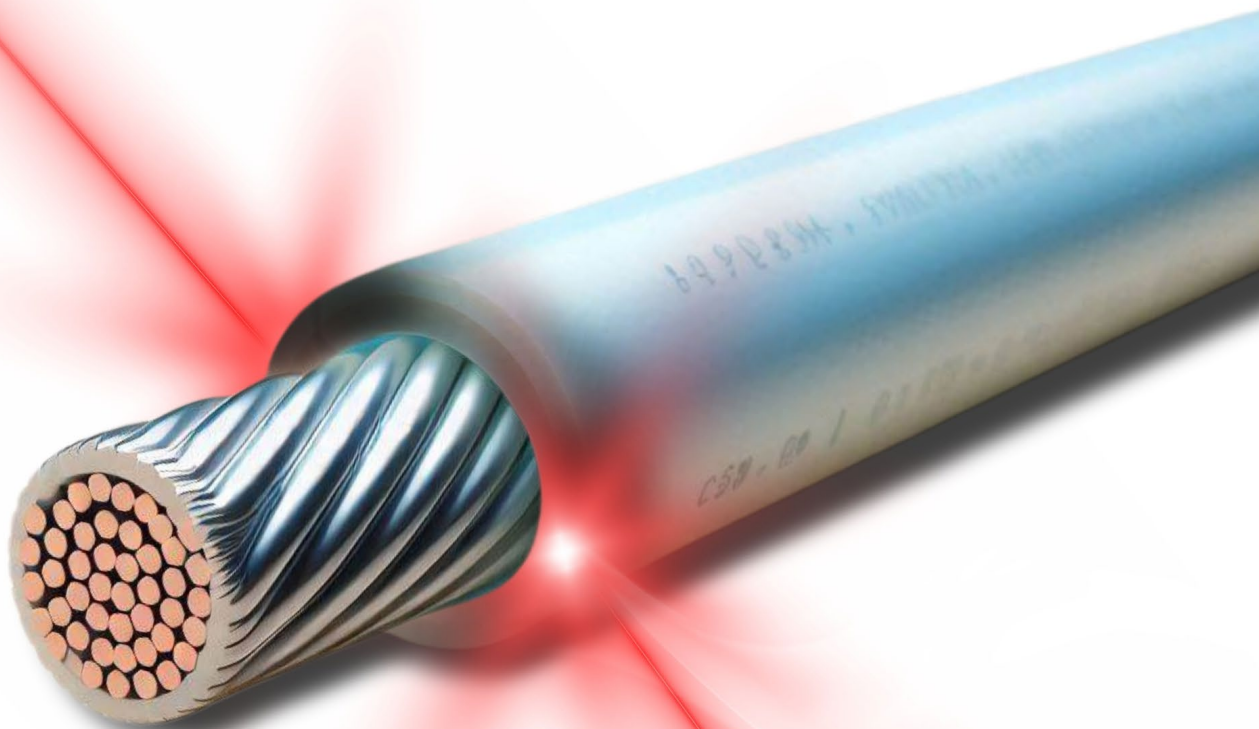


The Future of Precision Connections



LASER WIRE
— SOLUTIONS —



Medical Overview





Introducing Our Company

Laser Wire Solutions, located in Cardiff, in the United Kingdom, serves the medical, automotive, aerospace and data industries around the world.

Our non-contact, high precision method is revolutionizing the connection of wires and cables found in catheters, electric vehicles, and data centers.

If you have a wire connection challenge – speak to our experts.

Laser Wire Stripping Experts

We are the laser wire stripping experts. Our solutions ablate the wire coating without damaging the conductor.

Laser Micro-Soldering Pioneers

As pioneers of laser micro-soldering we understand the requirement for efficiency and accuracy in soldering your wires.

Medical Device Product

Using our suite of automated solutions, we can offer full production of pre-stripped wire and cable to meet your medical device product requirements, shipped and ready to be used.



LASER WIRE SOLUTIONS

All equipment is designed and manufactured in Cardiff, United Kingdom.



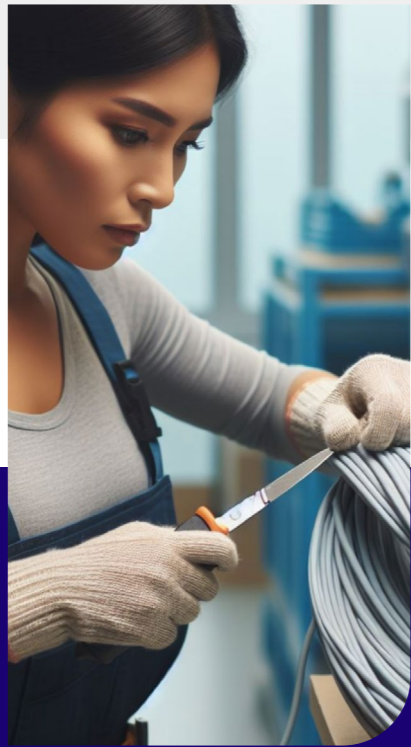
30 Distribution Partners

55 Employees across UK, Mexico, Costa Rica

500 Systems in the field worldwide

Existing Methods & Drawbacks

Do you experience slow production ramp up, low yields or variation in product quality?



Blade Stripping

Tough and out-of-round cables require you to deploy your most skilled operators to use hand tools, leading to bottlenecks.



Chemical Dip

Bonded enamel wires have to be dipped in dangerous hot caustic – a health & safety nightmare.



Tweezers

Thinner wires have to be ground or scraped giving poor bond strength or damaged wires.

Eliminating Human Skill from Wire Processing



When faced with challenging wire constructions, up to now, there has been no alternative than to use human skill to strip wires. Lasers require no human skill – no matter how small or tough the wire.

How It Works

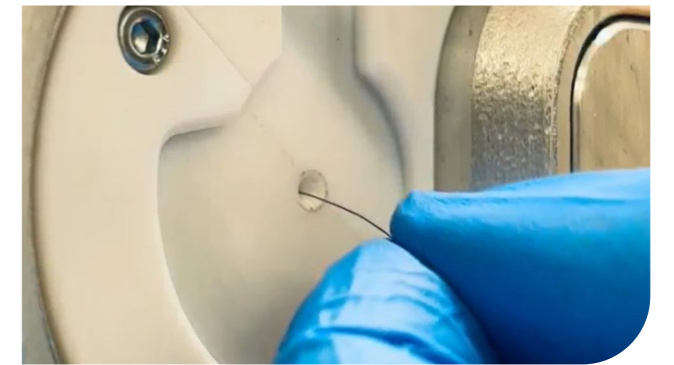
A minimum of two laser beams are used to give a 360 degree ablation.

The laser selectively removes the required material, reflecting from the next layer. This creates a very stable process.

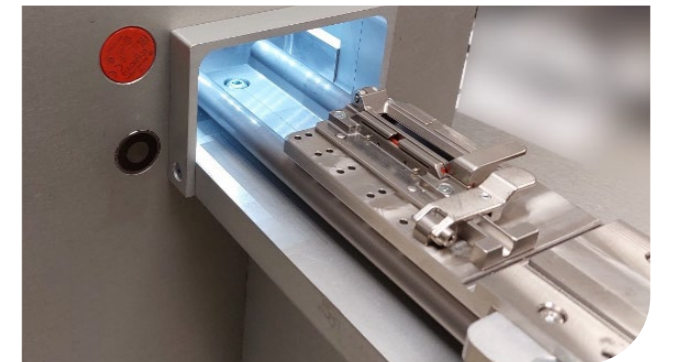
Laser stripping can be achieved with vaporizing (ablating) an area of insulation, cutting across the wire or cutting across and slitting.

