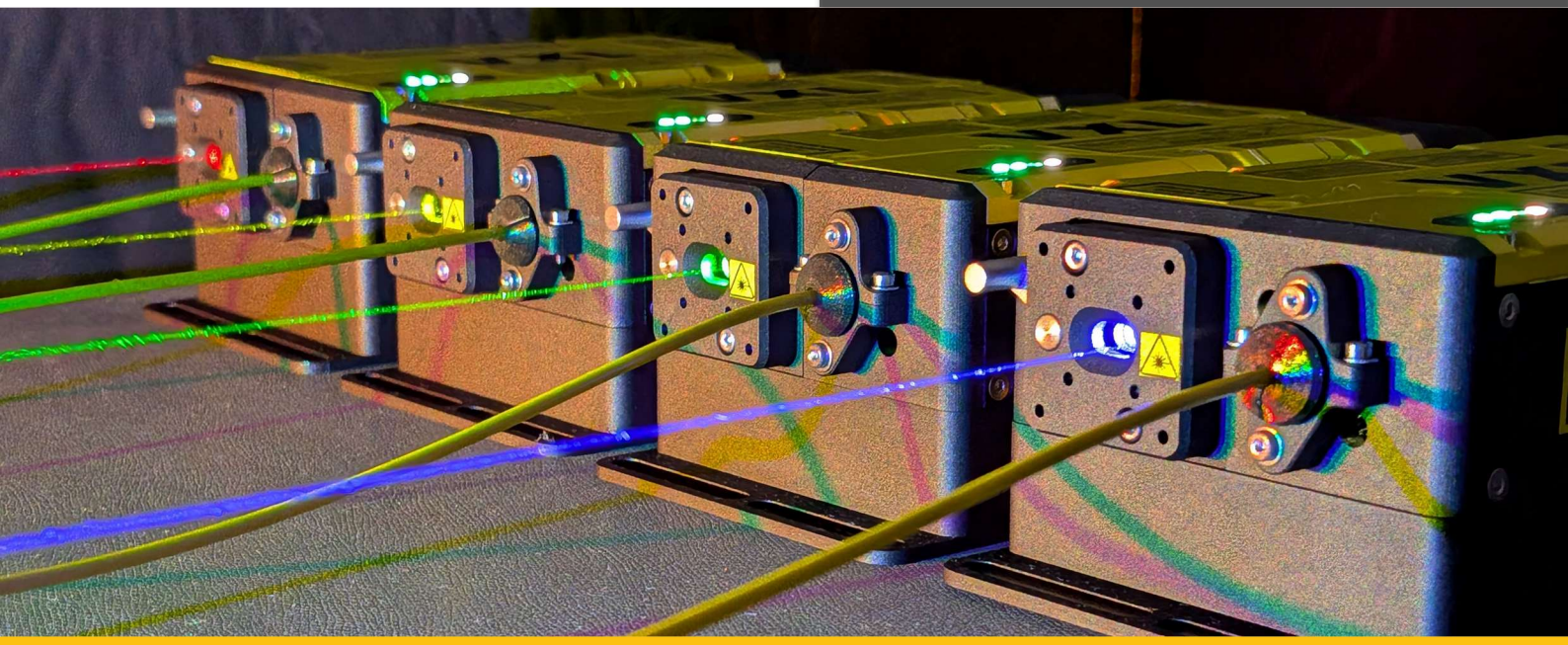
VEXLUM

Contact

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Vexlum Oy (HQ): Tampere, Finland
Vexlum Inc.: Broomfield, CO
Vexlum Ltd: London, UK



HIGH-POWER / LOW-NOISE / SINGLE-MODE LASERS FOR RESEARCH AND INDUSTRY

Optically pumped vertical-external-cavity surface-emitting lasers (VECSELs)

VECSELs combine the benefits of semiconductor quantum well gain together with the external cavity architecture of disk lasers, resulting in wavelength-versatile high-power systems. Our product platforms provide compelling advantages for quantum technology and semiconductor metrology.

Key Specifications				
Broad-wavelength selection	**High-power output**	**Low frequency and amplitude noise**	**Excellent spatial mode quality**	**Narrow linewidth**
350 nm – 2150 nm	Up to 10 W	No ASE - SNR > 100 dB	$M^2 < 1.1$	< 100 Hz (instantaneous)

VEXLUM is a **semiconductor** laser company with a **vertically integrated manufacturing process**:

- ✓ Design and growth of gain structures
- ✓ Cleanroom processing of gain chips
- ✓ Optomechanical design and laser assembly
- ✓ Control systems development

