thousands of successive calculations. Afterwards, a virtual validation operation is carried out with this calculated profile.

The computer-simulated result is compared with the calculated optimum result and the calculated removal profile is optimised until both match and the result is perfect.

Values of one hundredth of a diopter can be corrected to an accuracy of one thousandth of a millimetre. The ray tracing algorithm thus enables a precision of the ablation profile that has never been achieved before - this is individualised medicine at the highest level.

### **ALLEGRO Topolyzer™ | Corneal Topographer**

Assistance of our colour-based video topography system, we determine the actual surface shape of your cornea in 22,000 measuring points. The individual curvature of your cornea measured in this way is included in the planning of your Femto-LASIK. In addition, this precise representation enables us to reliably diagnose certain corneal diseases that may be a contraindication for Femto-LASIK.

### **ALLEGRO Oculyzer™ II | Scheimpflug camera**

This innovative measuring instrument makes it possible to measure the actual thickness of your

cornea three-dimensionally. Instead of only in one central point, we analyse your cornea in approx. 25,000 points on the front and back surface. Only in this way is a true height measurement possible, which guarantees precise results and also enables an analysis of the stability of the cornea. The oculyzer also measures any corneal or lens opacities that may be present and is able to display the anterior segment of the eye its structure.

**THE QUALITY OF OUR  
DIAGNOSTIC DATA IS THE BASIS  
FOR A PERFECT RESULT.**





**ALLEGRO Analyzer™ | Aberrometer**

The aberrometer measures all optical aberrations of your eye (refraction, aberrations and other higher order errors) that affect the quality of the retinal image and thus the maximum visual acuity. We have the Tscherning technology for wavefront measurement. This measures the incoming wavefront by projecting a grid of light points into your eye and recording its image on the retina by a highly sensitive infrared fundus camera. Any deviations of this image from the original are mathematically analysed to determine the errors of the entire optical system and to calculate the corresponding optimal ablation profile.

**ALLEGRO BioGraph™ | Biometer**

The BioGraph™ is the first biometer to feature the unique EyeClick technology. This enables an exact and contactless measurement of your eye length and other structures of your eye. The eye is an optical system with 2 lenses (cornea and lens) and an aperture (pupil), comparable to a camera. The retina corresponds to the film or chip. The distances between the individual components essentially determine the optical effect. This new and patented process.

The new „Drive“ system uses 16 scans per measurement to precisely determine these distances, divided into anterior and posterior surfaces. For this purpose, the central anterior curvature values are measured and the distribution of the blood vessels on the conjunctiva is documented. This can be used to control and compensate for possible cyclorotation (rolling movement of the eye) during lasing.

**YOU CAN EXPECT A RAZOR-SHARP VISUAL EXPERIENCE AND A BETTER QUALITY OF LIFE.**

**OCULUS Corvis® ST | Tonometer**

The OCULUS Corvis® ST uses an ultra-fast Scheimpflug camera (4,300 images per second) to document the reaction of the cornea to a defined air blast. This allows conclusions to be drawn about the basic stability of the cornea.

# OUR LASER TECHNOLOGY

Of course, we work exclusively with lasers of the latest generation. Femto-LASIK uses 2 different lasers. The femtosecond laser to create the flap and the excimer laser to bring the cornea into the ideal shape. We are the only centre in Germany and Austria to have the complete REFRACTIVE SUITE, which opens a new dimension in Femto-LASIK.

For the first time, it has been possible to link the diagnostic devices, the femtosecond laser and the excimer laser, with each other in a shielded network. This means that the individual measurement data is transmitted to the lasers via this network. The flap is then aligned over the planned ablation zone of the excimer laser via this integrated data exchange - optimal and accurate to a tenth of a millimetre. All information about the flap that has just been generated is automatically considered during the subsequent treatment with the excimer laser.

The Refractive Suite is another step towards individualising our Femto-LASIK treatment. Thanks to the completely freely selectable position of the flap, we can reliably optimise our treatment options, especially for patients with farsightedness and complex corneal curvatures.

At the same time, Femto-LASIK with this system is significantly more pleasant and more comfortable for the patient. For us, the use of the entire REFRACTIVE SUITE from WaveLight is standard for every patient.

## **Femtosecond laser**

The femtosecond laser is an infrared laser used to create the flap. The occasionally still used microkeratome is an obsolete method. The femtosecond laser works at a wavelength of 1,053 nm and emits very short laser pulses with a very small spot size (1/100 mm). In contrast to the excimer laser, the energy of the laser beam does not act on the surface, but at a predetermined depth inside the cornea, where it produces thousands of small bubbles that, when lined up, form a complete cut in one plane. This laser is the most advanced method for creating the flap.

