



EXCELSIUS
MEDICAL



MICRON M7 EXCIMER REFRACTIVE LASER

PRECISE, SAFE & COMPACT

 LEADING LIGHT TO THE EYE.


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Who We Are

EXCELSIUS MEDICAL GmbH was founded in 2015 in Germany by a team of experienced specialists in medical technologies bringing new ideas to advance ophthalmic surgery devices.

Our commitment to advancing ophthalmic surgery is global. Excelsius Medical serves a growing network of distributors, healthcare professionals, and surgical centers worldwide, with the aim of enhancing patient care on a global scale.

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 workstation in the industry.

Compact Laser Workstation

- The **MICRON M7** is designed for maximum patient comfort.
- Optimised optics design for precision and predictability.
- Designed for cost-efficiency and low gas consumption.

Treatment Options

LASIK, PRK, TEPI-PRK (Transepithelial PRK) with selectable zone sizes and depth. Presbyopia , PTK and optional Topography guided treatments (planned).

Unique Beam Delivery Philosophy

We have redefined the traditional approach. **Micron M7** laser beam applicator and microscope move towards the lying patient by a robotic arm, resulting in reducing system dimensions, flexible working distance and less impact of ambient air on the laser beam.

REVOLUTIONARY

The first laser in refractive surgery leading the light right to the eye via a robotic applicator.

MORE PRECISION

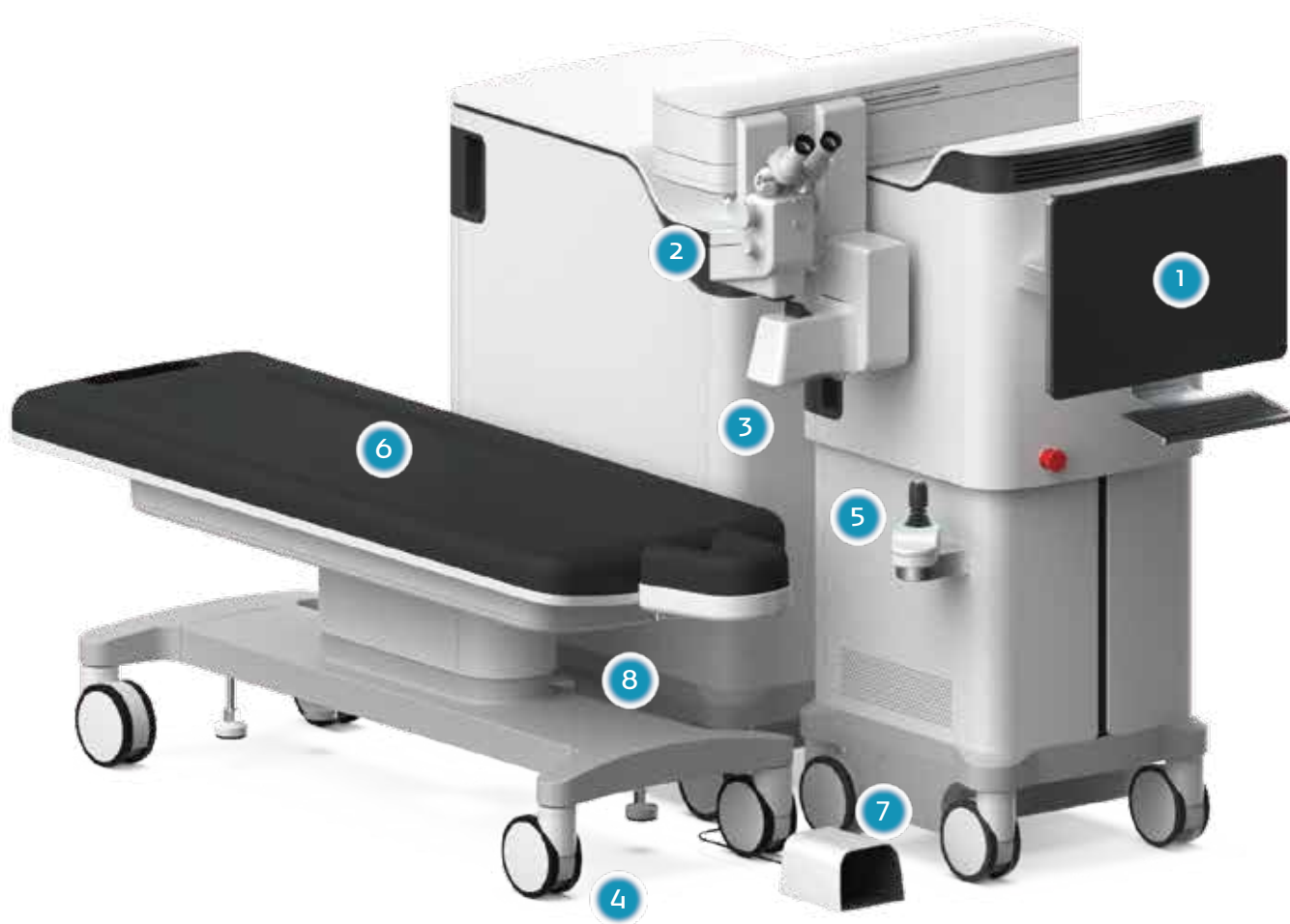
A combination of continuously working video eye-tracker and docking eyepiece tracks eye movements and minimizes fixation saccades.

