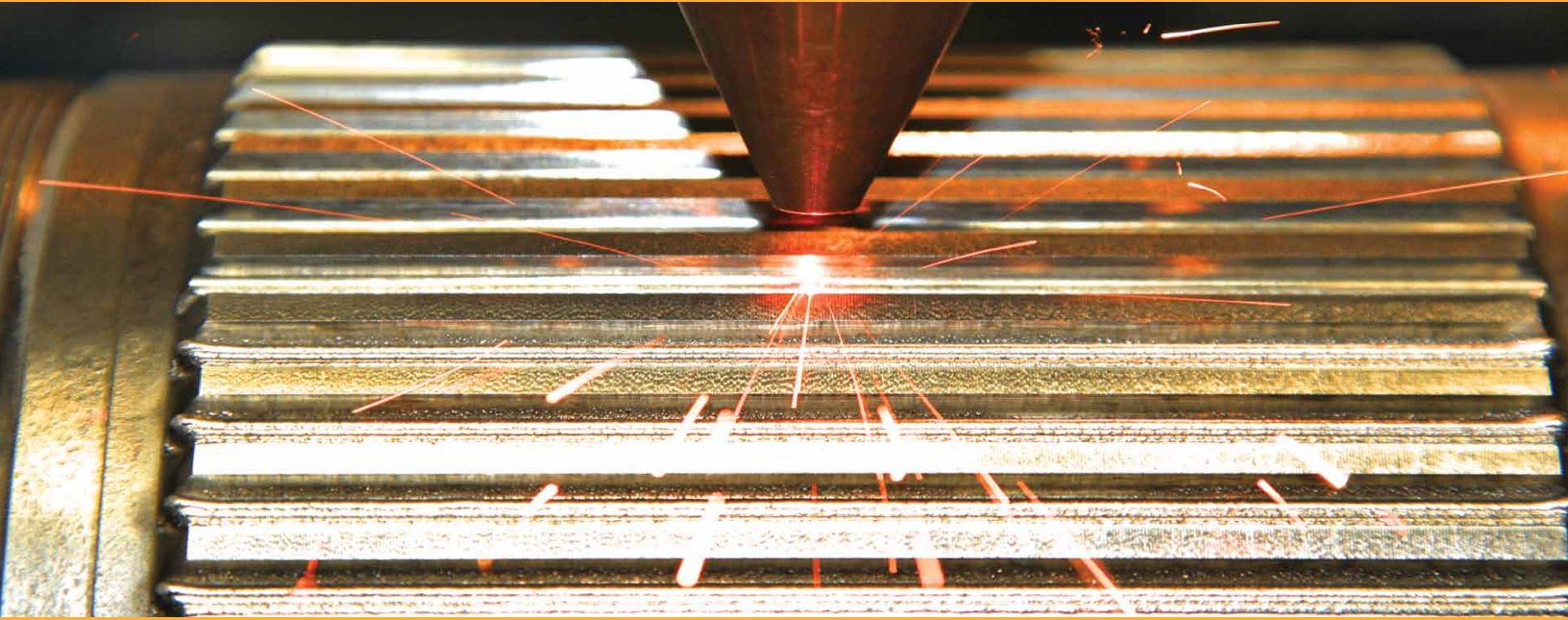
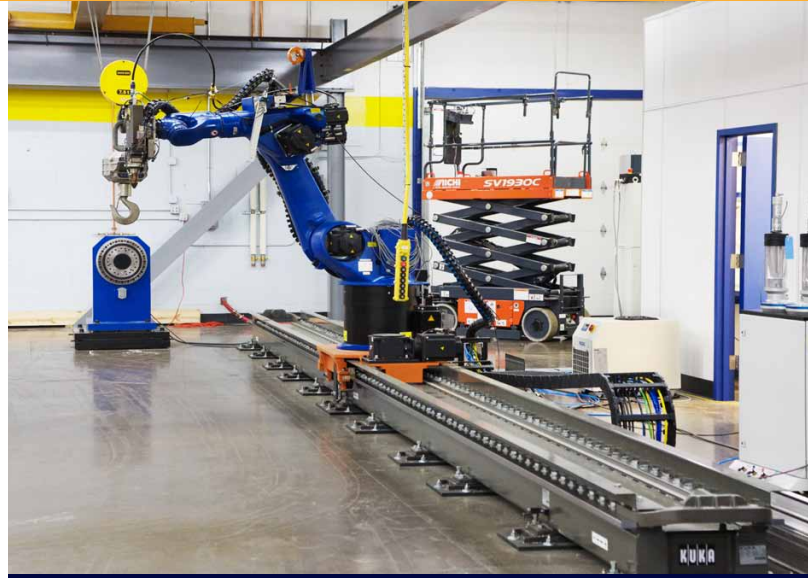


