We provide a trusted and innovative total manufacturing capability for highly complex electronic integrated systems, sub-systems, modules and printed electronic circuit assemblies where quality is paramount. Our ethos is to add value through our people, scale, capability and engineering know-how, allowing us to provide a vital advantage to our customers where it counts.

**SEM**

**Bench top Scanning Electron Microscope**

Excellent for analysing contamination, process effects on material, material structure and clearly seeing ageing effects that may be otherwise hard to spot using conventional scopes.

This facility is incredibly easy to use and allows us to understand complex material and process interactions. The image below helped us optimise laser parameters and reduce the risk of thin film metallisation delamination within via holes.

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**X-ray fluorescence**

**Non-destructive and non-contact analysis of multilayer films and coatings**

Uses a collimated beam of x-rays and subsequent energy dispersion to analyse materials present.

**Key features:**

Elemental analysis as low as <10ppm

Electroplating thickness measurements +/-0.1um

This capability provides valuable information on the make up of our thin film sputtering and plating as well as identifying any contaminants/corrosives present in more traditional build processes.
Surface topography
Talyscan 150: 3D surface topography system
Used to measure feature variations ranging from extremely delicate thin film patterns through to the surface flatness of item housings. The 3D image negates the need for a sacrificial item to carry out destructive batch testing.

Key features:
Can measure surface flatness to within 0.5 µm. Step height of 0.25 µm
This facility removes any error associated with both human and automated operation with regards to ‘shadowing’ in standard optics that were used prior to the Talyscan.

Non-destruct pull testing of gold ribbon
It is known that failures can occur at the bond heels of gold ribbons after many hundreds or thousands of thermal cycles; this is in the most part due to longitudinal and lateral movement of the two assemblies being bonded to. See diagram for pictorial example of the potential failure area.

Once this movement has been minimised by design it is then essential that we ensure we have built non-destructive preventative quality checks in to the manufacturing processes involving gold ribbons. This is done via pull-testing, where a test wire is bonded on each substrate and subsequently pulled to a pre-programmed load, dependant on the ribbon size, to check for both bond and ribbon integrity.

Photo illustrates some test bonds that are carried out during each set up of the bonding machines prior to production use.

X-ray
The real time focus x-ray system is ideally suited for batch inspection and quality control activities. From the images below it is clear to see how this capability is advantageous not only in inspection but also in assisting preventative engineering by enhancing production processes before a problem is built in to a design.

The main advantages to manufacturing are in detecting the quality of welding, bonding, soldering and component and material structures, the system has a number of different uses.

For more information contact:
BAE Systems Maritime Services
Broad Oak, The Airport, Portsmouth
Hampshire, PO3 5PQ, United Kingdom
E: elect manufacture@baesystems.com
W: www.baesystems.com/electronicmanufacturingUK

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