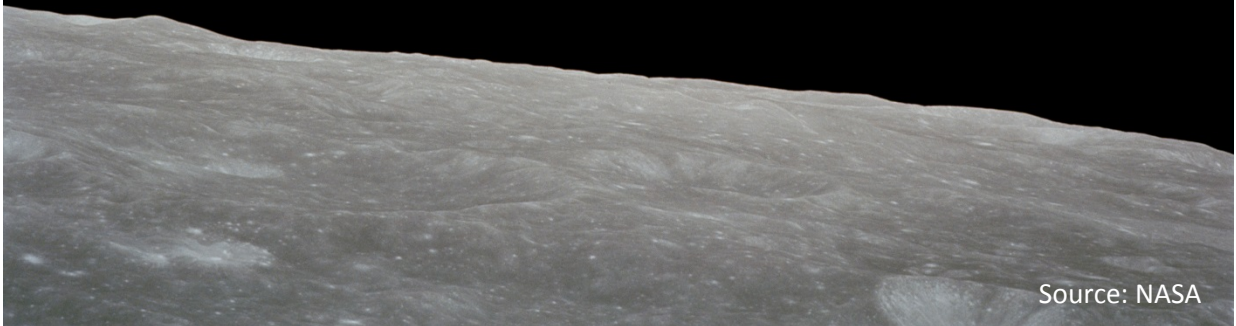




Seeing beyond ZEISS Convention 2019

Press Kit

21st / 22nd October 2019 | Berlin



Source: NASA



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About ZEISS

ZEISS is an internationally leading technology enterprise operating in the fields of optics and optoelectronics. In the previous fiscal year, the ZEISS Group generated annual revenue totaling more than **5.8 billion euros** in its four segments **Industrial Quality & Research, Medical Technology, Consumer Markets and Semiconductor Manufacturing Technology** (status: 30 September 2018).

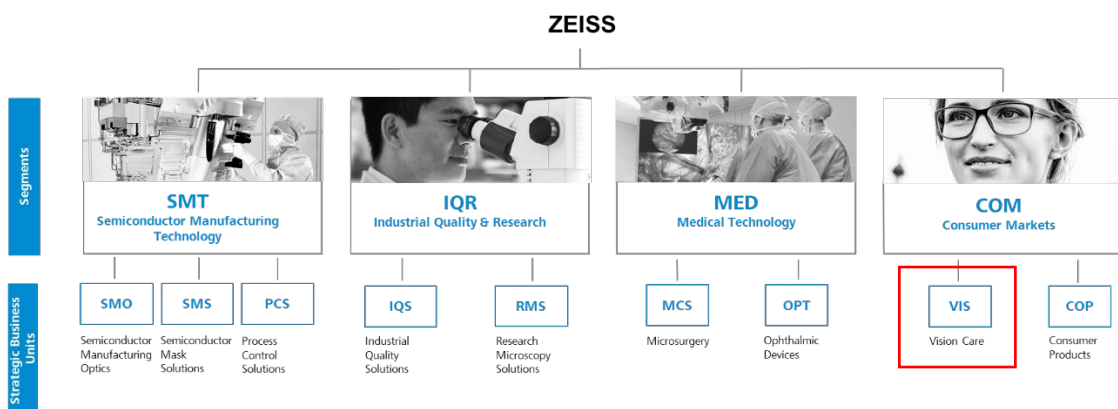
For its customers, ZEISS develops, produces and distributes highly innovative solutions for industrial metrology and quality assurance, microscopy solutions for the life sciences and materials research, and medical technology solutions for diagnostics and treatment in ophthalmology and microsurgery. The name ZEISS is also synonymous with the world's leading lithography optics, which are used by the chip industry to manufacture semiconductor components. There is global demand for trendsetting ZEISS brand products such as eyeglass lenses, camera lenses and binoculars.

With a portfolio aligned with future growth areas like digitalization, healthcare and Smart Production and a strong brand, ZEISS is shaping the future far beyond the optics and optoelectronics industries. The company's significant, sustainable investments in research and development lay the foundation for the success and continued expansion of ZEISS' technology and market leadership.