Key Benefits

- Eliminates the need for operator skill
- Increases product quality and yield
- Safe to use
- No nick no scrape
- Non-contact



Hand Insert - simple and fast

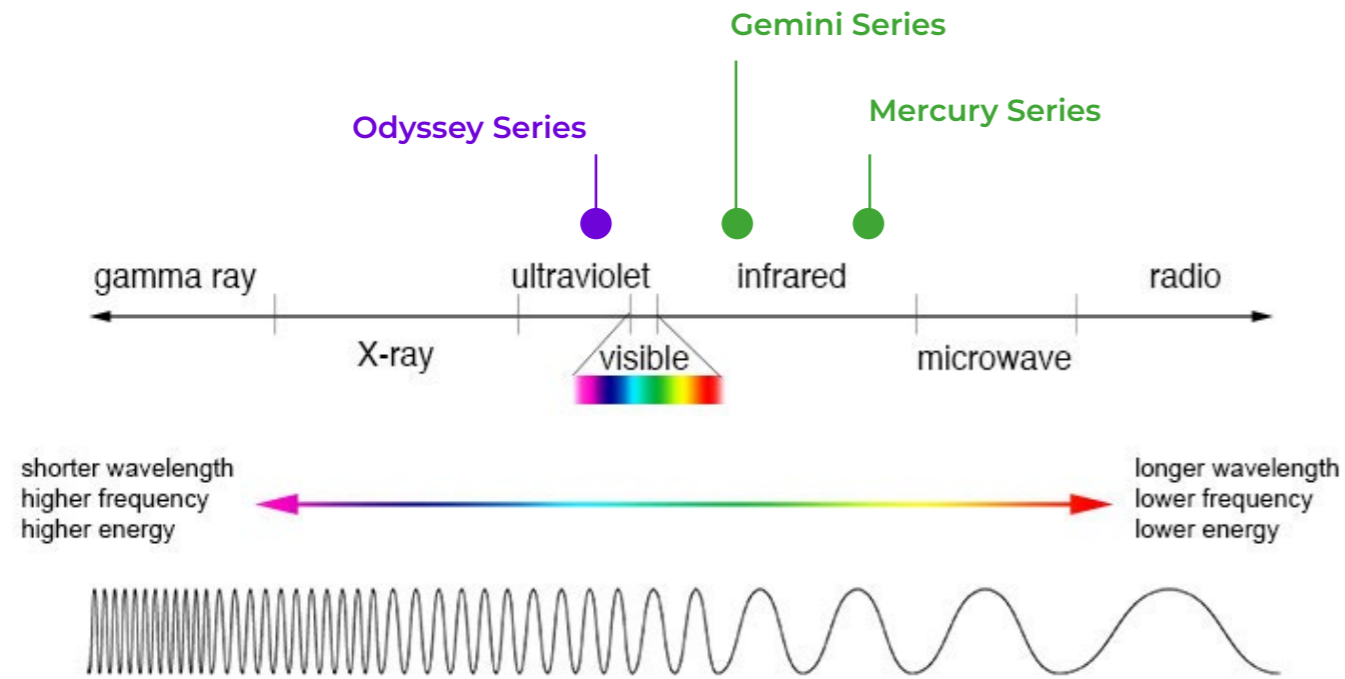


Fixture Plate - high level of accuracy



Integrated - highest level of productivity

Laser Technology



Laser Type	Series	Features	Application
Ultraviolet (Solid State UV)	Odyssey	Low power, but suitable for small areas (micro wires) on enamel insulations	Ablation of enamels / magnet wire
Fiber	Gemini	Couples with polymers but depends on color	Shield cutting Explosive removal of enamel from large magnet wire and thick wire >0.2 mm
Carbon Dioxide (CO ₂)	Mercury	Absorbed by all polymers	Jacket cutting Dielectric cutting Ablation for some polymers

Odyssey Series

UV laser technology best suited to fine enamel insulations.



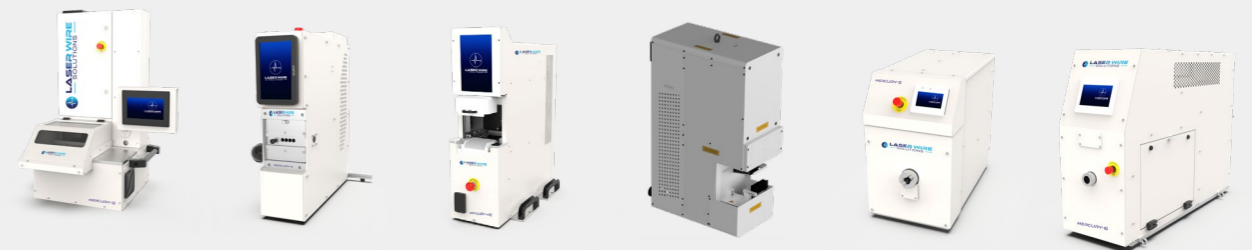
Gemini Series

Fiber laser technology best suited to large gauge enamel insulations.



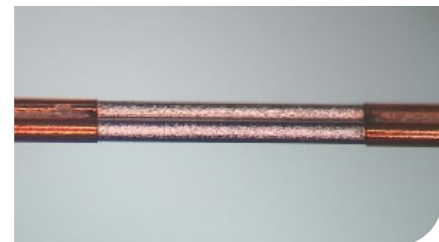
Mercury Series

Carbon dioxide laser technology best suited to polymer insulations.

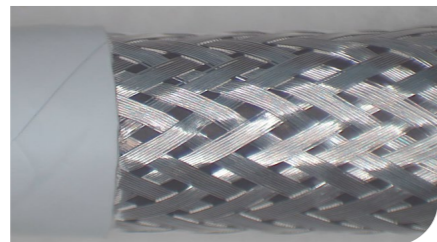


Material Selection Guide

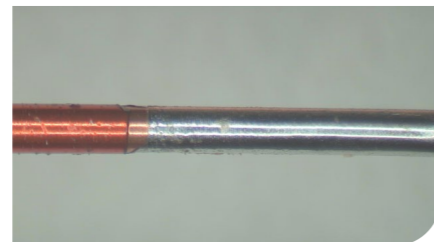
Material	Wire Type	Application	Machine Series
Plastic	Stranded multicore	Industrial	Mercury
	Multi-layer shielded	Industrial	Mercury
	EV Coroplast	Automotive	Mercury
	Twin ax	Telecoms	Mercury
	Micro coax	Medical	Mercury & Odyssey
	Twisted pair	Telecoms	Mercury
	Ribbon	Telecoms	Mercury
Enamel	EV bus bars	Automotive	Mercury
	Coated stainless steel	Medical	Odyssey
	Thermocouple	Medical	Odyssey
	Micro ribbon cable	Medical	Odyssey
	Fine magnet wire	Medical	Odyssey
	RF coils	Automotive	Gemini
	Motor coils	Automotive	Gemini
Metal	Thermocouple	Aerospace	Gemini
Fiberglass	High temperature	Industrial	Mercury



