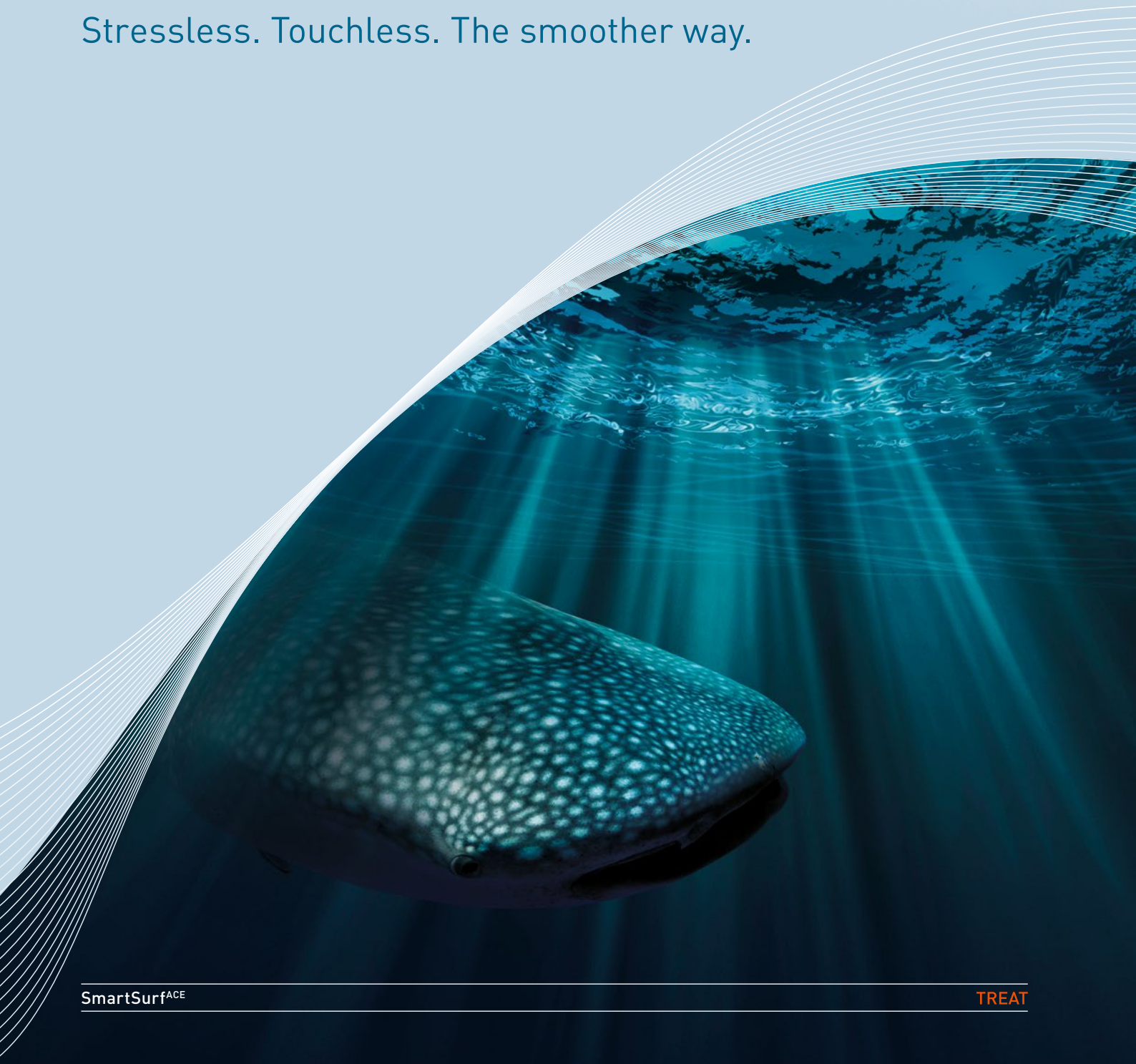


# SmartSurf<sup>ACE</sup> laser vision correction

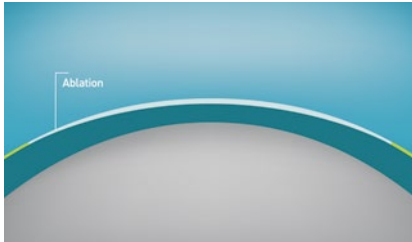
Stressless. Touchless. The smoother way.