With around **30,000 employees**, ZEISS is represented in nearly **50 countries**, with approximately **60 of its own sales and service companies** and **30 manufacturing and development centers** around the globe. **Founded in 1846 in Jena**, the company is headquartered in Oberkochen, Germany. The Carl Zeiss Foundation, one of the largest foundations in Germany committed to the promotion of science, is the sole owner of the holding company, Carl Zeiss AG.

ZEISS Vision Care is one of the world's leading manufacturers of eyeglass lenses and ophthalmic instruments. The area is part of the Consumer Markets segment and develops and produces offerings for the entire eyeglass value chain that are distributed globally under the ZEISS brand.

Further information: www.zeiss.com and www.zeiss.com/vision-newsroom





Milestones of the ZEISS Segments

Consumer Markets

The first photos taken on the surface of the moon in **1969** were captured using camera lenses from ZEISS. The extremely powerful ZEISS Planar 0.7/50 lens – originally developed for NASA – ultimately achieved cult status when the famed director Stanley Kubrick used it for his film Barry Lyndon in **1975**. ZEISS has received three Technical Oscars for its camera technology.



Great innovations have been happening since ZEISS launched its Punktal precision lens in **1912**: the first sunglass lens with an even tint in **1924**, the first patented anti-reflective coating in **1959**, the first individualized progressive lens in **2000**, and ZEISS DriveSafe lenses for safety behind the wheel in **2015** – all of these were developed by ZEISS. ZEISS sees digitalization and healthcare as tomorrow's challenges. ZEISS presents products and the latest developments that have been strongly shaped by these megatrends, and show how ZEISS is leading the way with ZEISS UVProtect and ZEISS VISUFIT 1000. (**2018**). This year, **2019**, a complete premium portfolio for the connected, on-the-move lifestyle, another milestone in eye glass lens design, will be brought to the market.



Medical Technology

The ZEISS KINEVO 900 surgical microscope is the first visualization system with surgeon-controlled robotics and has been used in neurosurgery since **2017**. ZEISS has also developed technology that enables surgeons to assess blood flow in the blood vessels quickly and easily with the INFRARED 800 fluorescence module. Surgeons can obtain vital information about blood flow to the brain in real time during the operation – all at the push of a button, without interrupting the procedure.





Semiconductor Manufacturing Technology

Every second grass grows 30 nanometers – about the same size as the structures on high-performance microchip transistors. To map such fine patterns onto the microchips, optical lithography – the key technology in chip fabrication – must be increasingly precise. ZEISS is the world's leading manufacturer of lithography optics. Without them, the smartphones, laptops and microchips used in industry **today and tomorrow** would be unthinkable.



Industrial Quality & Research

In a letter to Ernst Haeckel, Prorector of the University of Jena, Charles Darwin requested a microscope from company founder Carl Zeiss for his son, Francis. And Carl Zeiss actually sent the company's 4,876th microscope to Darwin on 11 March **1881**. In **1882**, Robert Koch discovered the pathogen that causes tuberculosis using a ZEISS microscope. Since then, more than **35** research scientists awarded the Nobel Prize have used or are using ZEISS microscopes.



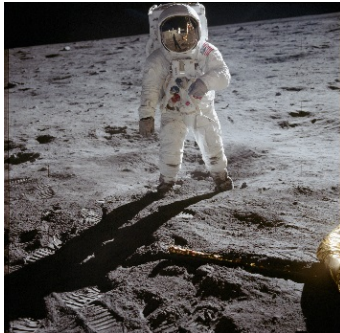
Today, ZEISS plays a leading role in the future-oriented field of Smart Production. Thus ZEISS Industrial Metrology fully networks the production environment by incorporating cutting-edge information and communication technology.

