MEDICAL TECHNOLOGY
COUNTING BLOOD CELLS

Thousands of cells per second are counted and characterized in medical and biotechnical analytics with laser-based flow cytometry. This enables the fast and secure detection of blood anomalies.
Endoscopes enable doctors to examine body cavities and hollow organs, detect illnesses, and treat them with minimal invasion at the same time, if required. The tubes, which are only a few millimeters thick, transfer illumination in one direction and high-resolution images in real time in the other direction.
Individually adjusted varifocals help older people have good vision for all distances. A variety of criteria is included in the calculation for personalized and individual lens design. CNC machines are used to translate the calculated design into individual lenses with micrometer precision.
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**INDIVIDUAL CRITERIA**
- wearer's characteristics
- intended use (sports, office, daily life)
- eye and head movement
- face form
- angle
- corneal vertex distance
- prismatic: associated heterophoria
- axial: direction of lens fitting
- spherical: myopia or hyperopia

**MODEL OF VARIFOCALS**
- distance vision: > 2 m
- medium vision: 0.5 – 2 m
- near vision: < 0.5 m

The different colors indicate the varying refractive power of the lens: from red (strong) to blue (weak).
SEEING CLEARLY AGAIN

From the age of 60 onwards, most people get a slight cataract – known as the grey star. Treating cataracts is the most common operation around the world. The WHO estimates that by 2020, 32 million cataract operations will be performed. The use of the femtosecond laser with ultra-short pulses allows a precise and careful operation.

ANATOMY OF THE HUMAN EYE

- cornea
- iris
- pupil
- lens
- sclera
- vitreous cavity
- optic disc (blind spot)
- retina
- choroid
- fovea centralis
- optic nerve

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**SEQUENCE OF A LASER OPERATION**

1. opening the lens
2. segmenting the lens
3. opening the cornea
4. suctioning the lens
5. inserting and centering the artificial lens