Copper conductor with enamel 0.180mm OD processed using the Odyssey 4



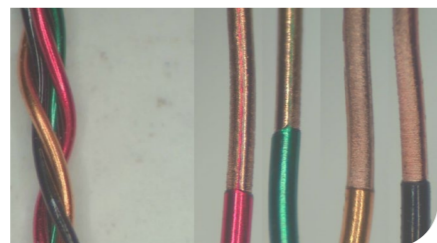
Double shielded multicore cable 8mm OD processed using the Mercury 5



Enameled copper wire 1.5mm OD processed using the Gemini 4E



Flat cable, 41mm wide with 11 conductors connected together processed using the Mercury 4



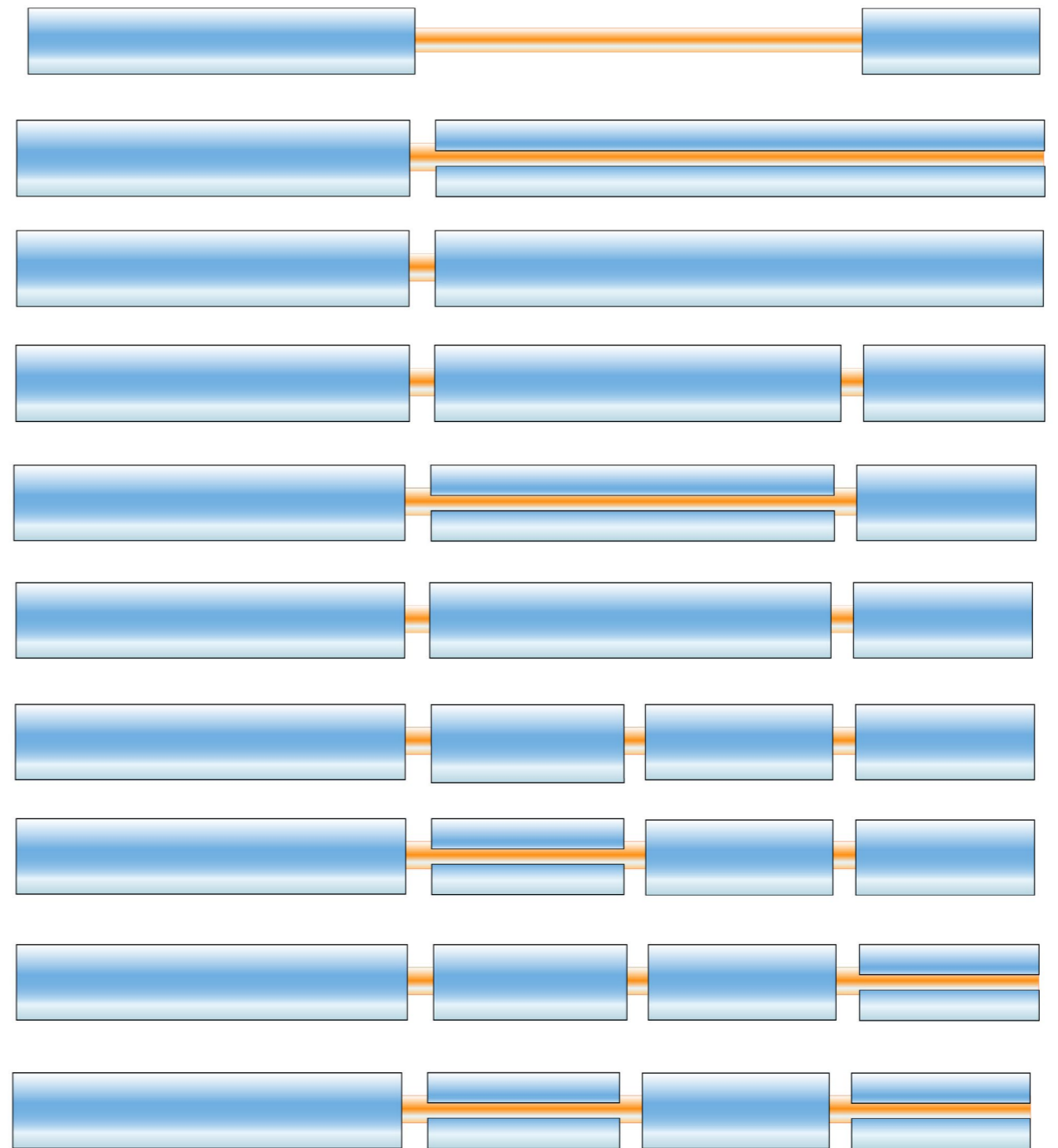
Multifilar magnet wire processed using the Odyssey 8



4/0 AWG cable 21mm OD semi-conductive layer insulation processed with the Mercury 6

Strip Patterns

Laser wire stripping machinery are capable of processing a wide range of strip patterns to suit the wire type or end-application.

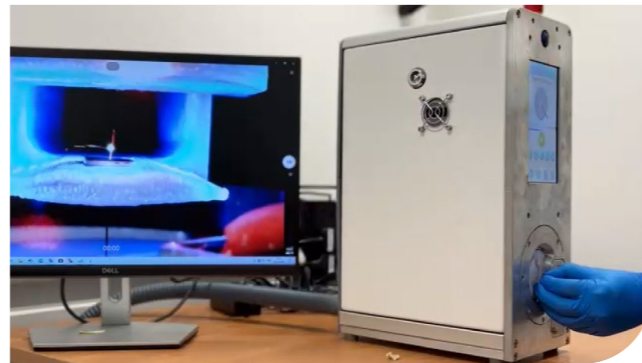


Laser selectively removes the insulation, reflecting from the conductors, preserving the electrical characteristics of the wire or cable.

Production Ready Laser Wire Strippers

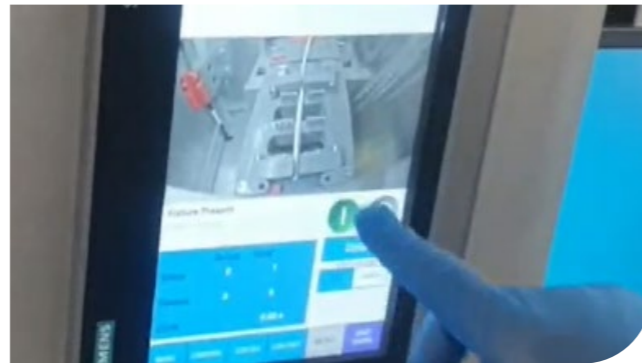
Benchtop Systems

All Laser Wire Solutions models have been designed to retrofit into any existing production line, with many integrating seamlessly with other brands to provide complete solutions.



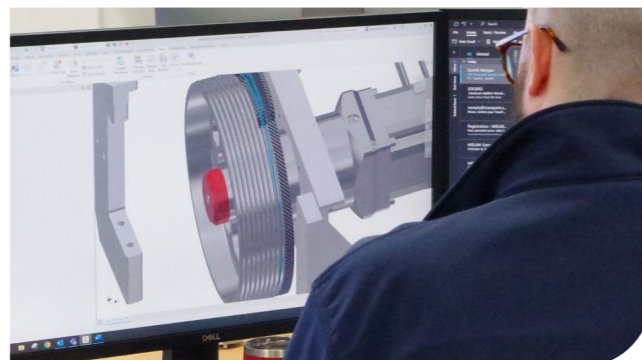
Minimal Training

With pre-installed recipes, and simple start/stop buttons, all our systems are easy to master. Simply load the wire, select the recipe, and press start. No more lengthy training sessions required.



