

# FUTONICS



# The Pain

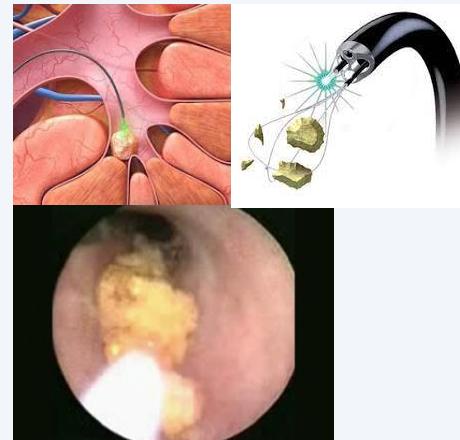
## Agriculture

Slow manual techniques and expensive chemical weed controlling techniques which are toxic to humans, wildlife and the environment



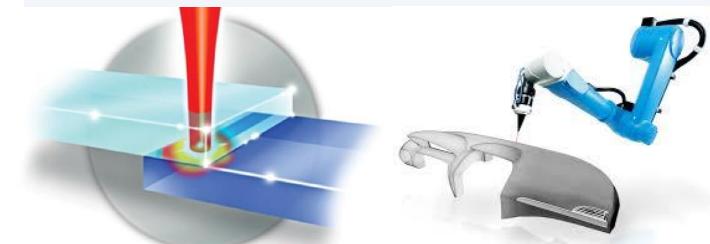
## Medicine

Old laser technologies with high after surgery pain and scarring



## Industry

Low laser power and slow laser speeds in welding leading to high risk of thermal degradation or material disintegration

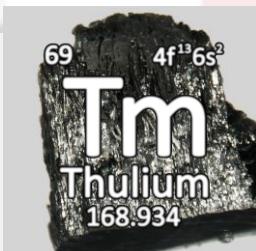


## Problems with the old

- ✖ Limited optical laser power
- ✖ Low power output and efficiencies
- ✖ High sensitivity to back reflection
- ✖ Insufficient laser speeds ---> limited productivity
- ✖ No frequency stabilization and tunability of high powered lasers
- ✖ Limited efficiency when used outdoors

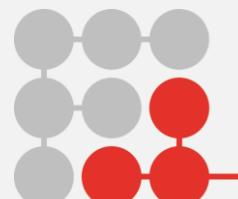
# Current Market Systems

- CO<sub>2</sub> and Holium lasers operate in the medium IR wavelength range but are often bulky and energy inefficient.
- Many companies building fiber lasers but few build at the 2μm wavelength
- Only IPG Photonics is produces a 200W laser at 2μm wavelength but uses an outmoded laser concept for pumping (exciting) the Thulium-Fiber.
- Their technology is derived from pumping the Ytterbium-Laser which then excites the Erbium-Laser which then excites the Thulium-Laser - which is **very inefficient and prone to failure!**



## A New Concept for Laser

FUTONICS uses the excitation at 793nm, and technology that uses the up-conversion process in Thulium resulting in almost **twice the energy efficiency** compared to IPG technology.



# The Future, NOW

## 2.0µm Thulium Fiber Laser Systems



- ★ 2.0 µm thulium-doped fiber laser systems with wavelengths of 1930 - 2050nm.
- ★ Water-cooled high-power laser systems built in a monolithically integrated full-fiber configuration with single-mode fibers and fiber Bragg gratings (FBG).
- ★ Single-mode beam quality of  $M^2 < 1.2$  across the entire power spectrum.
- ★ Robust, compact and lightweight system which can be thermally and electrically customized for scientific or industrial needs.

