When precision, reliability, efficiency matters, you need top quality professional in laser processing and Automation.

www.meeralasers.com
About Us

We the MEERA LASER SOLUTIONS (MLS) are Specialized in Building and Integrating various laser systems for all Industrial Applications.

With a Decade of Experience we have established ourselves as a qualitative Laser systems Integrator by providing solutions and machines for various industrious like.. **Automotives, Aerospace, Electronics, Medical, Jewelery, Printing, sensor, Semiconductors, Scientific, Solar, Batteries etc.**

We also provide customized solution for Factory Automation related with **CNC, ROBOTIC system design & software for Welding, Cutting, Assembling, Testing, Packaging, Material Handling and Palletizing.**

**Our Mission:**
To Advance our customers productivity in various laser oriented Applications by applying day to day technological advancements.

**Our Quality:**
Considering all the safety measures and having the International Quality Standard in mind MLS’ s team provides professional on site quality control during every work flow by providing outstanding solutions for various problems from customers.

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**Quality Innovation Satisfaction**

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Conventional welding methods, such as spot- and arc welding, reached their mature state a long time ago. As laser welding starts where traditional welding techniques end, its use can really set you apart from the competition.

**Why start with laser welding?**

Laser welding is a versatile process which can be used to weld a variety of materials. Lasers are often used in high-volume production applications as they have high welding speeds and a level of automation that allows 24/7 operation.

**Cost savings**

When using laser welding on products with high production volumes, long welding lengths and/or many sub parts, the cost savings are impressive. These savings are primarily created by the high welding speeds, the quick weld-to-weld times and the fast change-over times.
Robot Laser Welding

Why do you need MLS?

Over the years MLS has gained a lot of experience in laser welding. As a system integrator we know all the sub components of the laser configuration and are able to really fine-tune the process.

Path accuracy

High welding speeds often interfere with the path accuracy, especially when welding curves/patterns. In close cooperation with ABB Robotics, we have tuned the programming software, which is now based on re-orientation from the wrist. This guarantees excellent path accuracy even at high welding speeds.
Remote welding system

This configuration is very solid and offers high weld-to-weld times. A remote welding system is available for CO2, Fiber and Disc laser. Primarily it is used for products that have welds close to each other (2½ D).

Robotised scan optics

This configuration uses a scan optic which is mounted on a robot. It offers great path accuracy while retaining high welding speeds and the opportunity to weave and mark. The short weld-to-weld times offer a high laser up-time. This solution is best suitable for products with welds close to each other (2½ D).
Flexible Automation

The heavy duty production platform with standard operating software and graphical user interface. This flexible platform can easily be configured for a wide range of light assembly and part handling applications in both high volume - low mix and in low volume-high mix environments. By starting with a proven platform, custom solutions are delivered with lower cost, less technical risk, and shorter delivery time when compared to ground-up automation development.

Equipped with state of the art industrial robots, the MLS Automations meets the most demanding requirements for speed and accuracy. Three different robot arms are available depending on the application need. All the robots are roof mounted allowing a large working area for the utilization of process heads, application units, feeders and transport systems.
Flexible Automation

Turn Key Automation Solutions

System integration

We are proud to say that we are a world-class system integrator. By using A-level equipment and components we are able to provide you with a machine that meets your needs, is efficient, cost-effective and reliable; whether you are looking for a standard configuration that consists of standardized building blocks (configure-to-order), or are in need of a customer-specific solution (engineering-to-order). Most projects are an ideal combination of these two philosophies and often include multiple processes and automated handling.

Turn key delivery

AWL has a clear strategy. We not only ensure that the machines and the fixtures are of an excellent quality, we also take responsibility for the complete process, from engineering to your machine being “up and running” at your facility.
Laser Hardening

Inner Hardening / Outer Hardening

Advantages Of Laser Hardening

The laser is most appropriate for treating small areas on sensitive, high-value components. Specific advantages compared to conventional processes are as follows:

- Selective areas can be hardened without affecting the surrounding material
- Minimal heat input results in limited distortion and reduces the need for additional machining
- Treatment depth is accurately controlled and highly reproducible
- Superior hardness can be obtained compared to conventional processes
- No external quenching is required
Robotic 3d Laser Cutting
Metal / Non-Metal

The 3D laser technology can produce extremely accurate and complex laser cut geometry on angle, box, channel, pipe and tube, offering increased flexibility as well as rapid turnaround times on high quality products.
# 2D Laser Cutting

## Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>MLS3015G</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>MLS3015G</td>
</tr>
<tr>
<td><strong>Laser source</strong></td>
<td>Fiber / Disk Laser</td>
</tr>
<tr>
<td><strong>Laser power</strong></td>
<td>1000W/2000W/6000W(optional)</td>
</tr>
<tr>
<td><strong>Working size</strong></td>
<td>3000<em>1500mm/4000</em>2000mm</td>
</tr>
<tr>
<td><strong>Repeated positioning precision</strong></td>
<td>0.03mm</td>
</tr>
<tr>
<td><strong>Max. Running Speed</strong></td>
<td>120 m/min</td>
</tr>
<tr>
<td><strong>Max. Acceleration</strong></td>
<td>1.5G</td>
</tr>
<tr>
<td><strong>Cutting Head</strong></td>
<td>Precitec / Laser Mech</td>
</tr>
<tr>
<td><strong>Controller</strong></td>
<td>PI/Beckhoff</td>
</tr>
<tr>
<td><strong>Motor &amp; Drive</strong></td>
<td>AC Servo / Yaskawa / Fuji</td>
</tr>
<tr>
<td><strong>Driving mode</strong></td>
<td>Precision Dual-drive Gear</td>
</tr>
<tr>
<td><strong>Specified voltage and frequency</strong></td>
<td>380V 50Hz</td>
</tr>
<tr>
<td><strong>Dimension</strong></td>
<td>7900<em>2950</em>1900mm</td>
</tr>
</tbody>
</table>
Laser Cladding

Inner Cladding / Outer Cladding

Advantages Of Laser Cladding

• Metallurgical damage due to extended HAZ and severe grain growth is vastly reduced
• Microstructures are much finer, harder and corrosion resistant compared with other processes
• A single cladded layer matches the composition of the welding consumable
• Selective areas on sensitive high value-components can be cladded
• Highly reproducible homogeneous layers with relatively smooth surfaces are obtained

Typical Applications Of Laser Cladding

• Wear and Corrosion Resistant Layers:
  - Valves
  - Pumps
  - Turbine blades
  - Moulds and tools
  - Rolls
  - Shafts (including crank and camshafts)
• Repair and Modification:
  - Gears and drive shafts
  - Moulds
  - Turbine blades
  - Fins on labyrinth seals (e.g. in gas turbine blades)
  - Valve seats and shafts (e.g. in power plants)
• Laser Direct Casting:
  - 3D Metal prototypes
Laser Cleaning

Strong but short laser pulses can remove coatings, manufacturing residues and grease from the substrate material, without damaging it. When choosing the proper intensity and wavelength of the laser is an impurity in the processing rapidly locally heated until it comes to its evaporation. This way you can clean metals, plastics, ceramics, glass, stone or concrete.

Laser cleaning does not require any chemicals or abrasives, eliminating the necessary operating costs of classical purification methods. The entire cleaning process is also significantly quieter and does not damage the substrate.

Most cleaning laser systems allows both manual machining leadership in product and simple installation into robotic systems.

The main advantages of laser cleaning:

- Does not destroy the underlying material
- Ecological and economical cleaning method
- Silent process
- Manual and robotic laser guidance
Glove boxes provide a controlled inert atmosphere for manufacturing and assembly processes. MLS is a leading provider of Laser Glovebox Systems along with glove box accessories, including both integrated and retro fit gas purification units, process ovens, analyzers, vacuum equipment, and much more. Inert glove boxes with integrated laser welders can be used in a variety of applications including but not limited to...

Medical Devices – MLS can provide a wide range of both resistance and laser welding glove boxes to medical device manufacturers who require a reliable and maintainable inert atmosphere when fine control and atmospheric monitoring is crucial.
Laser Micro Machining

Micromachining Division supplies full turn key laser micro-machining systems for laser drilling, cutting, marking, patterning, milling, and ablation. A variety of configurations are offered which can incorporate DPSS nanosecond, picosecond or femtosecond lasers operating in the IR, visible and UV to give controlled ablation of a wide range of materials. Lasers standard systems range from table top general machining advanced research and development to high commercial production solutions.

Micromachining examples of R&D and Industries we service:

Universities, Government Entities, Probe Card, Fuel Injector, Solar Cell, MEMs, Medical, Semiconductor, Leak Detection, Sensors, and Microfluidics.
Additive Manufacturing

- It is an industrial grade system for 3D Additive Manufacturing of small and medium sized metal structures. It is characterized by compact size, high build precision, user friendliness, and robustness. Our system uses Co-Axial Blown Powder Technique (LMD) to produce fully dense metal structures, and provides the standard for building complex parts.

