

Reworking used mirrors pays its way

Finding ways to cut costs is more important than ever which is why our reworking service is proving to be so popular.

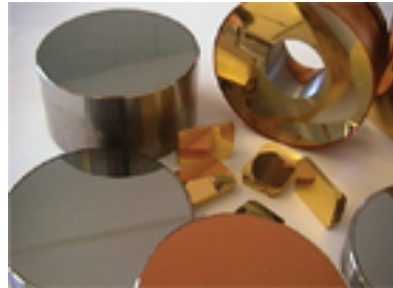
Recently one of our customers, an international steel manufacturer has *saved over £8,000* by reworking used mirrors, rather than replacing them.

By repairing and refurbishing your own laser mirrors, you could be making substantial savings.

We have been reworking copper and silicon mirrors so they are **as good as new**, saving customers the cost of a replacement.

This is particularly effective for water-cooled, large or unusual shaped mirrors. And we can coat your mirrors for cavity use, beam delivery or phase retarders.

By recycling valuable materials such as copper and silicon, reworking your mirrors can contribute towards ISO14000 certification, as well as making commercial sense.



Saving time and money

It's not just industrial CO₂ laser mirrors that can be reworked, mirrors from gas analysis equipment and scientific instruments can be degraded after exposure to corrosive elements in gases or the atmosphere. Some of this equipment is not supported by the manufacturer, so having the mirrors repaired or copied is the only option.

NEW FOR Autumn 2009

.....**Protected Silver Coating for broadband 1-5 microns**

.....**Gold coated Aluminium mirrors for medical and dental lasers**

.....**CO₂ laser mirrors available up to 150mm diameter**

Improved productivity

"We have 2 specialised 3.5Kw laser systems that are used to cut detailed images in paper.

The optics have been a bespoke purchase from the USA, but we have started to have them re-worked at Laser Beam Products. They have polished and recoated copper optics for us in the past, and recently did an excellent job resuscitating a special Molybdenum mirror with some particularly nasty surface marking. Great turnaround times have meant we have been able to maintain our usual product quality and customer response times.

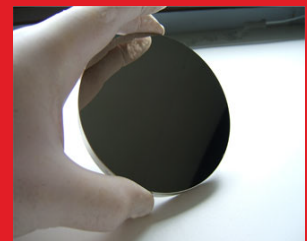
Richard Dyson, "Trilogy Laser-craft Ltd"

FREE UK Collection

If you are based in the UK, we will arrange to pick up the mirrors from you, **FREE OF CHARGE**. Simply email or call us with as much information as possible about your mirrors, and we will do the rest.

Telephone: +44 (0)1767 600877

Email: sales@lbp.co.uk



Reworked Mirror

Recent case studies

Case Study 1: Gold Mirrors 5mm Diameter

Small mirrors are always a challenge so when a medical device customer asked for Gold coated Copper mirrors just 5mm diameter and 1mm thick we developed the manufacturing process.

Since no chamfer was allowed, the mirrors could only be handled by wooden tweezers to avoid damaging the edges, and surface inspection was performed using a 80X video microscope.



There were no tooling, or set up charges and the first production run was just a few pieces for trials. Now in production we have made many hundreds, and slightly larger versions at 10mm diameter made from Gold coated Aluminium. As many mirrors are used in a system, that is aligned with a red diode laser, the smooth polished surfaces allowed the alignment laser to transmit without scatter, and minimal reflection loss.

Case Study 2: Govt Research Laboratory

Multi pass IR spectroscopy of gases requires a pair of carefully controlled concave mirrors, one of which will have an offset through hole for the laser light to enter and/or exit. Since the gas being analysed could contain acidic species, Gold coated mirrors were specified to give both broad reflectivity with the Quantum Cascade Laser source, and to avoid corrosion of the mirrors.

The mirrors were 150mm diameter and had several tapped holes in the rear to facilitate mounting. The through hole was tapered to allow the incoming and outgoing QCL beam into the multipass cell.

The mirrors were chemically polished to super-smoothness, and the gold coating applied all over the mirror including the inside of the through hole for maximum corrosion resistance.



Case Study 3: Silver coated Aluminium mirrors with extreme parallelism

LBP recently supplied a series of Aluminium mirrors coated for high reflectivity in the 1-6 micron spectrum. Additionally the mirrors needed to be coated over the whole mirror face, including the very edges. Standard coating tooling allowed this to be done with no extra cost, and took just 1 week. The extreme flatness of the mirror was unchanged after coating, and the surface quality was better than 10-5 Scratch:Dig

The customer asked for flatness to be measured over a pattern of 20mm diameter test zones, this was easily done on our phase shifting interferometer and the results individually recorded and shipped with the mirrors. Double sided lapping ensured the mirrors were

parallel to within 2 microns and certified with Fizeau interferometry. We have since made metal mirrors with better than 1 micron parallelism.



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sample reworked mirror

Telephone: +44 (0)1767 600877 or Email: sales@lbp.co.uk