# Industry Applications

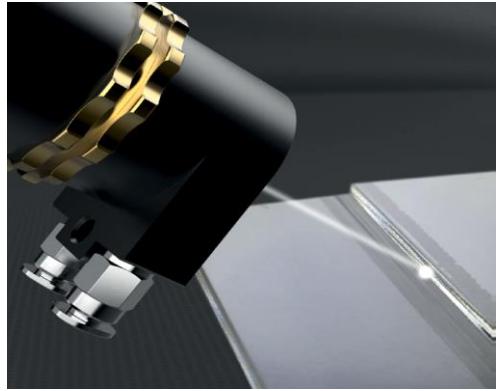
## Agriculture



## Medicine



## Industry



## Unmatched Benefits

### Weed Control

- ✓ Chemical and toxin-free weed control
- ✓ No damage to crops and soils
- ✓ No health hazards to field workers
- ✓ No impact on insects and small animals

### Surgery

- ✓ Easy automation and integration in series production
- ✓ Non-contact processing of the workpieces
- ✓ No particle generation & no contamination
- ✓ No thermal stress of sensitive component areas

### Welding

- ✓ Easy automation and integration in series production
- ✓ Non-contact processing of the workpieces
- ✓ No particle generation & no contamination
- ✓ No thermal stress of sensitive component areas

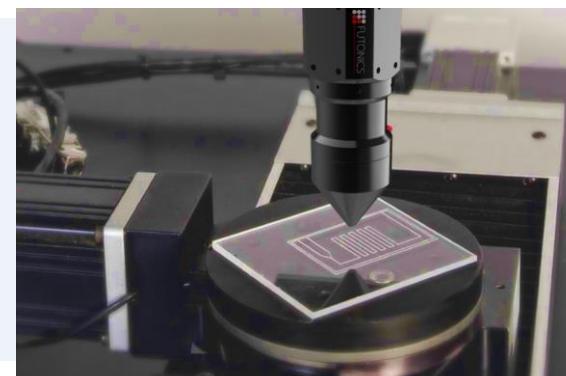
# Market Insights

- The global weed control market is expected to grow to €45.67billion in 2027 at a CAGR of 7% from 2019.
- The EU is phasing out Glyphosate, a widely used herbicide, with Luxemburg completely banning all products containing glyphosate due to its carcinogenic and genotoxic side effects.