ISO 9001:2015 Certified

All Laser Wire Solutions machines are designed and built inline with ISO 9001:2015. As an ISO 9001 certified manufacturer, customers are guaranteed high quality machinery built to fit their requirements.



Fixture Plate Loading

Each application requires a different type of fixture plate depending on the machine being used. The fixture plates ensure repeatability when processing the wires or cables, and ensures they are held in place for accurate processing by using the clamps.

Integration Possible

By synchronizing the laser wire insulation stripping process with cutting and stripping operations, manufacturers can streamline their workflows, reducing the time and labor required for manual adjustments and interventions.

Barcode Reader

Simplifying the process from the start. The barcode reader allows the operators to scan a barcode on relevant paperwork to quickly select the right recipe, helping to prevent incorrect job selection. This can easily be configured within the machines software.

Safe to Use on Shop Floor

These machines can be used on the standard production factory floor where no additional PPE is required to safely operate it in standard operation mode. Additional PPE is only required when conducting cleaning, maintenance, or service tasks.

Customizable Strip Patterns

Each of our systems is designed to suit a wide range of applications and next step of the customers process. The strip patterns can be edited for complex wire structures using a third party graphical user interface.



Medical

Experience the assurance of having a dedicated ally in advanced medical devices.

From micro fine catheter wires to MRI enamel coils, we partner with the world's leading medical device manufacturers to implement laser wire stripping machinery that handles their wires and cables with ease.

- Laser stripping of wires pre-welding can increase bond strength 100%.
- Laser stripping enables micro-coax stripping below 42AWG.
- Suitable for OEMs specializing in cardiovascular ablation, mapping catheters, neurovascular pull wires, bone ablation.

Suitable Wires:

Electrodes

- Enamel
- Polyimide
- Polyester – sizes 0.020-0.20mm (<40 AWG)

Draw Wires:

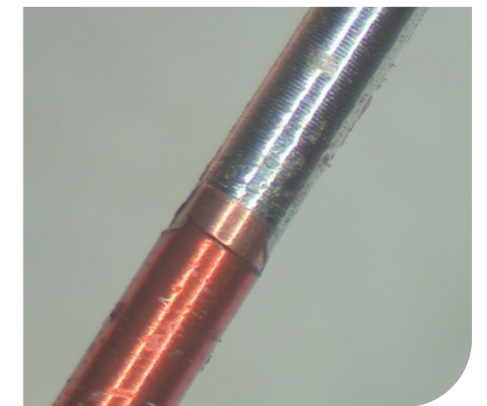
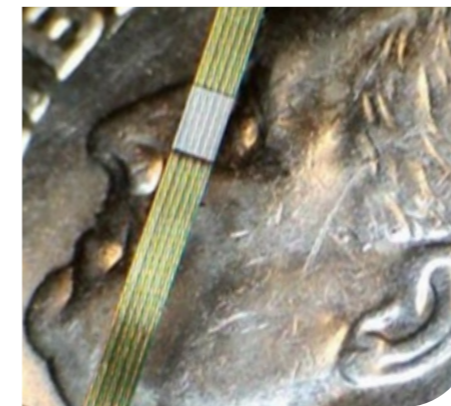
- Stainless Steel

Thermocouples:

- Bonded Enamel Wires
- Bifilar, Multifilar

All conductors including:

- Copper
- Monel
- Gold Coated



All Medical Wiring Applications

- Endoscopic
- Fetal & maternal monitoring
- Neuro-monitoring
- Brain mapping
- Cardiovascular imaging
- Electrosurgical
- Surgical imaging
- Ultrasound
- Surgical navigation
- Surgical robots
- Cardiovascular
- Sensors
- Handheld surgical devices
- RF applications
- Nerve stimulation
- Neuro-stimulation
- Cardiac rhythm management
- Hearing devices
- Neuro stimulation
- Bone ablation

Key Medical Applications

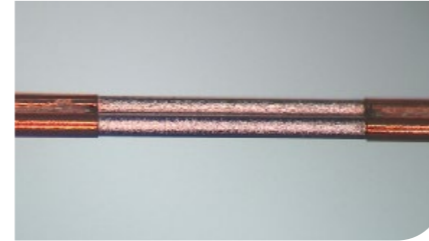
Catheter Wiring

Small gauge enamel wires usually found in cardiovascular ablation & mapping catheters, neurovascular pull wires and stimulation electrodes.

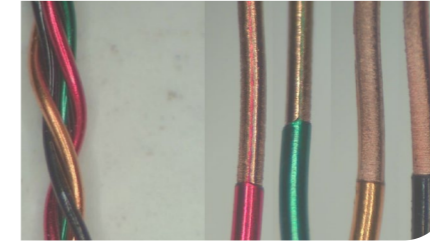
- ✓ Mapping Catheter
- ✓ Guide Wires
- ✓ Pull Wire



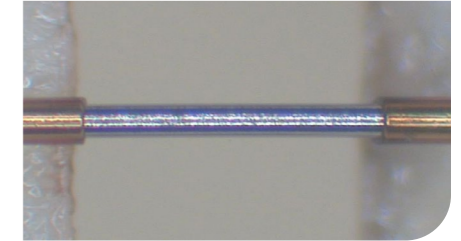
Alternative: Abrasion wheels - operator skill dependent, no process control
 Results: Low yield (poor weld strength), slow ramp up, cannot strip multifilar



Copper conductor with enamel 0.180mm OD processed using the Odyssey 4



Multifilar magnet wire processed using the Odyssey 8



40 AWG enamel wire with 0.7mm ablation using the Odyssey 4

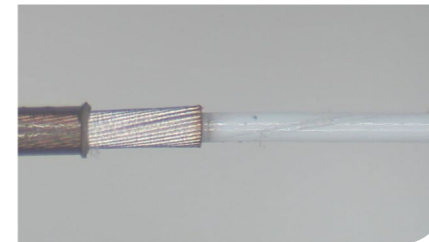
Micro-Coax Cables

Usually found in medical device cabling where space and weight are limited, and damaged conductors or residue is not permitted.

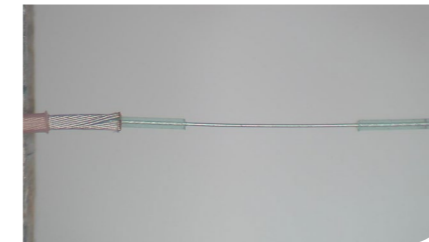
- ✓ Ultrasounds
- ✓ Sensors
- ✓ Endoscopes



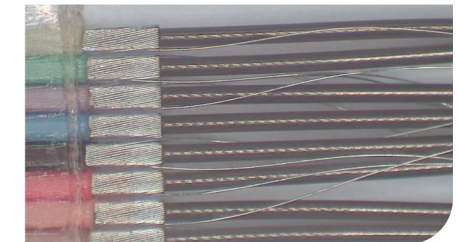
Alternative: Rotary mechanical strippers
 Results: <42AWG they are very inconsistent= high scrap, high maintenance



42 AWG micro-coax with PFA black jacket and insulation processed using the Mercury 4 and Odyssey 4



44 AWG micro-coax with PFA jacket with SPC alloy processed using the Mercury 4 and Odyssey 4

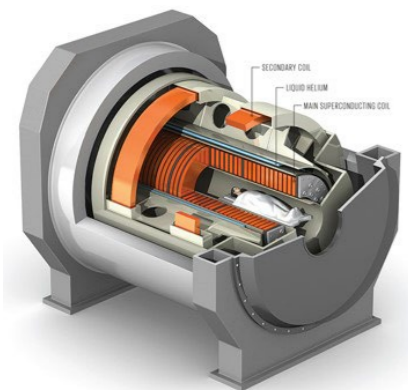


Micro-coax tape composed of 8 conductors processed using the Odyssey 4

MRI Coils

Enameled wire with a rectangular cross section, super conducting electro-magnet, requiring precision and minimal to no damage.