- The system consists of SPI fiber laser, Willowborg Industrial Machine Platform, FESZL Core Moulding Unit and CNC System. This system is suitable for building high value metal parts in small quantities. It can be widely used for aerospace, medical implants, mould manufacturing, research and many other applications.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>2000 x 1500 x 1800 mm</td>
</tr>
<tr>
<td>Build Envelope</td>
<td>1000 x 600 x 350 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>~700 kg</td>
</tr>
<tr>
<td>Laser Model</td>
<td>SPI</td>
</tr>
<tr>
<td>Laser power</td>
<td>1000 W</td>
</tr>
<tr>
<td>Build accuracy</td>
<td>0.05mm</td>
</tr>
<tr>
<td>Process gas</td>
<td>N2 / Ar</td>
</tr>
<tr>
<td>Control system</td>
<td>SINUMERIK 828D</td>
</tr>
<tr>
<td>Slicing Software</td>
<td>Met-Build 2017</td>
</tr>
<tr>
<td>CAD Software</td>
<td>ProE, SolidWorks, UG, CATIA, AUTOCAD</td>
</tr>
<tr>
<td>Deposition Rate</td>
<td>50–10g/min</td>
</tr>
<tr>
<td>Core Process Assembly</td>
<td>FESZL Cladding Assembly</td>
</tr>
</tbody>
</table>
Additive Manufacturing
Additive Manufacturing System

Key Features

- Large capacity work area with accessibility for large parts, ergonomic system with enhanced user-friendliness.
- The proprietary FESZL Laser Cladding Head increases build dimensional stability and repeatability and improves throughput and final part quality.
- Software efficiently creates process parameters and enables simple “push-button” operation.
- The machine is designed to be portable. It can be fitted to work in almost manufacturing environment.
- A variety of Cladding Heads are available to meet any specific application requirements.
- The machine works with metal powder of grain size of 50–150 microns which can be recycled several times, offering significantly lower expenses on consumables and overall operational cost.
- Anaerobic enclosures are available for down to < 10 ppm Oxygen, for processing of reactive alloys such as Titanium with Argon (99.999%)
Additive Manufacturing
System Characteristics & Advantages

- It can produce parts in any weldable metal, from a range of elemental, pre-alloyed or mixed powders with either spherical or irregular shaped grains with grain sizes of 50–150 microns.

- For Titanium and other reactive metals, the machine can be upgraded to an anaerobic chamber (Oxygen content of <50 PPM as standard, and down to <10PPM upon request) with an Argon atmosphere.

<table>
<thead>
<tr>
<th>Alloy</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>TC4</td>
</tr>
<tr>
<td></td>
<td>TA15</td>
</tr>
<tr>
<td></td>
<td>BT22</td>
</tr>
<tr>
<td>Nickel Based</td>
<td>Inconel 625</td>
</tr>
<tr>
<td></td>
<td>Inconel 718</td>
</tr>
<tr>
<td>Co-Cr</td>
<td>Stellite 21</td>
</tr>
<tr>
<td></td>
<td>304</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>316</td>
</tr>
<tr>
<td></td>
<td>347</td>
</tr>
<tr>
<td>Tool Steel</td>
<td>H13</td>
</tr>
<tr>
<td></td>
<td>J04246</td>
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<tr>
<td>Aerospace</td>
<td>K424</td>
</tr>
</tbody>
</table>

Comparison between Blown Powder & Powder Bed Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>MLS System</th>
<th>A Typical Powder Bed Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build Envelope (L<em>W</em>H)</td>
<td>1000x 600x350</td>
<td>250 x 250 x 325</td>
</tr>
<tr>
<td>Laser Model</td>
<td>SPI 1000W</td>
<td>Ytterbium Fiber Laser, 400 Watts</td>
</tr>
<tr>
<td>Optical Scanning System</td>
<td>FESZL</td>
<td>F-theta lens, high speed scanning lens</td>
</tr>
<tr>
<td>Scanning Speed</td>
<td>Up to 1m/s</td>
<td>Speed up to 7.0m/s, accuracy up to 6 microns</td>
</tr>
<tr>
<td>Layer Thickness</td>
<td>1.5–0.2mm</td>
<td>0.1–0.02 mm</td>
</tr>
<tr>
<td>Build Rate</td>
<td>60–0 g/min</td>
<td>20–5 cc/hr</td>
</tr>
<tr>
<td>Machine Dimensions (L<em>W</em>H)</td>
<td>2000 x1500 x 1800 mm</td>
<td>2500x 1300 x 2190mm</td>
</tr>
<tr>
<td>Recommended Installation Space (L<em>W</em>H)</td>
<td>3.2m x 2.5m x 2.5m</td>
<td>4.8m x 3.6m x 2.9m</td>
</tr>
<tr>
<td>Weight</td>
<td>~ 700 Kg</td>
<td>~ 1,250 Kg</td>
</tr>
<tr>
<td>CAD Software</td>
<td>ProE/ Solid Works/Catia</td>
<td>Proprietary software</td>
</tr>
<tr>
<td>Slicing Software</td>
<td>MetBuild</td>
<td>Proprietary software</td>
</tr>
<tr>
<td>Data Format</td>
<td>STL file</td>
<td>STL file</td>
</tr>
</tbody>
</table>
Additive Manufacturing

