

Custom Interconnect Limited

*The Specialists in
Services and Solutions...*



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A Total Solutions Provider

Custom Interconnect Limited has a proven track record in the manufacture of electronics Printed Circuit Board Assemblies and the provision of complete Product Build, ready tested and delivered to their Customers, or indeed the end user.

We provide a single source capability from the procurement of all required materials, and complete electronics production including:-

- Bare Die Bonding, Wire Bonding and micro-packaging of Electronics
- Surface Mount Assembly and verification
- Conventional Assembly and Specialised Soldering
- Product testing, including X-Ray, AOI and Flying Probe Testing
- Product assembly & testing, a complete box build service
- From Prototype quantities, requiring our unique "Rapid" service to full production volumes using the benefits of our Global Sourcing of Materials and our established production methodology, rapid@cil-uk.co.uk

Our History

Custom Interconnect was formed in 1987 and has grown steadily to become one of the major Electronics Manufacturing Service companies available today. Located in Andover, Hampshire, in the United Kingdom our 2 manufacturing facilities comprises 33,000 sq ft of modern production space.

Environmentally Controlled with Full Anti-Static Flooring at Both Sites CIL can provide you with one of the premier manufacturing facilities available in the UK. Our fully integrated Business Control system gives us the visibility and planning tools required to ensure that we have sufficient materials and resource available to meet your manufacturing needs.

Having developed a number of Industry Sector teams, we can provide cross functional teams which understand the needs of our customers, both existing and new; these specific skills extend into the production teams where people understand customers needs and desires, a unique but highly important perspective on the "Customer".

Our Customer Markets

Supporting Customers across the United Kingdom, and within mainland Europe, extending into the Americas and Australasia, CIL also operates across very diverse markets, a few primary ones are detailed below:-

- Down Hole Oil and Gas
- Nuclear and Petrochemicals
- Home Land Security, Border Control and Counter Terrorism
- Military, Naval Systems and Avionics
- Marine Rescue, Location and Distress Beacons
- Medical Devices and Research Projects
- Transport Infrastructure, ANPR, Security and Safety Systems
- Professional Broadcast, Audio & Video equipment
- High Powered LED, visible & non-visible sources



Custom Interconnect Limited engages with clients from product conception to mature production and post delivery support services. It is accepted by CIL these partnerships' require understanding and commitment and adaptability, flexibility and responsiveness is key to partner success. CIL's team has an established level of expertise and the all important willingness to continue to continue to learn with our clients.

Quality Assurance Arrangements. Environmental and Health & Safety.

ISO9001 2008 and AS9100 Rev C remains the backbone of our Business Control System and compliments well our existing ISO13485 approval, which covers the manufacture of Medical Devices.

Our Control systems observe the legislative requirements of Health & Safety under a BS OHSAS 18001 framework and this will be ultimately transferred to the ISO 45001 standard which is due for release during 2016. Our guidance for all Controls relating to the preservation of the Environment is taken from the ISO 14001 standard, and we have published Policies and Codes of Practice in support of all these internationally recognised standards.

Our Quality Assurance Team understand the requirements needed to support the traceability and associated production records required for devices which are mission or in-service critical, and construct appropriate History or Record systems required for all projects.

The achievement of required Product Quality Standards is a given at CIL and we continue to strive to exceed and improve, a trait which has held us in good regard within the High reliability market sectors. IPC standards are adopted as the specific standard and codes of practice issued or referenced by our Customers.



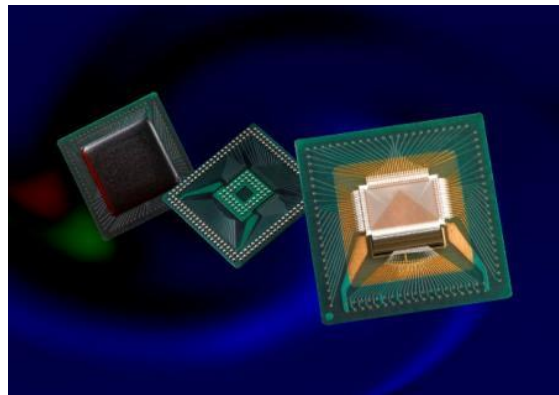
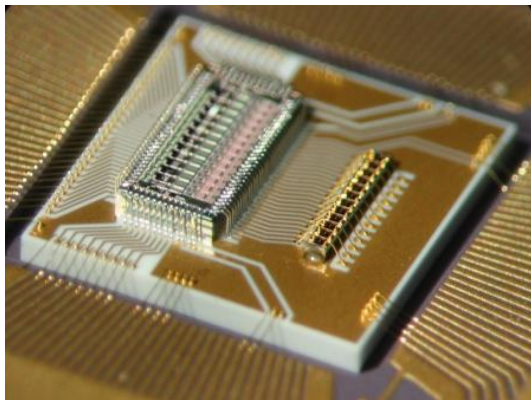
Advanced Manufacturing, (Micro-Packaging).