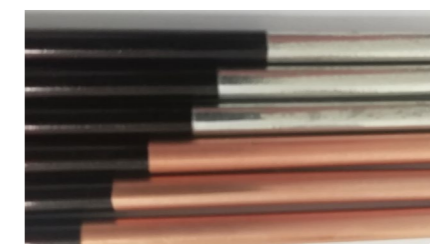
- ✓ Large Gauge Enamel
- ✓ Ablation of long sections



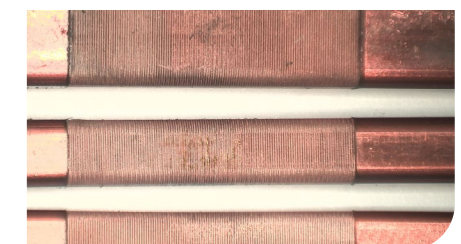
Alternative: Hot caustic dip
 Results: Large health & safety risks, messy and dangerous process



6.2 x 6.2mm wire with 25.4mm strip processed using the Gemini 4E



Large gauge enamel coated copper wire processed using the Viking 4 (Custom Project)



Enameled copper "U" shaped pins processed using the Gemini 4

In the medical device industry, precision and reliability are paramount. Every component, especially the wiring, plays a critical role in the performance and safety of your devices. When it comes to the intricate task of wire and cable insulation stripping, there's no better solution than laser wire stripping. This technology ensures unparalleled accuracy and quality, safeguarding the integrity of your devices.



Comparisons with Alternative Methods



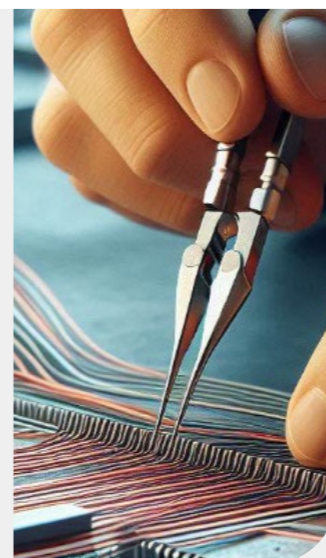
Cone Strippers

Thinner wires have to be ground or scraped giving poor bond strength or damaged wires. Achieving consistent stripping results with cone strippers can be challenging, especially with very fine wires. Variations in pressure and alignment can lead to uneven stripping, which can affect the performance of the medical device.



Chemical Dips

This involves using chemicals to dissolve the insulation. It's effective for wires with coatings that are difficult to remove mechanically. However, it requires careful handling of chemicals and thorough cleaning of the wires afterward to remove any residues. The health and safety of operators is paramount when using this method.



Thermal Tweezers

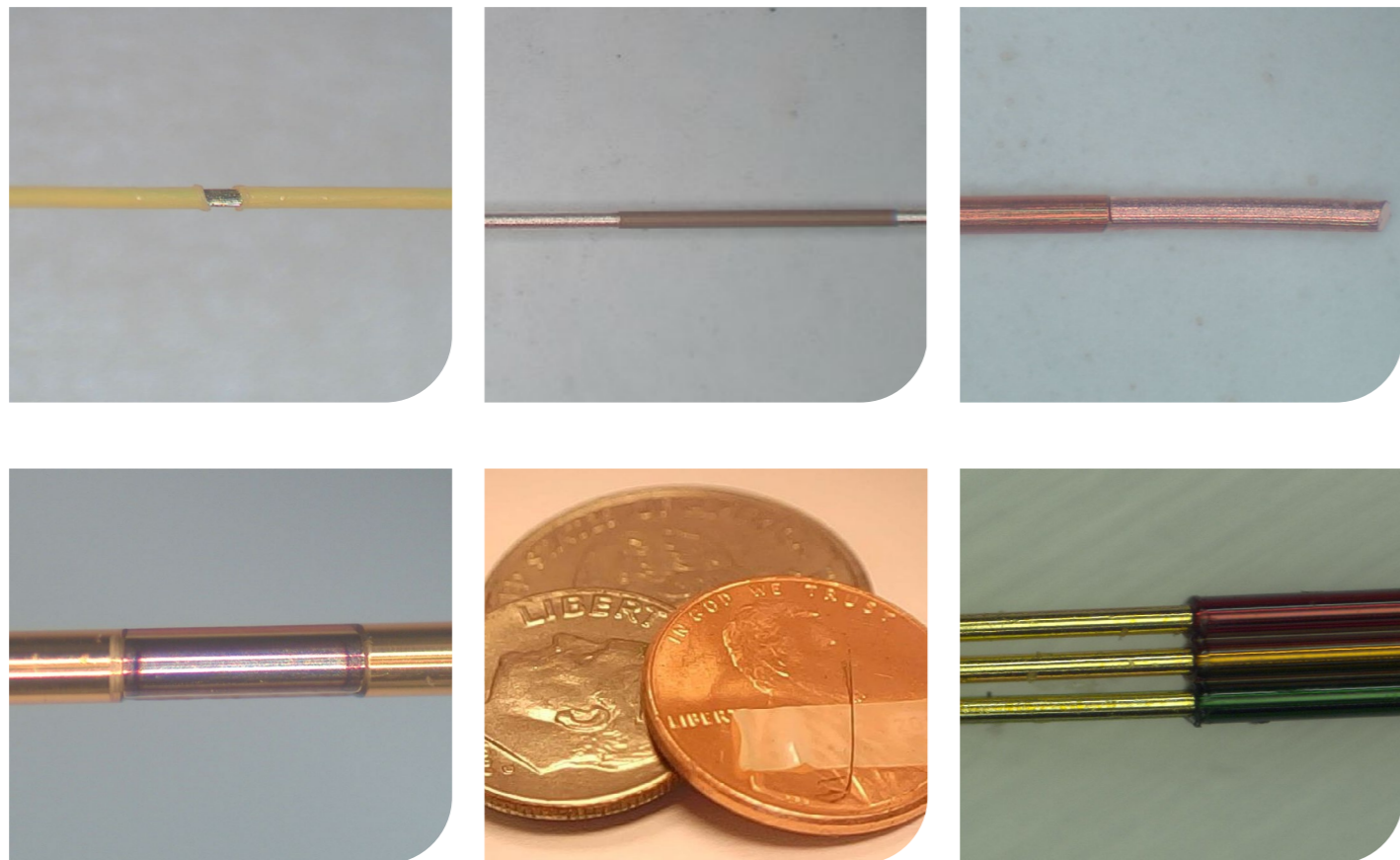
This method uses heat to melt or burn off the insulation. It's suitable for certain types of insulation materials but must be controlled carefully to avoid overheating and damaging the wire.

