EXCELSIUS
MEDICAL

# FEMTON F1

## OPHTHALMIC FEMTOSECOND LASER

INTUITIVE, MOBILE & VERSATILE

LEADING LIGHT TO THE EYE.

EXCELSIUS
MEDICAL

# EXCELSIUS MEDICAL
## LEADING LIGHT TO THE EYE.

## Who We Are

**EXCELSIUS MEDICAL** GmbH was founded in 2015 in Ulm, Germany. In early 2019 the headquarter moved to Nuremberg, northern Bavaria into larger premises using the advantage of better connection to international travel, local universities and bio-medical network.

Our team consists of experienced specialists in medical technologies bringing new ideas to advance ophthalmic surgery devices.

## Our Goal

Is to develop, manufacture and sell Femtosecond and Excimer Lasers for refractive surgery. By using the latest R&D and production tools, high quality standards and an international network of suppliers for fast transformation of ideas into final products, we aim to take the technology leadership.Short communication lines and direct contact are the key to our success.

At **EXCELSIUS**, we are striving for compact and affordable integrated solutions. Our Excimer Laser has the smallest overall footprint and provides the perfect match to our Femtosecond Laser.

The combination of both **EXCELSIUS** lasers offers our customers the most compact refractive work-station in the industry.

## The FEMTON F1 Philosophy

Our initial idea is to design a laser which is versatile, offering many treatment options.

Mobile for use in different operating rooms within the clinic. Upgradable and compatible to already existing Excimer Laser Systems or surgery tables.

## Treatment Options

The **FEMTON F1** is open to a large number of applications. The basic configuration includes LASIK Flap, Refractive Lenticule Extraction, Intrastromal Pockets, Intrastromal Tunnels and optionally it can be extended for cataract surgery. More applications will be added.

LASIK Flap

Refractive Lenticule Extraction

Intrastromal Pockets

Intrastromal Tunnels

Cataract (Optional)

## FEMTON F1 Controls and Components

1. TOUCHSCREEN MONITOR and GLASS KEYBOARD for easy user interaction.
2. SMALL FOOTPRINT, LIGHT AND MOBILE.
3. The specially designed ROBOTIC DELIVERY ARM is of compact design to fit under most operating microscopes and Excimer Lasers.
4. FLEXIBLE HEIGHT ADJUSTMENT RANGE for easy adaptation on existing patient beds.

   Designed to be combined to an already existing Excimer Laser and especially to the **Micron M7** Excimer Laser.
5. EYE TRACKER
   Centration during docking is done automatically by using eyetracking technology. This can be toggled with the optional joystick.

# FEMTON F1
## OPHTHALMIC SURGERY LASER


INTUITIVE, MOBILE & VERSATILE

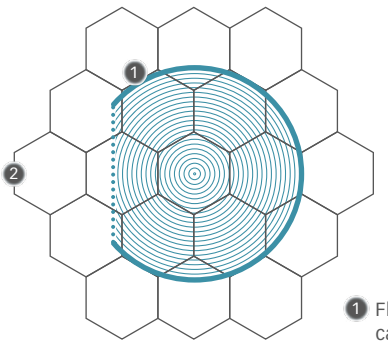
# The HexaScan™ Principle

The **EXCELSIUS FEMTON F1** is using a an unique scanning pattern creating high efficiency tissue cut with flexibilities on the size and type of applications.

The treatment area is divided into smaller hexagonal segments. The proprietary **Femton F1** operating software is using a self learning algorithm determining the size and number of hexagons used for an optimum balance of speed and resolution for each treatment.

## The HexaScanTM Pattern

### LASIK Flap

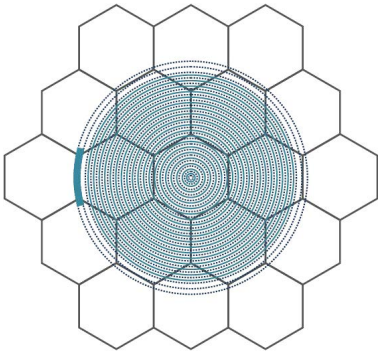



1 Flap rim, downcut can be customized

2 Hexagon sizes are optimized according to flap diameter

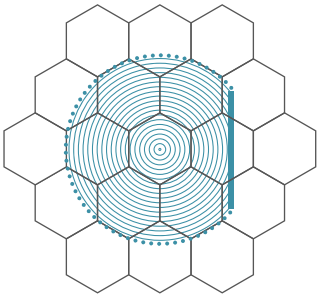
Hexagon sizes adjusted automatically for best speed and cut quality.

