

## Femtosecond Laser with Multiple Functions for the Anterior Segment Surgeon

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### History of Technolas' Femtec to Victus

Year	Event
2004	FDA 510(k) clearance and CE Mark for LASIK flap
2005	First ICRS tunnels for keratoconus
2005	First astigmatic keratotomy cuts
2005	First penetrating keratoplasty
2006	First posterior lamellar keratoplasty
2007	First noncircular decagon-shaped KP
2007	First link between femtosecond laser and diagnostic unit
2007	First intrastromal refractive procedures (INTRACOR)
2009	INTRACOR receives CE Mark
2011	VICTUS receives CE Mark
2012	VICTUS is cleared in the US for the creation of a corneal flap in patients undergoing LASIK surgery or other treatment requiring initial lamellar resection of the cornea and anterior capsulotomy during cataract surgery
2013	VICTUS receives 510(k) clearance for the creation of penetrating arcuate cuts/incisions in the cornea
2013	VICTUS receives CE Mark for Corneal Incisions, Penetrating Keratoplasty and Intrastromal Channel Incisions for Intracorneal Ring Segments



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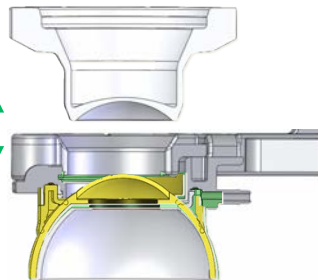
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### VICTUS™: 2-Piece Curved Patient Interface with Flexible Locking



Laser attached to Curved PI & Suction Clip attached to eye, Small enough to fit various eye topologies



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### Designed for Patient Comfort & for Avoiding Corneal Folds

Curved Interface & Intelligent Pressure Sensors

Avoiding corneal folds means the laser beam path is not affected

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### VICTUS™ - Curved PI – designed to provide gentle docking

Evaluation of hemorrhaging of the eye caused by docking the patient interface on 59 patients.

Hemorrhage grade ranged from grade 0 to grade 3, as shown in images.

Evaluation observed the average hemorrhage grade was  $0.85 \pm 1.14$

Data courtesy Dr Pavel Stodulka, Zlin

Grade 0      Grade 1  
Grade 2      Grade 3

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Data courtesy of Dr. Pavel Stodulka, Zlin, data on file Bausch + Lomb Technolas

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### Real Time OCT

ScaleWidth = 12.205mm  
ScaleHeight = 10.662mm  
OCT 0°

Aids positioning, planning & monitoring

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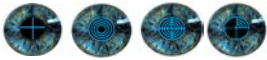
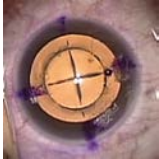
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### Capsulotomy & Lens Fragmentation

- High pulse repetition rates of 80 - 160 kHz result in fast laser treatment times, e.g.\* for
  - Capsulotomy: ~ 4 sec
  - Lens Frag (4 Quadrant): ~ 6 sec
- User can adjust energy and patterns, e.g. for addressing different grades of cataract



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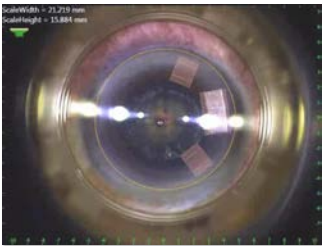
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### Corneal Incisions



- Up to **three independent Corneal Incisions** can be created
- Each Incision can consist of **up to three planes**
- Incisions can be centered either on the **pupil or on the limbus**



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### CATARACT GRADING and PHACO ENERGY

CATARACT	VICTUS CDE (phaco energy)	CONVENTIONAL CDE (phaco energy)
NO1	1.61	1.41
NO2	12.66	13.88
NO3	11.05	16.17
NO4	16.75	22.12
NO5	38.10	42.87

N=133 cataract patients with 3 month follow up  
Victus eyes = 128  
Conv phaco eyes = 65

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### Arcuate Corneal



- The diameter of Arcuate Incisions **can be up to 12 mm**
- Each Arcuate Incision **can be planned independently**
- Assistance for **easy centration** on the limbus or the pupil

Courtesy of Pavel Stodolka, MD



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### Victus for Flap Creation

- Easy docking
- Easy to dissect
- Smooth bed
- Minimal opaque bubble layer (OBL): avoid disrupting Iris Registration (IR)
- Minimal subconjunctival hemorrhage
- Consistent flap thickness



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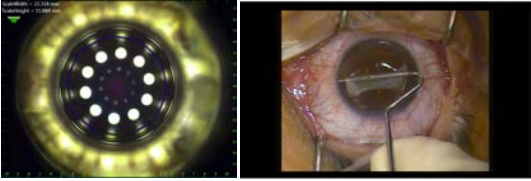
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### Femto Flap Procedure



Intended flap thickness 120µm



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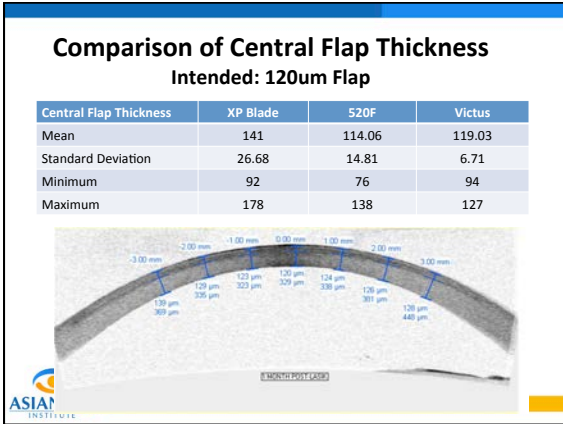
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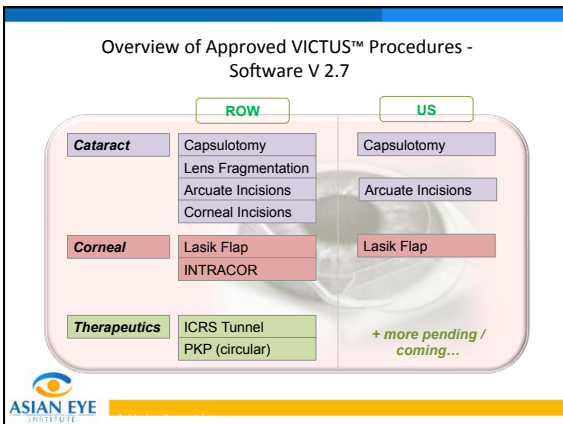
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### Pearls

- Adequate dilation (>6.5mm pupil)
- Center suction clip on limbus
- Pressure sensors neutral position: no folds
- Corneal incisions: avoid arcus, vessels
- Check IOP and pupil before and after
- Forceps for controlled removal of capsulotomy
- Careful hydrodissection

 Bimanual I&A for easier cortex removal



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### Summary

- We decided on the Victus:
  - Offer cutting edge technology
  - One machine to do multiple procedures
  - Inspires confidence in patients, improves conversion to surgery (cataract and Lasik)
  - Save on maintenance cost
  - Space saving
  - Increased utilization means faster return of investment



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### Femtosecond Technology That Empowers The Anterior Segment Surgeon

Cataract		Corneal	Therapeutics	
				
				



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