NGM PHOTONICS

The Future of Welding.
Delivered with Laser Precision.



LASER SOLUTIONS FOR STRUCTURAL & FRAME WELDING

High-Precision Structural Joining & Distortion-Free Fabrication

NGM Photonics provides structural steel fabricators, equipment manufacturers, and skid/frame builders with high-speed, minimal distortion, low-cost welding solutions rooted in NGM's cutting-edge laser technology. Operating from our Calgary headquarters and Edmonton-based manufacturing facility and supported by an active research partnership with the University of Alberta's Canadian Centre for Welding and Joining (CCWJ), we deploy state-of-the-art Handheld Laser Beam Welding (HLBW) technology for a wide array of structural applications. Through replacement of conventional multi-pass MIG/TIG welding with our qualified, high-powered precision laser processes, NGM delivers defect-free structural joints, eliminates flame straightening and joint preparation costs, and restores high wear components in both shop and field environments.



CORE STRUCTURAL & NON-PRESSURE CAPABILITIES

STRUCTURAL ASSEMBLIES & FRAMES

High-speed welding of structural skids, enclosures, brackets, cross-members, and thin-to-thick material joints without thermal distortion.

IN-SITU MOBILE REPAIR

Field-ready service vehicles equipped for emergency defect repair, structural reinforcement, and on-site asset overhaul.

SURFACE MODIFICATION FOR TARGETED PERFORMANCE

Precision overlay deposition of wear and corrosion resistant alloys on augers, bucket teeth, liners, and wear plates.

FABRICATION ECONOMICS & ROI

55-60% Direct Cost Savings

70% Labor & Prep Saved

60-80% Consumable Wire Saved

- **Reduce or Eliminate Post-Weld Straightening:** Ultra-low heat input preserves tight dimensional tolerances and flat frame geometry.
- **Reduced Joint Preparation:** Deep keyhole penetration enables square edge butt joint designs, replacing deep beveling.
- **Total Welding Work Content Reduction:** High energy density achieves deep root penetration in a single pass on heavy plate sections.

METALLURGICAL & MECHANICAL EDGE

- **Superior Tensile Strength:** Tested to **118 ksi (814 MPa) UTS** on CSA G40.21 structural plate without PWHT.
- **HAZ Size Reduction:** Rapid thermal cycles prevent coarse-grain formation, eliminating HAZ softening and cold cracking.
- **Thin-Gauge & Dissimilar Fusion:** Precision control enables joining materials down to **0.005 in (0.13 mm)** and dissimilar metals.
- **Laser Cleaning & Surface Prep:** Non-abrasive, chemical-free removal of mill scale, rust, and coatings prior to welding/NDT.

STRUCTURAL & INDUSTRIAL APPLICATIONS

INDUSTRY SECTOR	COMPONENT & STRUCTURAL SCOPE	NGM ADVANTAGE
Structural Steel & Skids	Equipment skids, structural frames, mounting brackets, thin-wall enclosures, ducting.	Minimal thermal distortion on long seams; eliminates straightening, grinding, and rework.
Heavy Machinery & Wear	Excavator bucket teeth, augers, conveyor wear plates, tool joints, and drive shafts.	Low dilution laser hardfacing extends asset life with minimal post-finish machining required.
General Fabrication & Repair	Thin-gauge stainless/aluminium assemblies, non-pressure containers, emergency repairs.	Slashes project cycle times and consumable wire volume with targeted material application.

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ACADEMIC & FACILITY PARTNER
CCWJ, UNIVERSITY OF ALBERTA • EDMONTON