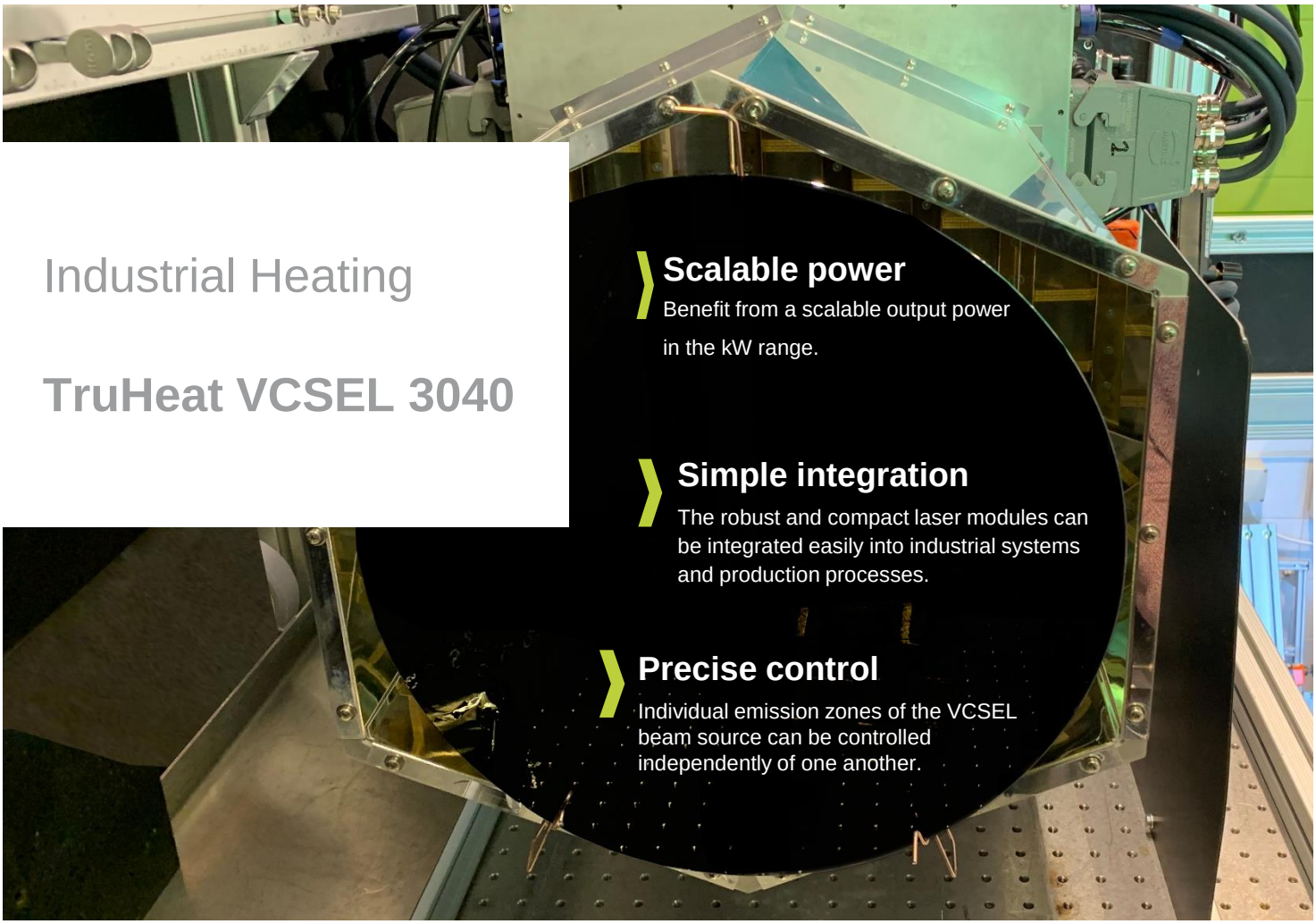


Industrial Heating

TruHeat VCSEL 3040

Scalable power

Benefit from a scalable output power in the kW range.

Simple integration

The robust and compact laser modules can be integrated easily into industrial systems and production processes.

Precise control

Individual emission zones of the VCSEL beam source can be controlled independently of one another.

TruHeat VCSEL systems for Silicon Wafer Heating

VCSEL lasers can be used in the semiconductor industry for heating the wafers for Rapid Thermal Processing (RTP). TruHeat VCSEL systems make it possible to heat wafers quickly and uniformly as the individual heat zones can be superbly controlled. Temperature increases of several hundred degrees Celsius can be achieved per second.

Which application fields?
The TruHeat VCSEL systems are used in numerous industrial heating processes. Some examples are wafer heating, semiconductor production, additive manufacturing with metals (preheating), photovoltaics and drying battery foils (E-Mobility).

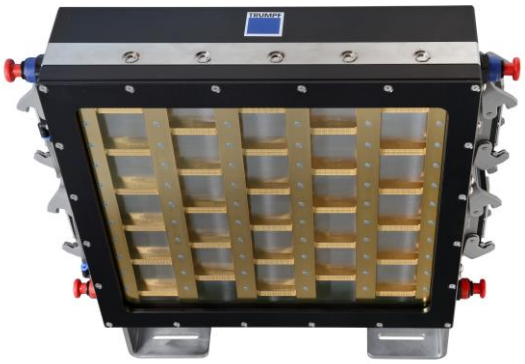
Why TRUMPF?
The VCSEL-based infrared laser heat treatment systems from TRUMPF provide attractive solutions in many fields of industrial heat treatment. They deliver infrared radiation with an output power of a few watts up to several kilowatts. VCSEL arrays are a flood source for intense and directed infrared radiation and can be used without additional optics for numerous tasks when it comes to surface heating. TruHeat VCSEL systems are supplied in a compact and robust housing with a safety screen and allow easy machine integration in industrial applications and production processes.

TRUMPF

TruHeat VCSEL systems for silicon wafer heating

Benefits of industrial TruHeat VCSEL systems:

- Very homogenous heating
- Excellent local control of temperature profile
- Compact equipment, without mechanical rotation
- Very long lifetime (> 25,000 hours) and low maintenance
- Fast heating rates up to 260ºC/s possible
- For 9,6kW module 45ºC/s demonstrated



TruHeat VCSEL 3040

TruHeat VCSEL 3040

TruHeat VCSEL Series 3040:

TruHeat VCSEL Series 3040		
Laser Module		**TruHeat VCSEL 3040**
Optical power (max.)	kW (cw)	9.6
Emission area	mm²	300 x 290
Working distance	mm	450
Distinct emission zones		24
Power density	W/cm²	12.2 (typical, with possibility to upgrade to 70 W/cm²)
Wavelength	nm	980 ± 20
Beam half angle		typ. 12.5° (enclosing 95% power)
Front glass		borosilicate, anti-reflex coated
Laser module size	mm	W390 x L370 x H110 (without connectors)
Weight	kg	12
Laser control		typically, 10 ms time constant; individual control of laser emission zones, integrated laser zone monitoring
Machine communication		Ethernet-based (EtherCAT® protocol)
Mains voltage		3 phase 400 V (±10%), 47-63 Hz

For more information visit
www.trumpf.com/s/vcsel-heating-systems

Safety information:
The products contain laser arrays that can emit invisible high power laser radiation of class 4, which can cause serious injury.
The machine manufacturer is responsible to fulfill the relevant laser-related and other safety regulations.

TRUMPF Photonic Components GmbH
Lise-Meitner-Straße 13 · 89081 Ulm · Germany
E-mail: photonic.components@trumpf.com · Homepage: www.trumpf.com/s/vcsel-heating-systems
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