

Focus: HOPE R&D and Manufacturing

Since 1993, Focus: HOPE has been a leader in Innovative Engineering and World-class manufacturing. This non-profit organization's uniqueness resides in its ability to produce exceptional results that meet or exceed its customer's expectations. Satisfaction is enhanced from a strategic hiring structure that focuses on hiring/capturing the best trained engineering students, a part of the Focus: HOPE family/enterprise, in conjunction with experienced engineers working on R&D, applications, and production-based projects. With a culture that is centered on the community, as well as quality, cost efficiency, and the on time delivery of parts, a future of solid partnerships lie ahead. We invite you to join the Focus: HOPE family and experience a holistic way of doing business that is sure to be a valuable venture.

Other Machinery/Systems at Focus: HOPE:

- DMD® 105D (Diode laser) & 505 (CO2 laser) machines
- GG-1 Series 6-Axis Friction Stir Welding machine
- Mazak Integrex 300 II SY 5-Axis CNC lathe
- Cincinnati HPC-630XT Horizontal 4-Axis CNC Machining Center
- Cincinnati Milacron Arrow 500 Vertical Machining Center
- Kira KPC 30 A Vertical Machining Center
- Hardinge Conquest 42 live tool turning center
- Optical Gaging Products (OGP)
Opticom Qualifier 30" Optical Comparator
- Coordinate Measuring Machines
- Metallurgical Lab (Zeiss Scanning Electron Microscope-EVO MA10, Optical Microscope, LECO AMH 43 Microhardness Tester, Mounting Press, Instron 5982-Universal Testing Machine, Grinder, Precision Saw, Abrasive Cutters).



SEM-EVO MA10

Our Customers

- The United States Department of Defense
- Chrysler Corporation
- Detroit Diesel Corporation
- Ford Motor Company
- General Motors Corporation
- Lear Corporation

Committed to Quality, Precision, & Low Cost Manufacturing: QS 9000 Certified



Focus: HOPE

Celebrating Diversity Since 1968

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Mobile Robotic Direct Metal Deposition (DMD®) System Prototype



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The Mobile Robotic Direct Metal Deposition (DMD®) System Prototype for the U.S. Navy

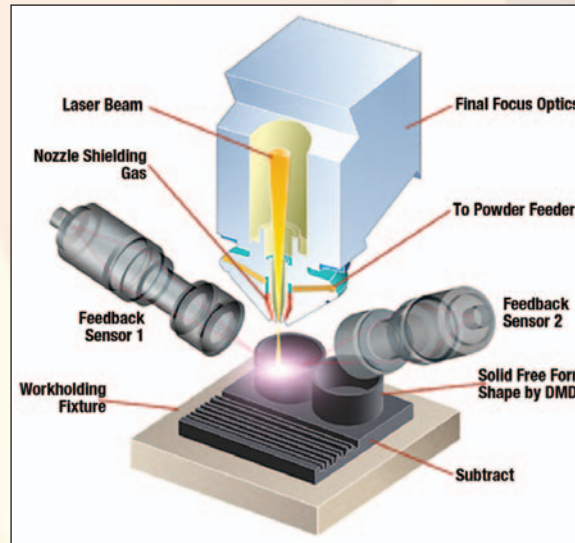
The Robotic DMD® System is a fiber coupled diode laser system integrated with a 6-Axis industrial robot for depositing complex metal alloy powders for repair and/or manufacturing of parts and components in the industry.



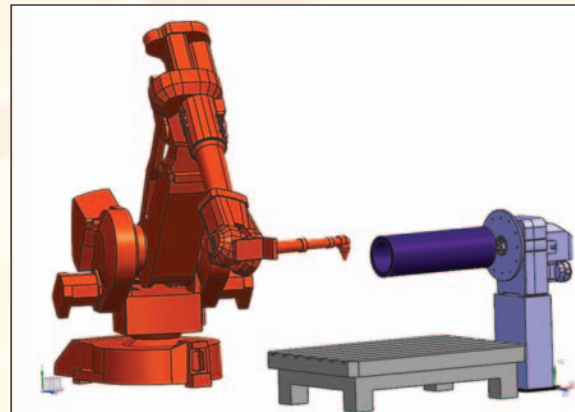
The Mobile system offers a large work envelope of 1.955m x 2.14m x 330°. During the DMD® process, energy of a high power industrial laser beam using a diode laser along with a concentric stream of metallic alloy powder is utilized to melt and solidify material on a freestanding substrate.

Typically, the added powder material is metallurgically compatible with the substrate material. A pre-defined solid shape is formed through layer by layer metal deposition, which follows a specified tool path.

This is a collaborative product of Focus: HOPE, POM Group Inc., and Kentucky Trailer Technologies Inc., for the U.S. Navy.



Source: Courtesy of POM Group, Inc.



Robotic DMD® system prototype

Key Design Features

- Upgradable
- Different laser power (1.0-5.0 KW fiber-coupled Diode Laser, etc.)
- Rotary stage
- Mobility
- “Process” goes to the “Part” to be serviced.
- Container: DMD® Package, Robot, Laser, HVAC, Utilities, etc.
- Cost-effectiveness
- OD and ID Capable
- Robot vs. CNC based platform

Advantages of DMD® technology over other similar additive manufacturing processes

- Controlled geometry (near net shape) on complex parts
- Closed Loop Feedback control
- Use of high precision CAD parameters resulting in minimal distortion and material usage
- Capable of depositing a variety of metals in an open or closed atmosphere
- High Quality Depositions with improved material microstructures

DMD® Capabilities at Focus: HOPE

- Repairing, Reconfiguring, and/or the Building of 3D Parts
- CAD/CAM software for complex 3D shape generation & reverse engineering
- R&D experience with wide range of metals
- Inside and Outside Diameter deposits



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