

DBCH-4000

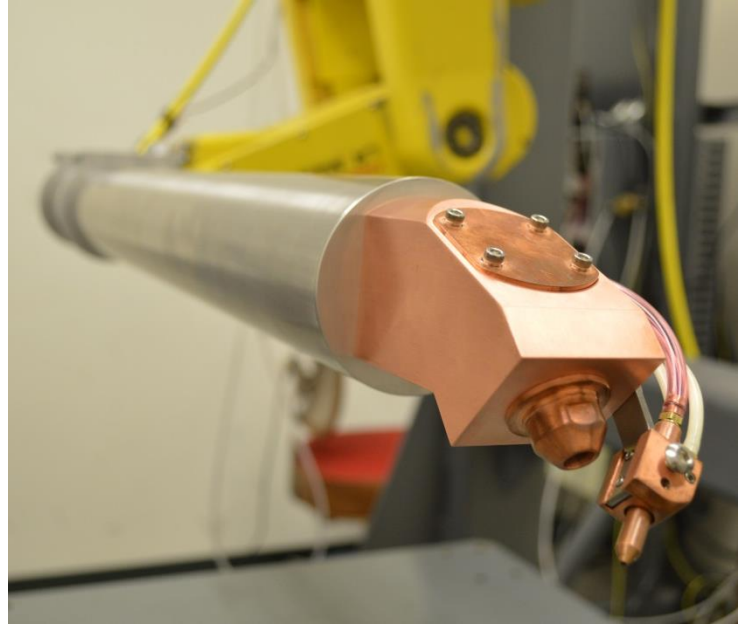
Deep Bore Clad Head Product Specification



The DBCH-4000 is a rugged, versatile laser cladding tool ideal for bores or tubes. A wide range of alloy materials can be used in either powder or wire form.

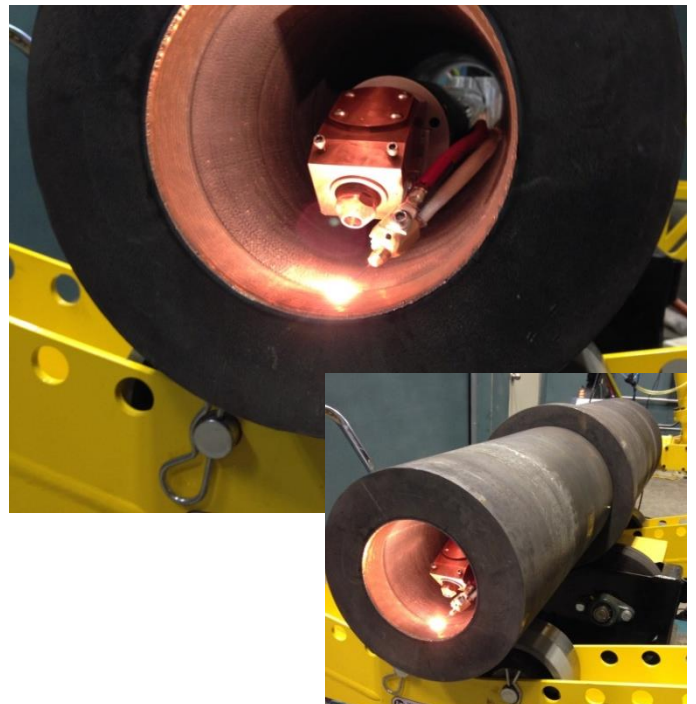
This tool features a unique 45° laser beam exit angle which allows cladding of both cylinder walls and seating surfaces, keeps the cover window further from the melt pool, and greatly reduces back reflections into the head. This innovation also greatly increases the life of the cover window, reducing down time and replacement costs.

The camera system and remote filler material adjustment axis allow the operator to adjust the wire or powder position in real time.



Features

- Up to 72" reach standard (custom to 30'+)
- Quickly interchangeable between powder, wire, and hotwire filler materials
- High power / high deposition rates
- Flexible design: operator can adjust clad track width and tool standoff distance
- Cover window monitor alerts the operator if the cover window needs to be replaced
- Remotely controlled axis for fine tuning fill material placement within the melt pool
- Compatible with solid state lasers such as Nd:YAG/Disk or Fiber lasers
- Protective cover window is easily replaced
- Stays cool even when operating at full power in a preheated bore



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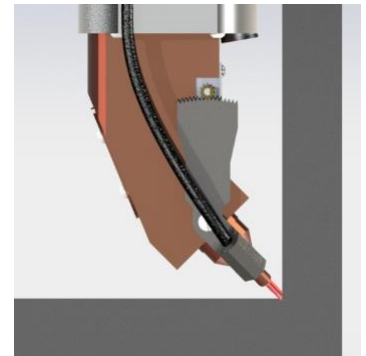
DBCH-4000 with hot-wire attachment

The DBCH-4000 has been extensively tested and is currently in use in production facilities around the world. Our customers are highly satisfied with the tool and report excellent cladding results. They also report significantly fewer cover window changes, higher deposition rates, less down time, and greater ease of use compared with other laser bore cladding tools.

Wire / Hot-wire Advantages

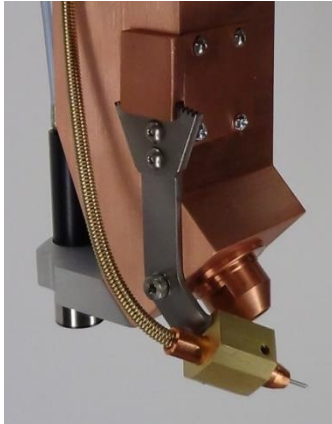
- No waste! 100% material capture rate
- Cladding can be applied in all orientations without changing process parameters
- Cladding can be performed in environments where powder cannot be tolerated
- 2-5 times higher deposition rates possible with hot-wire technology

The unique 45° beam angle makes the clad head a very versatile tool. It is able to clad almost any surface, including ID's, OD's, inside conical shapes, flat surfaces, corners... all without making adjustments to the head. Coaxial gas flow provides shield gas coverage and helps cool and protect the internal optics.



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The remote wire positioner axis allows the operator to make precise adjustments to the feed tip so that the wire or powder filler material is centered in the laser melt pool.



The cover window monitor displays the temperature of the cover window and warns the operator if the temperature rises indicating damage to the cover window.

Product Specifications / Comparison

	DBCH-4000	Competitor
Maximum Power	4000 watts	3000 watts
Tube Diameters	4" ID and above (100mm)	3.5" and above (85mm)
Maximum Clad Length	72" standard, custom to 360'+	39" (1 meter)
Clad Thickness	0.010" to 0.100" single pass (0.25-2.5mm)	0.008" to 0.08" single pass (0.2-2.0 mm)
Clad Track Width	0.18" to 0.36" (4.5-9mm)	0.216 inches (5.5 mm)
Powder Feed Rate	up to 80 grams / min (4.8 kg/h)	up to 60 grams / min (3.6 kg/h)
Cold-Wire Feed Rate	up to 60 grams / min (3.6 kg/h)	no cold-wire capability
Hot-Wire Feed Rate	up to 130 grams / min (7.9 kg/h)	no hot-wire capability
Remote Filler Placement Axis	Yes	No
Process View Camera	Yes	No
Clad Seating Surfaces	Yes	No
Adjustable Clad Width	Yes	No
Adjustable Standoff	Yes	No
Yearly Calibration	No	Yes (~\$10,000, 1-4weeks)

This product was designed in collaboration with The Applied Research Lab at Penn State University and the United States Navy, Office of Naval Research's ManTech Program

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