



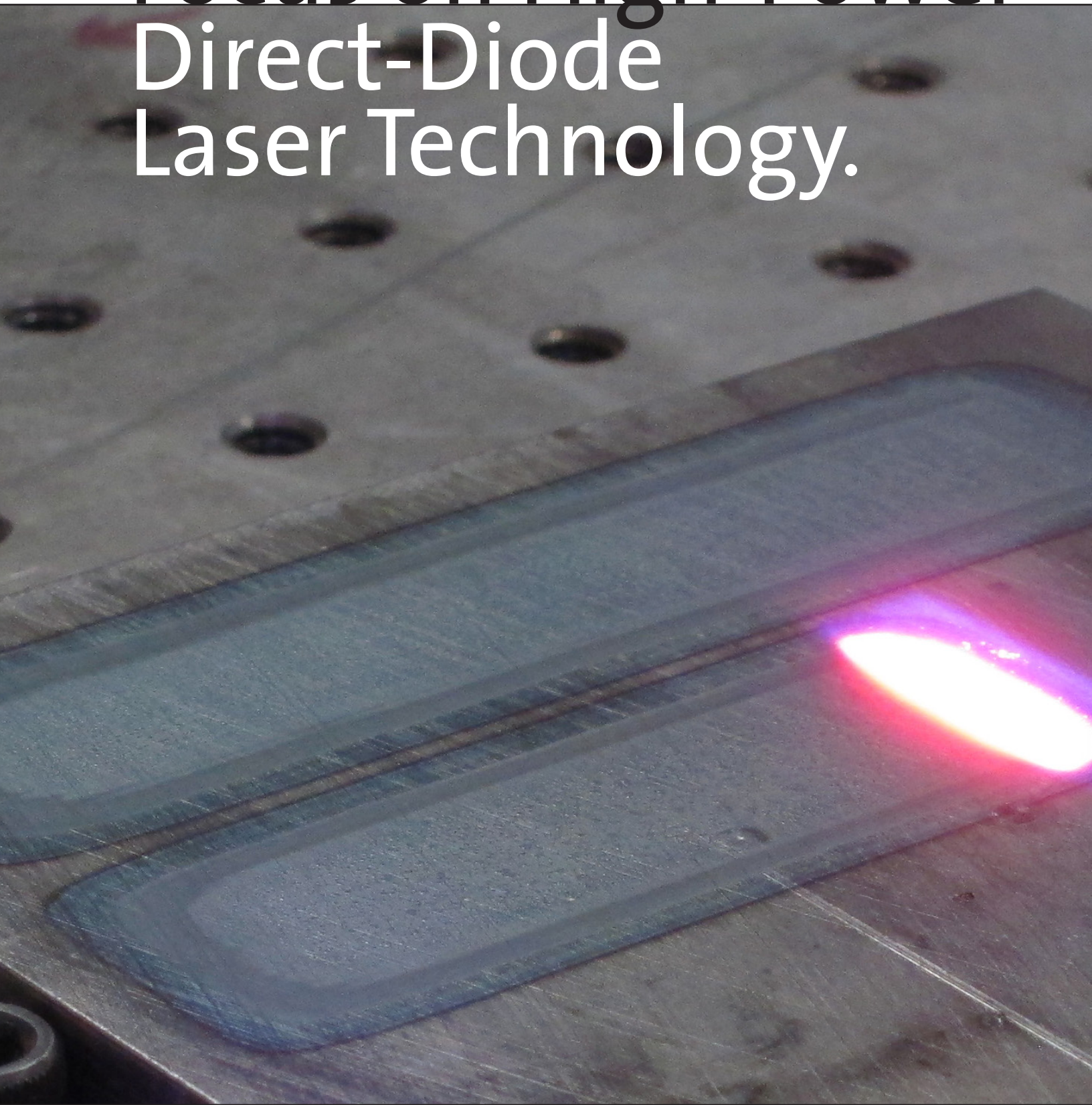
HighLight^{*}

Direct-Diode Industrial Systems.



Superior Reliability & Performance

Focus on High-Power Direct-Diode Laser Technology.



