



TeraXion's Offering for Laser Beam Welding Ecosystem

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EPIC Webinar on Laser Beam Welding

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TeraXion in a Nutshell

- » Founded in **2000**
- » Based in **Quebec City**, Canada
- » More than **170 employees**
- » Design, develop and manufacture **optical components**
- » **3 markets**
 - » Laser Systems
 - » High power fiber lasers
 - » Ultrafast lasers
 - » Optical Communications
 - » Optical Sensing

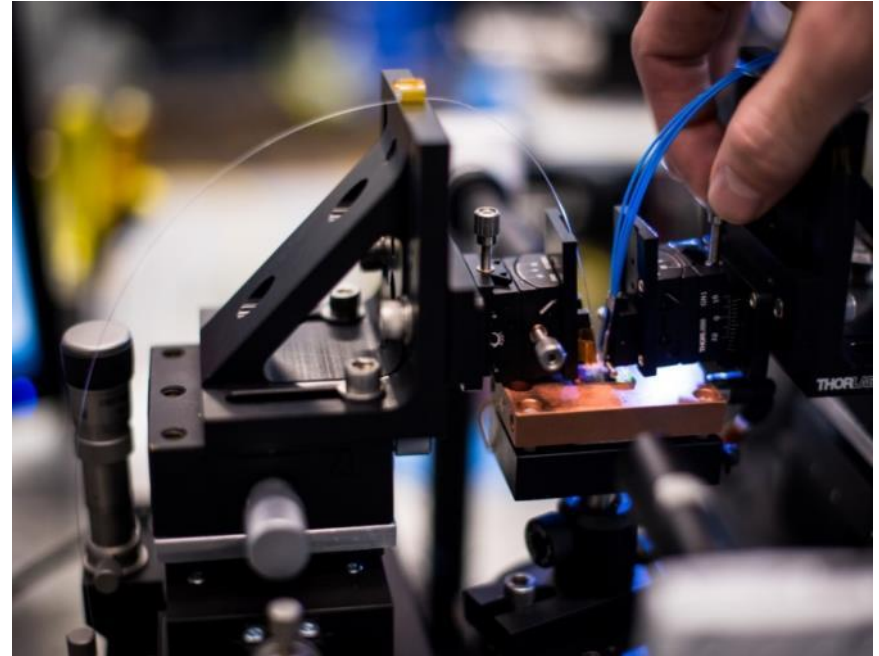


Our Technological Expertise

Fiber Bragg Gratings

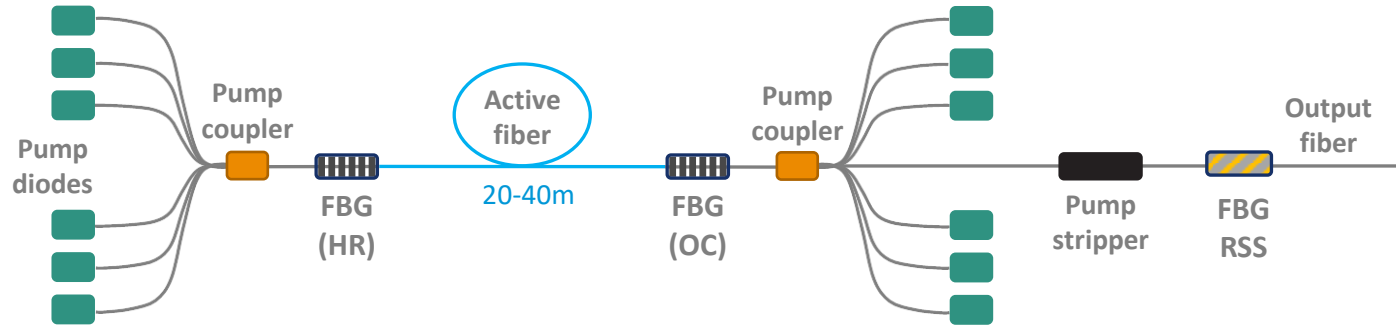
Low Noise Lasers

Integrated Photonics

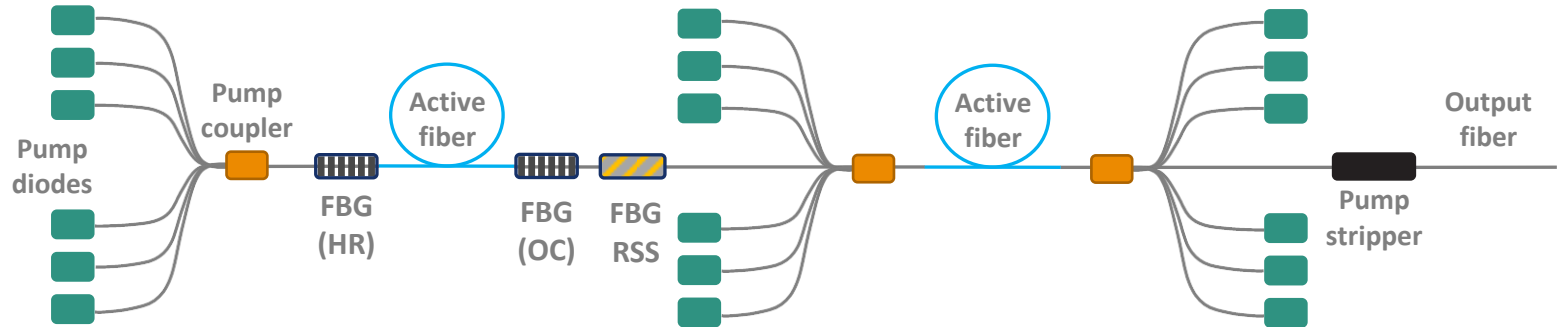


Use of FBGs in High Power Fiber Lasers

Single cavity config



MOPA config



Challenges in High Power Fiber Lasers

Industrial process requirements	Laser requirements	RSS benefits ¹
High throughput/\$	Low \$/Watt	Higher power/engine = fewer engines/system
High processing stability	High power stability	SRS reduction improve power stability while welding or cutting
	High beam pointing stability	Allow the use of single mode fiber to minimize TMI
No down time	High reliability	Immune to back reflections

¹Ref: Brochu et al, *High performance FBG-based components for kilowatt fiber lasers power scaling*, Photonics West 2020

High Power Laser Component

PowerSpectrum™ HPR High-Power Reflector