More fascinating ZEISS stories: www.zeiss.com/stories



A Special Milestone for ZEISS: 50 Years of Moon Landing

One small click on the release button – one giant set of images for mankind



Even though 50 years have passed since the first Moon landing on 20 July 1969, the images have lost none of their fascination. The main reason this event became so firmly entrenched in our collective memory is that it gave us the iconic images captured during the Apollo missions. These were not only the first photographs ever taken of the Moon's surface – the image of the Earth as seen from the Moon also continues to inspire people of all generations to this day. And all these missions used cameras with lenses developed by ZEISS.

In October 1968, ZEISS received the order for a camera lens to be used during the Moon landing, which was scheduled to take place a mere nine months later as part of the Apollo 11 mission. "The time for development was extremely brief," says Dr. Vladan Blahnik who works in research and development at ZEISS. The optical data for the preceding model the ZEISS Biogon 4.5/38 still had to be calculated manually, an extremely time-consuming process. However, a mainframe computer helped to determine the mathematical parameters for the ZEISS Biogon 5.6/60, the camera lens designed for the Moon landing, in a mere couple of weeks. Dr. Erhard Glatzel (1925-2002), a leading mathematician from the optical design department at ZEISS, received the Apollo Achievement Award for this and the development of other special camera lenses for space photography.



Apart from the ZEISS Biogon used on the surface of the Moon, ZEISS designed a number of other special camera lenses for space photography in the 1960s, among them lenses that could transmit UV-waves or extremely fast lenses such as the ZEISS Planar 0.7/50. The engineers at ZEISS continue to benefit from this research until the present day. Some examples are the development of fast lenses for professional movie cameras, lenses for aerial photography used in surveying the Earth's surface and lithographic lenses employed in the production of microchips.

The camera lens was a small but significant contribution to the Apollo 11 lunar mission. And, incidentally, the cameras with the ZEISS lenses are still up there on the Moon, because on the return journey the astronauts wanted to save every gram in order to take back as many samples of Moon rocks as possible. Only the valuable exposed film made it back to Earth.

[Learn more about ZEISS and the first man on the Moon](#)



Our Focus Topics in Berlin



ZEISS SmartLife Lens Portfolio

A complete premium portfolio for a modern, on-the-move and connected lifestyle



These days, we spend a lot of time on-the-move: we take our smartphones along with us, quickly and frequently shifting our focus between the screen and our surroundings – in short, our connected and dynamic lifestyle is changing our visual habits. ZEISS has developed a completely new eyeglass lens portfolio for all ages that takes new visual challenges into account in its design. In combination with the wearer's age, visual needs

and the latest optical technologies, ZEISS SmartLife Lenses are poised to deliver exceptional visual comfort in our connected, dynamic world – every day and across all age groups.

Alongside individual correction, three factors come together to create custom lenses: the wearer's age, lifestyle and visual behavior. Consumers aren't interested in whether their lenses will correct their short- or long-sightedness, presbyopia or visual challenges in middle age. What they're looking for are lenses that are adapted to their lifestyle, age group, the demands of the modern world, and their personal needs – which is where ZEISS SmartLife comes in.

Nor are consumers interested in the categories that eyeglass lenses have traditionally been assigned to. That's why with ZEISS SmartLife a communication will be introduced that details the lenses' easy-to-understand, verifiable benefits, and avoiding any complicated, expert jargon, as well as the conventional breadth of product and feature names. ZEISS SmartLife comprises more than 1,000 individual products, which will continue to be used for orders, price lists and product comparisons. When visiting an ECP, all consumers need to know is how ZEISS SmartLife Lenses can be customized for them: thanks to the tried-and-true ZEISS Vision Analysis, entering ages and determining their personal needs can now be done without assigning them to one of the former lens categories.

"An eyeglass lens portfolio for today's consumer"
Meet our experts and learn more in Berlin.

[Interview with
Manuela Weinreich
about
ZEISS SmartLife as a
complete portfolio](#)

Please speak to your
local PR contact at
ZEISS about the
launch date and
possible
publications



Visual Behavior

Our eyes are always in motion | Interview with Dr. Katharina Rifai, Neuroscientist and Physicist at the ZEISS Vision Science Lab in Tübingen



Our eyes never seem to stay in one place. Is this actually true?