MICRON M7 Controls and Components

- 1 LARGE TOUCHSCREEN MONITOR and KEYBOARD for easy user interaction.
- 2 MICROSCOPE including LED ILLUMINATION and auxiliary beams on a robotic arm. Large working distance and natural colour LED for easy patient preparation and surgery control.
- 3 The UNIQUE ROBOTIC APPLICATOR delivers the laser beam close to the eye in order to minimize the impact of the ambient air.
- 4 SMALL FOOTPRINT, Light and Mobile.
- 5 JOYSTICK CONTROL for a simple docking procedure and automated for patient eye centration.
- 6 COMFORTABLE PATIENT BED. easily accessible comfortable patient bed reducing any claustrophobic feelings.
- 7 FOOTPEDAL to start laser treatment and activate surgical plume removal for a stable microclimate above the corneal surface while at the same time eliminate ablated corneal particles during laser operation.
- 8 SMART OPTICS DESIGN and LASER ENERGY MANAGEMENT minimizes operating costs and gas consumption.

MICRON M7

EXCIMER REFRACTIVE LASER

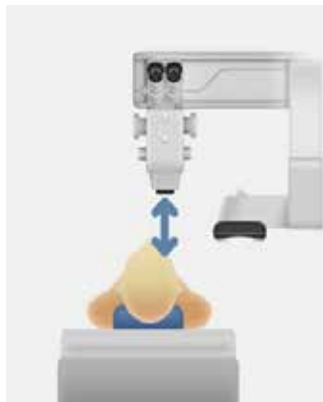


PRECISE, SAFE & COMPACT

Robotic Arm

EXCELSIUS MEDICAL is presenting the most compact excimer Laser platform. We have eliminated the need for a motorized patient bed. Instead of positioning the patient under the laser beam, a robotic arm positions the eye along the laser beam path.

The main advantage of this approach is the large working distance during patient preparation and a small distance during treatment, minimizing environmental influences.



Preparation

Adequate room for eye draping and flap creation



Treatment

Close distance for maximum control and precision, excluding environmental influences.

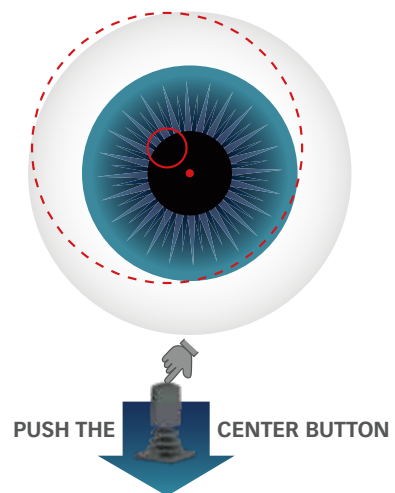
Auto Centration

Our video eyetracking system is connected to the controls of the robotic arms. Once the pupil is detected, the system automatically locks itself on the center of the patient's pupil, following the movement within tracking range.