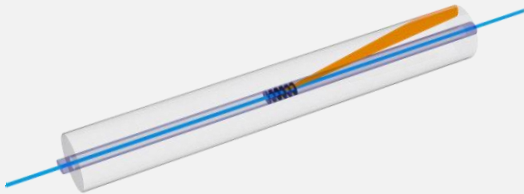
Reliable
Value

Power Handling
Highly-Efficient

- » **Power Handling:** Up to 3kW, depending on fiber type
- » **Wavelength Bands:**
 - » Ytterbium (1 μm)
 - » Erbium (1.5 μm)
 - » Thulium (2 μm)
- » **Fiber Types:** Cladding diameters from 125 to 700 μm

High Power Laser Component

PowerSpectrum™ RSS Raman Scattering Suppressor



Enables
power
scaling

Improves
laser
Reliability

- » **Suitable for:**
 - » Oscillators: up to 3kW
 - » MOPA: up to 5kW
- » **Wavelength Band:** Ytterbium (1 μm)
- » **Fiber Types:**
 - » Core sizes from 20 - 25 μm
 - » Cladding sizes 350 - 600 μm

Collaboration Opportunities

What can TeraXion do for you?

- Provide high-performance AND reliable FBG reflectors and filters for high power fiber laser applications
- Expert in dispersion management for ultra short pulse lasers
- Provide customized components for new innovative fiber based lasers
 - Various fiber types (single mode/LMA/multimode, multi-clad, multi-core, ...)
 - Traditional UV and fs through coating writing processes
 - Solutions to reduce \$/W, improve laser stability and reliability

What are we looking for?

- In-depth understanding of laser design/application challenges
- Partners to test our FBG-based products at extreme power conditions
- Collaboration to develop added-value products

Contact TeraXion!



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