

Breakthrough in laser marking for precious metals

For a period spanning over two years, the Birmingham Assay Office has investigated the possible application of laser technology for the marking ('Hallmarking') of jewellery and allied products.

Investigation into - and the assessment of - the technology started in the Czech Republic and Russia. Both countries had introduced 'lasers' for the marking of jewellery prompted by problems they were experiencing in illicit trade which had been growing in the area of counterfeit 'punched' marks within their territories.

A visit to the Czech Republic in Prague confirmed that the quality of the laser marks they were applying were impressive. This convinced Birmingham Assay Office that the technology could be developed further in terms of both its versatility to mark an increasing product range of finished jewellery coming into the U.K., that could not be marked by conventional methods without bruising (damage), and also had the

ability to provide more intelligible hallmarks to the benefit of the consumer.

The technology developed in the Czech Republic was based on a laser beam fired through a mask or stencil. Generally only one symbol was applied. The system worked exceedingly well but the Birmingham Assay Office felt that it lacked the versatility of a CNC controlled system and there was some doubt as to whether the Republic's system would comply to EU Health & Safety requirements.

As a consequence, the Birmingham Assay Office decided to investigate laser marking in more depth. The concept of carrying out the process of hallmarking by use of a laser with an integrated computer system was pursued where the depth of cut and pattern of mark could be accurately controlled. After many months of evaluation much progress was made.

They have now developed a quality of mark on products which, in most cases, is equal to and, in many

cases, more intelligible than a struck mark on products which cannot be satisfactorily marked by traditional methods due to the articles being too fragile. Laser marks do not cause distortion or bruising, which reduces substantially any finishing costs after hallmarking and prior to the sale of the product. This is another significant advantage.

The Birmingham Assay Office is the first U.K. Assay Office to introduce this technology and it is the first fundamental change to conventional marking by punches for several hundred years.

In October 1997 a Regulation of the British Hallmarking Council approved the concept of carrying out the process of hallmarking by use of a laser. Other Assay Offices have since decided to adopt laser marking post-haste following this consent.

At a meeting of the International Hallmarking Convention held in Helsinki - May 1998, it was agreed by all Member States that laser marking would also be permitted under the Convention.

Lasers have, of course, been used in industry for many years and more recently in the jewellery industry for surface decoration, but this initiative pioneered and developed by the Birmingham Assay Office, using state-of-the-art technology, is a first for Europe. This concept is ideally suited for those products which cannot be marked satisfactorily by the conventional method using punches, such as some traditional Indian gold jewellery. It is a non-impact method and therefore does not result in the 'sinking' and bruising damage usually associated with the hallmarking of hollow and fragile articles.

The consumer and retailer also benefit from the larger and more legible marks which can be applied. As a further development of the laser



Figure 1 - The laser marking equipment

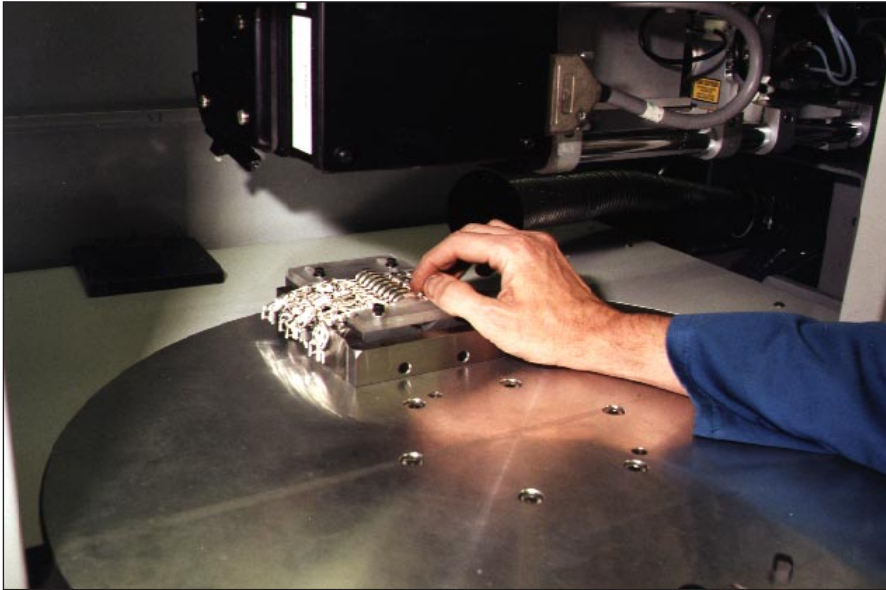


Figure 2 - Close up, showing jewellery being positioned

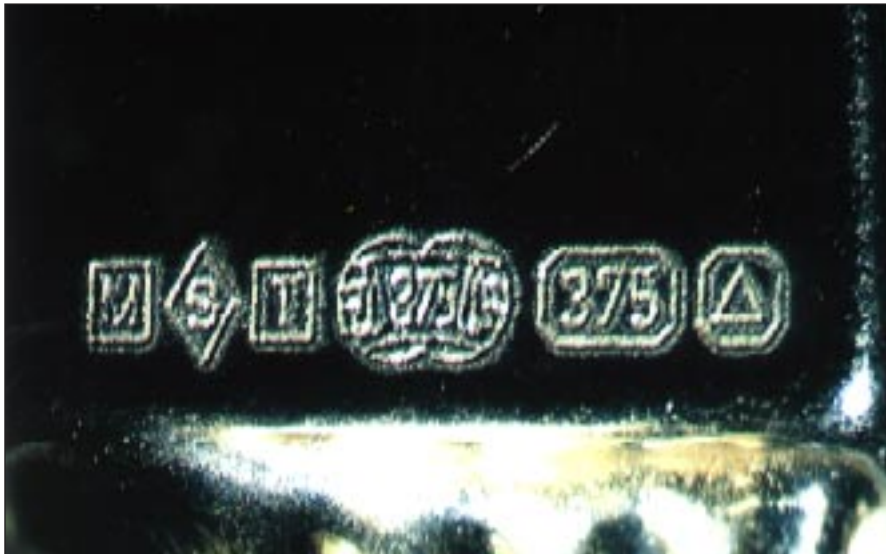


Figure 3 - A laser hallmark on jewellery

technology, customer logos, pattern numbers and sequential serial numbers can be applied if required. This facilitates implementation of Quality Assurance requirements such as traceability

The Birmingham Assay Office is constantly looking at ways it can improve the service to its customers, and is aware of the need to keep pace with any technological advances that can be applied to the jewellery and allied trades. This is a major innovation and is expected to be of considerable interest to the industry worldwide as assurance of jewellery quality becomes increasingly in demand.

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