Custom Interconnect Limited is the Largest Independent "Chip & Wire" facility within the United Kingdom, and has an established reputation for providing outstanding Engineering Solutions to Technical Problems. This being one of our foundation skills we have accumulated extensive knowledge and expertise in the following key disciplines:-

- Thick Film Hybrids
- Custom BGA's, (Ball Grid Arrays)
- Placement and bonding of complex optical devices, sensors and arrays
- Multi Chip Modules & Chip Scale Packages
- Chip on Board and Chip on Flexible Circuits
- Re-Packaging of Silicon Die within bespoke solutions.

And combinations thereof...

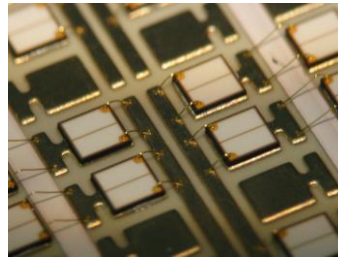
Work of this nature is conducted within a dedicated "Clean" and environmentally controlled areas, the following manufacturing disciplines are managed by CIL Engineering.



Die Bonding

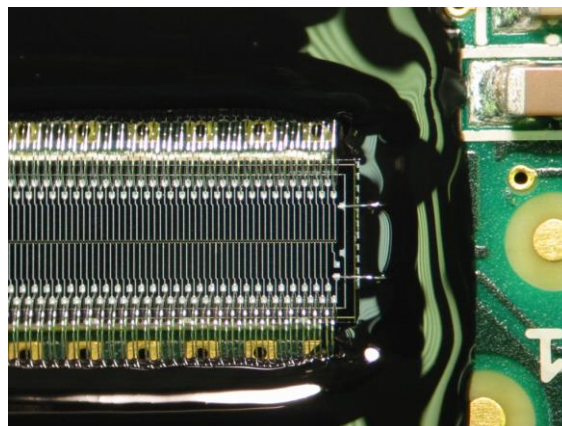
CIL Advanced Manufacturing provides the attachment of bare die using conductive and non-conductive die attach materials, both adhesives and eutectic solders. We process production volumes of several 100,000 die per month down to single projects for "Proof of Concept" or prototypes.

Our placement capability in terms of positional accuracy is less than 10 microns X & Y and theta accuracy of 1.0 degree. Experience and running production quantities of ASIC's/MEM's/LED's/Detectors/Sensors and all commercially available die types.



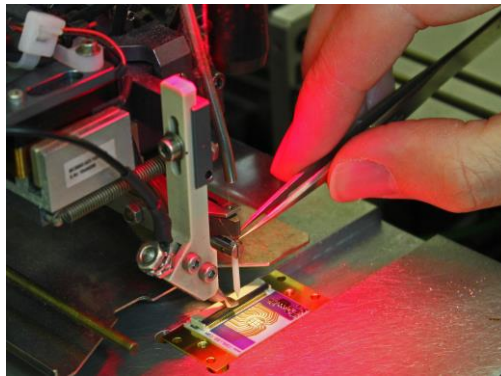
We are able to bond die to a variety of substrates, and as new or revised materials and structures become available we are able to conduct shear testing in-house and ensure that appropriate standards for die attach are met.

