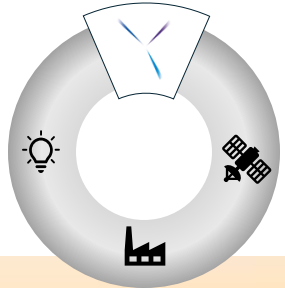


HYBRID VIS-NIR COMBINERS FOR INDUSTRIAL & AEROSPACE APPLICATIONS





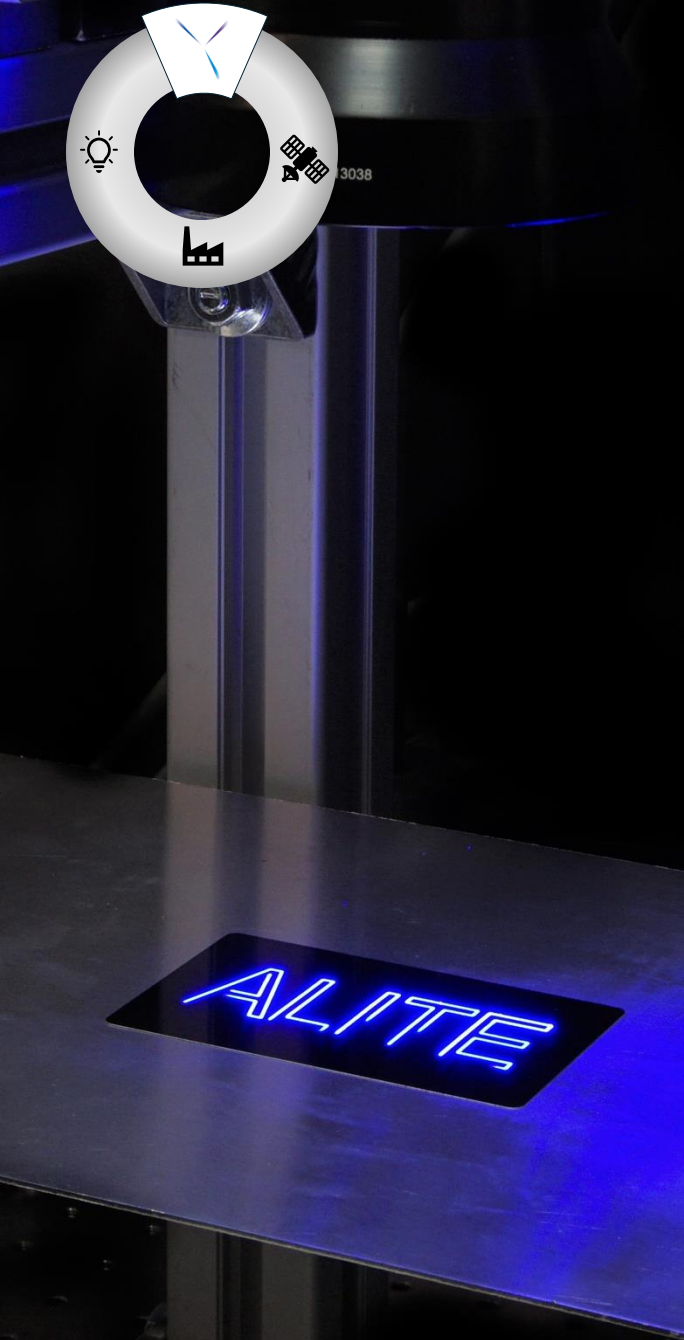
ABOUT US



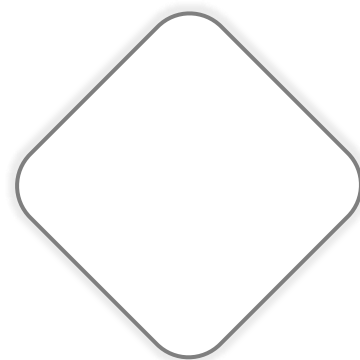
Mission

Exploit the power of light to accelerate a sustainable growth in a safer world.

Welding
Aerospace
Environment
Medicine
Biomedical
Additive Manufacturing
Research **Industry** Surgery
Infrastructure Agriculture



CORE



STRENGTHS



FLEXIBILITY

One-of-a-kind prototypes to small volume production.



CUSTOMIZATION

Adapting our photonic solutions to meet each client's unique requirements.



CORE STRENGTHS



EFFECTIVENESS

Developing prototypes that meet the specificity of your needs.