### Refractive Lenticule Extraction



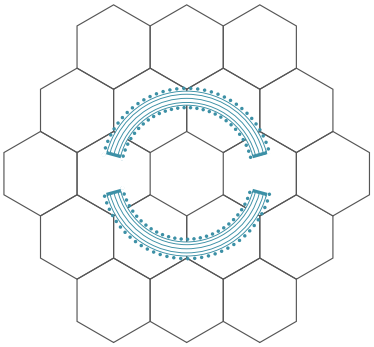
Hexagon sizes adjusted to ensure tissue saving technology can be realized to maximize the optical zone of lens.

### Intrastromal Pockets



For Intrastromal Pockets the hexagon spacing is optimized for speed and optimum cut quality to minimize optical distortions when inserting a lenticule implant.

### Intrastromal Tunnels



For Intrastromal Tunnels to ensure easy opening, tunnel width and depth as well as access cuts can be customized.

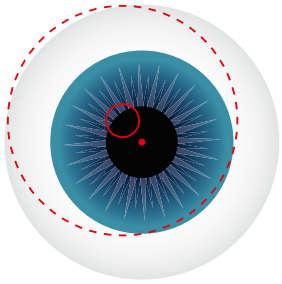
# The AutoDock Function

The **FEMTON F1** utilizes an eyetracking system which is integrated into the operating software controlling the robotic arm.

After positioning and preparing the patient for surgery, the application arm is moved towards the preselected eye. Once the pupil is detected the center is highlighted. The system automatically locks and centers itself on the calculated pupil center after pushing the center button, which is located on the joystick control.

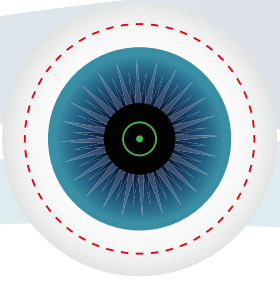
Corrections of a potential decentration can always be done be simply pressing the center button again, before applying the suction.

**Eye, slightly decentered, within Eye-Tracker Range**



Push the centering button on joystick.

**The Robotic Delivery Arm centrates to Pupil Center the Interface can now be moved downward with perfect Centration. Last Moment Decentrations can always be compensated by just pressing the Autocenter Button. Once the Interface touches centrally, the docking Process is completed by applying Suction.**



# The Advantages of FEMTON F1 Surgery

- LASIK Flap

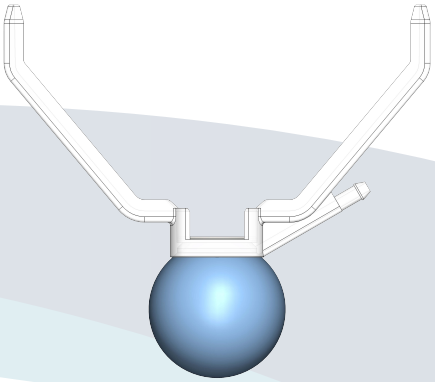
The **FEMTON F1** use a predefined flap program. Hinge position can be selected to the four main directions nasal, temporal, inferior and superior. Standard setting can be defined for each user. A separate sub menu allows more complex setting such as individual energy setting, spot spacing, side cut oblique angle, hinge size and more.

- Refractive Lenticule Extraction

The **FEMTON F1** do intracorneal lenticule cut and small incision extraction with an innovative tissue saving technology that can increase more than 10% of optical zone without add extra cornea thickness. With the same technology, the lenticule can be extracted relative easy even by the first hand on surgeon. The application range of lenticular extraction include myopia, Hyperopia, myopic astigmatism and hyperopic astigmatism.