Catheter Wiring

These laser wire strippers is a state-of-the-art solution designed and manufactured specifically for precision applications such as the intricate wires used in catheter manufacture.

These machines excel in handling medical fine wire and enamel wire down to 54AWG. They offer single, bifilar, and trifilar capability, ensuring versatility across various wire types.

With statistical process control, these strippers provide consistent, high-quality results that are operator independent.



Odyssey-8

- World's smallest enamel wire stripper
- Load wire with no fixture
- Auto wire detect
- Super simple recipe



Watch the Odyssey-8 in action



Suitable Materials	Polyurathane Enamel, Polyester Enamel PEW, Polyester-imide EIW, Polyamide-imide, Kapton, ML, PTFE or ETFE
Suitable Wire Types	Single conductors, twisted pairs, bifilar, and trifilar wires
Processing Speed	< 5 second cycle for a typical 2mm strip (material dependent)
Processing Length	Up to 6mm
Breakout Length	18mm
Max. Wire Diameter	< 0.4mm (27 AWG)
Dimensions (LxWxH), Weight	180 x 340 x 480 mm, 6kg

Odyssey-4

- Multi wire processing simultaneously
- Fixture loaded
- Ergonomic design on mobile trolley

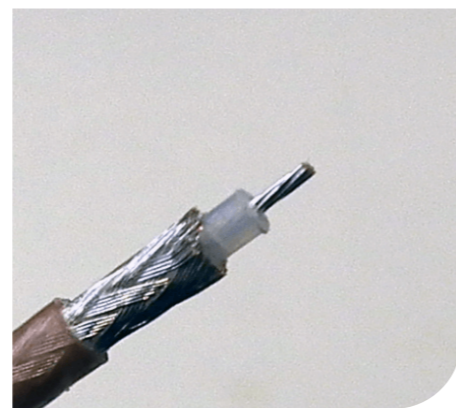
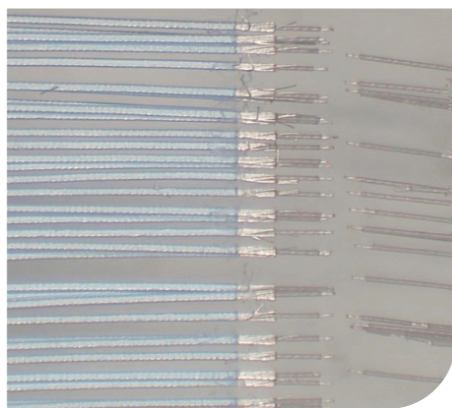
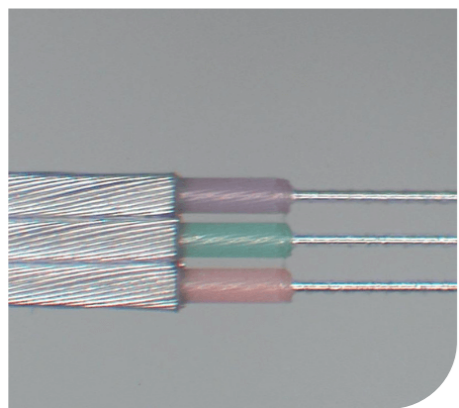
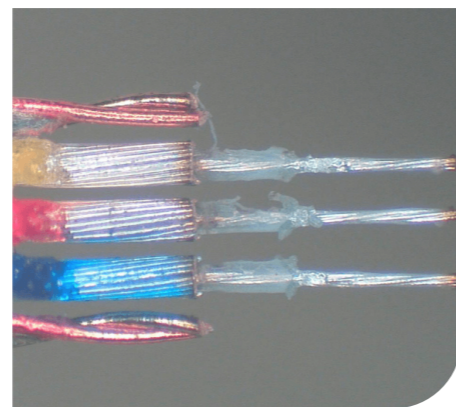
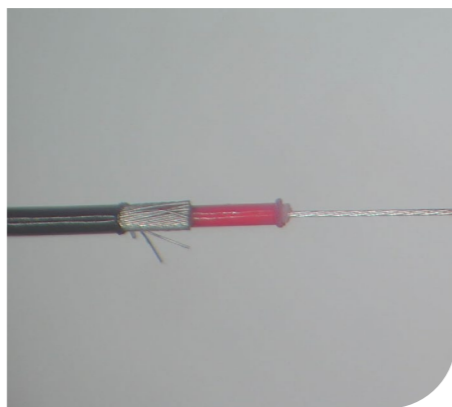


Suitable Materials	Polyurathane Enamel, Polyester Enamel PEW, Polyester-imide EIW, Polyamide-imide, Kapton, ML, PTFE or ETFE
Suitable Wire Types	Micro-coax, multi-filar, single conductors, twisted pairs
Processing Length	Up to 65mm
Max. Wire Diameter	< 0.7mm
Dimensions (LxWxH), Weight	1180 x 800 x 1470 mm, 220kg

Micro-Coax Cables

With the multiple layers and different materials on micro-coax cables, it's necessary to use different laser types to ensure no damage to the underlying conductors.

These machines particularly adept at handling multi-layer cables, making them an ideal choice for processing the outer jacket and inner dielectric of micro-coax cables.



Single Machine Process | Floorstanding System



Micro-Coax Center

- Purpose built machine for the preparation of micro-coax cables
- Automatic moving fixture plate



Watch the Micro-Coax Center in action

Suitable Wire Types	Micro-coax cables
Max. Wire Diameter	< 0.3mm
Dimensions (LxWxH), Weight	2073 x 1318 x 2159 mm, 800kg

Multi Machine Process | Benchtop Systems



Step 1: Mercury-4

- Used to vaporise the polymer jacket and dielectric material of micro-coax

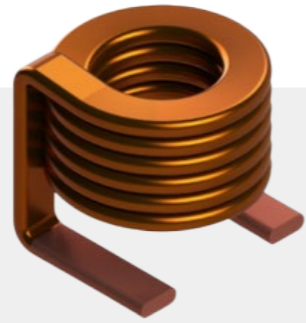
Suitable Materials	PTFE, ETFE, PU, Silicone, Kapton, Polyimide, Polyester, Polyethylene, Nylon and more
Max. Wire Diameter	< 5mm
Dimensions (LxWxH), Weight	406 x 152 x 508 mm, 60kg



Step 2: Odyssey-4

- Used to cut micro-coax shield wires and clean residue from the shield and conductor