INNOVATION

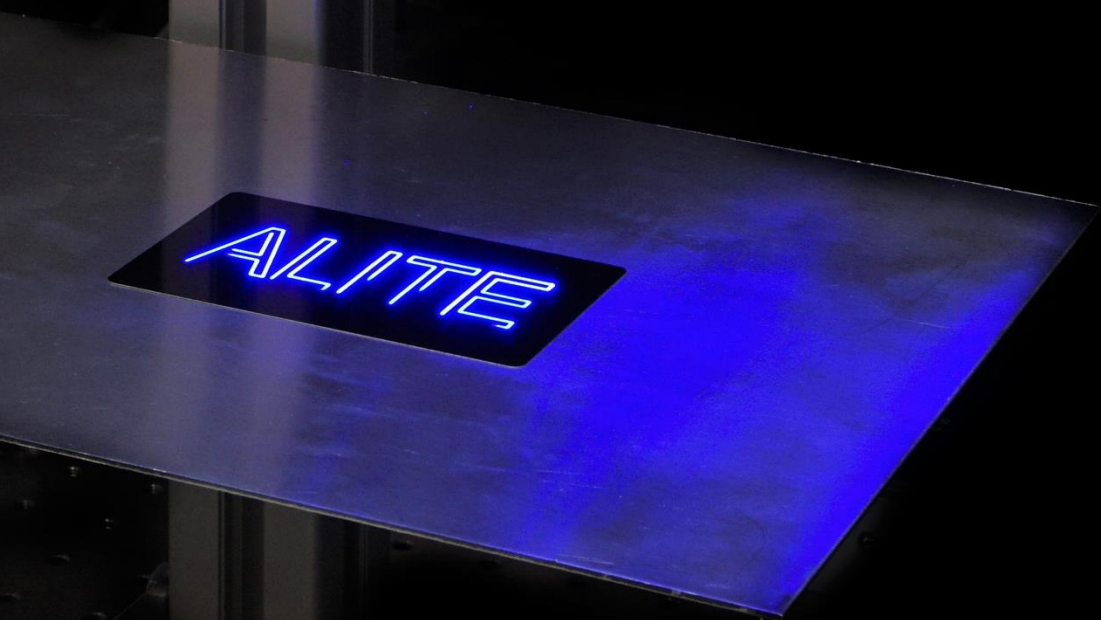
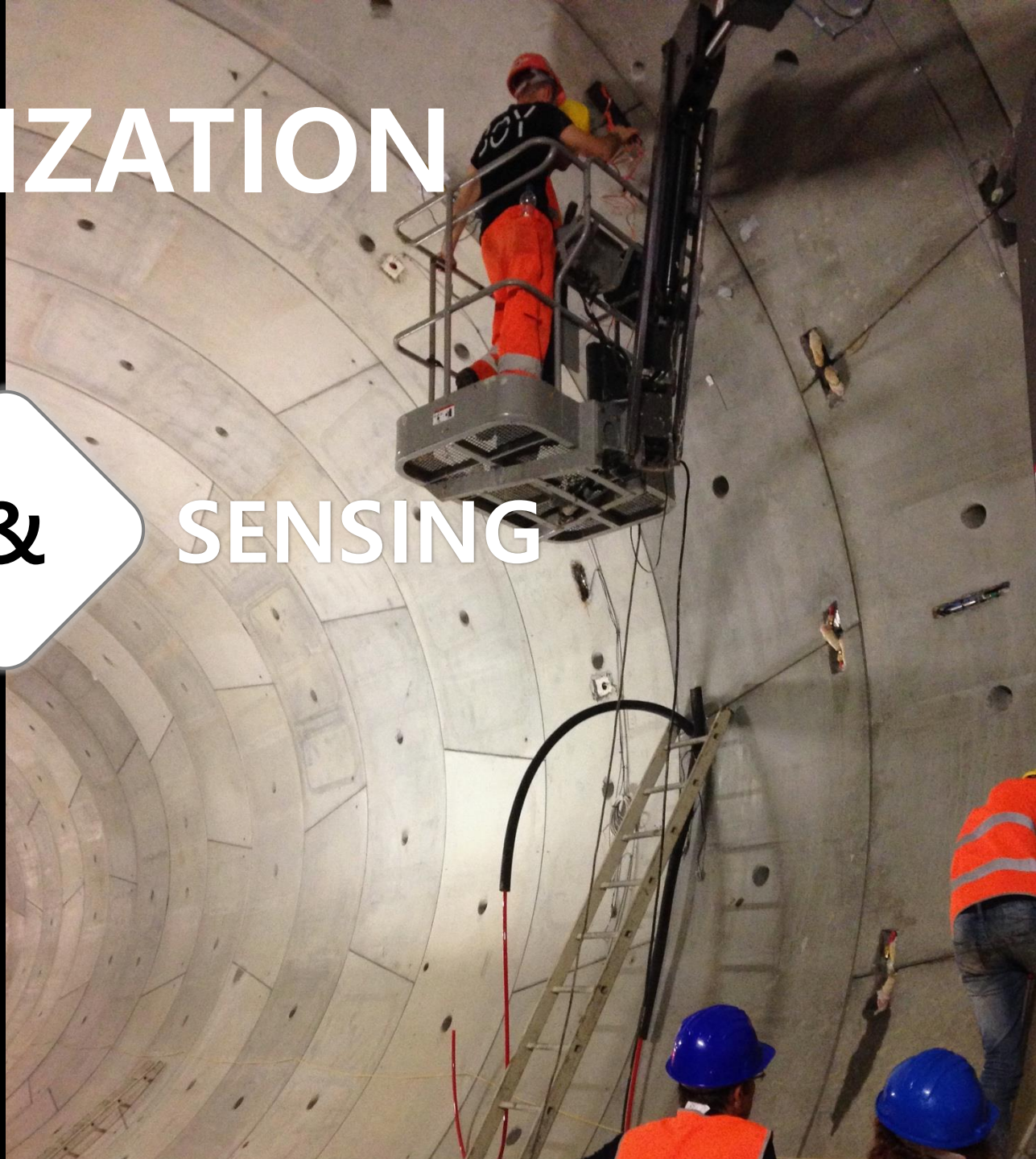
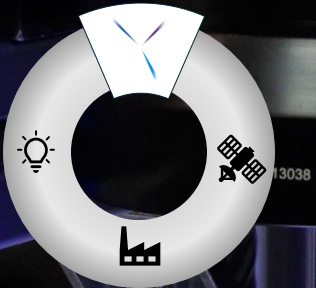
Constantly studying and developing cutting-edge technologies.

