Internal Diameter (ID)

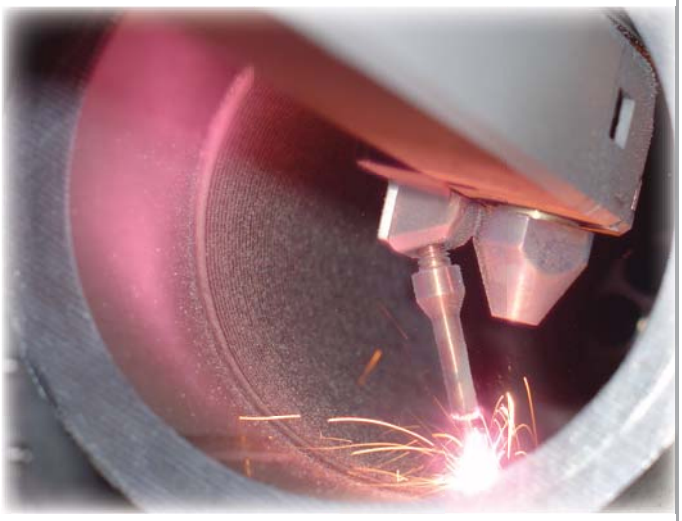
Laser Cladding

Fraunhofer USA

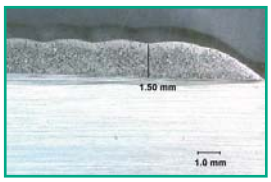
Center for Coatings and Laser Applications

Making innovation a reality

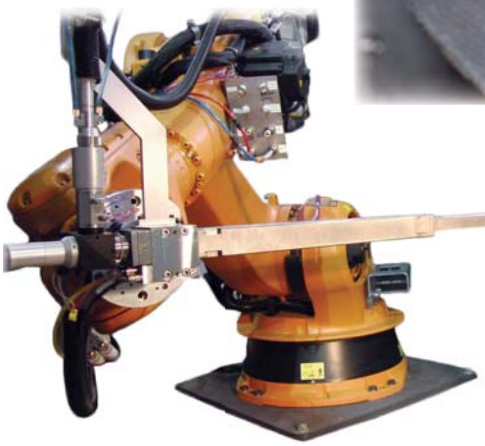
Introducing our latest innovation in laser cladding technology, the Fraunhofer CCL ID1 & ID2 cladding heads, which enable a wide range of alloy materials to be deposited on the internal surfaces of tubes and pipes. This head features our latest innovative design concepts and features internal water cooling and powder delivery which allows the head to operate reliably in hostile environments whilst traveling up to 39 inches (1000mm) deep inside tubes. Our quick change cover slide design allows for rapid change out of the consumable protective lens minimizing machine down time.



Internal Pipe Diameter Cladding Process

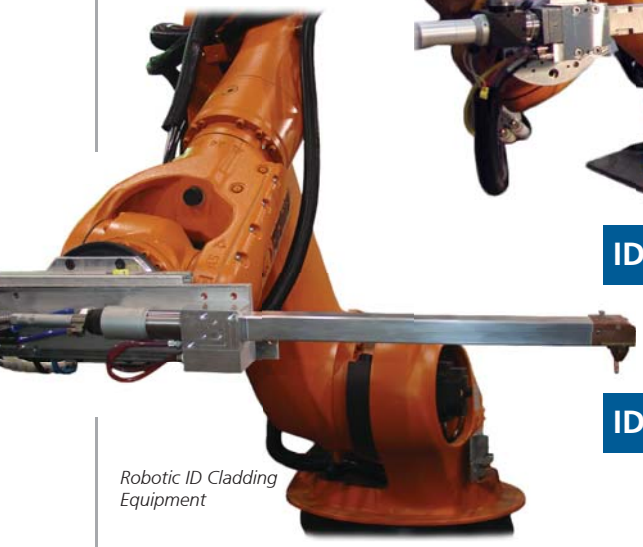


(above) Typical Cross Section of Tungsten Carbide Laser Clad Material from ID Clad Tube



ID 2 *Fraunhofer USA CCL ID2 - Laser Cladding Head*

(below) Steel Pipe Featuring Internal Laser Cladding



ID 1

Robotic ID Cladding Equipment

Applications

- Sleeves, Tubes, Pipes and Bearing Housings
- Oil Drilling Components
- Plastic Injection Moulds
- Gun-Barrels
- Engine Components
- Difficult to reach Surfaces

PRODUCT SPECIFICATIONS

Tube Diameters:	3.5 inches ID and above (89 mm)
Clad Length Capability:	ID1 up to 18 inches (457 mm) ID2 up to 39 inches (1000 mm)
Clad Thickness:	from 0.008 inches (0.2 mm) up to 0.08 inches (2.0 mm) single pass
Clad Track Width:	0.216 inches (5.5 mm)
Innovative Design:	Internal water cooling shield gas and powder delivery channels
Laser Type:	Suitable for high beam quality solid state lasers such as Nd.YAG/Disk or Fiber lasers
Powder Feed Rate:	up to 60 grams / min (3.6 kg/h)
Motion System:	Suitable for both robotic or CNC machines
Powder Materials:	Nickel based, Cobalt based, Iron based Carbides in Nickel base / Cobalt base
Temperature Monitoring:	Monitors head performance

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