When speaking to someone else, we've all looked at the other person and realized that our eyes are moving constantly. They move specifically in the direction where we want to look. This makes vision an active process – rather than just functioning like a static video camera. So, a person's eyes are never really still.

Do our eyes always move at the same rate of speed?

There are three typical eye movements. First, there are so called saccades. That's the name for these rapid movements that are always happening both consciously and unconsciously. [...] Second, there are visual fixations, especially on objects we either want or have to focus on. Drift happens while fixating, i.e. the eye slowly wanders. And then there's the saccade in miniature, the microsaccade. The third type of eye movement is the pursuit of moving objects. [...]

These days, everyone is using digital devices, moving around a lot and is always on the move. Does it affect my visual behavior if I do a lot of things simultaneously?

This means changes to the number of saccades are only limited since the saccades, for example, continue to take place even during fixation. But you have to devote more effort in visual processing in the face of so much information. And this also affects our movements. Cognitively, a lot more is being asked of us. And what definitely happens is that it changes what we look at and requires far more accommodation, i.e. the eye's ability to focus. For example: if I'm walking along a busy street with my smartphone in hand toward the subway while passing by people and cars, there's a host of things I have to pay attention to if I want to stay safe. There's a lot going on at different distances, but this nevertheless requires my attention. The lens of the eye has to work constantly. A lot of things I deliberately focus on by choosing to look in a particular direction and focus, whereas other things stay at the periphery of my vision. I just see them out of the corner of my eye. Sometimes, I'll just move my eyes toward what's of interest to me, while other times I'll move my head as well and fixate on the object. Of course, there's a tremendous difference between this and a situation where I'm reading a book in a peaceful location or having a conversation in a quiet spot without looking down at my smartphone from time to time.

"How to measure visual behavior"
Meet our experts and learn more in Berlin.

[Full interview incl.
video with
Dr. Katharina Rifai](#)



Our Eyes in The Course of a Lifetime

We are getting older every day – and so are our eyes | Interview with Dr. Alexander Leube, Optometrist and Visual Scientist at the ZEISS Vision Science Lab in Tübingen



We are getting older every day – and so are our eyes. So do our eyes really change all the time, i.e. as we turn 30 or 40?

Yes, that's a fact. Our eyes are subject to normal physiological processes that never stop. In particular, this concerns the ability of our visual system to focus on nearby objects, which worsens as we get older. This is a gradual process that is already present at around the time we turn 30 – and it becomes apparent at

40. That's when people who already wear glasses start to need lenses that help them see better at close range. At 50, it becomes all too evident that we need to hold our smartphones much further away in order to see clearly. In other words, the eye's lens is no longer able to make out close-up objects clearly – this is what we call "accommodation" and is normally the time when glasses wearers need to switch to progressive lenses. [...]

Do our eyes keep changing as we get older?

Many things change for example the composition of our tear film. A major change affects the size of the pupil, which determines how much light enters the eye. If it's dark, the pupil will normally dilate in order to make the most of the little available light. As we grow older, the pupil becomes increasingly smaller. This is a compensation process as it allows the light to enter the eye more bundled. This phenomenon continues to compensate for the worsening of the eye's lens; we talk about an increased depth of field. As a result, one does not realize that the lens starts to weaken. But this equalization does not go on indefinitely. However, this normal physiological change in pupil size can now be taken into account in modern lens design.

"Physiological changes in the eye"
Meet our experts and learn more in Berlin.

[Full interview incl. video with Dr. Alexander Leube](#)

[Full interview incl. video with Dr. Arne Ohlendorf about how kids see the world](#)



ZEISS VISUFIT 1000

The digital platform for precise lens fitting and customization



Good vision requires more than just the right prescription lenses. It is also crucial that the lenses are properly centered in the frame and in relation to the eyes. Back in 1992, ZEISS launched ZEISS Video Infrac1, the first video centration system. Therefore, ZEISS is a forerunner to the digitalization of centration data determination. The latest development, ZEISS VISUFIT 1000, stands for precision, speed & a new consumer journey. In the future, it will be possible to expand ZEISS

VISUFIT 1000 platform with modules for trying on glasses virtually and virtually centering them. Thus, ZEISS is already offering a system today that will also accommodate the next level of customization and digitalization that consumers will demand tomorrow. This is possible thanks to more than 20 years of expertise in the area of centration data determination and intensive research and development involving an interdisciplinary team of experts from throughout the world.

