



# CUSTOM INTERCONNECT LTD

Award winning  
Design and Manufacturing Services  
For the Electronics Industry



Officially “Best Small Company” in the UK

# A One Stop Shop

Whether you need PCB assembly including BGA's, In-House X-Ray Inspection, Die and Wire Bonding, full Box Build, complete project management including CAD Design, from prototyping, or runs of just 100 boards per batch, to fully automated production with up to 50 million placements per year, CIL offers you a true one-stop resource. CIL's integrated facilities will provide you with the total solution, essential to your contract electronic manufacturing requirements. Our highly trained staff has a wealth of experience and is here to advise and assist. We pride ourselves on a fast and flexible response to customer demands. You can be confident that we will surpass your highest technical and commercial expectations.

## Proven Track Record

CIL was established in 1987 and has grown steadily to become a major contract electronics design and manufacturing company, covering a broad and diverse range of technologies. Due to this continuing growth in June 2005 CIL relocated its entire business to its current 22,000 sq ft facility in Andover, Hampshire and in September 2006 was voted "Best Small Company" at the prestigious Best Factory Awards hosted by Works Management and the Cranfield School of Management

## Quality

As you would expect from a company with a proven track record, CIL has full third party approval of its systems and operating procedures to UKAS approved ISO 9001:2000.



Capability

## Technical Excellence

The latest technologies and very modern machinery are employed to ensure the very highest standards. From CAD Design, Latest pick and place systems, through to X-Ray, flying probe ATE and “State of the Art” Chip and Wire bond facilities, the CIL system is simply the best.

## Total Solutions

The CIL System offers customers the advantage of a total solution. We have the resources to efficiently progress your project from concept to full production. CIL is here to assist customers with “design for manufacture and test”. Our design and production engineering departments can offer guidance at any level to ensure a smooth transition from concept to product realisation. As well as Circuit design / PCB layout, full material management and procurement, kitting, or build to print assembly service from free issued material is available.

## In-depth Capability

Facilities include fully automated SMT or Thru Hole PCB production and prototyping through to full product assembly. CIL also offer a full Die and Wire bond facility complete with micropackaging capabilities. Our combined electronics, mechanical and project management expertise provides a total package, in-depth and in-house. Should you require a clean room environment, CIL has a temperature and humidity controlled area.

## Surface Mount

PCB assembly can be manual, semi, or fully automated, using pick and place machines with full vision capability. These machines are currently populating all SMT package styles including BGA's / uBGA's ceramic BGA's/QFP's/GPS Modules/Fine pitch/0402 components.



### CIL's SMT Assembly Area

CIL has 4 fully automated SMT assembly lines with:

- 3 off Speedprint SP880avi solder paste screen printers with vision systems capable of solder check and SPC data collection.
- 1 off DEK HORIZON 02i with Hawkeye print verification
- 1 off MIRAE 1030/1020P with SP880avi in line printer
- 1 off MIRAE 1030/1030P DEK Horizon 02i in line printer
- 1 off MIRAE 1030/1025P with SP880avi in line printer
- 1 off MIRAE 1030 with SP880avi in line printer
- 4 off QUAD QCR Top and Bottom heating convection reflow ovens, all of which is processing lead free product

Support facilities include:

- DAGE XD7600 Digital X-Ray Inspection System
- MARANTZ M22XDL450 AOI Automatic Optical Inspection
- TERADYNE Z1820VP ICT ATE
- TAKAYA APT8400 Flying probe ATE
- JTAG and XJTAG Boundary Scan test
- ERSA PL550A SMT/BGA rework station.

Your requirement calls for short production runs? Hundreds of complex boards? Tens of thousands of simple boards with just a few components on each? CIL has the skills and flexibility of resource to respond promptly and effectively, whatever your requirement.

Solutions

# Through Hole PCB Assembly

CIL also have extensive investment in conventional PCB production facilities. Assembly can be undertaken using machine manual insertion. Our plant list includes:

- TYCO OPUS 3 Selective Soldering System with Nitrogen
- Electrovert fully PC controlled wave solder machine using either No clean or water soluble flux systems
- FORMAT III Axial and radial Cut and Crop machine



Selective soldering



Flow Soldered PCB Assemblies



## Advanced Manufacturing

CIL has built up a reputation in leading edge technologies, which provide its customers with higher levels of miniaturisation. It is currently the largest independent Chip and Wire facility in the UK and has built up extensive expertise in the following area.