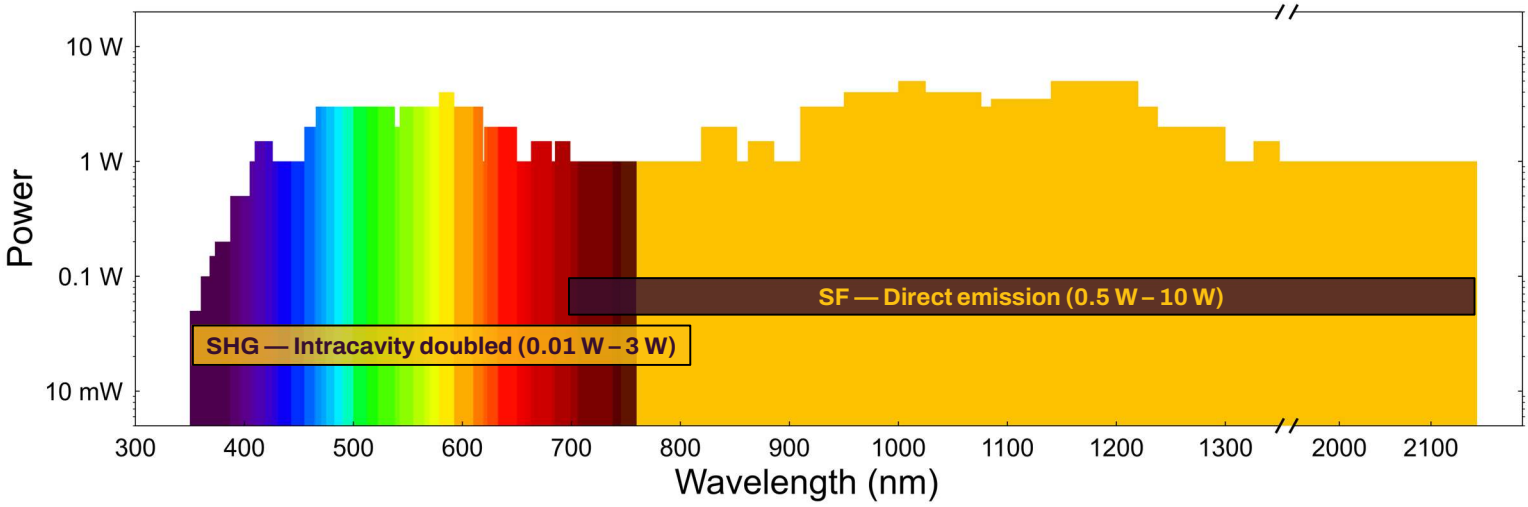


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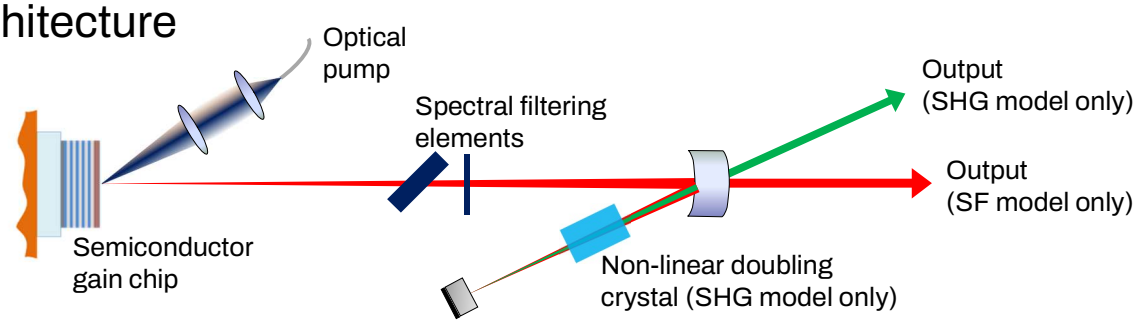
Rev. 2026-09

VEXLUM

Available Output Powers



VECSEL Architecture



Key Features and Benefits

Optical pumping
High power & beam quality

Semiconductor gain
Target wavelength flexibility

Vertical external cavity
Tunable single frequency

Intracavity SHG
High-power at visible λ

Products

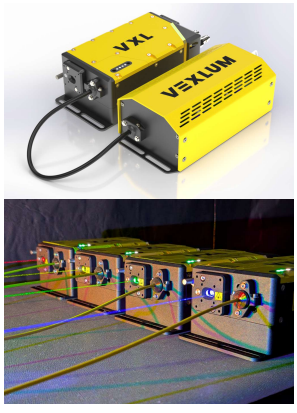
VALO system

Laser, control electronics, and chiller



VXL® system

Next-generation modular, rugged design



Example Quantum Use Cases

Laser Application	Sr	Yb	Ba^+
Cooling	461 nm > 2 W	399 nm > 0.5 W	493 nm > 3 W
Photoionization	N/A	N/A	791 nm > 1 W
Narrow cooling	689 nm > 1.5 W	556 nm > 3 W	N/A
Clock	698 nm > 1.5 W	578 nm > 3 W	1762 nm > 0.7 W
Trapping (magic wavelength)	813 nm > 1 W	759 nm > 1 W	N/A

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Danger – Visible and/or invisible laser radiation
Avoid eye or skin exposure to direct of scattered radiation
Class 4 laser product
Max power: 10 W. Wavelength: 350 – 2150 nm

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Rev. 2026-09