ZEISS VISUFIT 1000 is first used to determine 3D centration data (e.g. interpupillary distance, reading distance and the pantoscopic angle or tilt of the frames). By using nine cameras, just a single shot is required to create a 180-degree image of the wearer's face and frames. The eye care professional then processes this data comprising of 45 million points. Captures with different frames can be created and then compared. ZEISS VISUFIT 1000 is also a digital platform that, in the near future, will be used for a wide variety of other functions in addition to centration data determination. The volume and precision of the captured data, including a 3D view of the wearer's face, will be used to assist patients as they try on glasses virtually and select customized lenses.

The interface between ZEISS VISUFIT 1000 and an Eye Care Professional is ZEISS VISUCONSULT 500. ZEISS VISUCONSULT 500 is much more than your average patient data management system. It is a platform with an interface to nearly all ZEISS devices and instruments; it connects them to one another, helps collect data, assigns this data to the right consumer, calculates the best lens option and supports the consultation process through technology-driven consumer experiences. With platforms like ZEISS VISUFIT 1000 and ZEISS VISUCONSULT 500 digitalization becomes an immanent part of the ECPs business.

"ZEISS VISUFIT 1000 and digitalization at the ECP"
Meet our experts and learn more in Berlin.

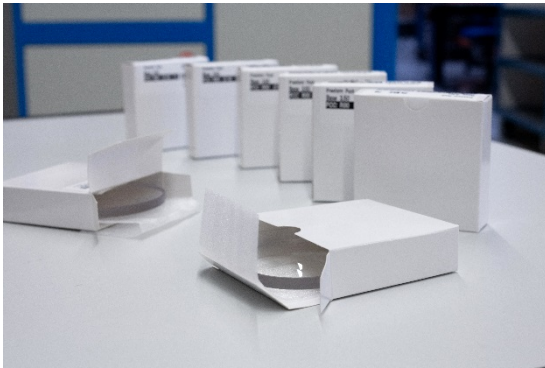
[The full story about
ZEISS VISUFIT 1000](#)

[The full story about
ZEISS VISUCONSULT
500](#)



Green, Safe, Responsible

The ZEISS Vision Care initiative for sustainability



At ZEISS Vision Care, more than 240 initiatives at all sites worldwide have been bundled together under the slogan "Green, Safe, Responsible" to promote greener production and logistics. Greater safety means improved occupational health, e.g. by further reducing the use of any potentially hazardous chemicals or designing the workstations accordingly. For ZEISS as a foundation, "responsibility" has played a special role throughout its history.

Customers, patients and partners ask us time and time again – with good reason – how all of the company's employees actually put this responsibility into practice.

ZEISS counts on the collective impact of many small and big steps. For example, since November 2018 we have prevented the generation of 50 tons of plastic waste thanks to the first series of a new semi-finished pucks for lenses. This corresponds to the amount of plastic needed to produce 2.5 million plastic bags. Moreover, we have reduced material usage, thus preventing the generation of roughly 75 tons of the related CO₂-equivalent emissions – corresponding to the amount generated by a person flying 40 times from Taiwan to Berlin. Future puck series are very promising too, with the possibility of reducing the amount of plastic used by 65% compared to the original version of the puck.

In addition, ZEISS is working together with suppliers to significantly improve its packaging ecobalance in the future as well. In addition to more sustainable production, we actively engage in activities to support the UN sustainable development goals like "affordable and clean energy" and "climate action". ZEISS currently uses 9,800 megawatt-hours of renewable electricity for the energy consumption at the production sites, saving one gigaton of carbon dioxide every year. It would take 7,000 trees and 30 years of a reforestation project to balance out the same amount of CO₂. Water is needed primarily for cooling and cleaning during the manufacturing process. Water treatment is standard in modern lens production. But process improvements have made it possible to conserve water. Since 2018, we have saved 180,200 tons of water – that is enough drinking water for nearly 180,000 people for one year.