## **FS200**

We are the first centre in Germany to have installed the FS200 from WaveLight. With this laser it takes only 6 seconds to generate the flap. Its exceptional accuracy guarantees reliable and precise predictability of size, position, shape and thickness of the flap. At the same time, the treatment is much gentler and more pleasant for you



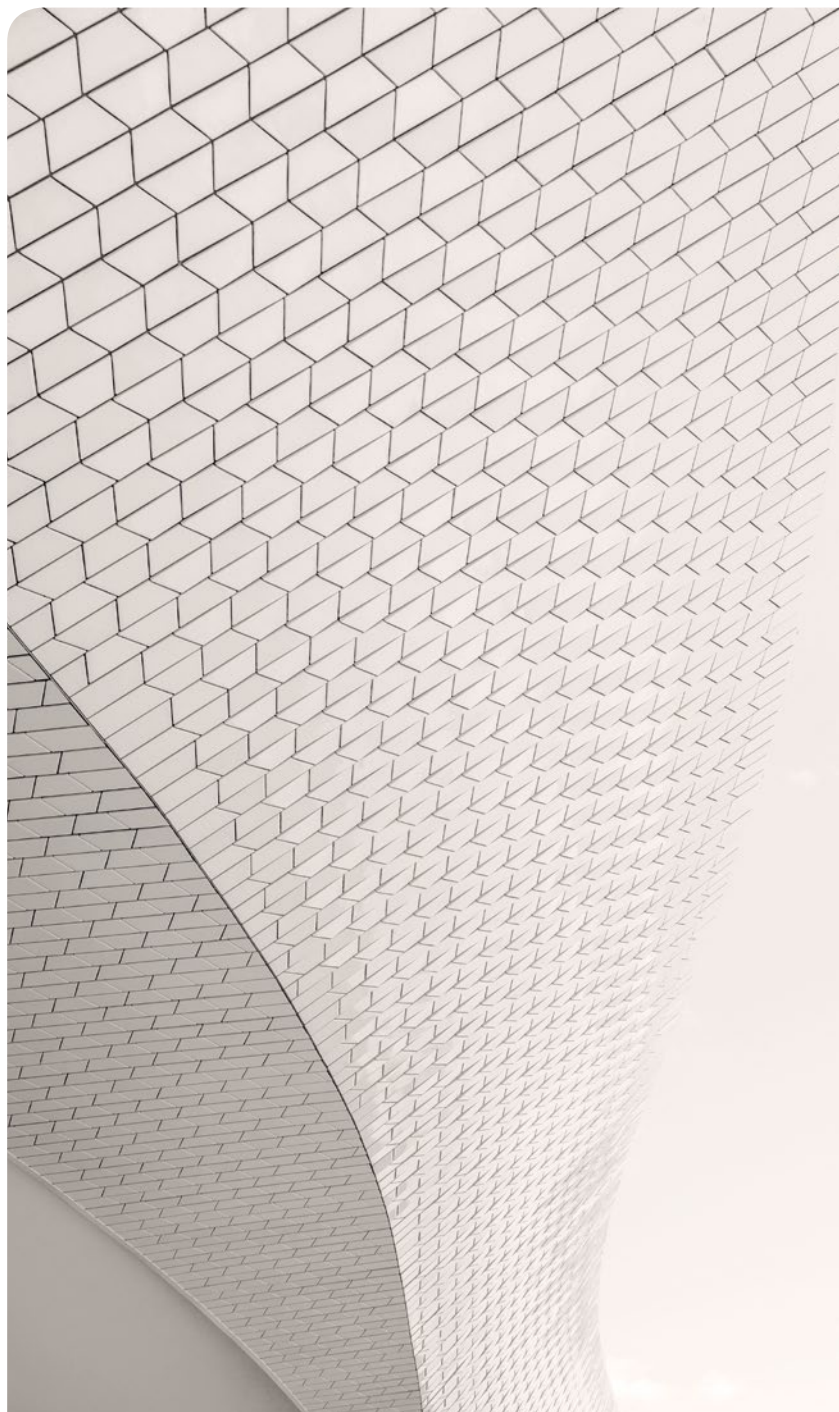
due to the low energy per pulse and the unique docking system. Together with the EX500 excimer laser, it forms the REFRACTIVE SUITE.

