WHAT MAKES US DIFFERENT

Laser metal deposition (LMD) is not a niche offering for us... it’s what we do. Constantly striving to stay at the forefront of this fast-growing technology has resulted in a full staff dedicated to the science of LMD. This expertise ranges from metallurgical sample evaluations to custom LMD equipment designs. Helping you through feasibility, qualification, serial production and up to onsite vertical integration is our daily routine. With annual powder deposition amounts now exceeding 32 tons, we’ve learned how to help you stay successful. We currently offer 24 hour/day LMD work cells whose part capacity ranges from ounces to multiple tons that are over 40 feet in length.

INDUSTRIES SERVED
• Power Generation
• Industrial Gas Turbine
• Chemical Processing
• Aerospace
• Transportation
• Oil & Gas Exploration
• Dept. of Defense
• Mining

APPLICATIONS
• Hardfacing overlays
• Corrosion resistant overlays
• Original material restoration
• Boss / profile builds
• R&D / feasibility studies
• Systems build & training

PARTIAL LIST OF ADDITIVE ALLOYS
• Low Alloy Steel: 4130 | 4140 | 4340 | H-13
• Stainless: 304 | 309 | 316 | 347 | 410 | 420 | 15-5PH | 17-4PH
• Cobalt Alloys: Stellite 6 | 21 | 31 | 75
• Ni Alloys: Inconel 622 | 625 | 718 | Waspaloy | Hastelloy X
• Aluminum: 6061
• Bronze: Nickel bronze | Aluminum bronze
• Titanium: Ti-6-4 | Ti-6Al-4V | CP
• Others: Tungsten carbides | Chrome carbides | various proprietary alloys

ACCREDITATIONS & CERTIFICATIONS
• ISO 9001
• AS9100
• ASME boiler & pressure vessel
  S • R • PRT

INDUSTRIES SERVED:
Extend pump component life with laser cladding

Want to Learn More?
START A CONVERSATION TODAY.
americancladding.com
860.413.3098
Laser cladding, also known as laser metal deposition (LMD), uses metal alloy powders to enhance the surfaces of metal components. These enhancements are usually focused on extending component life by minimizing erosion/corrosion of the base material.

Advantages of LMD over more traditional additive processes include:

- **Lower powder costs** due to thinner coatings
- **Improved metallurgy** with higher material hardness
- **Less stress** due to lower heat input
- **Shorter process time** than traditional processes like PTA

**Typical Pump Challenges**

**Casing/Impeller Wear**
Laser cladding can repair wear to pump casings and impellers caused by:

- Minor abrasive wear from pumping light slurries
- Heavy casing wear and erosion from pumping solids and/or cavitation
- Chemical attack
- Wear to specific areas of the casing or impeller

**Shaft Wear**
Laser cladding restores worn shafts caused by:

- Packing and oil seals – typically the result of constant pressure and abrasion against the shaft surface
- Neglect and improper lubrication – causes the packing to heat up and result in severe wear to the shaft

**Benefits**

- Long-lasting protection from wear and erosion
- Extended component life
- Improved pump reliability

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**LASER CLADDING ADVANTAGES**

**PUMP APPLICATIONS**

**Twin Rotary Screw Pump**

**Hardfacing Flights**

- **PROBLEM:**
  The top of the flight of a screw is exposed to metal-to-metal rubbing contact with the casing or adjacent shaft screw, causing wear. Therefore, the integrity of hardfacing alloy to the base of the flight is very important.

- **SOLUTION:**
  Laser hardfacing is welded to form a “metallurgical bond” rather than a “mechanical bond” commonly found in thermal spray processes or sometimes spray and fuse applications.

**Centrifugal Pump**

- **PROBLEM:**
  Wear to shaft and shaft components.

- **SOLUTION:**
  Laser cladding to repair shaft and shaft components with a cost-effective and environmentally friendly solution.

- **PROBLEM:**
  Corrosion inside the pump caused by the fluid properties.

- **SOLUTION:**
  By coating with a corrosion-resistant alloy, the component can be manufactured from a less expensive material resulting in an overall cost reduction.

- **PROBLEM:**
  Wear of the impeller or other pump components – can be worsened by suspended solids.

- **SOLUTION:**
  In many cases, wear-resistant coatings can be applied to increase component lifespan or original material can be applied to the wear location to allow component restoration.
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