ORGANIZATION

LASER

&

SENSING





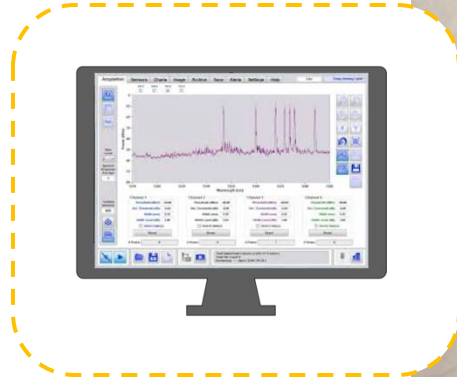
FIELDS OF INTEREST

FIBER SENSING SYSTEM

ACQUISITION SYSTEM



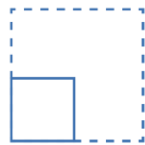
DATA ANALYSIS



Immunity to
Electromagnetic
Interference



Safe use in
Explosive
Environments



Compact
Size



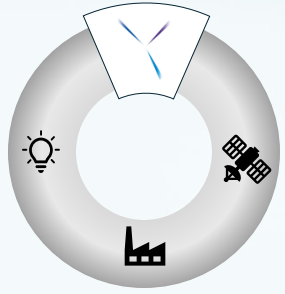
Corrosion
Resistance



Immune to
Lightning
Strikes



SENSING



FIELDS OF
INTEREST

WORK IN PROGRESS

WATER MONITORING AND SANITAZING

Measurement/detection of:

- Temperature
- pH
- Heavy metals
- Organic and industrial chemicals
- Pesticides
- PFAS

Water sanitation:

- Sanitization system utilizing UVC exposure
- Bacterial load reduced by up to 99%

SENSING

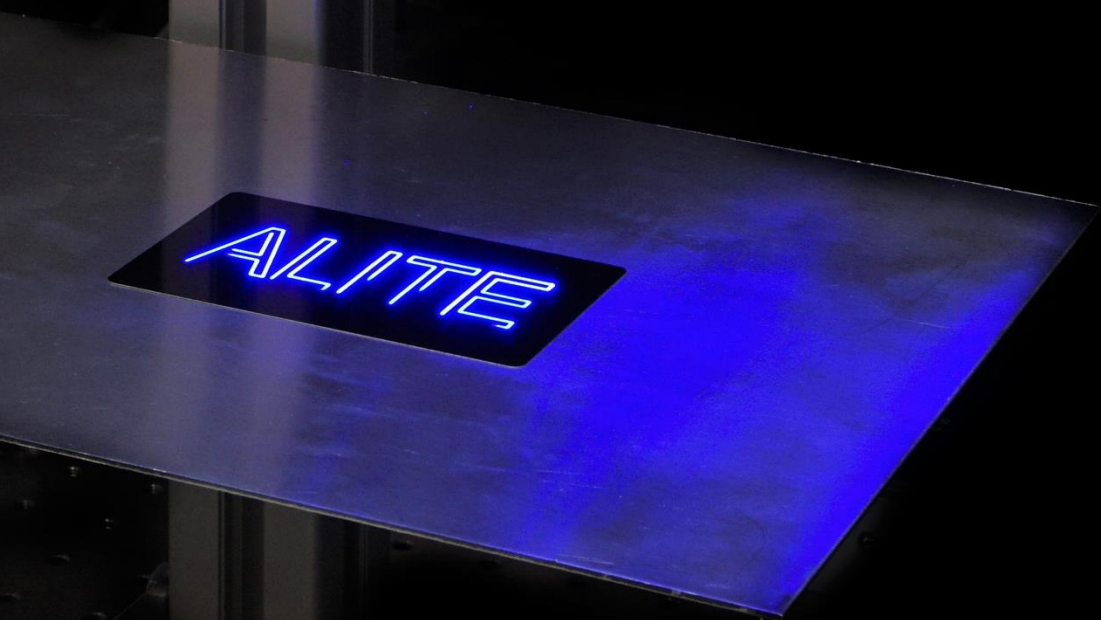
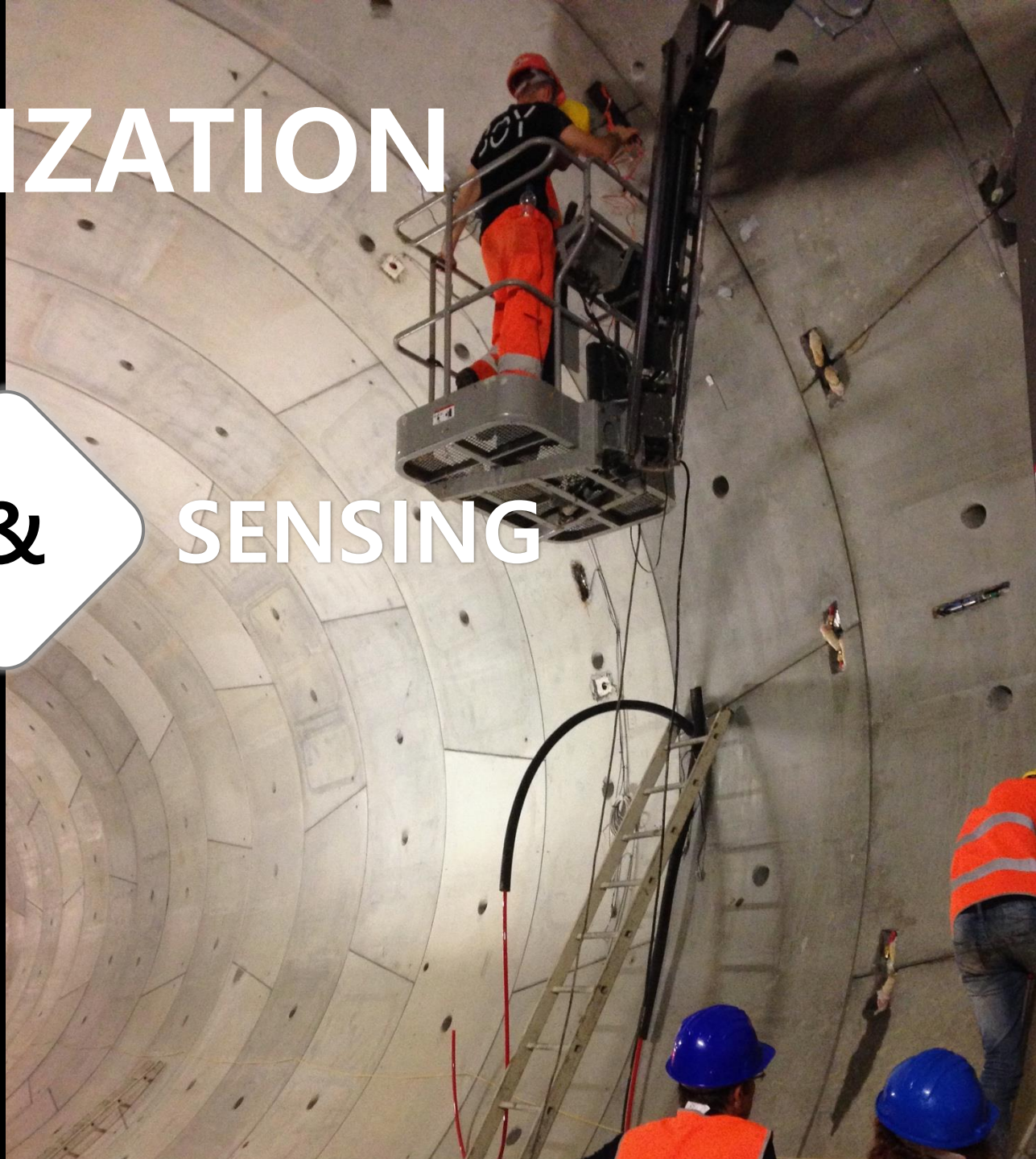
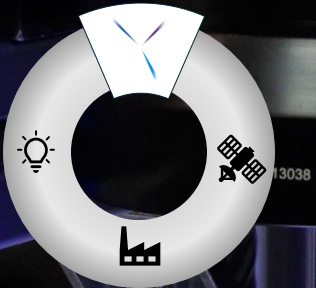