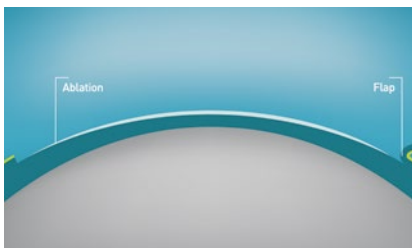
# SmartSurf<sup>ACE</sup>

## laser vision correction

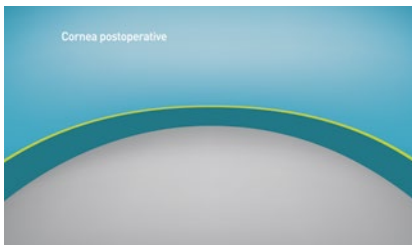
Stressless. Touchless. The smoother way.



SmartSurf<sup>ACE</sup> treatment\*



LASIK treatment\*



Comparable result with both procedures\*

### No touch, no blade, no flap

SmartSurf<sup>ACE</sup> is an innovative surface ablation method that works without touching the eye. There is no blade and no flap – vision is precisely corrected through the top layers of the cornea with SCHWIND AMARIS technology, gently, touch-free, in a single step.

### The “wow” effect

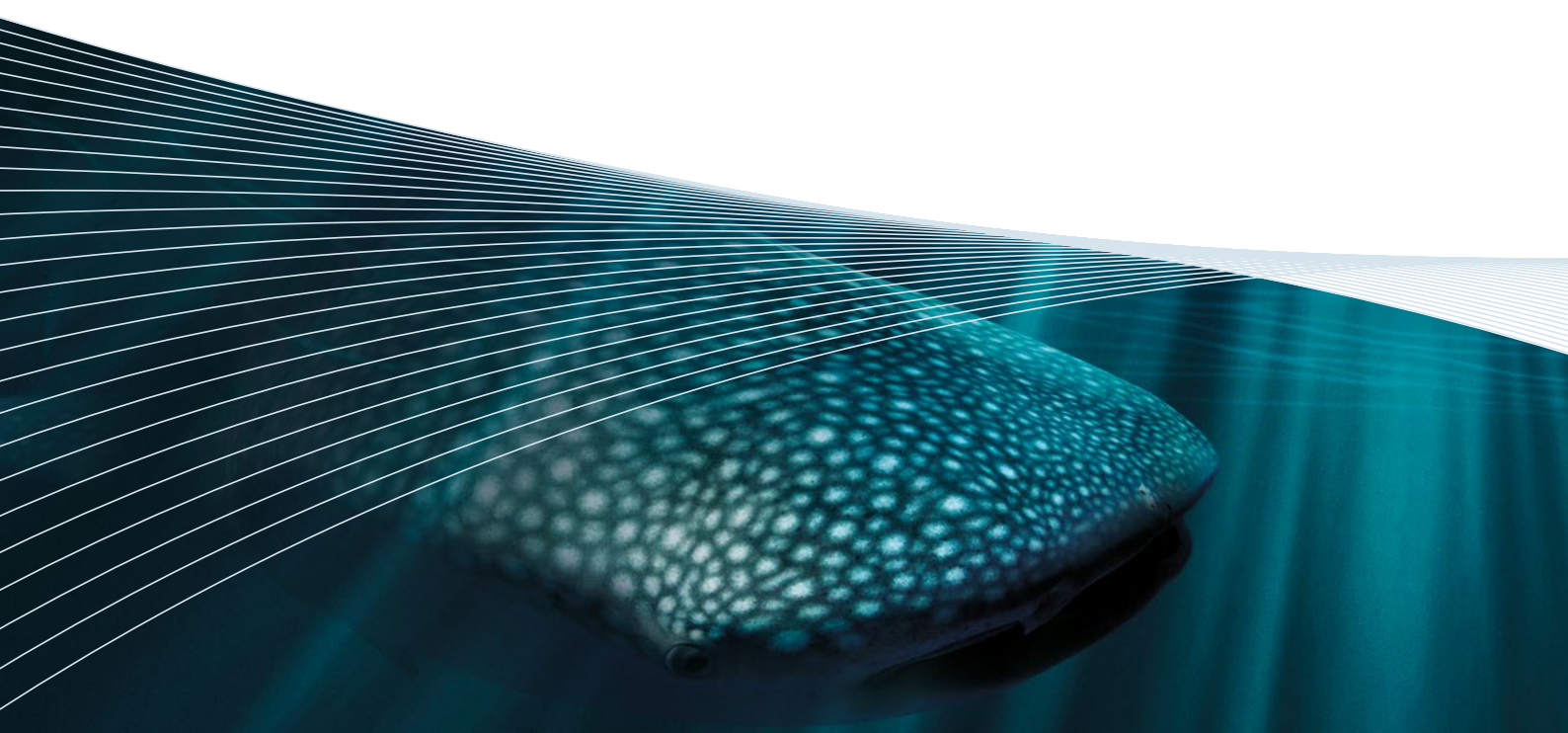
SmartSurf<sup>ACE</sup> combines the benefits of touch-free TransPRK surface treatment with innovative SmartPulse Technology. Your patients will experience a “wow” effect in their vision right after the treatment. The healing process is faster and vision recovers sooner than with other surface treatments. And since SmartSurf<sup>ACE</sup> is non-invasive, there is less stress on the cornea, and the potential for more biomechanical preservation and stability.

