OEM LASER SYSTEMS AND COMPONENTS

FOR DERMATOLOGY & AESTHETIC APPLICATION

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Speaker - Sergei Tsarev, CEO at Astrum LT
EPIC Online Technology Meeting on Photonics for Dermatology and Aesthetic

Medical and Aesthetic application of laser

In Today's talk laser technologies for

- Hair removal
- Tattoo removal
- Rejuvenation/peeling/wrinkle reduction
- Vessel lesion treatment
- Gyno

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Group profile

(Kralupy nad Vltavou, Czech Republic, 2018)– GaAs fab, VCSEL, EEL and laser devices, EU and US market

Astrum LT sro

Commercial serial scale epitaxy, chip fabrication, packaging (low and high power),

Melsytech Ltd.

Astrum LT uab

liaison, representation, assembly

Customers for EEL, VCSEL, gain modules, packaged devices

Dzerzhinsk, Russia, 2012) – R&D, semiconductor lasers, laser modules and systems, aesthetic and surgery lasers, Russian market

(Vilnius, Lithuania, 2017) - representation activities for communication, sales and logistical support for EU customers and customers worldwide

small serial production R&D, laser chip design, proof of concept, **for epi and chip fabrication**

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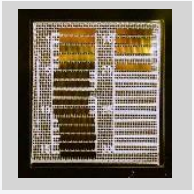
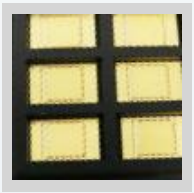
Vertical Business Integration

Design, R&D

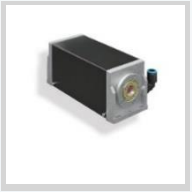
In-house epi

In-house chip fabrication





In-house modules and laser diode drivers



In-house laser module production

Up to a complete brand/OEM device

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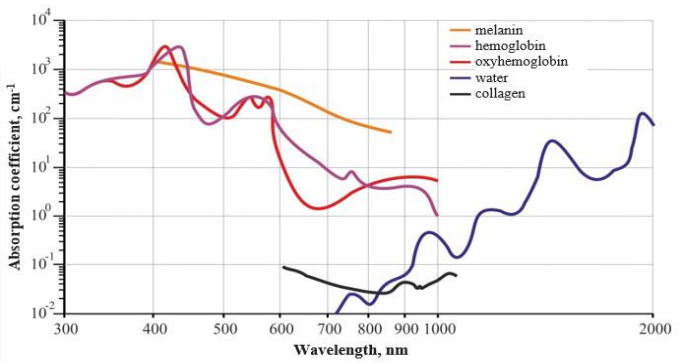
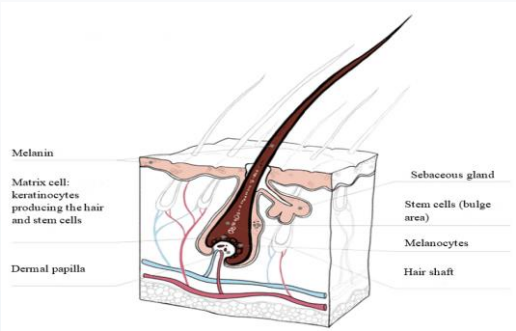
Product 1 OEM 808+760+1060 Hair removal





Standard design features diode laser inside the handpiece

- selective photothermolysis
- a chromophore and its thermal destruction
- hair keratinocytes and dermal papilla stem cells with no chromophore
- the chromophore for laser epilation procedures is melanin

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Product 1 OEM 808+760+1060 Hair removal