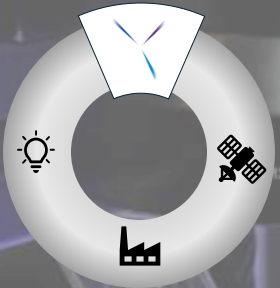
ORGANIZATION

LASER

&

SENSING





LASER

CUSTOM LASER SOURCES

FIELDS OF
INTEREST

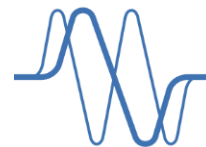
Laser solutions:

Innovative laser solution with W to kW optical power integrating semiconductor and fiber laser sources with flexible configuration at:

- **Blue**
- Non-conventional wavelengths (e.g., **L-band**, **VIS**)

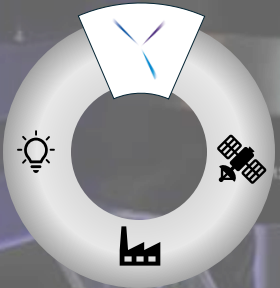


Power Level



Wavelength





LASER

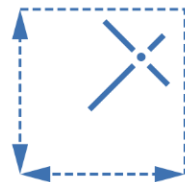
LASER INTEGRATION

FIELDS OF INTEREST

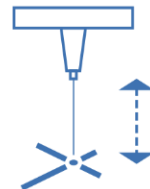
Features:

Innovative systems to bring laser processing in new application fields:

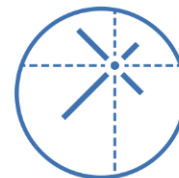
- Smart agriculture
- Energy efficient processing of new materials using multi-wavelength (**hybrid**) combination
- **Wireless power transmission** in aerospace



Working Area

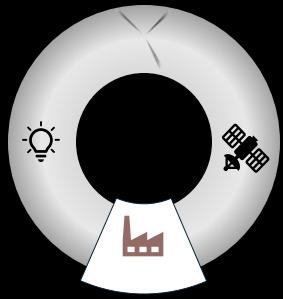


Working Distance

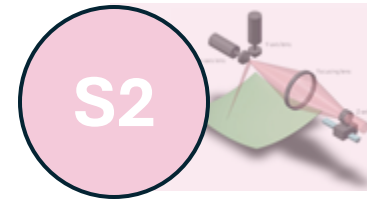
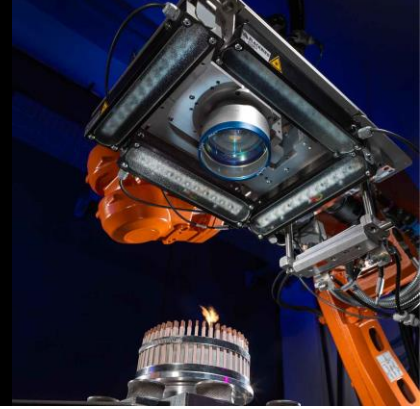