### Precision ablation, faster healing

In SmartSurf<sup>ACE</sup> the SCHWIND AMARIS laser ablates the corneal tissue through the epithelium. The advantages over other surface treatment methods are obvious – the epithelium is removed more precisely, more uniformly and more easily than with manual or alcohol-assisted debridement. A soft contact lens remains on the eye for three or four days, after which time the epithelium has regenerated. Healing is faster and patients experience less postoperative pain. Good vision is achieved just a few days after the procedure.

### Very smooth cornea

Through SmartPulse Technology SmartSurf<sup>ACE</sup> gives an impressively smooth corneal surface, starting directly following the procedure. Surface treatments benefit in particular, since the LASIK flap does not contribute to smoothing of the stromal surface until it regenerates.



### High efficacy

For SmartPulse, the geometric corneal model, the ablation pulse and the pulse distribution were optimized based on extensive research. Clinical results from over 1,000 procedures document the high efficacy of SmartPulse – with this new feature, vision recovers significantly faster than without. In addition, higher vision performance in the early postoperative phase was observed.<sup>1</sup> Physicians taking part in the evaluation also report epithelial regeneration that is a day faster, along with less postoperative pain for patients.

### Carefully calculated epithelial thickness profile

SmartSurf<sup>ACE</sup> corrects refractive errors by superimposing an aspheric ablation profile with a defined epithelial thickness profile based on literature values and mean epithelial profiles of large population averages. The epithelial thickness profile is thinner in the centre at 55 µm, increasing at

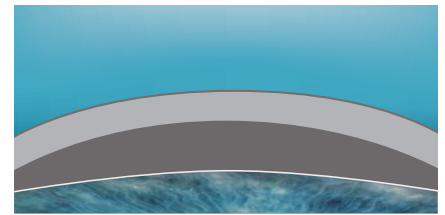
the periphery to 65 µm with 8 mm diameter. The profile can also be adapted to individual cases for use in conjunction with diagnostic devices that map the patient's corneal epithelium.

### Compensation for differences in tissue ablation

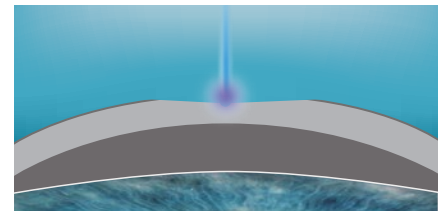
Corneal curvature and resulting oblique incidence of the laser beam cause efficiency and reflection losses. AMARIS technology compensates for these losses, thereby preventing hyperopic shift. In addition, the sophisticated software compensates for the slight differences in ablative rates of epithelial tissue and the stroma.

### SmartSurf<sup>ACE</sup> for regular corneas

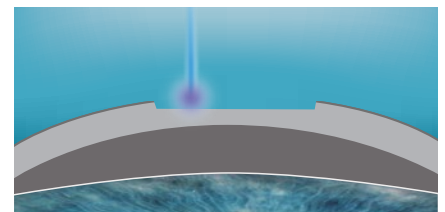
With regular corneas, treatment with SmartSurf<sup>ACE</sup> speeds the healing process over other surface treatments. Good vision quality is achieved significantly earlier, even in high myopic eyes (over -8 D).