### Die bonding

CIL provides both conductive and non-conductive die bonding using both epoxies and eutectic solders. Using “state of the art” equipment, we are capable of both large throughputs of in excess of 400,000 die/month but also very high precision with placement accuracy of less than 10 microns and 0.1 degree of theta. The die bonder’s are used for a variety of die types including ASIC’s/MEM’s/LED’s/Detectors/Sensors and all commercially available die types.

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We are able to bond these die to a variety of substrate materials including FR4 / Alumina / Metallised Ceramic / Carbon Fibre / Thick Film / Thin Film / Flexi PCB and Glass as either single die or multi die arrays for Chip Scale Packaging (CSP's). CIL has gained extensive expertise in the bonding of Opto-electronic die with batch sizes up to 80,000 per month using the following equipment:

- ASM AD809 Fully Auto Die Bonder
- HACKER VICO 520P Fully Auto Die Bonder
- Dynapert DB600 Manual Die Bonder



CIL's Die Bond Area



Auto Die Placement

## Wire Bonding

Complementing CIL's Die bonding capability is its Wire bonding capability where both Aluminium Wedge and Gold Ball Bonding technologies are available using the very latest machines. We have invested in this area heavily over recent years so that we now have 2 fully automatic Aluminium wedge bonders and 1 fully automatic Gold ball bonder capable of very small pitch geometry's, in batch sizes from 1 off to 100,000 off.

These machines when coupled with our high precision die bonder's give CIL a capability that is unmatched by any other independent facility in the UK. Equipment is as follows:

- ASM AB559 Automatic 30 Deg Aluminium Wedge Bonder
- ASM AB559A Automatic 60 deg Aluminium Wedge Bonder
- F&K Delvotec 6200 Fully Automatic Gold Ball Bonder

Other support equipment includes:

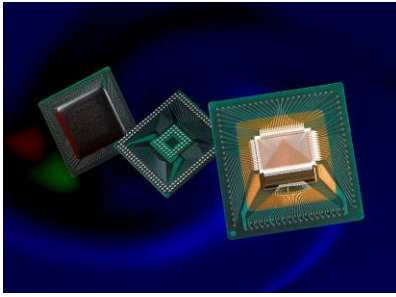
- Orthodyne 250um Heavy gauge Aluminium Wedge Bonder
- DAGE SERIES 4000 Wire bond pull/Die shear tester
- 2 off ASYMTEK full auto Dam and Fill Glob Top machines
- MEIJI X1000 Inspection Microscope with colour monitor
- HUNTER Z check non contact thickness measuring system



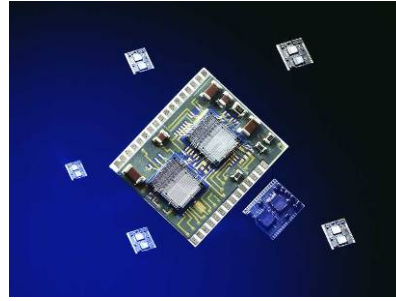
CIL's Auto wirebonders

## Micropackaging

To take full advantage of CIL's "state of the art" chip and wire facility, we have backed this up with a micropackaging capability including Chip on Board (COB), Chip Scale Packaging (CSP), Multi Chip Modules (MCM), Thick Film Hybrids and Custom BGA's. These can all be designed and fully manufactured at CIL's facility. As well as standard packaging technologies, we currently manufacture a large number of custom designed assemblies that give our customers a significant edge in their market places. Using exotic materials such as Carbon Fibre, Thin film, Flexi circuits and UV cure materials / adhesives, ensures that we are able to keep our customers in front of their competitors. It is this facility that enables CIL to offer its customers advanced packaging techniques with applications such as custom BGA packages. Customers are coming to CIL with custom silicon die / ASIC's and CIL is able to design and manufacture a custom BGA package for that die. This ability when coupled with CIL's advanced SMT placement and in house X-Ray Inspection facility allows CIL to offer a service that is not available anywhere else in Europe.



CIL's Custom BGA



Multichip Modules

## Inspection & Test

Here at CIL we understand the importance of monitoring our own performance, to ensure that we live up to the trust you have shown in placing your business with us. The ability to deliver a product of the highest quality has been a cornerstone in building and maintaining our many successful, longterm partnerships. Our manufacturing centre is equipped with some of the most sophisticated test and inspection equipment currently available and includes statistical reporting.