HIGHLIGHT PRODUCTS

The HighLight™ D-Series of kilowatt-class direct-diode laser (HPDDL) systems are simple to use and have a proven track record in industrial environments. These systems consist of a light weight, rugged laser head, a user friendly control unit with a Graphical User Interface (GUI) and a dual-loop chiller. The compact size of the laser enables mounting the head on a robot or a gantry type system. The lightweight and rugged design is employed in production sites worldwide processing everything from small hand tools to massive steel shafts and heavy truck axles. The types of industrial production processes include surface cladding for re-manufacturing of engine components, heat treating of drive train components and hermetic welding of large pressure canisters. The compact size and ease of installation makes these systems extremely flexible and capable of solving your production challenges.



The HighLight D-Series is a solid-state laser system based on laser diode bars with beam shaping optics and a free-space beam delivery system. The beam shape formed by the laser can be tailored to the application and is ideal for processing large surface area parts with localized and minimal heat input.



	HighLight 4000D	HighLight 8000D	HighLight 10000D
Power (kW)	4	8	10
Wavelength (nm)	975	975	975
Line Beam:			
Lengths (mm)	4 to 30	6 to 36	6 to 36
Widths (mm)	1 to 12	1 to 12	1 to 12
Applications	Materials		
Cladding	Stainless Steel Alloys (316L, 420) Iron-based Alloys (316L, 410, 420, M2, H13) Nickel-based Alloys (IN625, Ni-WC) Cobalt-based Alloys (Stellite, Triballoy)		
Heat Treating	Cast Iron (4140, 1045) Carbon Steels (Gray cast iron) Stainless Steel Alloys (420SS, 440SS)		

Focus on Heat Treating.

Heat treating a surface with a laser is as simple as point the laser, heat the surface, and let it cool. HighLight D-Series laser technology is ideal for performing laser-transformation hardening in a manufacturing environment because of the superior heat treat characteristics, the flexibility of the process, the compatibility with a lean manufacturing environment, and fast cycle time for processing the parts. When comparing yields, operating expenses, and environmental impact, this method is the most cost-effective laser heat-treating process. HighLight D-Series, having an output wavelength of 975 nm, is highly absorptive and requires no pre-coating of the work piece to achieve absorption. Laser heat treated parts feature greater wear resistance and, under certain conditions, increased fatigue strength.

ADVANTAGES

- High processing speed
- Low or negligible distortion
- No pre-processing required
- Precision heating control
- Flexibility — easily handles most work piece shape/geometry
- Higher hardness capability — over Rockwell C 60 without cracking or spalling
- Fatigue life improvement on powder metal parts and drive train components
- Pyrometer-based closed-loop heat treat process control