Spot Size

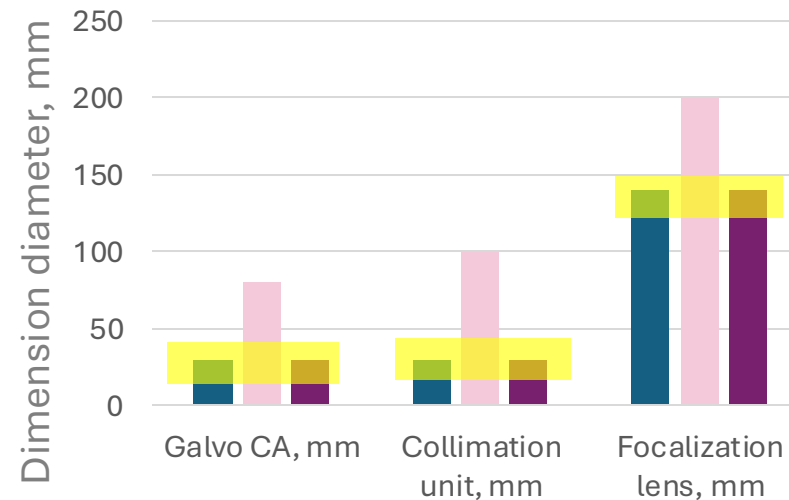
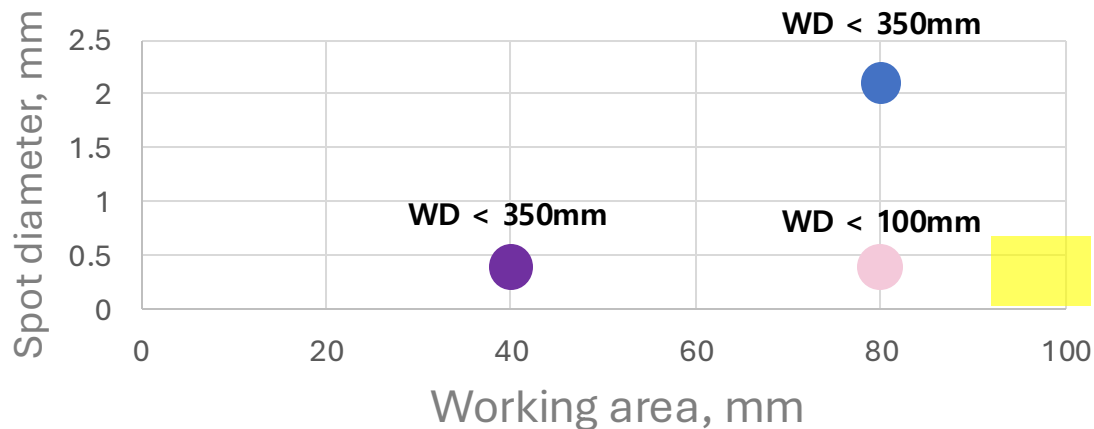


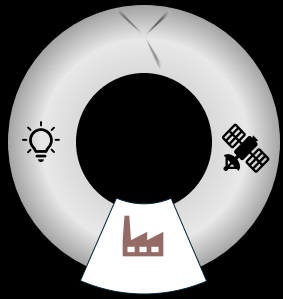


COMMERCIALLY AVAILABLE SOLUTIONS

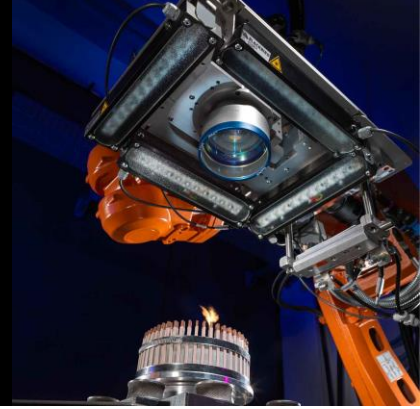


Theoretical achievable **Blue laser spot** diameter per area and working distance (left) and estimated optical component dimensions (right). Target specification highlighted.



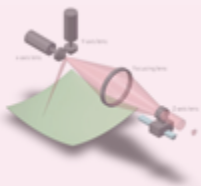


COMMERCIALY AVAILABLE SOLUTIONS



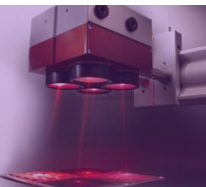
S1

No acromatic ftheta lens available. Standard ftheta lens cannot achieve acceptable blue laser spot.



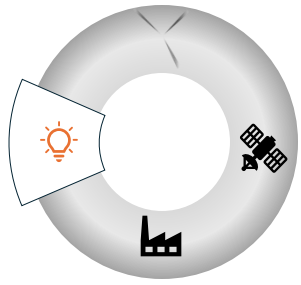
S2

No commercial or custom solution available. It is not possible to obtain the required blue laser spot without sacrificing the working distance and working area.



S3

Too small overlap area due to low blue laser working area. Custom scan head with dedicated galvo-mirrors for each wavelength are not available.



ALITE'S SOLUTION

Comparable acceleration and speed of commercially available solutions

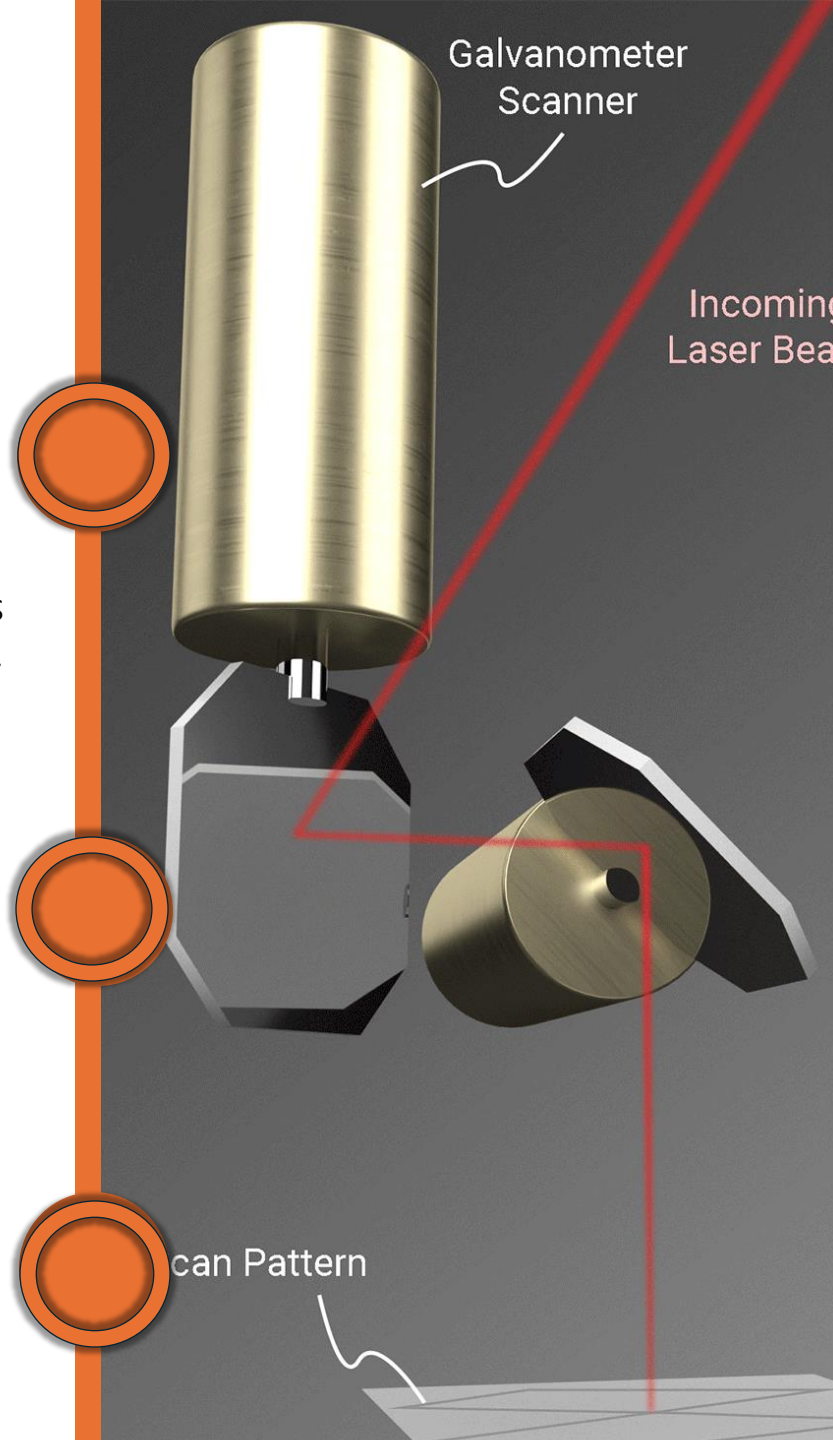
Thanks to the patent pending solution, high-speed galvos can be integrated without compromising blue laser spot.