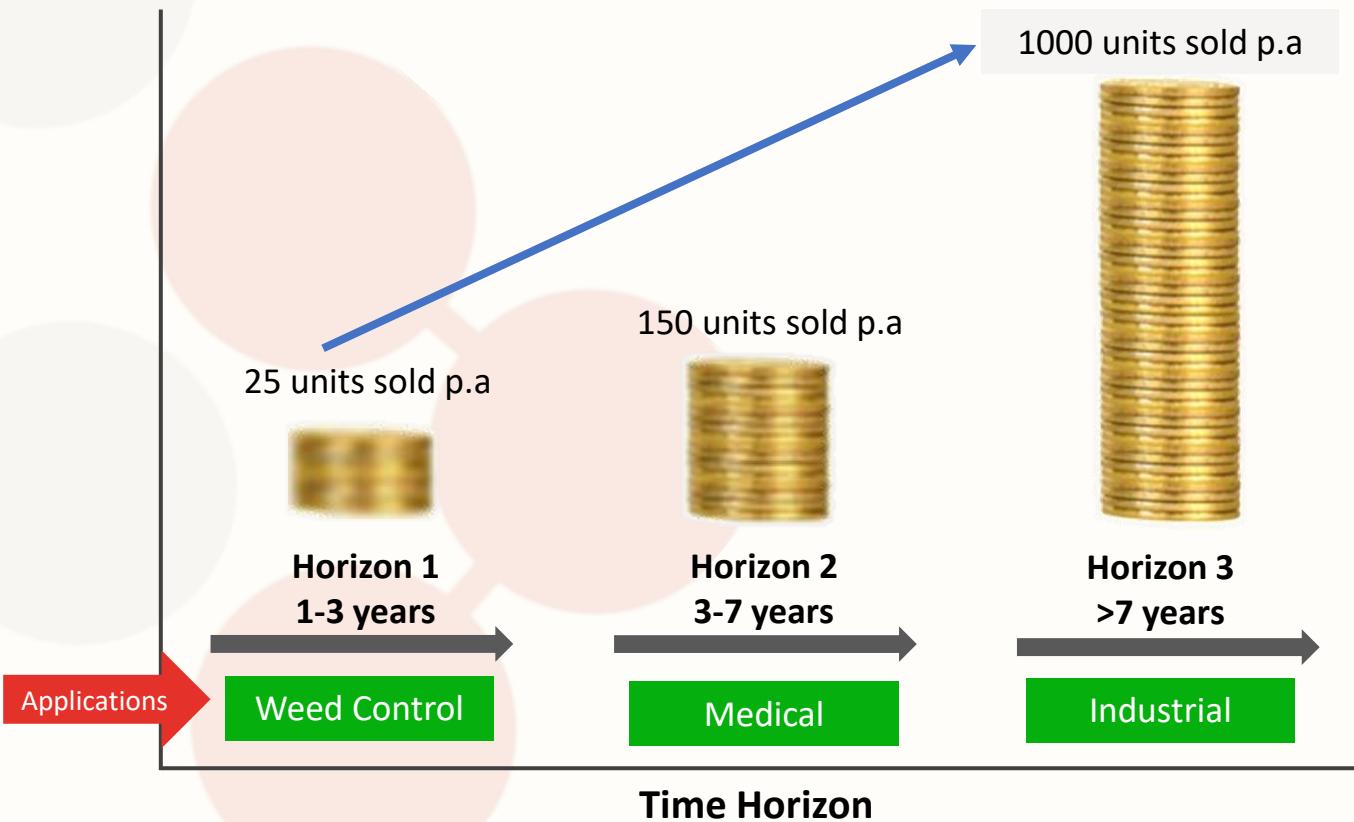


- The medical laser market is anticipated to grow to €10.7billion in 2027 from €3.11billion in 2020 at a CAGR of 19.3.
- Rising focus on physical appearance is increasing preference for minimally & non-invasive procedures. Surgery using medical lasers generally results in less pain, minimal incisions & reduced risk of post-procedural complications.

- The industrial laser market is forecasted to grow to €13.28billion in 2027 from €5.17billion in 2019 at a CAGR of 12.4%.
- The appeal of fiber laser for industrial cutting, welding and drilling is rising due to high reliability & easy computer and robotic automation integration.



# Go-to-Market Strategy



Higher volume production will take three to four years.

During this time, our strategic partners & customers need to validate the systems for industrial applications and to get approvals for medical use.



**TAM** €45.7B  
**SAM** €5.7B  
**SOM** €14.3M

Weed Control



**TAM** €10.7B  
**SAM** €1.4B  
**SOM** €3.3M

Medicine



**TAM** €13.3B  
**SAM** €1.7B  
**SOM** €4.2M

Industry

# Our Business Model

In-house manufacture of laser systems at Fotonics factory.  
Potential production of >1000 systems a year



R& D Collaborations

Integration into Partner devices

Strategic Partners



End-users



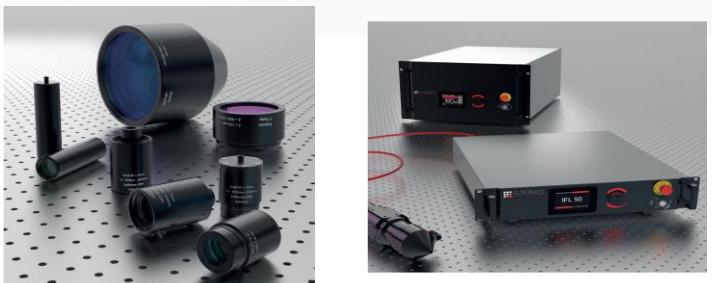
## Marketing Plan:

- Maintaining a detailed website with optimized search ranking.
- Direct marketing by sales engineers in Germany and by contractors in foreign countries.
- Regular publications in specific journals, attending trade shows and congresses.