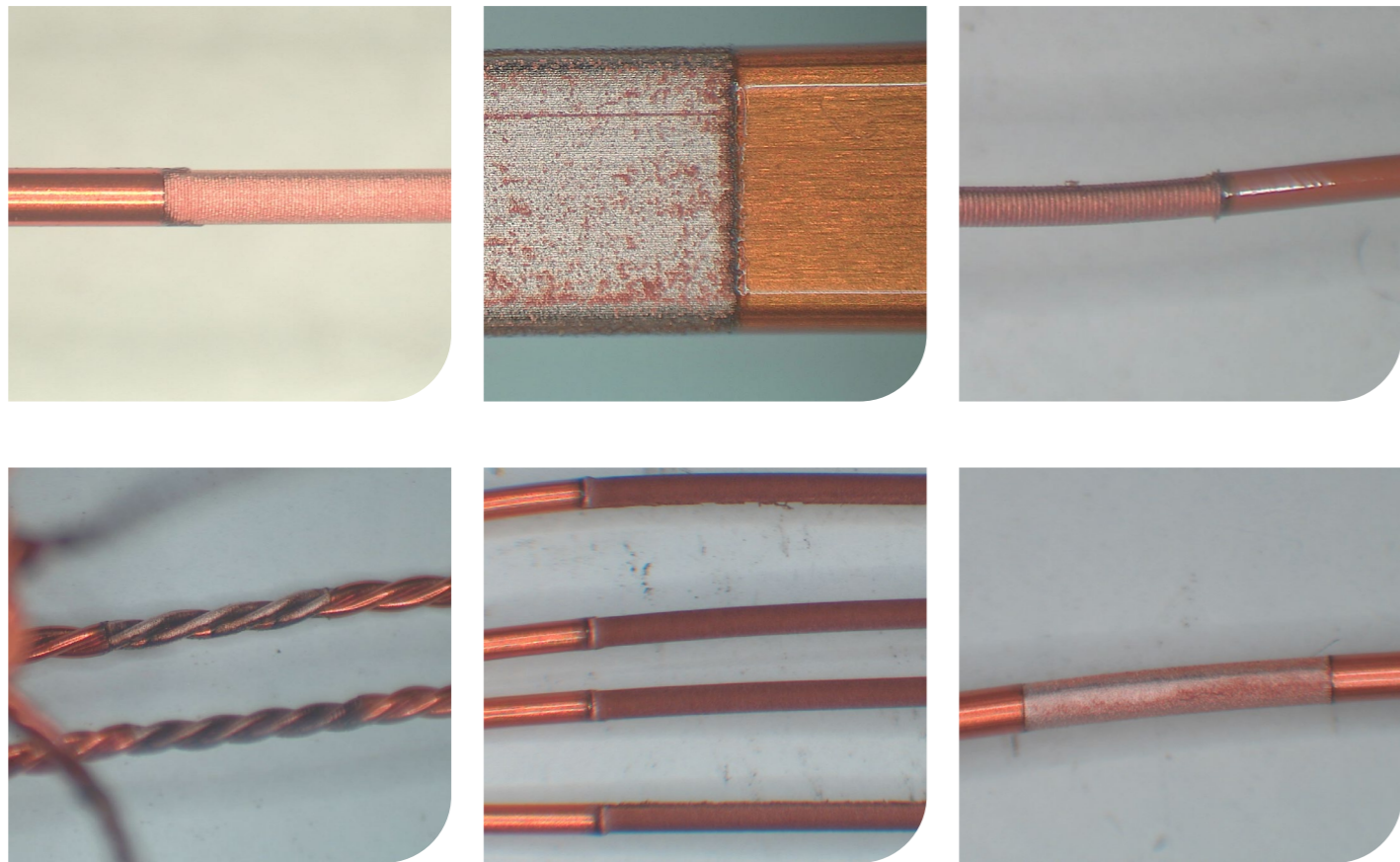
Suitable Materials	Polyurathane Enamel, Polyester Enamel PEW, Polyester-imide EIW, Polyamide-imide, Kapton, ML, PTFE or ETFE
Max. Wire Diameter	< 0.2mm
Dimensions (LxWxH), Weight	1000 x 410 x 752 mm, 40kg



MRI

MRI coils, essential components in magnetic resonance imaging, require precise electrical conductivity to generate the necessary magnetic fields. Using chemical dips are slow, risky, and often result in product defects.

By adopting laser technology, you can transform your operations. Our laser-based systems automate the enamel removal process, dramatically reducing processing time, eliminating safety hazards, and ensuring consistently high-quality MRI coils.



Viking-4

- Suitable large gauge enamel
- 4-beam laser system
- Round wires and rectangular magnet wires

Suitable Materials	Removal of enamel / polyimide type coatings from copper and aluminium
Suitable Wire Types	Magnet bar or wire
Processing Length	Up to 100mm
Max. Wire Diameter - Round	3mm
Max. Wire Diameter - Rectangle	20 x 20mm
Dimensions (LxWxH), Weight	920 x 1900 x 2560 mm



Gemini-4E

- Suitable for shield cutting
- Medical grade enamel
- Custom fixture plate loading depending on wire/cable type

Watch the Gemini-4E in action



Suitable Materials	Enamels, Polyimide, PEI, PAI, Foils, Micro-coax shields
Suitable Wire Types	Micro-coax, enamel coils, rigid coax
Processing Length	Up to 100mm
Breakout Length	18mm
Max. Wire Diameter	< 0.7mm
Dimensions (LxWxH), Weight	1180 x 800 x 1470 mm, 220kg

Medical Device Product Supply Service

Cost effective alternative to medical equipment investment, without compromising on quality.

By partnering with us, you can eliminate the need for costly investments in specialized equipment, giving you the freedom to focus on what you do best—innovating and bringing life-changing medical devices to market.

With our cutting-edge laser wire ablation technology, we ensure that your wire processing is handled with unmatched precision and efficiency, so you can get your products to market faster and with complete confidence.

Don't let the burden of wire processing slow you down—let us be your trusted partner in delivering quality and excellence, every step of the way.

ISO9001 certified service

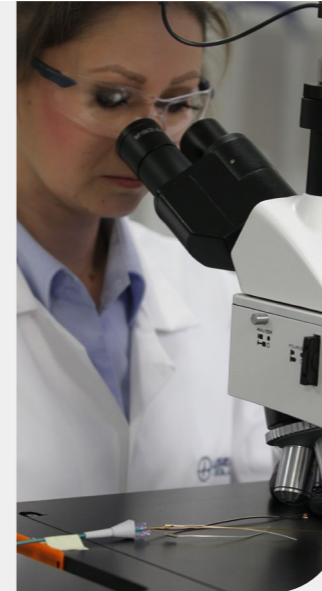
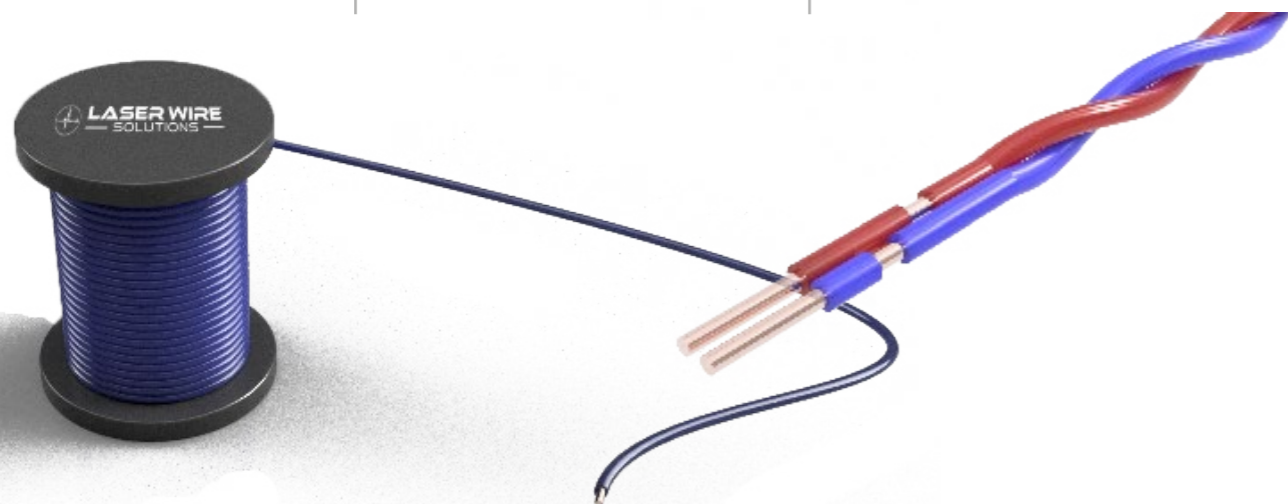
Automated lights out manufacturing

Medical component manufacture

Supplier to major OEM companies

Spool to spool, Spool to cut

Full analytical laboratory



Quality Assurance & Precision

When it comes to medical devices, precision is non-negotiable. Our cutting-edge laser wire ablation technology delivers wires stripped to the tightest tolerances, with every detail meticulously managed.