### **CIL's MARANTZ AOI / TAKAYA Flying probe ATE / TERADYNE ICT ATE**

Equipment includes:

TERADYNE Z1820VP ICT ATE is CIL's preferred method of test for all complex assemblies. This in-circuit-test ATE equipment is able to test ALL components both passively and actively as long as the PCB has been designed for test.

**Reliability**

CIL's engineers will project manage the manufacture of a dedicated test head and associated test program that enables this machine to provide 100% test coverage of all circuits, thus guaranteeing that when shipped 100% of assemblies are working units.

TAKAYA APT-8400 CE/CJ "Flying Probe" fixtureless automatic test system. The Flying Probe ATE requires no costly dedicated test fixtures. This makes state of the art automated testing a realistic option even for small build quantities. As well as the Flying Probe tester we also have standard stand alone and customer supplied custom test equipment operated by qualified and trained staff.

DAGE XD7600 XiDAT (X-Ray Integrated Digital Acquisition Technology) Sub-micron X-Ray Inspection System. The XD7600 is the very latest on the market and CIL were the first company in the UK to purchase this system. Whilst primarily used for BGA/uBGA inspection, it is also used for the X-ray inspection of any assembled product/part. When used in conjunction with the Flying Probe ATE this machine also is part of CIL's continuing program of ensuring that its processes are under control. In the modern manufacturing environment, you not only have to build the product correctly, you have to prove you have built it correctly and without these diagnostic machines that is not possible



**DAGE XD7600 X-Ray inspection**

MARANTZ M22XDL450 Automatic Optical Inspection / AOI system. This system in conjunction with our other test platforms allows CIL to offer the complete range of test solutions. The need for AOI inspection was driven by the complexity of products now in manufacture at CIL with some assemblies now having in excess of 2000 components with components as small as 0201. When processing both small and large quantities of these assemblies it is impossible for normal inspection methods to be applied as we are looking for very low levels of defects

JTAG / XJTAG Boundary scan

As well as the ATE based test systems we also have both JTAG and XJTAG Boundary Scan test platforms. We are also able to offer this test solution and assist all customers with JTAG / XJTAG programming.



**JTAG**  
Technologies

## Fast Turnaround Prototypes

CIL's manufacturing ethos is where possible, to automate everything to eliminate the labour and so reduce costs and lead-times to its customers. Technically advanced optical inspection, test and assembly aids are integral to our production, ensuring a service of the highest quality whilst remaining cost effective. As well as full production CIL is able to offer fast turnaround prototypes in any of the areas mentioned above, and when coupled with worldwide component procurement, we are able to offer a true "One stop shop" across a breadth of technologies. Using its fully automated SMT lines with fully automated Chip and Wire facilities and TAKAYA Flying probe test, CIL can turnaround fully assembled and tested assemblies faster than probably any other independent facility in the UK. If you are new to CIL the usual question is, "are you busy?" and the answer is always "yes we are busy;" because this facility and know how is always in demand in our ever changing world.

## Customers and Applications

By working closely with our customers we can build relationships which enable us to offer fast, flexible responses and deliver precisely to your requirements. Successful partnerships leading to growth benefits for both parties depend upon finding the right partner, with the right capabilities and the right attitudes - CIL has the will and resources to provide customers with a service second to none, from prototype through to finished product. Our extensive capabilities allow us to support a broad range of market sectors:

- Broadcasting
- Industrial
- Instrumentation

**Best Small Company**

- Medical Equipment
- Military
- Scientific
- Telecommunication
- Transportation

## Staff and Training

The greatest asset of any organisation is its people. At CIL we place great emphasis on the training and development of staff to keep pace with evolving technologies and techniques in all aspects of manufacturing. We have received recognition for this, both locally and nationally and in September 2006 were finalists in Works Management / Cranfield School of Management Best Factory Awards where we were awarded BEST SMALL COMPANY in the UK, where their definition of a small company is less than 500 employees.

## Your Contact

We invite you to test our award winning service, please contact CIL today



Custom Interconnect Limited  
CIL House  
Charlton Road  
Andover  
Hampshire  
SP10 3JL  
Tel: +44 (0)1264 321321  
Fax: +44 (0)1264 321329  
e-mail: [sales@cil-uk.co.uk](mailto:sales@cil-uk.co.uk)  
Web site: [www.cil-uk.co.uk](http://www.cil-uk.co.uk)