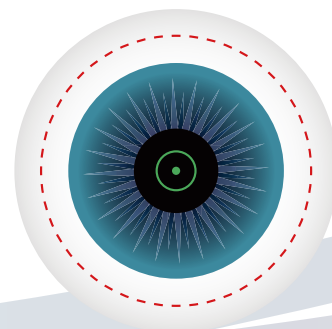
In case the eye moves out of eyetracking range during surgery, a re-centration just by pressing the center button can be achieved quick and easy.

Manual repositioning of the bed by using the joystick is not necessary anymore.

Pupil, slightly decentered, within Eyetracker Range



Robotic Arm moves to Pupil Center and Eyetracker works within Tracking Range determined by the green inner Ring



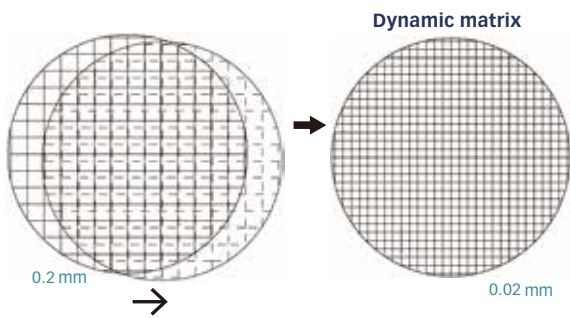
Safe and Fractional Ablation

With the Excelsius **Micron M7**, We are using the innovative dynamic matrix pulse setting to improve the ablation pattern resolution around 0.02mm that makes laser ablation very smooth and precise when the Topo-guided treatment is applied. Fractional ablation is our approach of treating the whole treatment zone in a combined spherocylindrical pattern from the beginning, increasing the refractive correction over time.

The randomized flying spot pattern distributes the individual laser pulses across the whole treatment zone from the beginning. Thus spreading the thermal impact on a larger area and minimizing the temperature increase on the stroma. This will reduce the risk of haze on surface ablation techniques such as PRK, EpiLasik or related treatment techniques.

As an additional advantage, fractional ablation provides added safety as any unintended surgery interruption will be logged to the last laser pulse. The surgery can later be continued in a second session starting from the last pulse.

Dynamic matrix algorithm

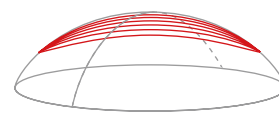
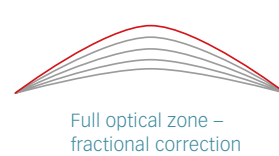


EXCELSIUS Dynamic matrix

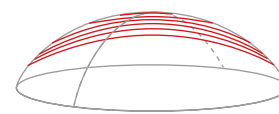
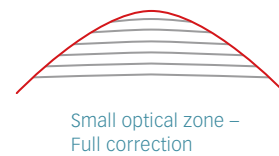
The innovative dynamic matrix pulse setting of laser ablation pattern improves the resolution from 0.2mm to 0.02mm.

Fractional Ablation

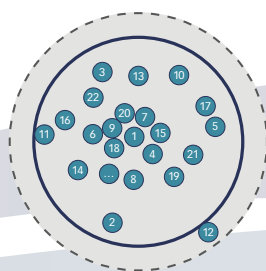
EXCELSIUS Fractional Ablation



Traditional Technology

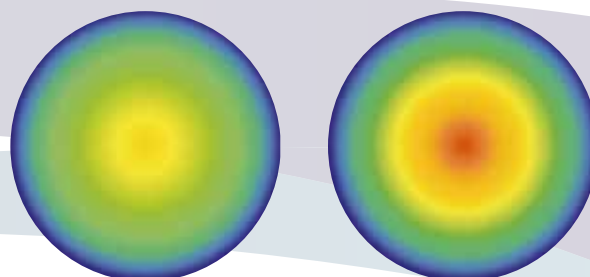


Optimized Flying Spot Technique



Low thermal impact is important. Each individual laser spot position is calculated in such a way, to never overlap with the previous pulses avoiding thermal accumulation.

