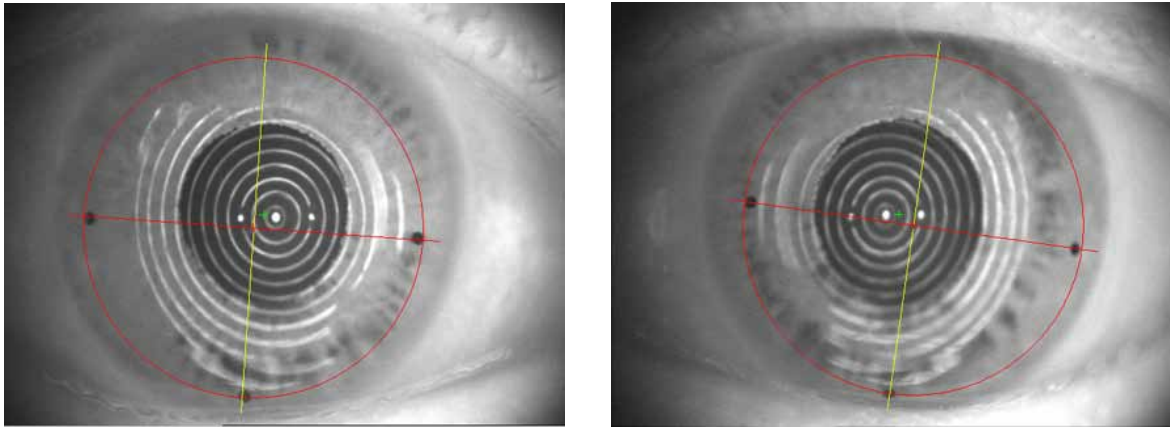


WaveForm Wavefront Guided Contact Lenses Case Study #2

PE – High Astigmatism

Overview and History

PE, resides in Montana and is a 60 year old male with 5 diopters of against the rule astigmatism. PE had been searching for a contact lens solution for his vision for over 30 years. As an avid hunter sighting in his rifle with his glasses presented constant challenges. Having tried rigid lenses several times resulting in unsatisfactory comfort and vision he had hoped to be able to wear soft toric lenses. He was told by all of the doctors he discussed this with that with his prescription he would never be able to see with soft lenses.



WaveForm Examination

PE was referred to an Optometrist in Montana and was evaluated for soft contact lenses using WaveForm's proprietary wavefront guided contact lens fitting system. A soft trial lens with fiduciary marks was manufactured by WaveForm. The parameters of the trial lens were tailored to the patient's axial measurements as measured by the Huvitz HRK 7000AW. After placing the trial lens on PE, the lenses were allowed to settle for 15 minutes at which time they were evaluated for overall fit and stability. Once stable, the patient was measured using the Huvitz HRK7000AW aberrometer for all low and high order aberrations including those generated by the trial lenses. WaveForm's software allows for the low and high order optical measurements of the eye as well as the position of the lens relative to the pupil including the X, Y and rotational co-ordinates. By using this information WaveForm manufactures a contact lens that accurately matches the visual needs of each of PE's eyes.



Technology Center
 Box 2020
 Whitefish, MT
 USA 59901

Patient Name: P. E.
 Scan Id: 0161

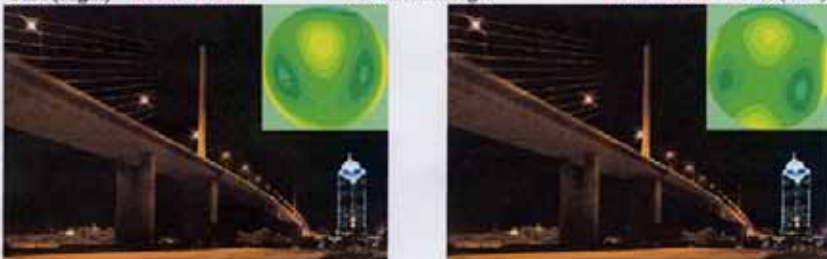
Device Type: Huvitz HRK 700DAW
 Scan Time: 2018-12-01 12:05:57

Rx Information

O.D. (Right)	Sphere	Cylinder	Axis	VA	O.S. (Left)	Sphere	Cylinder	Axis	VA	
OWR:	+2.04	-4.53	95	20/15	OWR:	+2.41	-5.54	77	20/15	
OWR Refined:	+2.00	-4.53	95	20/15	OWR Refined:	+2.25	-5.54	77	20/15	
				Horiz	Vert	Axis				
K Readings:				7.59	7.22	93				
				Horiz	Vert	Axis				
				7.68	7.07	76				

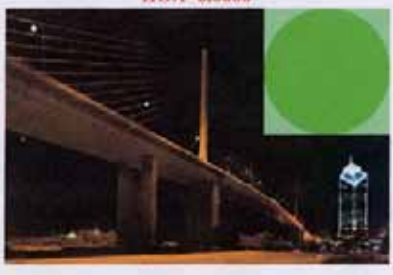
What is Optimized Wavefront Refraction (OWR)? Current eye tests measure only three components of your vision: Sphere, Cylinder and Axis. The optical systems of your eyes, however, are much more complex. As light enters the eyes your vision can be affected by High Order Aberrations (HOA). These HOA can cause halos around lights and reduce your ability to see clearly. OWR, through a new measuring device called an Aberrometer, can detect and measure these optical distortions. Using proprietary software developed by WaveSource, Inc. aberrometer measurements, incorporating all of your individual three lower and nine higher order optical components, are processed to create your PERSONALIZED OPTICAL PRESCRIPTION.

O.D. (Right) HOA=0.1964 Wavefront Images HOA=0.1852 O.S. (Left)



HOA=0.0000

Astigmatism 1	0.2350
Defocus	0.1944
Astigmatism 1	1.3612
Trefoil	0.0074
Coma	-0.1207
Coma	0.0199
Trefoil	0.0304
Tetrafoil	0.0043
Astigmatism 2	0.0216
Sph. Aberration	0.0987
Astigmatism 2	0.1111
Tetrafoil	-0.0064



Astigmatism 1	-0.5936
Defocus	0.1239
Astigmatism 1	1.4848
Trefoil	0.0463
Coma	-0.0969
Coma	0.0331
Trefoil	0.0669
Tetrafoil	-0.0314
Astigmatism 2	-0.0337
Sph. Aberration	0.0348
Astigmatism 2	0.1036
Tetrafoil	0.0558

WaveForm's Wavefront Guided Soft Lens Manufacturing Process

The Zernike data through 4th order polynomials was sent to WaveForm's manufacturing lab where it was optimized into cutting files for the Oscillating Tool Lathe. A lens with the same parameters as the original trial lens is used to re-create the final lens having identical fitting parameters. The cutting file generated through WaveForm's software algorithm precisely generates the Zernike coefficient data onto the front surface of the soft contact lens thereby correcting the patients low and high order aberrations.

Results

PE was fitted with WaveForm's wavefront guided soft contact lenses. The resultant BVA is:

20/15 OU

20/20 OD

20/20 OS

Initial wearing time was 12 to 15 hours per day. PE was able to wear contact lenses for the first time and was finally able to go hunting without the inconvenience of his glasses. WaveForm's soft wavefront guided contact lenses precisely corrected PE's vision by correcting the eyes astigmatism as well as his higher order optical aberrations. This technology is revolutionary and may help millions of patients who have high degrees of astigmatism, degenerative corneal disease, failed LASIK or people who have presbyopia. Research and development of this novel technology is ongoing.