### **EX 500 Excimer Laser System**

The excimer laser is a cold light laser with a wavelength of 193 nm. It penetrates less than 1/1,000 mm into the cornea and thus enables precise and gentle modelling without affecting adjacent tissue. Due to our partnership with the international technology leader Alcon / WaveLight GmbH from Erlangen and our function as a worldwide training and reference centre, we only use the most modern technologies.

**UNIQUE EYE LASER  
TREATMENT AT THE  
HIGHEST LEVEL:  
PRECISE AND GENTLE.**

These lasers, which we have been actively involved in developing and refining from the very beginning, meet the highest demands in terms of speed, precision and safety. That is why this type was the first European laser to be approved by the American Food and Drug Administration (FDA) as





„effective and safe“ for the treatment of short-sightedness, long-sightedness and astigmatism in the USA. The precision of the treatment results and the positive influence on night vision and contrast vision were highlighted as particularly remarkable. In addition, visual acuity could be improved to above-average values in many cases.

### EVEN GENTLER THANKS TO 40% LESS TISSUE REMOVAL.

Thanks to the high ablation speed of 500 pulses (Hertz) per second, we can reduce the treatment time to a minimum and ensure an extremely even ablation. One diopter is corrected in only 1.4 seconds, which reduces the average treatment time to a few seconds. Another outstanding feature of our lasers is the wavefront-optimised ablation profile. In each of our Femto-LASIK methods, an essential feature of the wavefront-guided treatment is integrated when calculating the ablation profile. The EX500 is the only laser that measures and controls the following as standard. The system displays the corneal ablation and the remaining corneal thickness in real time during the entire treatment.

Next to speed, precision is one of the most important factors for successful LASIK. The EX500

removes only 0.7 thousandths of a mm of tissue per pulse. This achieves an extremely high level of precision. Due to its special ablation profile, it also ablates up to 40% less tissue than other lasers. The WaveLight Perfect Pulse Technology is unique. Each individual laser pulse is energetically controlled during the treatment. The energy is checked 3 times from generation to impact on the eye. Only such a constant energy level guarantees accurate results and maximum safety.

A unique intelligent 6-D eye tracking technology ensures maximum safety. It checks the position of your eye more than 1,000 times per second, tracks even the fastest eye movements and changes the position of your eye positioning of the laser beam based on the current eye position.

## A UNIQUE 6-D EYE TRACKING TECHNOLOGY ENSURES THAT YOU AS A PATIENT CAN DO NO WRONG.

In just a thousandth of a second, the position of your eye is determined with the help of a video camera, the position data is transmitted to the laser and the laser beam is readjusted. Before a new laser pulse is sent to your eye, the eye tra-

cker actively checks the position of your eye once again. If your eye moves too quickly or outside a predefined tolerance, the laser stops automatically and only continues the treatment when your eye is within the target parameters again. As a patient, you have the security of knowing that you cannot make a mistake that would affect the result. So you can be completely relaxed during the treatment.

# OPPORTUNITIES AND RISKS

After we have described the possibilities and opportunities of Femto-LASIK, we would now like to inform you about the potential risks and side effects of the procedure. We also deliberately mention extremely rare side effects, because we want you to include these in your decision-making process.

## FEMTO-LASIK IS SAFER THAN CONTACT LENSES.

Our many years of experience enable us to reduce the risks to a minimum in advance through the critical selection of our patients and the individual determination of the optimal treatment method in compliance with international guidelines and quality standards.

Femto-LASIK is an extremely safe and protective procedure. It has been „scientifically recognised“ since 1998. This means that the advantages and disadvantages of the procedure are largely known - as proven by studies - the area of application can be clearly defined, and long-term results are available that make late complications appear unlikely. Studies show that LASIK is significantly safer than wearing soft contact lenses.

The sensitivity of the cornea is reduced in the initial period after LASIK. As a result, the eye may

temporarily no longer produce enough tear fluid to moisten the corneal surface sufficiently.

This condition is called dryness of the eyes. It manifests itself as a foreign body sensation and can cause fluctuations in visual acuity. This discomfort can last for weeks to months. However, tear substitutes help well through this period.

During the day and in the dark, a temporary sensitivity to glare may occur and last for several weeks. It can lead to the perception of halos of light or reduced visual acuity in twilight or glare. However, the phenomenon usually disappears on its own. These side effects are more common with short-sightedness of more than -5 dioptres and with long-sightedness. We can considerably reduce this risk by treating large optical zones and by using the aberrometer.

The use of the femtosecond laser can lead to a temporary light sensitivity, the so-called TLS (Transient Light Sensitivity). This usually disappears within a few weeks.