Schematic thermal images illustrating the lower thermal impact



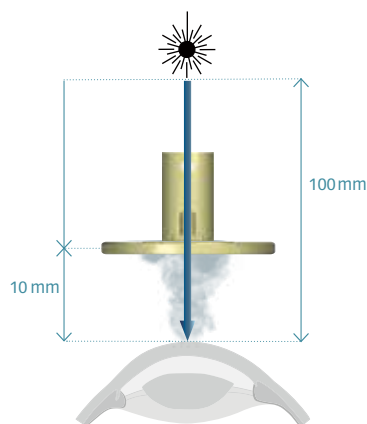
Closed-up Operation & Surgical Plume Removal

The **MICRON M7** has been designed in such way that the applicator is only 100mm away from cornea. This short operating distance reduces the unpredicted ambient air particles interferences. As the eye tracker module is located in applicator, its camera is close to the eye, resulting in best recognition and optimum IR illumination.

Moreover, in order to avoid airflow around the surgery area, affects the stromal eye hydration an air extractor which is optimally positioned with respect to the corneal plane of the patient evacuate the laser beam working area air. This takes place at only 10mm away from the eye.

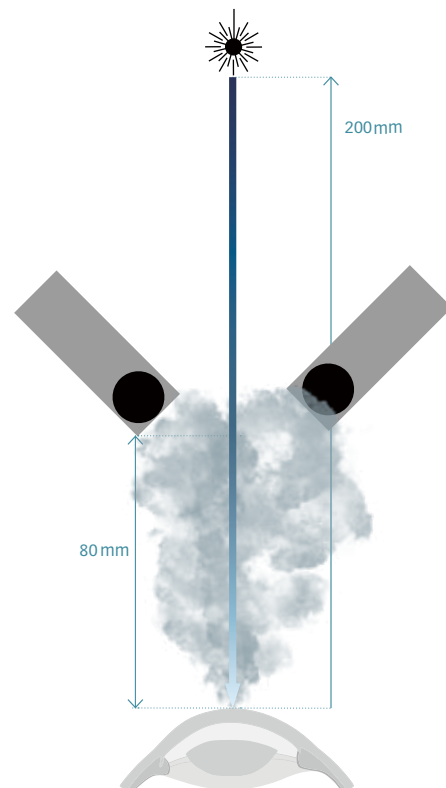
- Surgical plume evacuator close to the eye to remove smoke at the highest density without affecting the stromal bed
- No unpleasant smell of ablation products

Short Operation & Aspiration Distance



EXCELSIUS Surgical Plume Evacuation

Laser beam travels short distance through environment and is minimally influenced. Nearly no unpleasant odours.



Traditional Surgical Plume Evacuation

Laser beam affected by dense surgical plume near corneal plane. Still environmental influence. Noticable "burnt tissue" smell.

Patient Comfort

The slidable patient bed provides maximum patient comfort. When preparing surgery, the robotic arm is moved away from the patient. The patient will not experience the feeling of being “blocked and locked into a machine” and lies relaxed during the whole procedure.

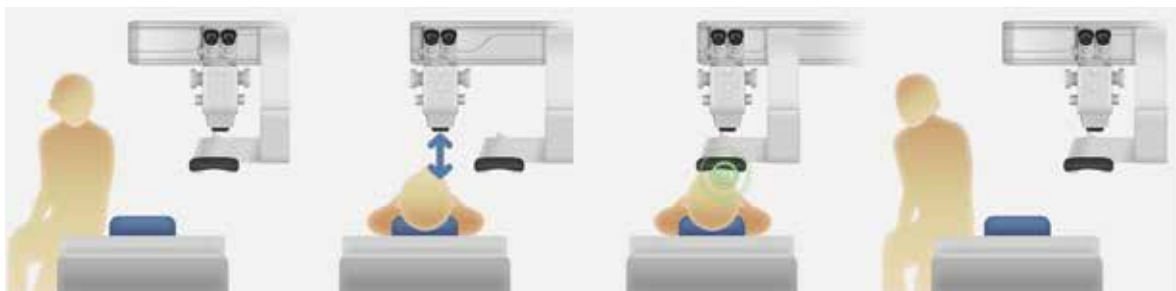
In the case of a femtosecond laser assisted surgery, there is no need to reposition the patient, as the applicator can be moved close to him/her, the femtosecond laser is added to the excimer laser for treatment and the microscope can be used for flap management and surgery controls.

