



Optimo Medical AG and Ansys Transform Eye Surgery to Better Treat Astigmatism

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Collaboration uses Ansys simulations to help ophthalmologists optimize surgery prep for faster patient treatment

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/ Key Highlights

- Optimo Medical AG and Ansys are collaborating to combine high-fidelity structural simulations with digital twin technology to efficiently develop patient-specific astigmatism surgery plans and significantly enhance patient vision
- The collaboration also facilitates in silico clinical trials of new eye products, enabling engineers to detect design flaws and slash development costs

To perform patient-specific eye surgery planning, dramatically improve vision and treat astigmatism, [Optimo Medical AG](#) and [Ansys](#) (NASDAQ: ANSS) are incorporating high-fidelity structural simulations with cutting-edge digital twin technology into next-generation surgery preparation. Delivering a solution that powers surgical precision to maximize patient outcomes, the collaboration also drives in silico clinical trials of new eye products — significantly reducing development time and cost.

Providing care for 15 million low-cylinder astigmatism patients each year has traditionally forced ophthalmologists to plan eye surgeries with largely run-of-the-mill statistical models. This has often caused suboptimal incision placement and imperfections in patient vision correction, requiring multiple operations to solve issues. By integrating [Ansys® Mechanical™](#) with Optimo Medical AG's Optimeyes™ digital twin technology, ophthalmologists are creating identical digital copies of patient corneas to test surgical strategies for individual patients that substantially improve results.

"Before I started using Optimeyes, like all ophthalmologists, I was forced to work with one-size-fits-all statistical models, which frequently lead to overcorrections. With Optimeyes, I'm now able to work on a patient-specific approach," said Dr. Johan Blanckaert, ophthalmologist at Oculus Clinic. "Since then, I deliver superior results, which means a spectacle-free life for my patients. Hence, I consider the usage of Optimeyes in surgery planning to be a real game changer within the industry."

"Integrating Mechanical with Optimeyes empowers ophthalmologists to perform virtual keratotomy astigmatism surgeries for enhancing individual patients' incision parameters. Additionally, it equips surgeons with a state-of-the-art planning tool for addressing low-cylinder astigmatism during cataract surgeries and predicting operation outcomes. Optimeyes also facilitates in silico clinical trials based on Mechanical — enabling engineers to simulate new products, identify design flaws and save millions of dollars in development costs."

"In eye surgery, microns make the difference between a successful operation and disappointing results. Optimeyes uses Mechanical to guide eye surgery treatment planning, simulate the effects of physical interferences and enhance patient outcomes," said Harald Studer, CEO, Optimo Medical AG. "Together with Ansys, we are paving the way towards large-scale adoption of engineering simulation within the eye care industry and swiftly treating astigmatism for millions of patients worldwide."

"As the ophthalmology community exploits simulation to deliver personalized treatment, it is crucial to provide clinicians with simplified tools that speak their language," said Prith Banerjee, chief technology officer, Ansys. "Integrating Optimeyes with Mechanical delivers a next-gen solution for ophthalmologists to effectively battle cataracts and low-cylinder astigmatism. This enables first-time right surgeries, helping those suffering from vision impairment to regain a higher quality of life faster than ever."

/ About Ansys

If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge or put on wearable technology, chances are you've used a product where Ansys software played a critical role in its creation. Ansys is the global leader in engineering simulation. Through our strategy of Pervasive Engineering Simulation, we help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and create products limited only by imagination. Founded in 1970, Ansys is headquartered south of Pittsburgh, Pennsylvania, U.S.A. Visit www.ansys.com for more information.

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/ About Optimo Medical

Optimo Medical AG is a Swiss medical technology and IT-cloud company specialized in biomechanical analyses and simulation of the anterior eye. Since the company was founded in 2015, the team has built a steady reputation as the leading company in the field of virtual clinical trials for the anterior eye segment and is a recognized global technology leader in patient-specific astigmatism management. Optimo Medical has an interdisciplinary team of experts in ocular tissue biomechanics, computer simulation technology, software development, ophthalmology, physics, mathematics, and optics. For more information please visit us at: www.optimo-medical.com

About Optimeyes™

Optimeyes™ creates an identical, digital copy of the patient's cornea, based on eye measurement data. With this "digital twin", the software carries out a virtual arcuate keratotomy surgery, in order to find the optimal and personalized incision parameters for each individual patient. This CE-certified technology is based on tailored biomechanical simulations and does not depend on nomograms or statistical diagrams. Only Optimeyes™ provides in-silico patient-specific planning for arcuate keratotomy to correct astigmatism during a femtosecond laser cataract surgery [1]. About 75% of the cataract patients do have a treatable astigmatism of more than 0.50D. Out of those cases three out of four are within the so called low-cylinder category [2][3] between 0.5 and 2.0D. Treatment of low-cylinder astigmatism is important, as even a small cylinder of 0.5D is equivalent to a spherical error of 0.25D [4]. The Optimeyes™ core technology is based on multiple scientific papers by Harald P. Studer [5][6][7][8][9].

References:

- [1] Truffer et al., Optimization of surgical parameters based on patient-specific models: Application to arcuate keratotomy, J Cataract Refractive Surgery 2019
- [2] Hoffmann PC, Hütz WW. Analysis of biometry and prevalence data for corneal astigmatism in 23'239 eyes. *J Cataract Surg.* 2010; 36:1479-1485.
- [3] Ferrer-Blasco et al. Prevalence of corneal astigmatism before cataract surgery. *J Cataract Surg.* 2009; 35:70-75.
- [4] Miller A, Kris M, Griffiths A. Effect of small focal errors on vision. *Opt Vis Sci.* 1997; 74(7):521-526
- [5] Studer et al., Biomechanical model of human cornea based on stromal microstructure, J Biomechanics 2010
- [6] Studer et al., Importance of multiple loading scenarios for the identification of material coefficients of the human cornea, Computer Methods in Biomechanics and Biomedical Engineering 2011
- [7] Studer et al., Patient-specific finite-element simulation of the human cornea: A clinical validation study on cataract surgery, J Biomechanics 2013
- [8] Studer et al., Biomechanical Modeling of Femtosecond Laser Keyhole Endokeratophakia Surgery, J Refractive Surgery 2015.
- [9] Meek et al., Corneal Structure and transparency, Progress in Retinal and Eye Surgery 2015.

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