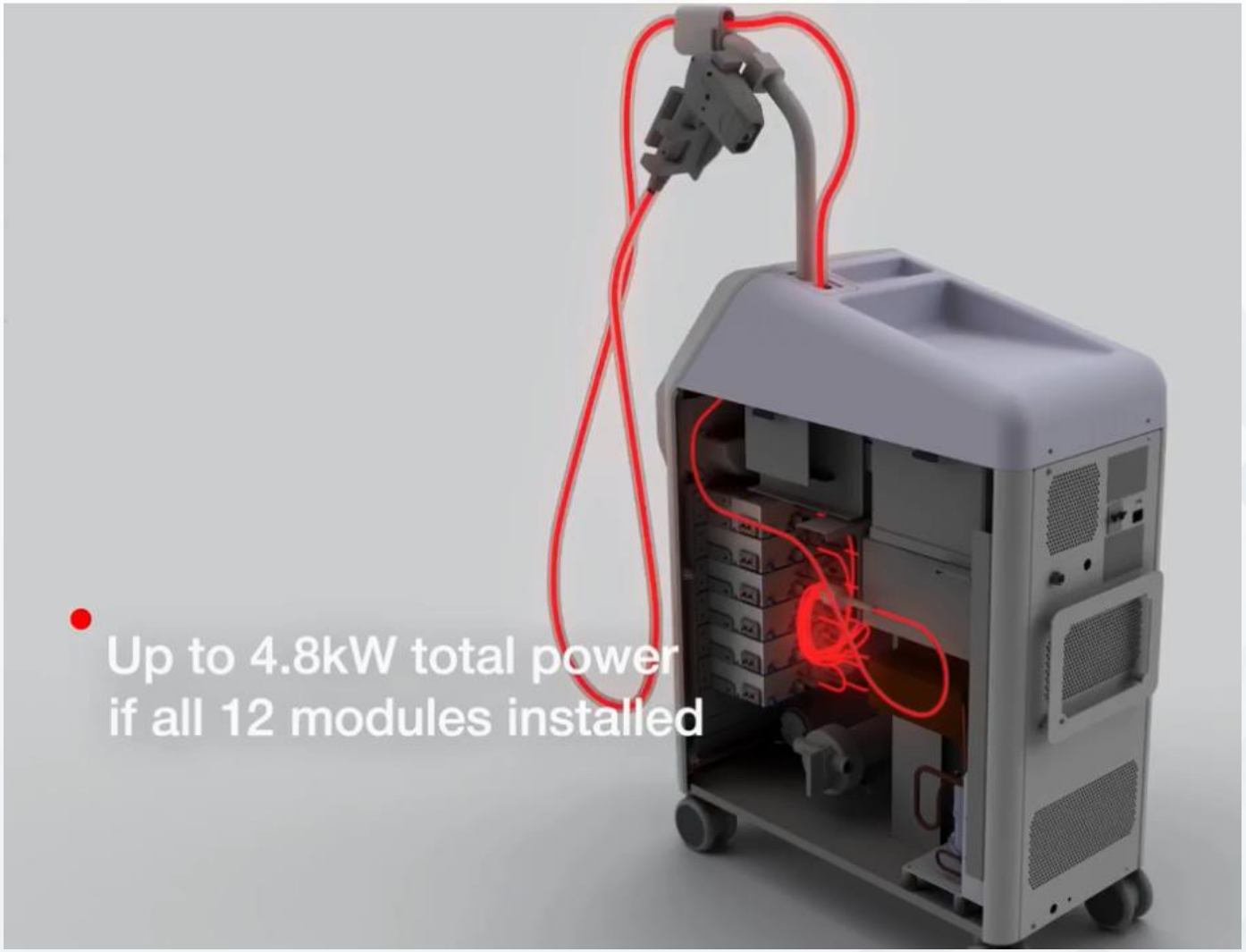
- Modular design allows for power and wavelength combinations
- System can combine from 1 up to 12 modules

12 Modules:

760nm (200 W)

808nm (400 W)

1060nm (500 W) in various combinations or by single wavelength



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Product 2 Q-Switch/nanosecond laser module

- **selective photothermolysis**
- Tattoo ink/pigment as a chromophore
- rapid heating destroys the ink particles
- Lymphatic system
- Color limitations

- **rejuvenation**
- effect is mainly associated with localized moderate heat damage
- Deeper in skin penetration (lower melanin and water absorption)
- remodeling and synthesis of collagen, epidermal hyperplasia, neo angiogenesis and increasing of fibroblast quantity

- **Other applications**
- Vessel removal, pigmentation, peeling, hair removal

Console design for demo purpose only!

Low cost of ownership

Dye handpieces are available

Nanosecond, microsecond and millisecond modes

1064nm 1.7J pulse energy (Q-switch mode)

120J long pulse

532nm 0.7J pulse energy (Q-switch mode)