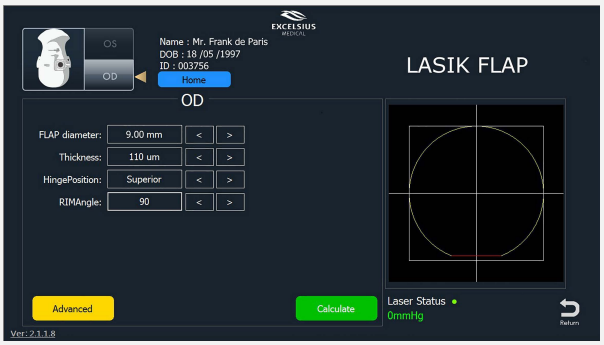
- Surgical Friendly Suction ring

The suction ring of Femton F1 has very compact dimension that outer diameter of ring is 16.5mm and the height is 8mm to be easily fit with eye. The suction ring has optimum design that can successful and steady dock the eye with docking pressure less than 200mmHg (266mbar) to minimize the IOP increase during docking period.

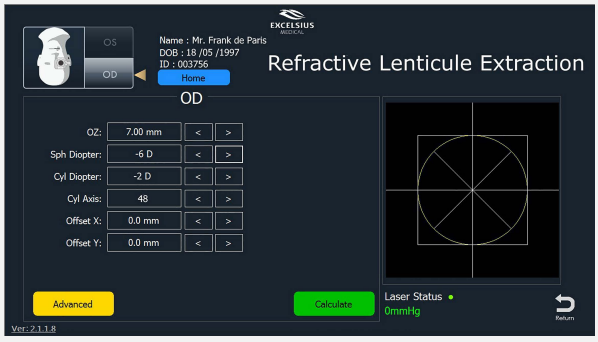


# The FEMTON F1 User Interface

### LASIK Flap

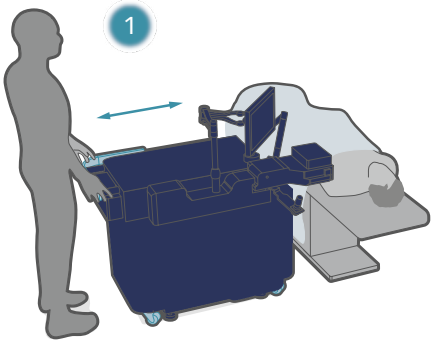



### Refractive Lenticule Extraction



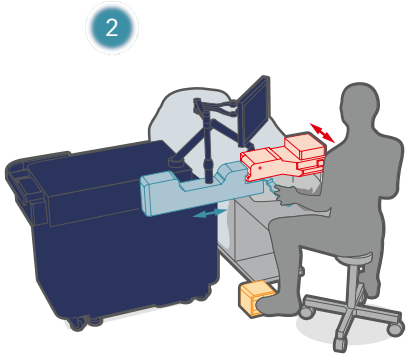

### Patient Positioning

**Easy Positioning.**
Move Laser towards patient bed, position and lock.




### Preparation

Move robotic arm to the eye to be operated.



# Patient Comfort and Unique Interface Design

The **FEMTON F1** is designed for the best patient comfort. Similar to the **Micron M7** Excimer Laser, the delivery arm is moved aside for surgery preparation. The surgeon has full access and free microscope view to the patient eye for draping, applying topical anesthetics and general procedures.

Then the delivery arm is positioned over the eye to be treated. After docking the cut is performed.

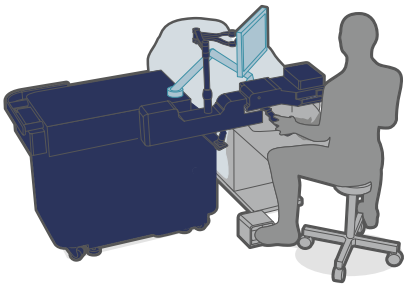
During the cutting process the surgeon can observe the whole procedure via the integrated video system. After cutting the applicator arm is moved aside, and the treatment can be continued either by Excimer Laser for LASIK or using the operating microscope for other treatment types.

The **FEMTON F1** uses a single piece patient interface. Optical interface and suction ring are made in one part. This makes the surgery setup quick and easy. Once centered and touching the eye, suction is applied to complete the docking procedure and fixate the eye.

**Treatment**

Perform surgery.

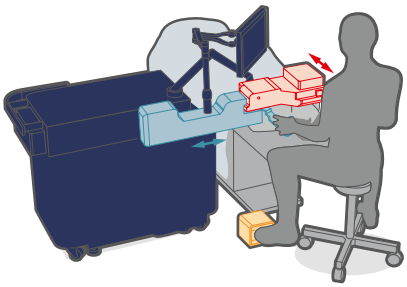
3



**Finishing**

Move robotic arm out of the way.

