

The Varilux S Series™: 4D Technology™ — The Next Level of Personalization: The Leading Dominant Eye™

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Three groundbreaking technologies underlie the extraordinary benefits of new Varilux S Series™ lenses:

- **Nanoptix Technology™:** A breakthrough technology that virtually eliminates “swim” compared to other premium progressive lenses. Nanoptix Technology™ reengineers the basic shape of the progressive lens by considering the lens as a set of many optical elements, allowing designers to minimize image deformation while maintaining the power progression.
- **SynchronEyes Technology™:** A powerful, innovative technology that integrates prescription data from both eyes into each lens, optimizing binocular visual fields and giving wearers expansive vision.
- **4D Technology™:** A revolution in lens personalization that enhances overall visual response times by ensuring the sharpest vision in the leading dominant eye™. (Available only on Varilux S 4D™ lenses.)

This paper will describe how 4D Technology™ can shorten visual reaction time by sharpening vision in the leading dominant eye™.

4D Technology™: Faster Visual Reaction Time™

The leading dominant eye™ is the eye that leads the other eye in perceptual and motor tasks. For example, when gaze shifts to a new target, it is the leading dominant eye™ that acquires the target first and leads the fellow eye. Research has demonstrated that the clearer the vision in the leading dominant

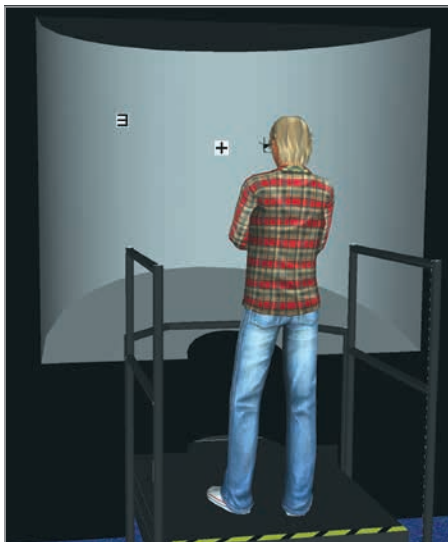


FIGURE 1 Target acquisition test device. Subjects looking straight ahead were shown an off-axis target. Time to start of head movement and target acquisition were measured.

eye™, the faster a subject is able to shift vision to a new target (Figures 1 and 2). The key to improving visual reaction

time, then, is to optimize vision in the leading dominant eye™. This is the goal of the Varilux S 4D Technology™.

4D Technology™ uses the Essilor Visioffice® System to measure individual personalization parameters and the Visioffice® System Hand Held Measuring Device™ to determine the leading dominant eye™ (Figure 3). The technology then optimizes the lens design to ensure the clearest possible vision in the leading dominant eye™, while maintaining the best possible binocular vision. This is accomplished in three steps.

- **Step 1:** SynchronEyes Technology™ uses wearer data to develop an integrated binocular coordinate system based on the concept of the “cyclopean eye”.
- **Step 2:** A targeted binocular design is applied to both lenses, optimizing each for the best possible binocular vision. At the same time, the incorporation of Nanoptix Technology™ ensures stable dynamic vision.
- **Step 3:** 4D Technology™ optimizes vision for the leading dominant eye™, enhancing visual reaction time while maintaining optimal binocular vision.

Conclusion: A Revolution in Lens Personalization

In addition to its revolutionary 4D



FIGURE 2 In a test system, when blur is placed on the leading dominant eye™, visual response time is significantly greater than when equal blur is placed on the fellow eye.



FIGURE 3 Determination of the leading-dominant eye with the Visioffice® System Hand Held Measuring Device™. The determination is entirely automatic: no action on the part of the eyecare professional is required.

Technology™, every Varilux S 4D™ lens incorporates Nanoptix Technology™ to provide stability in motion, and SynchronEyes Technology™ to provide expansive vision by allowing the two eyes to work as one visual system.

Using the Essilor Visioffice® System to take complete position-of-wear measurements and to determine the leading dominant eye™ makes possible the next level of personalization in progressive lenses. Optimizing vision in the leading dominant eye™ provides patients with the best vision and the fastest possible visual reaction times for the ultimate in personalization. ■

For additional information:

www.VariluxUSA.com/variluxSSeries
– Technical Information