Spot size 2-10mm Automatic spot size adjustment

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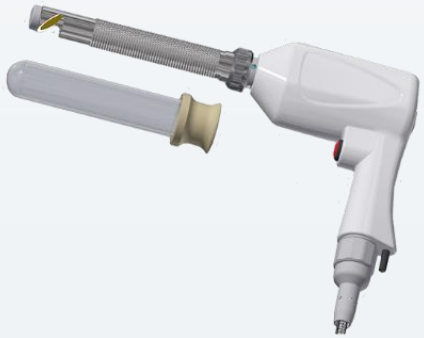
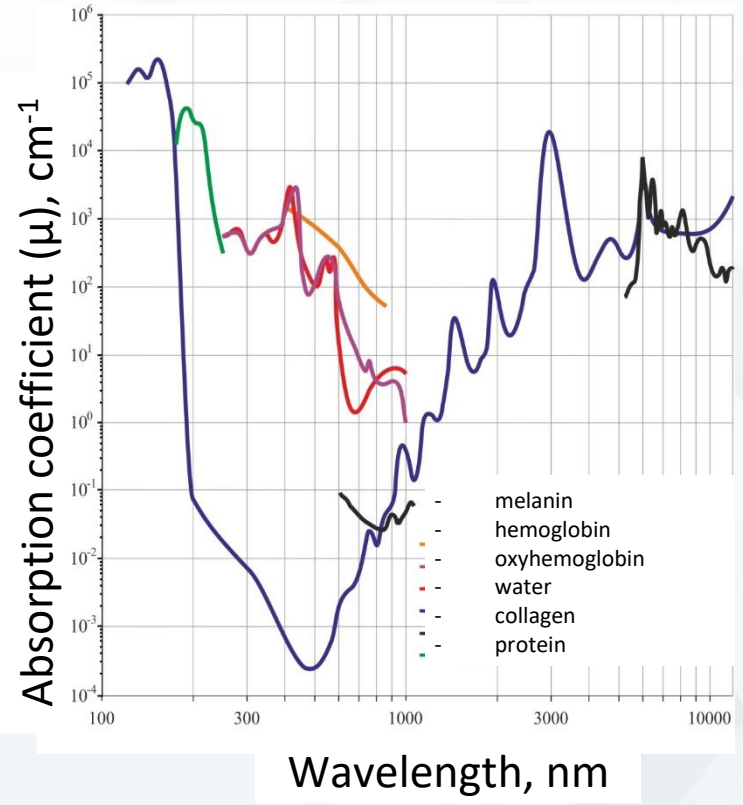
OEM gynecology 3.1 / solid state laser module 1064nm
OEM gynecology 3.2 / direct diode laser 1060nm

- State-of-the-art technology
- Clinically demonstrated and proved





- Prolapse I-II stage; Vaginal atrophy
- Treatment is based on ablation, heating and coagulation to recharge sensitivity, tightness, also called vaginal rejuvenation – main purpose to stimulate the collagen generation

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Lasers in aesthetic gynecology

Laser	CO_2	Er:YAG	Nd:YAG by Astrum
Wavelength, µm	10,6	2,94	1,064
Absorption in tissue	Strong absorption in water and collagen	Strong absorption in water	Low absorption in tissue components, selective in oxyhemoglobin
Main method	**Ablative** fractional photothermolysis	**Non ablative** fractional photothermolysis	**Non ablative** photothermolysis
Advantages	1) Fast and strong clinical result	1) Good clinical result 2) Non invasive procedure; 3) No pain; 4) No anesthesia; 5) Short rehabilitation period; 6) Low risk of complications as burn and fibrous tissue formation.	1) Good clinical result 2) Non invasive procedure; 3) No pain; 4) No anesthesia; 5) Very short rehabilitation period; 6) Risk of complications as burn and fibrous tissue formation practically excluded.
Limitations	1) Invasive procedure; 2) Pain; 3) Long rehabilitation period; 4) Significant lifestyle restrictions during rehabilitation; 5) High risk of complications as burn and fibrous tissue formation.	1) Delayed Result; 2) Accumulation effect required.	1) Delayed Result; 2) Accumulation effect required.

NOTE: There is another technique of combining an Er:YAG laser and a 1.5 µm diode laser (DiVa).
It uses the same principle and mechanisms as for a CO_2 laser: ablation (due to 2.94 µm) + coagulation and heating (due to 1.5 µm).

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More laser modules for medical and aesthetic applications / vessel removal

Yellow laser (583nm), 5J @ 60ms (5kHz)

Green laser (532nm), 5J @ 60ms (20kHz)

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Product portfolio

High power laser diode drivers

- **Laser diode driver**
- **High power optical modules**
- **High power fiber-coupled laser modules**
- **OEM**
- **Design and development**
- **Laser gain modules**

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Who is our product for?

- Medical/Aesthetic System integrators
- Research institutions

What we are looking for

- Laser Chip Packaging partners
- High power mirrors
- Medical laser consulting

Thank you!

Astrum LT, UAB
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