

[Understanding Vision](#) Oct 16, 2017

What's the difference between individualized eyeglass lenses and off-the-shelf lenses?

How eyeglasses can help you regain natural vision.

You can't tell if a lens is individualized or off-the-shelf by just looking at it. So what is the difference? Which eyeglass wearers have the most to gain from individually optimized lenses? BETTER VISION put that question to Volker Gahr, Senior Product Manager at Carl Zeiss Vision.

BETTER VISION: Mr Gahr, what makes individualized eyeglass lenses different than regular ones?



Volker Gahr, Senior Product Manager at Carl Zeiss Vision

Volker Gahr:

Well, obviously even conventional eyeglass lenses are to some extent tailored to the wearer. That's because you are basically following a prescription, in other words getting the right lens power in the right position in the selected frame to provide the wearer with better vision. If another wearer were to put on my glasses, it's unlikely they would have optimum vision. When we refer to individually "optimized" lenses we're really talking about taking into account other relevant, personal information about the wearer within the optical design by calculating the ideal lens surfaces for their needs.

As a rule, the eye care professional will perform a refraction and write the lens prescription.

What lenses are required?

- ✓ Single vision lenses for long-range vision
- ✓ Single vision lenses for close-up vision (e.g. reading glasses)
- ✓ Progressive lenses
- ✓ What diopter power, special cylinders...

The next step is for the wearer to choose a frame. But that's really as far as the conventional approach goes. Of course an eye care professional prescribing off-the-shelf lenses will measure the visual point of both eyes positioned within the selected frame in order to ensure correct glazing of the lenses that he or she subsequently orders from a company like ZEISS. But the ultimate position of the lenses in front of the wearer's eyes – which is determined by the specific frame style chosen – will not have been taken into consideration when calculating the lenses.

BETTER VISION: So the biggest difference with individually optimized lenses is how they are tailored to the frame...?

Volker Gahr: That's certainly a crucial difference, though it's not the only one. The more ZEISS understands how an eyeglass wearer looks through their lenses with the selected frame, the more accurately the lenses can be crafted so that the wearer ends up looking through them in the most natural and optimum way possible. This means that they end up with a perfect optical vision aid that has been tailored precisely to their individual needs. But to achieve this, the eye care professional needs to determine other important personal parameters in addition to the point at which the wearer focuses when they look straight through the lens – and those parameters need to be accurate to a tenth of a millimeter!

For example, what distance do their eyes tend to be from a book or computer screen? At exactly what height do they look through the lens in the frame they've chosen? How does the inclination of the frame affect the wearer's vision? That's something that depends not only on the frame but also on the shape of a person's face. What's the back vertex distance, i.e. the distance between the back surface of the lens and the front of the cornea? What's the curvature of the frame? Precise measurements need to be made of the frame dimensions and the height and width of the lens.

The ZEISS Online Vision Check

How well do you see contrast and colors? Check your vision quickly and easily here!

[Start the eye test now!](#)

Your glasses fitted to you

The more accurately the eye care professional calculates all the parameters, the more precisely the optics, i.e., the lens design, can be optimized by ZEISS. To ensure the frame and the lenses don't end up in a different position on the wearer's nose, the position of the frame on the bridge of the nose is adjusted by the eye care professional before they calculate the additional data.

BETTER VISION: Doesn't it take absolutely ages to measure all those parameters? And how can it really be so exact?

Volker Gahr: That's where technology comes into play. The [> i.Terminal®2](#) – that's the ZEISS centration system – uses a high-tech camera to take objective images of the wearer and frame from both the front and the side. Then the software measures all the key centration data and saves it to a file. The i.Terminal® 2 achieves accuracy down to a tenth of a millimeter, yet the whole measurement process takes very little time, even though it delivers tremendously precise data for all the key parameters.

BETTER VISION: So how do you end up with an individually optimized lens?

Volker Gahr: All the measurement data from the refraction, the centration and in some cases from the objective measurement are compiled by the eye care professional using the [> i.Profiler®](#). Once all the features are clear – such as the lens material/type, the type of coating and any tint or shade that may be required – all the data is sent to ZEISS. That's where the lenses are individually calculated according to the eye care professional's specifications and manufactured using a high-tech production technology known as [> freeform technology](#). ZEISS was one of the pioneers behind the development of this technology and, even today, we are constantly striving to make this method of lens production even better.

Thanks to freeform technology, lenses can be produced to the perfect specifications for the wearer and the frame they have selected. This restores the most natural vision possible for the wearer and, especially in the case of progressive lenses, creates the largest and sharpest possible ranges of vision at all the different distances. Unless you attain perfect harmony between the frame, lenses, individual visual needs and the shape of the wearer's face, then relaxed and natural vision will be impossible to achieve. With an imperfect solution, the wearer will potentially have to make major efforts to merge the individual impressions from each eye into a coherent whole. This can result in poor adaptation to the lenses, and result in headaches and tension for the wearer.

BETTER VISION: So the distinctive quality of progressive lenses depends on the individual parameters that are incorporated in each lens?