Patient Entry

Preparation

Treatment

Patient Exit



1

Easy Entry.

No claustrophobic feeling,
good patient-doctor contact.

2

Comfortable draping
and surgery preparation.

3

Short working distance
of the applicator for safety
and accuracy.

4

Easy Exit.

Cost Efficiency

The **MICRON M7** uses a specially designed laser source with large energy reserves for long active and passive gas lifetime.

The laser head generates a small and homogeneous beam. It is delivered along several small mirrors with a very low fluence. This results in high level of stability, low stress on the optics and long optics lifetime.

The laser startup and time between surgeries only take a few minutes. This allows an optimized workflow with minimized patient waiting time.

Accepting Walk-In patients during the daily routine now becomes possible.

The small footprint provides the possibility of installing the laser in almost all locations, minimizing the overhead costs of the clinics.

For easier installation or optional mobile use, the **MICRON M7** is designed to be separated into two parts.

Modular design

The **MICRON M7** is a modularized desing laser with slidable patient bed. The laser system weighs only 370 kg which makes it easy to handle and transport.



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 for providing them top level technical and clinical support for

your laser. We at **EXCELSIUS** are always keeping their training at the optimum.

MICRON M7

VERSATILITY

EXCELSIUS Ophthalmic Workstation

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

The large working space further enables the use of already present Femtosecond Lasers.

Please contact us for a current list of **MICRON M7** compatible Femtosecond Lasers.



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



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SPECIFICATIONS

EXCELSIUS MEDICAL GMBH | MICRON M7 EXCIMER LASER

Repetition Rate	800 Hz
Spot Size	0.5mm ² (0.75mmx0.65mm)±10%(effective size)
Energy Density	90~180 mJ / cm ² at the Cornea
Pulse Energy	< 1 mJ at the Cornea
Ablation Method	Flying Spot Scanning, Fractional Ablation
Pulse Width	4 ~ 8 ns
Cooling	Air Cooled
Input Voltage	230VAV, 50 / 60 Hz ±10 %
Input Current	7 A (max)
Dimensions	Tower Box / Laser Box : 1045*1191*1486mm / 932*702*1040mm (Length*Width*Height) Tower Box / Laser Box : 170 kg / 200 kg

Correction Range *

Myopia	-0.25D ~ -12.0D
Hyperopia	+0.25D ~ +6.0D
Astigmatism	-6.0D ~ +6.0D
Presbyopia	+0.5D ~ +3.5D

Ablation Area *

Myopia	5.0 – 8.0mm Optical Zone, 6.2-9.2mm Transition Zone
Hyperopia	5.0 – 8.0mm Optical Zone, 6.7-9.7mm Transition Zone
Astigmatism	5.0 – 8.0mm Optical Zone, 6.7-9.9mm Transition Zone
Presbyopia	3.0 – 3.5mm Optical Zone for Center Distance, 2.7 – 4.0mm Optical Zone for Center Near

* Note: The actual correction limit and ablation area are determined by the individual patient factors such as central corneal thickness, pupil size etc

Treatment Methods

LASIK
PRK | Trans-epithelial
PTK | Presbyopia
Topography Guided Treatments (optional)

Therapeutic Laser

Line Laser

Fixation Laser

ArF Excimer Laser, 193 nm < 3W Class 4
Red Diode Laser, 652 nm, < 1 mW Class 2
Green Diode Laser, 532 nm, < 1 mW Class 2