The use of eye drops containing cortisone can cause a short-term increase in intraocular pressure. This is extremely rare, as these drops are usually not administered for longer than approx. 1 week.



In very rare individual cases, the top layer of the cornea (epithelium) may grow in under the corneal flap. This complication is only noticeable after 4-6 weeks and occurs more frequently with outdated laser systems with longer surgery times and LASIK with the microkeratome but can be remedied by a short surgical intervention. Therefore, please be sure to attend your follow-up appointments.

Rubbing the operated eye can cause the corneal flap to shift or the upper corneal layer to wrinkle. These can significantly impair vision and then require a short revision procedure to smooth out the flap. Therefore, please avoid rubbing the eye at all costs in the first few days.

### JET PILOTS TAKE OFF AND LAND MORE SAFELY AFTER FEMTO-LASIK.

Approximately 3% of patients react to the removal of the cornea with slightly regrown corneal tissue. The resulting slight refractive error (0.25 to 0.75 dpt) will then be corrected definitively and free of charge at the earliest 6 months after the procedure. In principle, a subsequent correction is free of charge for the first 5 years.

After LASIK, there is a theoretical risk (< 1:10,000) of a postoperative infection, which can lead to scarring. To avoid this, you will receive antibiotic eye drops during and prophylactically after the operation. Please be sure to adhere to the drip schedule and the necessary follow-up appointments in the first period after the operation.

### THE FDA CERTIFIED THIS TYPE OF LASER AS THE ONLY ONE WITH IMPROVED NIGHT AND CONTRAST VISION.\*

Through the Femto-LASIK treatment, we make you normal-sighted. This means, however, that you will need reading glasses from around the age of 45, like everyone with normal vision. Alternatively, we can then correct your presbyopia.

\* Results of the FDA approval study 2003

# COSTS

The costs for Femto-LASIK are currently 2,900 euros per eye. \* This applies to all laser surgical refractive procedures, regardless of the type of treatment we choose for you. Our aim is to achieve the best possible treatment result for you, which is why we do not charge for the additional measurements and calculations which might be necessary in your case.

You can transfer the amount in advance or pay on the day of treatment by mobile phone, cash or with your EC card. Unfortunately, statutory health insurers are not allowed to cover the costs.

According to the BGH ruling, private insurers must pay for the treatment in full or at least in part, but unfortunately, they very often try to avoid this obligation and send their insurers to low-cost providers. As a private patient, however, you have the right to choose the best treatment.

\* The basis for the calculation is the fee schedule for doctors (GoÄ). All prices are approximate and may vary in individual cases.

## **Funding**

You can also finance your LASIK treatment. Please contact us for further information.



# SERVICE

## **Telephone and video counselling**

For all those who wish to live without glasses and cannot or do not want to visit us, we have set up our telephone and video chat consultation. We will be happy to answer all your questions and advise you individually on your treatment options - from the comfort of your own home and even outside practice opening hours.

## **Information events**

We present the possibilities of our individual treatment options at regular information events. You can find the current dates at [www.sehkraft.de](http://www.sehkraft.de) and [www.sehkraft.at](http://www.sehkraft.at).

## **Non-binding quick check**

In our walk-in consultation centre in Cologne and in the sehkraft centres in Berlin and Vienna, we offer you a no-obligation quick check to see if Femto-LASIK is the best solution for you.

## **Weekend dates**

Get lasered on Fridays, re-examined on Saturdays and then start the next week without glasses or contact lenses! We are happy to offer you this service every month.





# FURTHER INFORMATION

## Ability to work

Unfortunately, we are not allowed to certify that you are unable to work. You may have to take leave for the day of treatment and the following day.

## Hotels

We have agreed attractive special conditions with some hotels for our patients. Please see our website for details.

## Location in Cologne

sehkraft is conveniently located in the centre of Cologne, only a few minutes' walk from the cathedral and the main railway station. You can reach us from Cologne Bonn Airport in just 15 minutes.

## Location in Berlin

sehkraft is located in the centre of Berlin, only a few minutes away from the Gendarmenmarkt, Reichstag and Brandenburg Gate. You can reach us from the airport in about 45 minutes.

## Location in Vienna

sehkraft is located in the heart of Vienna. St. Stephen's Cathedral and the Vienna Hofburg are in the immediate vicinity. You can reach us from the airport in only 20-30 minutes.



IF YOU HAVE ANY FURTHER  
QUESTIONS, PLEASE DO NOT  
HESITATE TO CONTACT US.

LASIK BY SEHKRAFT

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# LASIK

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## PARTNER



Service-Partner

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