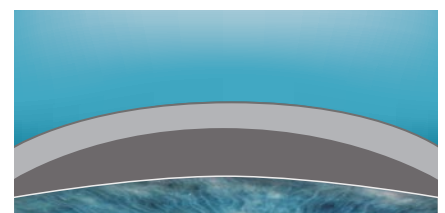
Regular cornea before SmartSurf<sup>ACE</sup>\*



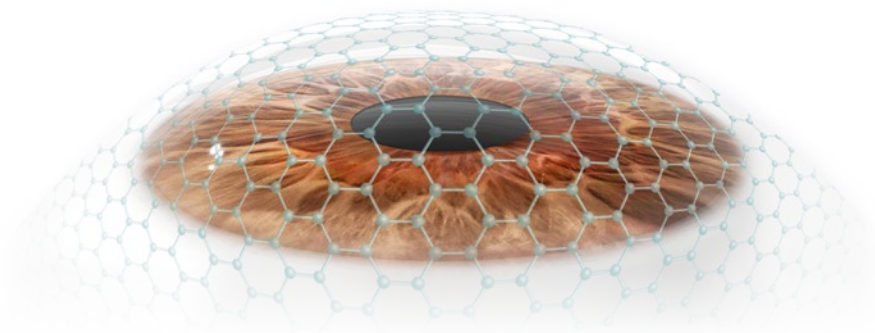
Ablation of the refractive component\*



Ablation of the epithelial component\*



Regenerated cornea after SmartSurf<sup>ACE</sup>\*



A three-dimensional fullerene model with equidistant structure is used to give a very accurate depiction of the cornea.

<sup>1</sup> SCHWIND Multi-Centre Evaluation of TransPRK outcomes with SCHWIND AMARIS using SmartPulse Technology.

Lin DT, Vinciguerra P, Arbelaez MC, Awwad ST, Kang D, Luger MHA, de Ortueta D, Tan J. 2015.

\*schematic



Unlike with LASIK or lenticular extraction, with SmartSurf<sup>ACE</sup> you can avoid the sometimes unpleasant suction or unnecessary pressure on the eye. In normal cases it also leaves a higher residual stromal thickness, giving the patient higher safety. A big advantage is the absence of a flap, thereby eliminating all flap-related complications, including incidence of dry eye. There is no additional weakening of the cornea.

### Potential patients

SmartSurf<sup>ACE</sup> is suitable for all laser candidates who want to see clearly. It's ideal for active and athletic people who do contact, water or air sports, as well as for professions where sharp vision is needed and for patients with thin corneas.

### SmartSurf<sup>ACE</sup> for irregular corneas

SmartSurf<sup>ACE</sup> in combination with corneal wavefront allows maximum correspondence between the corneal topography and the ablation profile. In addition to vision correction, it is also preferable for patients who need retreatment after radial keratotomy or corneal transplantation.

SmartSurf<sup>ACE</sup> is likewise useful in cases where a difficult epithelial flap can be expected or when the epithelium covers stromal irregularities. SmartSurf<sup>ACE</sup> can be used to treat haze, scarred corneal tissue and keratoconus (with corneal collagen crosslinking).

Because the calculated volume is ablated through the epithelium, this acts as a smoothing agent for the residual stromal bed.

### SmartSurf<sup>ACE</sup> is for you if

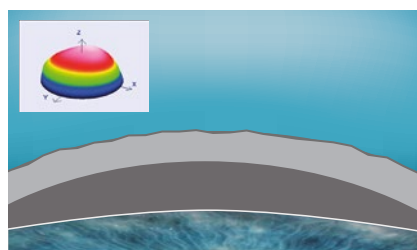
- You want to treat patients gently, safely and without stress
- You prefer a non-invasive procedure
- You're looking for a sophisticated procedure that lets you expand your treatment portfolio
- You're looking for an economical procedure that is appealingly easy to work with, regardless of the size of your practice or clinic

### Summary:

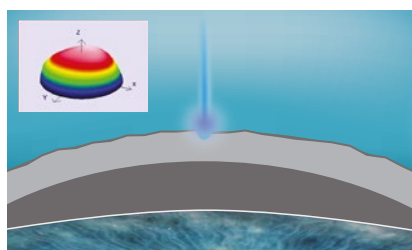
The innovative SmartSurf<sup>ACE</sup> procedure is the gentle, safe, stress-free, non-invasive answer to LASIK and lenticular extraction. It is suitable for any laser candidate as well as patients with thin corneas, corneal pathologies or complex topographies. SmartSurf<sup>ACE</sup> can also be combined with corneal collagen crosslinking.