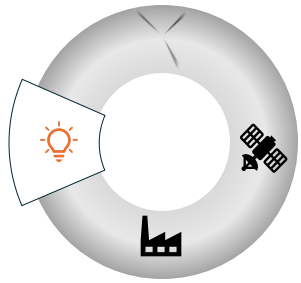
Blue laser light to stabilize the melt pool

Blue laser beam diameters of around 0.4mm can efficiently stabilize the melt pool and increase NIR laser light absorption.

50 μ m NIR laser beam spot

NIR laser beam spot size suitable for welding applications and additive manufacturing.





ALITE'S SOLUTION

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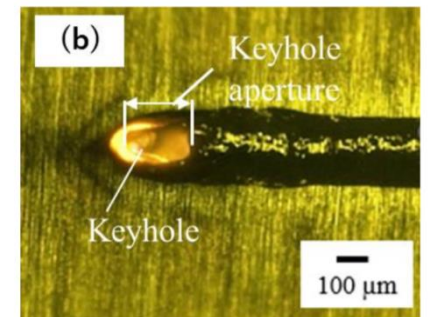
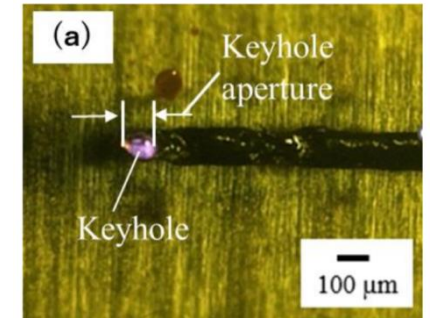
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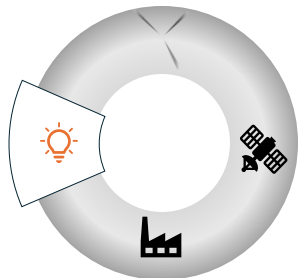
Blue laser beam diameters of around 0.4mm can efficiently stabilize the melt pool and increase NIR laser light absorption.

50µm NIR laser beam spot

NIR laser beam spot size suitable for welding applications and additive manufacturing.

- Observed melt pool during irradiation of:
- (a) 4.21×10^7 W/cm² single-mode fiber laser only and
 - (b) 4.21×10^7 W/cm² single mode fiber laser and 1.0×10^6 W/cm² blue diode laser at the scanning speed of 100 mm/s.





