

APPLICATION NOTE

Stripping of plastic insulation with excimer and TEA CO₂ lasers

AMS Technologies can supply gas lasers suited for stripping of plastic insulation of wires and other items, like hydraulic tubing for brakes. Excimer and TEA CO₂ lasers enable clean, non-contact stripping of a wide variety of wire and insulation types. They are standard industrial tools wherever mechanically fragile wires are used.

The Impact™ TEA CO₂ lasers have proven to be a uniquely valuable tool for wire-stripping and other fine processing applications in medical device manufacturing, often offering an extremely cost-effective alternative to excimer lasers.

Below we show a number of typical stripping examples done both with excimer and TEA CO₂ lasers from LightMachinery.



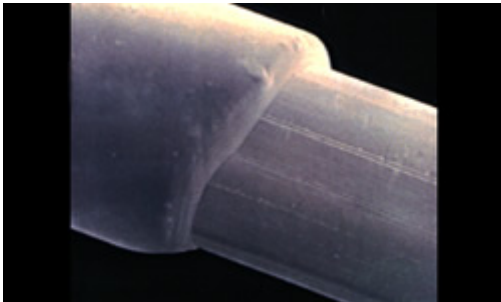
Single-conductor stranded, 0.0075" diameter, wire with a 0.00125 thickness ETFE insulation, stripped with an IPEX Excimer laser.



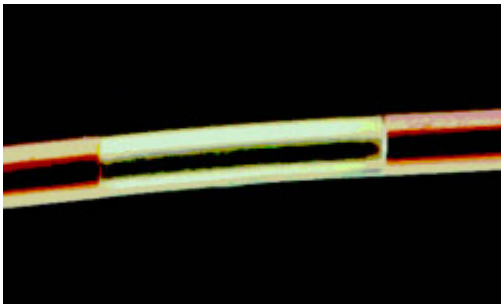
The high absorption of the 9.3 μm wavelength in most polymer materials, combined with the short pulse duration of TEA CO₂ lasers, means that Impact lasers mimic the photo-ablative process of Excimer lasers, at ~50% of the capital cost, <10% of the operating cost, and generally higher throughput.



Bifilar solid core wires, 0.014" wire diameter, 0.003" thickness insulation, stripped with an IMPACT TEA CO2 laser



Example of Excimer laser stripping of fine gauge wires for hard disk drives. Very clean insulation removal, no loose particles and no damage to the core conductor. This is a gold/copper 47 gage wire, 50 microns in diameter with 8 microns of polyurethane insulation.



Heavier Gage wire stripping. 14 gage wire, 2mm in diameter, insulation 12 microns thick. Wire has been stripped only from one side, a common requirement easily accomplished with an Excimer laser.



Excimer laser wire stripping; a single 50um wire, with polyimide insulation.