# How we Monetize

	2022	2023	2024	2025	2026	2027	2028	2029
FTE	8	9	9	12	19	24	35	43
Revenue	405	486	569	1,474	4,407	9,843	16,102	21,822
COGS	243	290	338	732	2,257	5,105	8,780	11,800
Op. Exp.	234	249	223	293	437	668	911	1210
EBITDA	-433	-456	-408	-125	775	2,847	4,571	6,464
N. I Margin	0%	0%	0%	0%	11%	26%	20%	21%

- Revenue is generated by selling complete Laser units and their accessories.
- Price of laser unit is between €15,000 and €35,000
- Potential of 2,000 lasers units to be supplied in the industrial, medical and agricultural fields annually.
- Fotonics wants to support 50% of this market in 5-7 years earning an annual turnover of €25 million.



# Support from our Strategic Partners

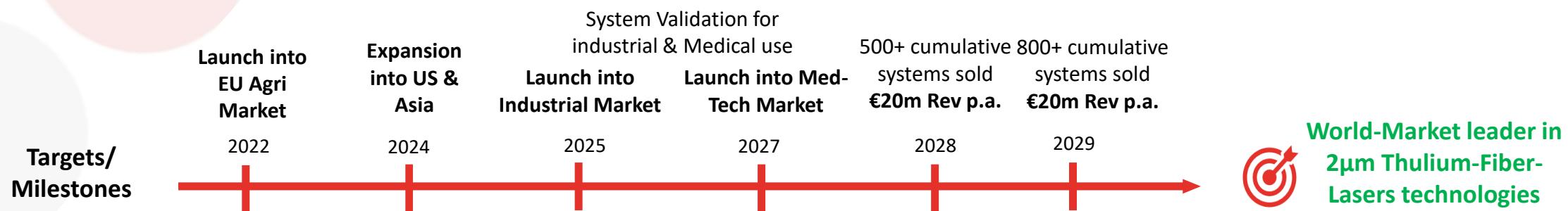


*"The use of herbicides is restricted to protect of the environment. Therefore, mechanical or laser weeding is the only sustainable method of maintaining agricultural productivity. This will generate a huge market for our machines. We expect to lease or sell several hundred systems in the next three years and up to several thousand systems per year towards 2030."*

# Investment Opportunity

We are raising **€3million** for shares in the company to:

- Expand our production capacity through investment in manufacturing machinery and equipment (50%).
- Build inventory of input components and raw materials (30%).
- Increase business development personnel and strengthen our salesforce (20%).



# Experienced Team

---

Dr. Peter Fuhrberg, managed Lisa Laser Products OHG for almost 30 years, specializing in 2µm lasers for medicine and industry

He founded Futonics in 2018 and the team now consists of 8 members & 3 advisors:

- three Ph.D. holders in physics and 4 engineers in laser technology, mechanical engineering, and IT science.

The team is highly experienced in laser development of infrared laser systems for medical and industrial applications and have participated in many international collaborative research projects



**Dr. P. Fuhrberg**  
CEO/Founder  
Financing  
Controlling



**L. Jin**  
Sales &  
Marketing  
Accounting

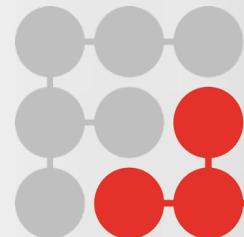


**Dr. K. Scholle**  
R&D  
Laser Physicist



**Dr. D. Müller**  
R&D  
Optic Design

*Thank You!*



FUTONICS



Dr. Peter Fuhrberg | [pfuhrberg@futonics.de](mailto:pfuhrberg@futonics.de)



[www.futonics.de](http://www.futonics.de)