INDUSTRY APPLICATIONS

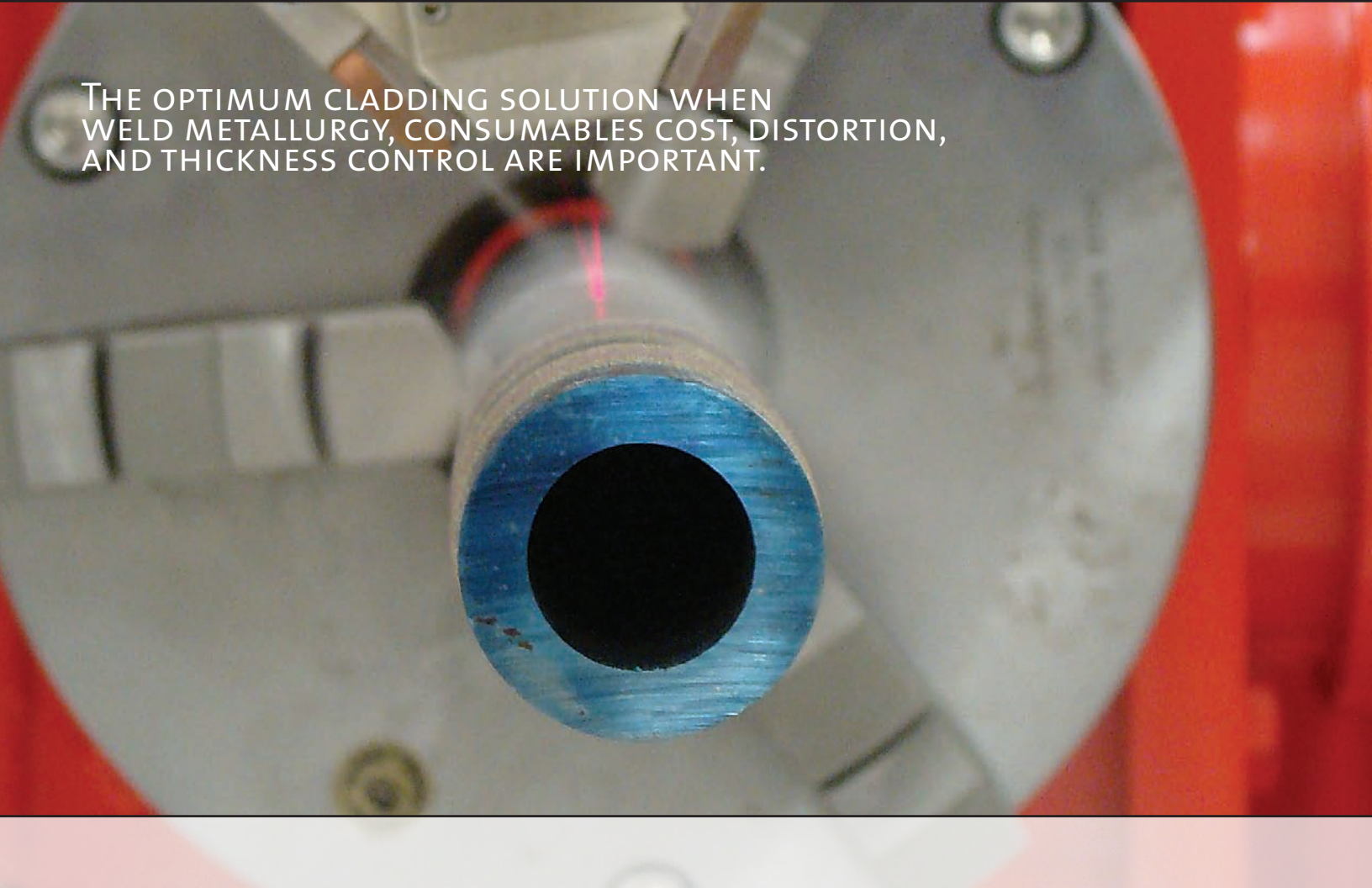
- Bearing Surfaces
- Hand Tools, Needles, and Pins
- Cutting Surfaces and Forming Tools
- Pumps and Stamping Dies
- Valve Seat and Seal Surfaces
- Turbine Blades
- Drive Train Components
- Powder Metal Parts
- Gears and Cams



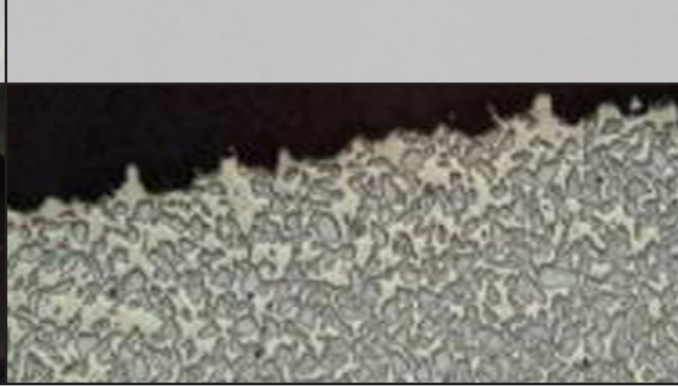
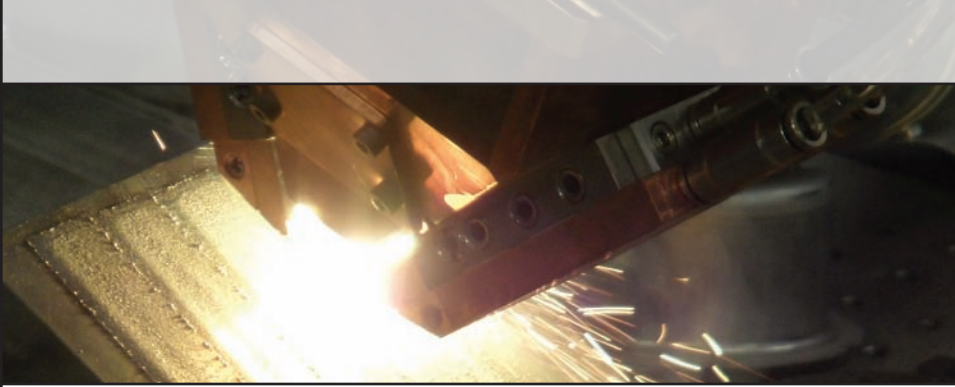
HIGH-POWER DIODE LASERS FOR LOCALIZED,
HIGH-SPEED HARDENING WITH MINIMAL DISTORTION
OR PRE-PROCESSING REQUIRED.