MetBuild Processing Software

Control & Software

Modeling Software
- Any modeling software that can generate SAT or IGES file format can be used, such as: ProE, CATIA, SolidWorks, UG, Inventor, etc. CAD software can be supplied on request to client requirements.

Control Panel
- SIEMENS SINUMERIK 828D is a panel-based CNC system. CNC, PLC, Operator Panel and 6-axis drive control (standard) are integrated in one unit. This configuration eliminates the hardware interface between the CNC circuit board and the operator panel, thus improving the system’s durability and provide ease of operation. Extra customised functions can be added by the customer. Siemens provides good customer service around the world. Most of Metlas working functions can be directly accessed and modified here on the panel.

The MetBuild software is a proprietary programming software that converts 3D CAD drawings into CNC codes that can directly drive Metlas or other AM systems to build parts. MetBuild consists of three main modules:

- WorkTable: An User-friendly environment where a CAD file can be imported, inspected and manipulated before slicing.
- 3D Slicer: Slicing 3D geometry into a finite number of 2D layers, each filled with vector paths.
- EASY LMD: A postprocessor that generates and edits G-Codes from the Vector paths. The G/M Codes can be saved as text files and then transferred to the controller unit of an AM/Cladding machine.

The MetBuild software can be purchased along with Metlas Systems, or individually, to be used on clients’ existing Blown Powder AM/Cladding machines.
Additive Manufacturing

Sample
Laser Marking

Metal / Non-metal

Laser marking is one of the fastest marking processes available in the market due to its various advantages like:

- High-precision marking at constant quality
- High marking speed
- Durable marking

Specifications

- Model No.: Tower Mark
- Working position: Stand up
- Working plane dimensions: 620 x 450
- Max weight on the plane: 100 Kg
- Markable max height: (ø 140 mm) 450 mm
- Available marking areas: 110X110, 200X200, 300X300
- Type of laser: Fiber, UV, Green & CO2
- Vision system: Optional – both TTL and Reflex
- Type of door: Pneumatic
- Cooling System: Panel Cooler
- Exhaust fan and filter: Integrated into the base – optional
- Power supply: 110 – 230 Vac - 50Hz
Laser Trimming

Laser trimming has become a successful and indispensable tool for the production of microelectronics devices where high precision and high performance are required. In the case of thin film chip resistors (TFCR) laser trimming is capable of delivering final post processing performance of the TFCR to within +/- 0.02 percent of nominal value. However, the continuing evolution of portable consumer electronics has created the need for even more performance and decreased package size and is further pushing current laser trimming technology.

Material
- Thick Film
- Thin Film
We added value with

Yamaha  Eaton  SS Gamma  Ashok Leyland  TAFE

Emerson  Maruti Suzuki  Bango  Brakes India Private Limited  TEL Turbo

Konzert Fahrzeugtechnik  HNA Automobiltechnik

GEZE  RACI Gears Ltd.  Argo-Hytos  Inida Industries  Fuchs

AMR  Roop Polymers Ltd.  JSLA Lifesciences  Delphi 鬃

Accelotech  ABI Showatach  Universal Engineers  Lucas-TVS Ltd  गब

Dorma  Amphenol  Sujan Corporate Buisness  Motor Group  फॅलन

Schaeffler  Rotex  PaceTronic  Ranc  रैंक

SAE HAN  Natesan Synchrocones  Kmf Automotive
MEERA LASER SOLUTIONS

<table>
<thead>
<tr>
<th>Registered Office Address</th>
<th>Factory Address</th>
<th>Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td># 2, K.S.R Nagar, M.T.H Road, Ambattur, Chennai - 600053</td>
<td>Door No. 2, Noor Market, Near Pillaiyar Kovil St, Kanchana Kuppam, Ambattur Industrial Estate, Chennai - 600 098</td>
<td>Ph :+91-44-26250716/26250681 Mobile : +91 – 98404 00396 mail:<a href="mailto:info@meeralasers.com">info@meeralasers.com</a> <a href="http://www.meeralasers.com">www.meeralasers.com</a></td>
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</tbody>
</table>