Volker Gahr: Exactly. For a comparison, imagine looking through a telescope. You're looking through some highly sophisticated optics, but if you don't have the telescope at the right distance from your eye, then things will look blurred. Or imagine looking through a keyhole. You only get good, relaxed vision if you put your eyes really close to the keyhole. You can show the difference like this:

Ranges of progressive lenses





The advantage of an [individually optimized progressive](#) lens is that we achieve high wearer adaptation right from the start. Of course everyone needs time to get used to new progressive lenses – and the time that takes varies considerably from case to case – but an individualized progressive lens is something that you get used to far, more quickly.

BETTER VISION: One last question: What type of eyeglass wearer will benefit most from individually optimized eyeglass lenses?

Volker Gahr: Generally speaking, you could say that everyone gets the best possible solution by choosing individually optimized eyeglass lenses. But the higher or more complex the prescription, the more you notice the gain in performance over conventional eyeglass lenses, and the more relaxed and stress-free your vision is likely to be.

For people with night vision problems it's also possible to use our [i.Scription® technology to individually optimize the lens](#) power for night vision or low-light conditions. This is particularly important for people whose prescription actually changes when their pupils are heavily dilated. Individual vision defects can be ironed out by taking additional steps to optimize the lens power.

But there are many other types of patients who can benefit from individually optimized eyeglasses lenses, too. [Take office lenses for example](#). This application allows us to optimize the lenses for each individual's occupational needs, especially at the middle distance ranges used for computer work and similar activities. Discussing your medical history with your eye care professional is very important in this context because he or she needs to have a very clear idea of what your individual vision needs are and how they can best be addressed.

My Vision Profile

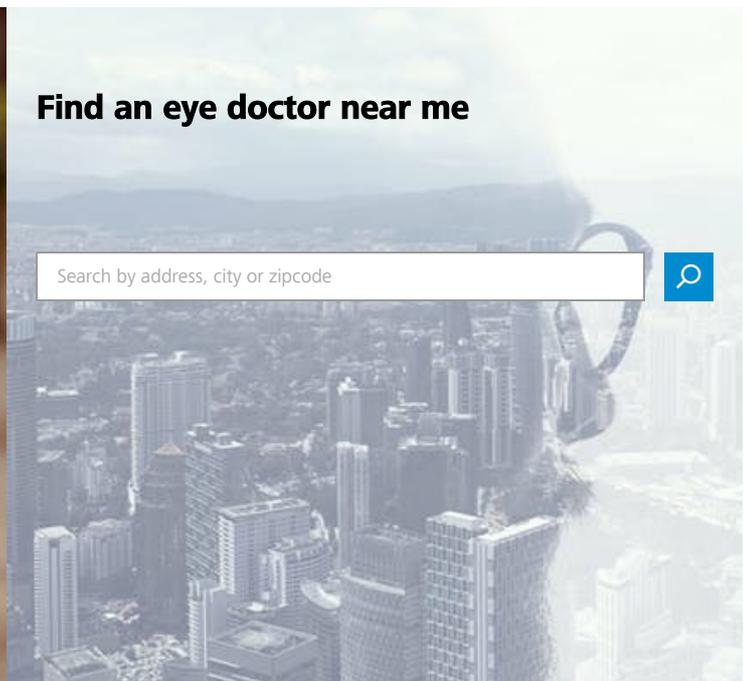
Determine your personal visual habits now and find your individualized lens solution.

Check your Vision Profile now!



Find an eye doctor near me

Search by address, city or zipcode



Related Articles



The secret behind the perfect eyeglass lens design

A lot of experience, mathematics and exact knowledge of the eyeglass wearer's needs are required to provide a tailored solution.

[Understanding Vision](#) Oct 16, 2017
Tags: At the eye care professional



Plastic or Glass Lenses?

Which material is best for which patient? Do your homework before you shop for glasses and you will enjoy better vision.

[Understanding Vision](#) Oct 16, 2017
Tags: At the eye care professional



Ophthalmic Optics Today: How Optical Consultation Has Changed Over the Past 10 Years

Volker Meyer and Heinrich Rath from Aalen University in Germany, spoke with BETTER VISION.

[Understanding Vision](#) Oct 16, 2017
Tags: At the eye care professional



Low Vision Devices for Work: When Better Vision is Just Not Good Enough

ZEISS precision loupes for those who have to have a good eye for detail in their jobs

[Understanding Vision](#) Oct 16, 2017
Tags: At the eye care professional, Magnifying Visual Devices

Related Products



Officelens:

Enjoy comfortable vision on the job.

[Learn more](#)



Progressive glasses are an all-around talent:

finally enjoy good vision again – no matter the distance.

[Learn more](#)



ZEISS i.Scription lenses.

Crisper and more brilliant vision with greater contrast – even at night.

[Learn more](#)



Explore

- Understanding Vision
- Health + Prevention
- Lifestyle + Fashion
- Driving + Mobility
- Sports + Leisure
- Work Life

Help me choose

- Progressive Lenses
- Sunglasses
- Working Glasses
- Sports Glasses
- Glasses for Children
- Lens Coatings
- Lens Cleaning
- At the Eye Care Professional

Services

- My Vision Profile
- Online Vision Check

For Eye Care Professionals

- Our goal is to make you successful
- Instruments + Technologies
- ZEISS Eyeglass Lenses
- ZEISS Cleaning Solutions