ALITE'S SOLUTION

Comparable acceleration and speed of commercially available solutions

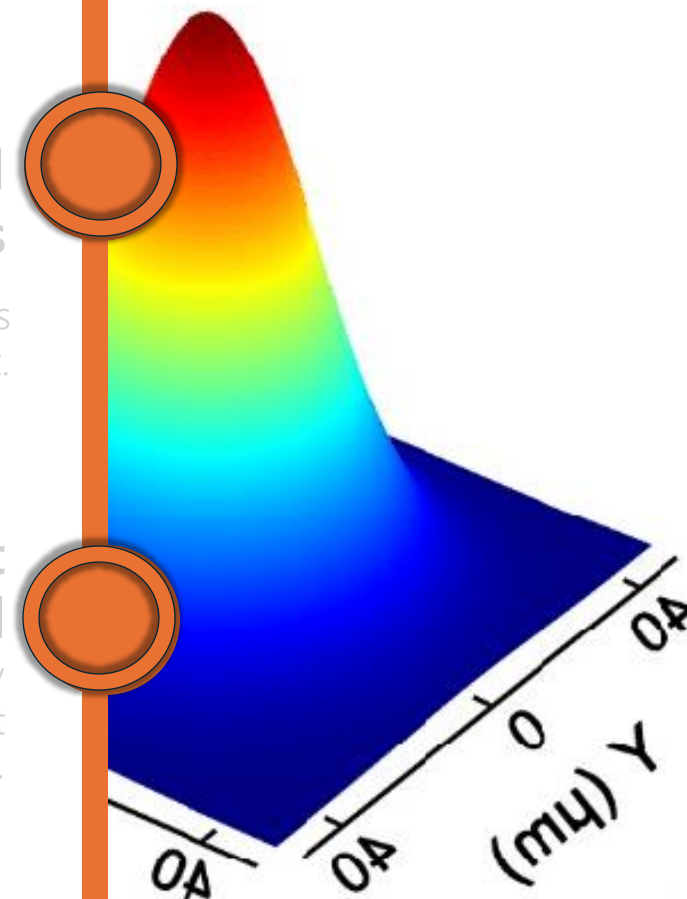
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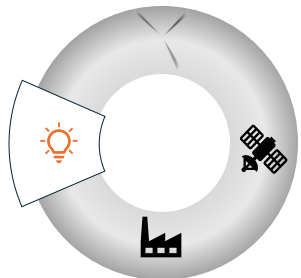
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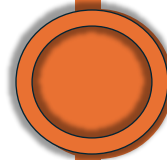
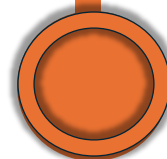
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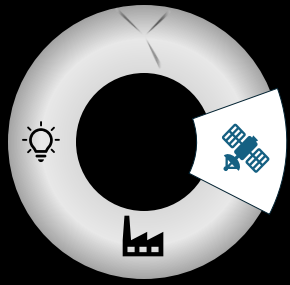
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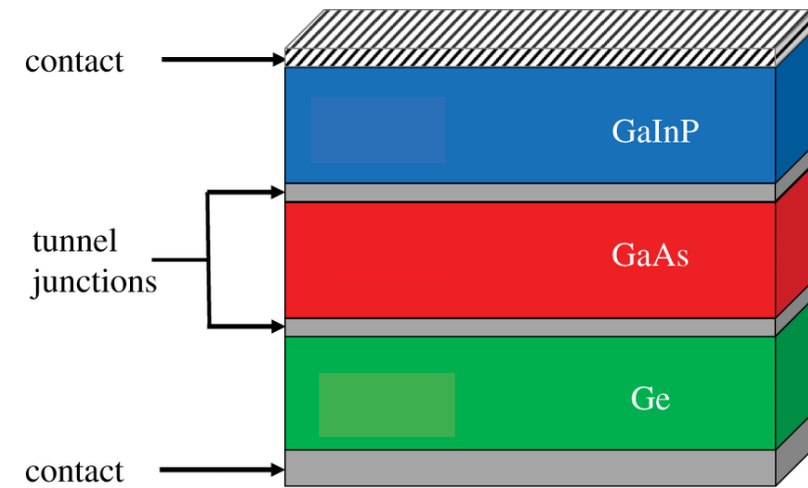


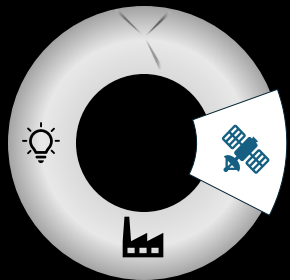


WHY AN HYBRID SYSTEM for aerospace?



MULTI-JUNCTION SOLAR CELL

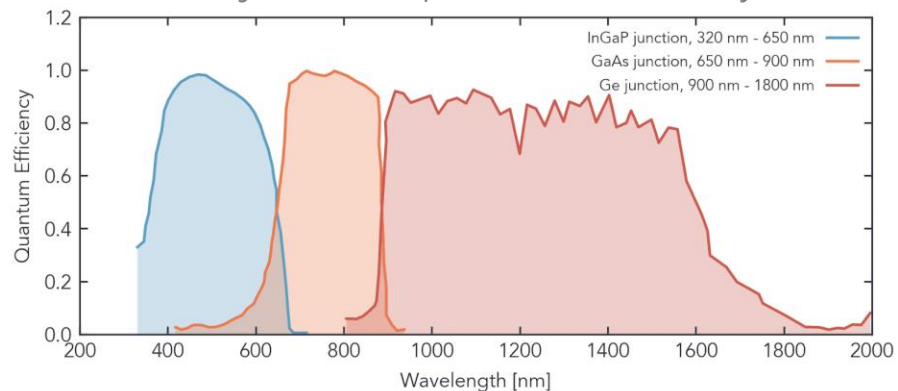




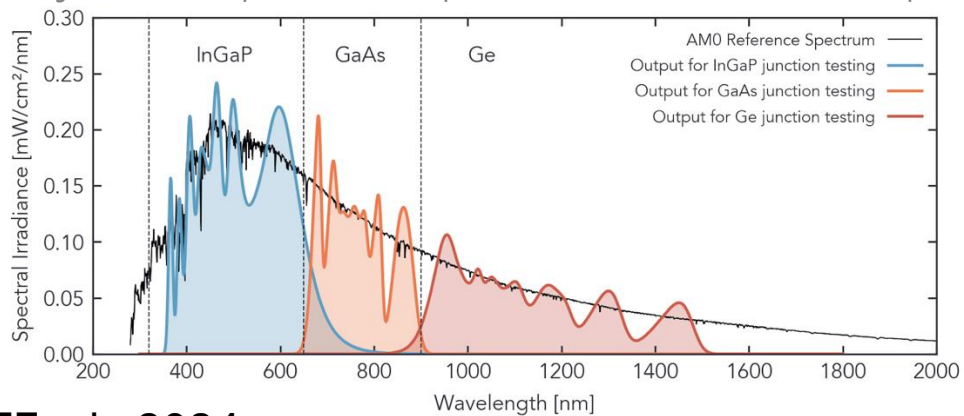
WHY AN HYBRID SYSTEM for aerospace?