Focus on Cladding.

Cladding is the deposition of materials on a base part for the purpose of enhancing mechanical properties of the base material. The HighLight D-Series based cladding process is the most cost-effective process available today for the production environment. This laser process has the highest material capture efficiency in the industry with 85% to 95% of the powder material being deposited on the surface of the work piece. The lesser the wasted material, the lower the costs. The HighLight D-Series is an all solid-state system delivering outstanding reliability and efficiency compared to all other types of laser systems. The HighLight D-Series laser system uses a unique rectangular or square beam profile to deposit the cladding alloy onto the part surface. This large area cladding profile provides the lowest dilution and smoothest cladding surfaces compared to all other processes. This process is significantly more efficient than the processes that can be performed with a Nd:YAG, CO₂ or fiber laser because of the unique beam shape. When comparing initial capital cost, the low cost of ownership and the high performance of the process, the HighLight D-Series laser system delivers the best price performance of any of the laser-based cladding process.



THE OPTIMUM CLADDING SOLUTION WHEN
WELD METALLURGY, CONSUMABLES COST, DISTORTION,
AND THICKNESS CONTROL ARE IMPORTANT.



ADVANTAGES

- Large area/high deposition rate cladding – deposition rates of ~30 lb./hr. possible
- Excellent cladding metallurgy
- High efficiency process — lower thermal input and lower powder consumption
- Minimal pre/post processing required
- Precision control
- Wall plug efficiency >50% => low operating cost
- High-resolution process — ability to deposit thin clad layers of ~0.25 mm thickness
- Lower residual stress and distortion
- Very minimal maintenance requirements

INDUSTRY APPLICATIONS

- Oil/Gas Industry Components
- Water Walls and Water Tanks
- Hard-Facing of Valve Seats
- Bearing Shafts
- Bearing Seats, Cylinder Liners, and Pins
- Hydraulic Shafts
- Mining Equipment
- Agricultural and Forestry Equipment
- Remanufacturing



COHERENT AS YOUR PARTNER.

To compete and succeed in today's fast-paced research and manufacturing environments, you need a laser partner who understands your needs. A partner who can provide a wide range of technology solutions, and the support that goes with them.

Since 1966, Coherent has been helping customers by providing complete laser-based solutions for a wide range of commercial and scientific applications.

With a heritage of innovation and an uncompromising position on quality, Coherent is the most forward-thinking and diversified manufacturer of solid-state, gas, excimer and semiconductor lasers in the industry.

For more information, visit us on the Web at www.Coherent.com. Or call 800-527-3786.



Coherent, Inc.

5100 Patrick Henry Drive
Santa Clara, CA 95054
phone: (800) 527-3786
(408) 764-4983
fax: (408) 764-4646
e-mail: tech.sales@Coherent.com

www.Coherent.com

Benelux	+31 (30) 280 6060
China	+86 (10) 8215 3600
France	+33 (0)1 8038 1000
Germany/Austria/ Switzerland	+49 (6071) 968 333
Italy	+39 (02) 31 03 951
Japan	+81 (3) 5635 8700
Korea	+82 (2) 460 7900
Taiwan	+866 (3) 505 2900
UK/Ireland	+44 (1353) 658 833