NGM PHOTONICS

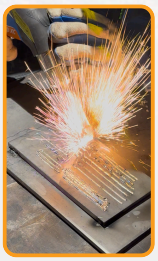
The Future of Welding.
Delivered with Laser Precision.



ADVANCED LASER BASED JOINING AND REPAIR

MOBILE HANDHELD LASER BEAM WELDING TECHOLOGY (HLBW)

CANADIAN DEFENCE INDUSTRY CAPABILITY



In alignment with Canada's **Defence Industrial Strategy** (DIS) and **Dual Use Technology**, NGM Photonics provides sovereign fabrication, repair, and mobile field services utilizing state of the art Handheld Laser Beam Welding (HLBW) technology. Operating from our Calgary headquarters and Edmonton manufacturing facility and supported by an active University partnership with the Canadian Centre for Welding and Joining (CCWJ), NGM replaces traditional high-heat arc processes with precision laser welding for today's modern, high-performance defence industries and materials. Our technology is the preferred choice for restoring critical equipment and unlocks new potential for manufacturing high-performance components with exceptional metallurgical integrity at significantly reduced operational costs.

Prime Contractor & Tier 1/2 Partnerships

Integration into Canadian and allied defence value chains for combat vehicles, naval vessels, aerospace support, and unmanned systems.

Depot & Field Maintenance Qualification

Collaborative validation of mobile laser welding procedures for front-line repair of high-hardness armor steels and specialized alloys.

Collaborative Innovation Initiatives

Joint development and qualification for land combat, sovereign defence manufacturing, controlled goods compliance, and field-repair readiness.

QUANTIFIABLE ECONOMIC IMPACT

55-60%
DIRECT COST SAVINGS

70%
DOWNTIME REDUCTION

60-80%
CONSUMABLES REDUCTION

- **Direct Cost Reductions**: Slashes total job expenditure compared to traditional MIG/TIG.
- **Support Process Time/Cost Reductions:** Significantly reduces extensive joint preheating and post-weld stress relief.
- **Material Efficiency:** Narrow-gap welding minimizes joint prep and volume of welding alloy consumables required.
- **In-Situ Capabilities:** Mobile deployment for rapid depot field repairs, hardfacing, cladding, and surface cleaning. Reduction of transportation delays and costs for large equipment repair.



ADVANCED PERFORMANCE

- **Preserved Base Metallurgy:** Deep keyhole penetration drives superior joint strength while significantly reducing traditional thermal degradation in the HAZ.
- **Microstructural Refinement:** Ultrafast cooling rates promote rapid solidification and refined weld microstructures.
- **Superior Properties:** Improved strength, toughness, and performance using existing welding materials.
- **Ultra-Thin Joining:** Enables precision fusion of ultra-thin foils down to 0.005 in (0.13 mm) with negligible distortion.
- **Disimilar Alloy Welding:** Joins complex, dissimilar metal combinations with minimal dilution/material mixing.

DEFENCE SECTOR APPLICATIONS

SECTOR	APPLICATION & COMPONENT SCOPE	NGM ADVANTAGE
Land Combat Vehicles	Armor steel plate fabrication & repair, structural hulls, brackets, exhaust systems.	Prevents armor softening, embrittlement, & cracking; enables rapid combat damage remediation.
Naval & Submarines	Heat exchanger seals, ducting, structural support, corrosion-resistant piping.	High-integrity leak tight seals with minimal heat distortion to adjacent structures.
Unmanned Systems (UAVs)	Lightweight frames, thin-wall battery housings, precision sensor mounts.	Near zero thermal distortion on compact, ultra-thin, precision assemblies.

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ACADEMIC & FACILITY PARTNER
CCWJ, UNIVERSITY OF ALBERTA • EDMONTON