### More information:

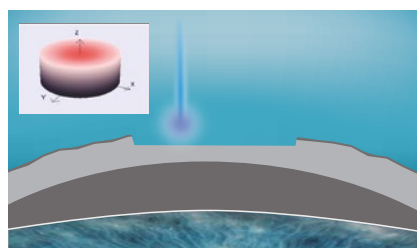
[www.schwind-smartsurf.com](http://www.schwind-smartsurf.com)



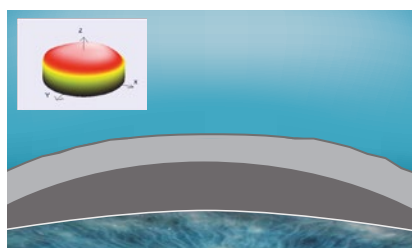
1. Irregular cornea before SmartSurf<sup>ACE</sup>\*



2. Ablation of the refractive component\*



3. Ablation of the epithelial component\*



4. Regenerated cornea after SmartSurf<sup>ACE</sup>\*

### Advantages at a glance

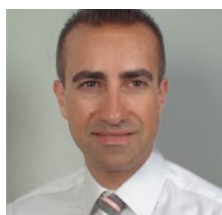
- Gentle: No touch, no cut, no incision
- Safe: More biomechanical preservation and cornea stability
- Stress-free for patients: Faster treatment, in a single step
- Faster healing compared to other surface treatments
- Excellent clinical outcomes
- Economical for you: Easy to use, time-saving, low investment (no femtosecond laser)

## Statements



### Bruce Allan, MD, UK

"The AMARIS platform abilities have established this system at the forefront for therapeutic corneal laser treatments. The latest advance has been the introduction of a new spot overlap algorithm (SmartPulse) giving a smoother surface with faster healing capabilities. Patients and surgeons like SmartSurf<sup>ACE</sup> – the most comfortable no touch ablation technique – because it is quick and easy to do. In routine refractive correction, SmartSurf<sup>ACE</sup> technology challenges the dominance of interfacial modalities such as LASIK and SMILE."



### Shady Awwad, MD, Lebanon

"SmartSurf<sup>ACE</sup> is a no touch, all-laser procedure that has helped my patients feel better during and see appreciably better in the first few weeks after, compared with conventional aspheric PRK. My patients have been able to resume office work and enjoy performing their daily activities much earlier with SmartSurf<sup>ACE</sup> and with only a few days delay compared to LASIK. It has also been a true savior when LASIK fails, consistently providing the great and fast results the patients were expecting to get."



### Diego de Ortueta, Germany

"Meanwhile 90 % of laser eye treatments are performed in our clinic with SmartSurf<sup>ACE</sup>. The biggest advantage is the smoother surface after the laser treatment and the quick visual recovery. In 80 % of cases patients see 20/25 or better binocularly on day 4 after removal of the contact lens. Predictability and efficacy is extraordinary so that less than 1 % of eyes need a second treatment. Furthermore, our workflow has been optimised using SmartSurf<sup>ACE</sup>. The whole procedure takes about seven minutes for both eyes."



### Emilio Juarez, MD, Spain

"With SmartSurf<sup>ACE</sup> we have an excellent technique to treat hyperopia using surface ablation, particularly for optical zone sizes larger than 6.7mm (up to 7.5mm) and total ablation zones of up to 9.2 mm. The biggest advantage is the surface quality after the laser treatment (three times smoother than after conventional PRK) and the quick visual recovery even in hyperopic eyes. At the contact lens removal eyes are seeing in average 20/32 or better."



### Paolo Vinciguerra, MD, Italy

"Since I have been always in the quest for the smoothest corneal surface, as a part of my cooperation with SCHWIND, I performed the first clinical experiences comparing SmartSurf<sup>ACE</sup> to TransPRK. We evaluated the smoothness of SmartSurf<sup>ACE</sup> by acquiring intraoperative topographies on the bare stroma. The outcomes spoke by themselves and impressed patients and surgeons alike. SmartSurf<sup>ACE</sup> eyes presented better visual acuity, less pain, faster re-epithelization time, and quicker restoration of visual acuity."