# Laser Additive Manufacturing



**Joining Technologies Additive** uses laser cladding of metal powder alloys to enhance, repair or free-form material for applications in power generation, oil & gas exploration, industrial heavy equipment, petrochemical and aerospace. Our new facility enables us to find solutions for components weighing over seven tons and up to 40 feet in length. Some items JTAD currently specializes in include IGT component repair, boiler/superheater overlays and valve hardfacings.



Up To 40 Feet & 7 Tons

## FEATURES

- Minimal surface prep
- Permanent metallurgical bond
- Small heat affected zone
- Less chipping, peeling or cracking
- Reduced corrosion
- Lower dilution
- Reduced retooling
- Unlimited surface heights
- Unprecedented reliability
- Long-term cost savings

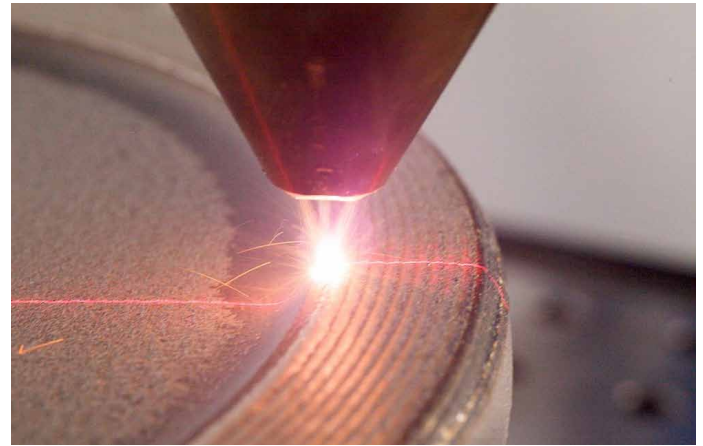
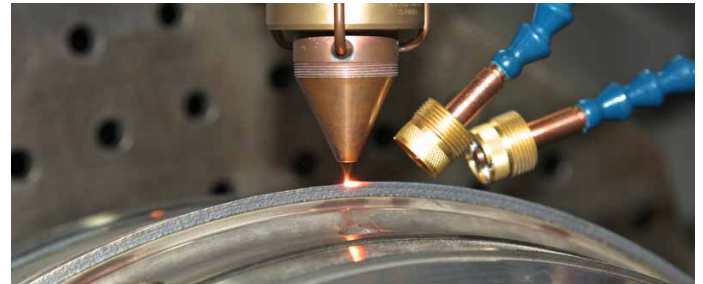
For more information see:  
<http://www.joiningtech.com>

Our new Laser Additive facility in East Granby Connecticut now offers our clients the ability to perform robotic and Cartesian laser cladding and direct manufacturing for components from the very small up to 40ft and 7.5 tons.



## APPLICATIONS

Joining Technologies uses laser cladding of metal powder alloys to enhance, repair or free-form material for applications in aerospace, power-generation, valve and OEM-supplied components. Our laser additive processes offer positional accuracy while maintaining material quality and metallurgical bonding.



## WHY LASER ADDITIVE

The unprecedented precision and reliability of our laser cladding processes is now available to private industry. As a leading provider of LAM (Laser Additive Manufacturing) surface restoration technology, we're able to create true metallurgical bonds between virtually unlimited metal types. Precisely focused lasers enable us to create an extraordinarily small heat affected zone and dilution zone for superior strength, hardness and performance.



Scott Poeppel  
Additive Processes Manager  
TEL 860.653.0111



## LAM ADVANTAGES

The laser additive manufacturing process is used to laser clad metal powder alloys when enhancing or repairing parts. Using a laser to create a melt-pool on the workpiece, powdered metal is fed through a nozzle into the weld puddle, creating a clad layer. Unlike HVOF, the LAM process achieves a full metallurgical bond by fully melting the surface of the substrate while applying powder. The precisely targeted heat of the laser allows for lower penetrations of the parent material, resulting in a smaller Heat Affected Zone (HAZ) and a lower dilution rate. This translates to an enhanced grain structure and lower minimum clad thickness required to achieve desired hardness, as compared to PTA applied clads. Parametric accuracy of the system allows for clad layers as thin as 0.004", with maximum clad thicknesses ranging over 3".



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