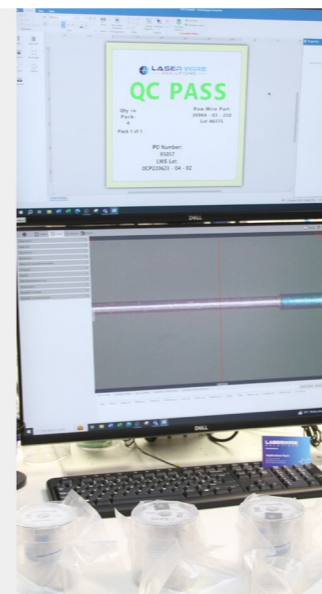
With our sophisticated controls and expert programming, you can count on us for unparalleled accuracy and performance, ensuring your devices operate flawlessly.



Streamlined Manufacturing Process

Take your product from concept to market with ease by leveraging Laser Wire Solutions' state-of-the-art manufacturing capabilities. Our advanced technology ensures that every wire is stripped with pinpoint accuracy, perfectly tailored to your specifications.

Whether you're in the prototyping phase or need high-volume production, we deliver consistent, high-quality results that give you a competitive edge.



Reliable Delivery and Packaging

Rest easy knowing that your wire spools will arrive securely packaged and ready for immediate use on your assembly line. We ensure perfect part-to-part length accuracy with demarcation nicks, so each spool is exactly as you need it.

At Laser Wire Solutions, we don't just deliver wire—we deliver peace of mind, knowing that every detail has been handled with the utmost care.

Service & Support

Regular maintenance and servicing are vital to ensure the smooth operation of your machines.

We will assist you in maintaining a high production level with the quality you need throughout the entire life cycle of your machinery.

Technical Support

System upgrades and troubleshooting support provided on-site and remote.

Install & Servicing

Installing ready for use and keeping your operations running smoothly.

Training Packages

We can provide introductory and customized training package on installation.

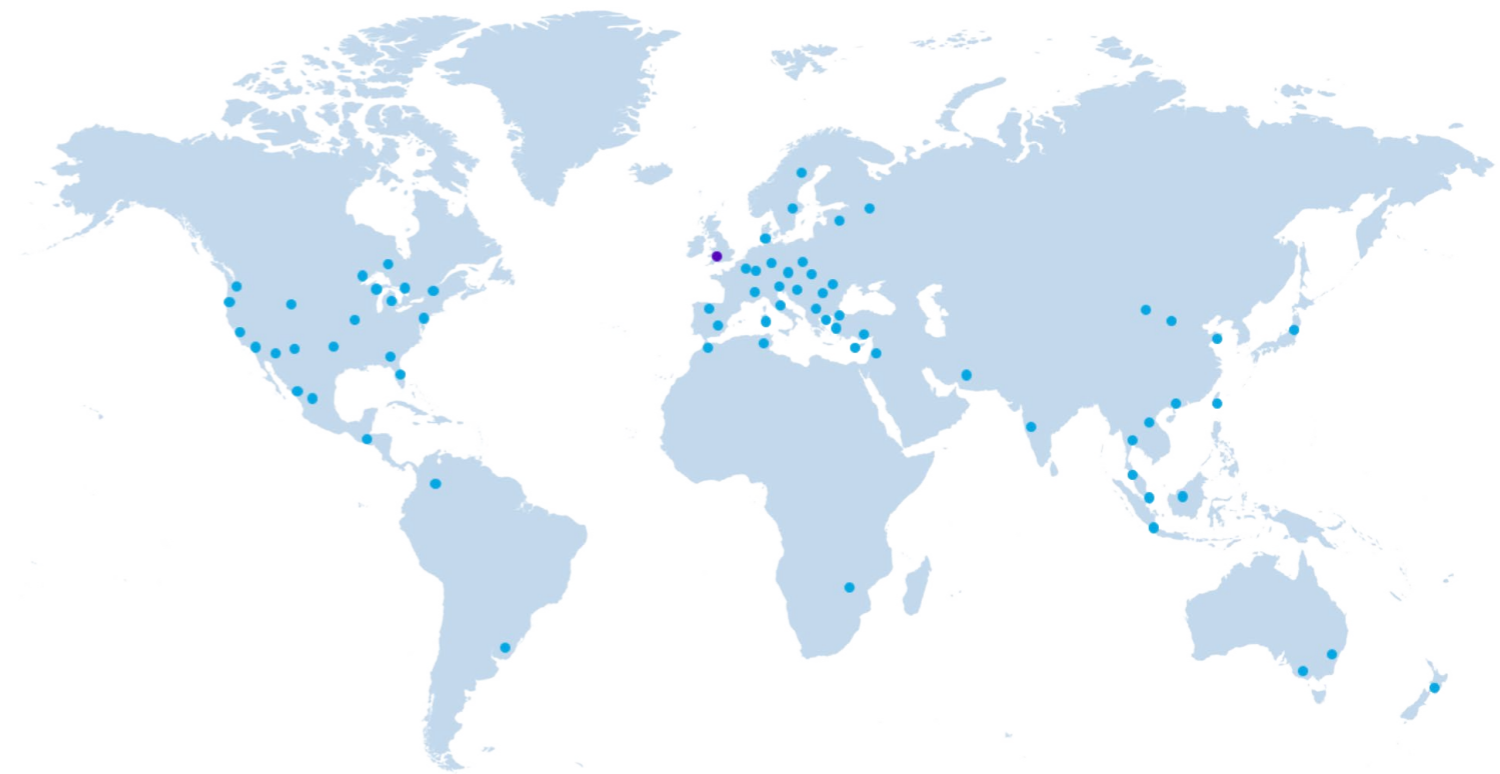
Extended Support

At the completion of the 12-month warranty period we offer two routes for customers to ensure we continue to provide ongoing support.



Field Service & Support Engineers

Blue chip companies around the globe trust us to carry out expert installations and services on their Laser Wire Solutions machines. We have a team of service engineers who work closely with each machine before shipping so they know how best to install and service them too.



Distribution Partners

Our distribution partners speak your language. With partners located across Europe, North America, Mexico and Asia, our expert team is well prepared to help you find the right solution for your precision wire stripping needs. Our partners are also trained to provide you with initial support with your products when needed.



LASER WIRE
— SOLUTIONS —

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