Sustainable social commitment

Today, one of the most pressing social challenges facing the eye care industry is the fact that millions of people in developing and emerging economies do not have access to eye and vision care. ZEISS Vision Care is pursuing different approaches to improve the availability of eye care throughout the world and supports major initiatives like the Christoffel Mission for the Blind, Helen Keller International, Optometry Giving Sight and the Free Lunch Fund along with local projects. With the Aloka Vision Programme, ZEISS has set up a program for eye and vision care in rural India. Each month, up to 8,000 people have their vision checked for the first time and, if needed, receive eyeglasses or ophthalmic care. The social business model developed together



with local and regional NGOs and foundations as well as small business owners makes it possible for a small, four-person team of optometrists to have a major impact and continue to reach thousands of patients.

"Eye and vision care in rural India"

Meet our experts and learn more in Berlin.

"Sustainable eyeglass lens production"

Meet our experts and learn more in Berlin.

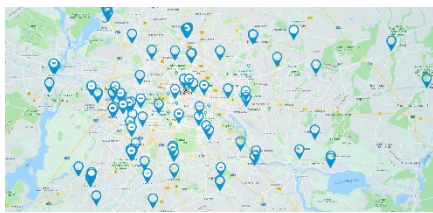
[Article about the Aloka Vision Programme in India](#)



ZEISS as a Partner

How ZEISS is helping eye care professionals succeed now and in the future

The transformation of the eye care industry is ongoing, digitalization poses both challenges and opportunities for this field, online retail is becoming even more popular, and the market players are changing. In this period of disruption, ZEISS is the stable partner eye care professionals (ECPs) can count on. By working together, ZEISS wants to ensure that ECPs can capitalize on current and future market opportunities thanks to its different solutions.



ZEISS assists ECPs with attracting consumers at precisely that moment when consumers are confronted with the topic of eyeglasses. And this starts well before they set foot in the ECP's office. Two of the most important questions are: How does the consumer realize that they need a new pair of glasses? How do they find the best

eye care practice in their neighborhood? Instead of relying on a stand-alone solution supplied by individual eye care professionals, ZEISS cooperates globally with Google and Facebook. This way, consumers with vision problems receive targeted messaging via online channels, while the Store Locator takes them to the nearest ECP's office – the ZEISS Partner ECP. This system would be hard for an individual eye care professional to implement on their own, but creates a win-win situation when undertaken together.



Part of the customer journey right from the beginning

Solutions like My Vision Profile from ZEISS are also aimed at future-proofing the eye care business today. Consumers can create their own vision profile either at home or on the go by completing a survey on their visual habits and related topics. My Vision Profile then displays their initial requirements and suggests potential eyeglass

lens solutions. The consumer can bring the result with them to the ECP's office as a QR code – the ECP then scans it, loads the data and can start the personalized consultation. Once the consumer has arrived at the ECP's office, they'll be impressed by the other digital possibilities enabled by cutting-edge technology, ranging from ZEISS VISUCONSULT 500 and ZEISS VISUFIT 1000 and extending to knowledge-sharing demo tools. These are small tools developed by ZEISS to teach consumers about complex topics like polarization, UV protection in clear eyeglass lenses and blue light filters via a hands-on approach that's easy to understand.

Whether online at the start of the customer journey or at the ECP's as part of the consultation, knowledge transfer or the provision of high-tech equipment and eyeglass lenses – ZEISS technology paves the way for successful ECPs.

"ZEISS along the whole customer journey"
Learn more in Berlin.



Press Contacts

Feel like more exciting ZEISS stories? Would you like to get to know us better, get a tour to the ZEISS Museum of Optics, or learn how our spectacle lenses are made? Please get in touch with us; we are happy to work with you!

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