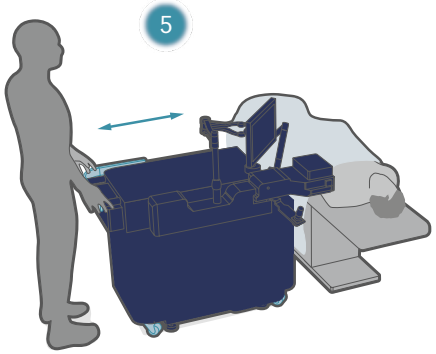
4



**Patient Release**

**Easy Release.**
Move laser away again when not needed anymore

5



## Cost Efficiency

When designing the **FEMTON F1** system intensive attention was paid to easy serviceability and a straightforward modular structure.

This results in great stability and a small number of necessary spare parts. Only application interaces which are intended for bilateral use are needed as acccessoires.

## Modular Design

The **FEMTON F1** is a modularized design as one compact unit. The laser system weighs only 200 kg which make it easy to handle and transport.

Moving the laser away when not needed is easy. Also it can be moved towards a patient bed of an Excimer Laser or ophthalmic surgery table for various procedures.

The width of only 790mm allows passage through the most standard doors.


## THE EXCELSIUS PROMISE

At **EXCELSIUS** we understand the importance of effective and direct support once your laser has been installed.

Our worldwide distribution partners are carefully selected. We have chosen them so they can provide top level technical as well as clinical support for your laser. We at **EXCELSIUS** are keeping their training always at the optimum.

# FEMTON F1
VERSATILITY

## EXCELSIUS Ophthalmic Surgery Workstation

The **FEMTON F1** is designed to work with our **Micron M7** Excimer Laser as a refractive workstation. This enhances the scope of applications from refractive surface ablation techniques such as PRK all the way to Femto Laser Assisted Cataract Surgery (planned).

The special delivery arm additionally design enables the use of already present Excimer Lasers and most ophthalmic surgery tables.

Please contact us for a current list of **FEMTON F1** compatible Excimer Lasers and tables.

EXCELSIUS also provides direct support helping our local partner for more complex issues.

All our customers are always welcome to contact us directly for any queries, complaints and suggestions.

We are here to help.
Contact us anytime at
**marketing@Excelsius-medical.com**

EXCELSIUS
MEDICAL

# SPECIFICATIONS

## EXCELSIUS MEDICAL GMBH | **FEMTON F1** FEMTOSECOND LASER

| | |
|---|---|
| Laser Type | YAG Solid State Laser, 1030nm +/- 10 nm |
| Repetition Rate | < 2 MHz |
| Spot Size | < 6 µm |
| Pulse Energy | 4 – 8 µJ at Laser Source Aperture |
| Ablation Method | HexaScan™, Segmented Ablation |
| Pulse Width | < 500 Fs |
| Cooling | Air Cooled |
| Input Voltage | 230 VAV, 50 / 60 Hz ±10 % |
| Input Current | 7 A (max) |
| Dimensions | 790 * 945 * 950 mm (Length * Width * Height) |
| | 200 kg |

| **Treatment Methods** | |
|---|---|
| LASIK Flaps | up to 9.5 mm Selectable Flap Thickness, Hinge Position and Hinge Dimensions, Advanced Mode |
| Corneal Pockets | up to 6.5 mm Selectable Opening Position and Width, Pocket Depth, Advanced Mode |
| Corneal Tunnels | up to 8.5 mm Inner Radius, Selectable Tunnel Width, Rotation and Depth, Advanced Mode |
| LenTx (optional upgrade) | Myopia and Astigmatism (Treatment Ranges Subject to Change) |

| | |
|---|---|
| **Advanced Treatments** (optional upgrade) | Rescue Mode (Converting Lenticular Extraction into LASIK)<br>Keratoplasty, Customized Profiles (planned) |

CE
2460

**EXCELSIUS MEDICAL GmbH** | Lina-Ammon-Straße 15 | 90471 Nürnberg | GERMANY
marketing@excelsius-medical.com | **PHONE** +49 [0] 911 8169249-0 | **FAX** +49 [0] 911 8169249-1 | **excelsius-medical.com**