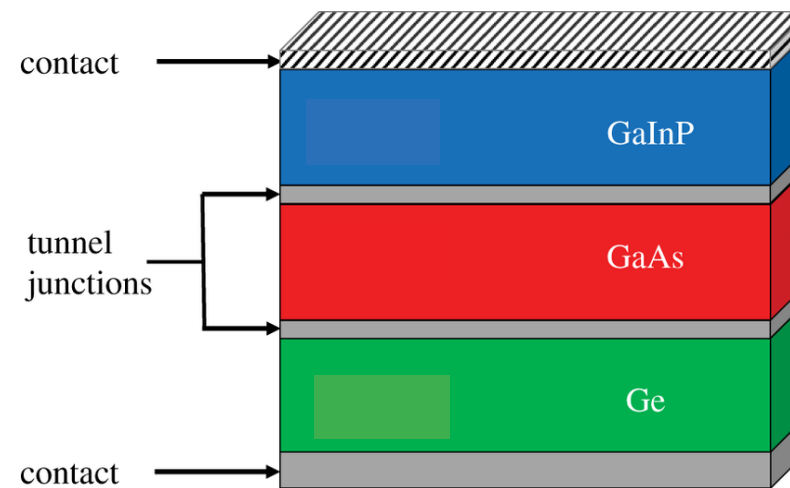
Multijunction quantum efficiency.

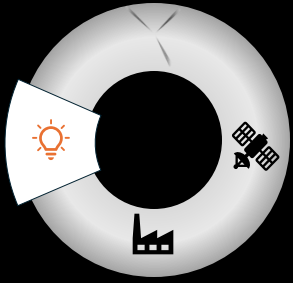


Subjunction spectral output and reference AM0 spectrum.

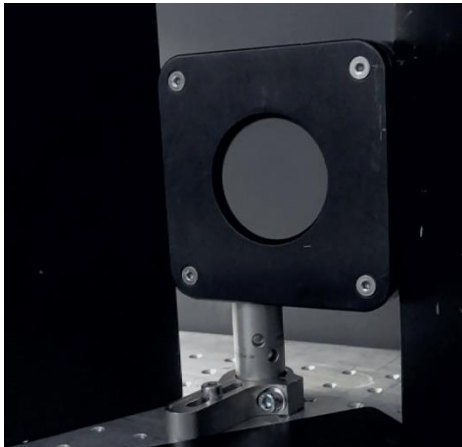


MULTI-JUNCTION SOLAR CELL





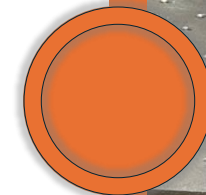
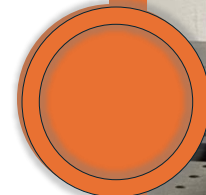
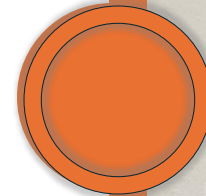
ALITE'S SOLUTION



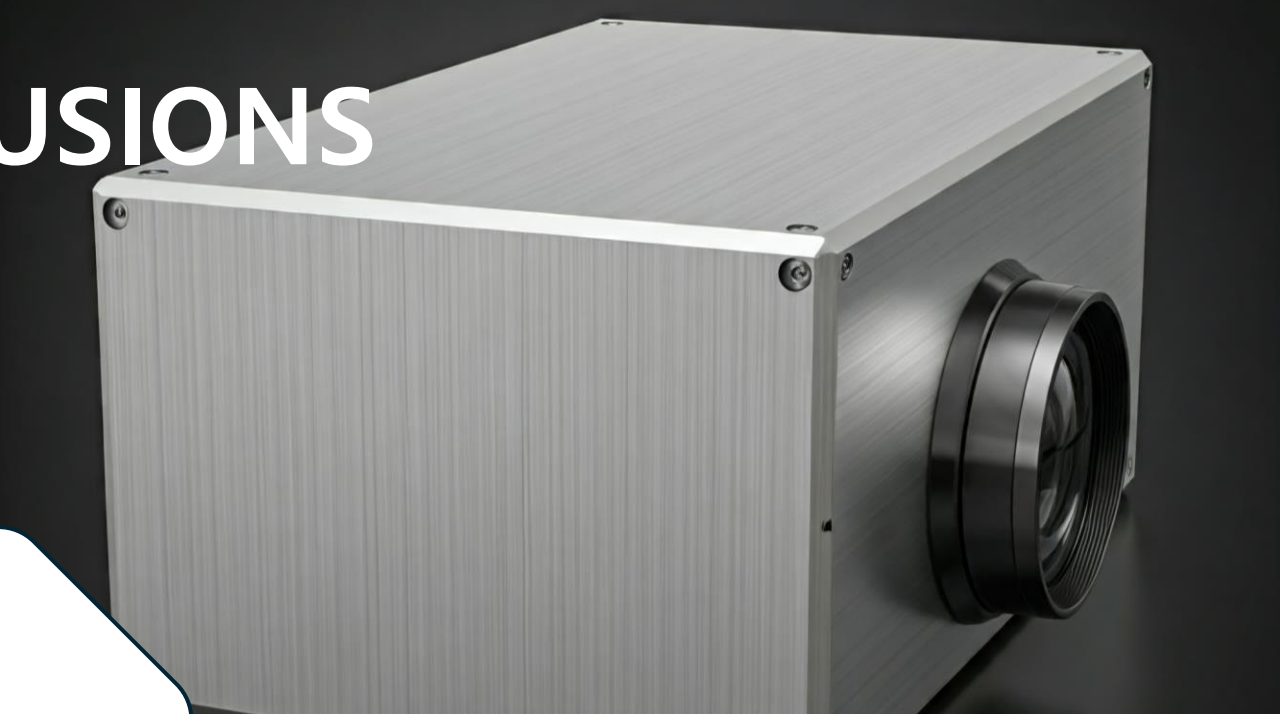
NIR + VIS laser beam spectrally combined

Variable beam spot dimensions

Dynamic beam steering through fine steering mirrors



CONCLUSIONS





SUMMARY

Additive manufacturing, laser welding can greatly benefit from the use of **hybrid laser technologies**.

Generating and combining multiple wavelengths can open up the laser market to new applications and possibilities, such as aerospace.





CONTACT INFO

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