- FR4 Laminates, including flex-rigid
- Alumina or other Metallised ceramics
- Carbon Fibre and Steel
- Thick Film & Thin Film
- Polyimide rigid and flexible



Wire Bonding

Fully complimenting CIL's Die Bonding capability is its fully automated Wire Bonding, where we can use both Aluminium and Gold Wire Bonding, utilising "Wedge" and "Ball-Bonding" formats. Couple this with our Automated Die Placement and we can provide an automated volume based solution. Our processes require strict control and we can achieve this using our QA Wire Pull testing station and can accommodate a number of wire diameters. Following die placement and wire bonding we can also provide an encapsulation, or glob-topping service subsequent to complete device testing.



Advanced Manufacturing Support Facilities

CIL's expertise and experience is available for our Customers and we are well placed to assist and advise on methods, process selection and the materials available. We can fully support projects and are able to combine our own expertise with that of our other Industry partners and suppliers, so that best economic and quality levels are always attained. Our in-house resources such as Digital X-Ray and non Contact 3D measurement, Flying Probe Testing and Temperature Cycling are also available as project control tools.

Surface Mount Assembly & Verification

General

Custom Interconnect Limited has within its Electronics Manufacturing Facility 6 fully independent Surface Mount Assembly Lines, comprising in-line Automated Solder Paste screen print, High Speed Placement of Surface Mount Devices and Multi-Zone Re-Flow.

In addition to the very latest in solder print technology the Mydata MY500 Solder Jet Printer, all of our Solder Paste Screen Printers operate with an integral Paste verification system prior to placement, and Manufacturing Capability for component placement through our Surface Mount Assembly is from 01005 Chip components to larger 55mm square devices.

Reflow Soldering can be achieved using our multi-zone reflow systems and can be soldered in a Nitrogen Environment using high reliability solder pastes.

Batch sizes we can accommodate are from low quantity early models to the higher production volumes, and everything in between. Complexity extends from the very simple to high complexity double sided multi-layer assemblies utilising a variety of substrates, including the high temperature Polyimide and specialised RF base materials.



Solder Paste

Solder Paste Screen Printers are Speed Print SP880avi and DEK Horizon 02i with Hawkeye verification Software, are complimented with a Mydata MY500 Jet Printer which provides CIL with the versatility we need for early model production and the ability to process and apply paste into cavities and for applications such as stacked components.

Placement Stations

CIL is equipped with both Tyco Mirae family of placement stations and the next generation of Mydata Speed Placers, with a total of 10 placement stations CIL has a very high placement capability, but more importantly it give us overwhelming flexibility within our manufacturing resource. In terms of our Technical capability we are currently placing 0201 chip components every day of the week and all of our machines are capable of placing 0402 devices and are doing so. We are constantly evaluating our capability to market trends in components and are already prepared for some of the WSP and CSP Packages becoming available.

Reflow-Soldering

CIL operates within the High Reliability and High Temperature market sectors and accordingly process many High temperature Laminates and substrates, therefore we possess high capability multi-zone reflow soldering machines. All Projects are assessed as part of our NPI, (New Product Introduction) processes and re-flow profiles established based upon the thermal characteristics of the layout and the components used, this becomes an established critical process parameter.

Re-Flow Soldering can also be achieved in a Nitrogen environment ensuring that no oxidation of substrates or solder surfaces can occur during the reflow soldering process.

Surface Mount Assembly Support Facilities

Our Engineering and Customer Support Group possess an extensive experience in the processing of PCB's containing a wide variety of components and are available to assist and advise on all new projects. Process Verification is achieved using our in house X-Ray, Automated Optical Inspection and Flying Probe Testing and the base industry IPC 610 standards as levels of acceptability.

Our Bake-out and in-process storage facilities are paramount to achieving high reliability electronics and where specified components and sub-assemblies are pre-baked or conditioned prior to controlled storage within Nitrogen charged & Temperature controlled cabinets.

Choices are available for Solder types, such as "Clean" or "No-Clean" and Un-Leaded or HMP type solders including Leaded, and SAC305 solders.



Conventional Electronics Assembly

General

The market tendency and increase in the variety of Surface mounted solutions is for the reduction in Conventional Assembly of electronics, inevitably it continues with many wound and power devices and interconnect. Within CIL's markets of Oil & Gas, Defence & Homeland Security we continue to provide a great deal of Conventional Electronics manufacture.

We use a combination of single work stations, flow-lines and light-guided assembly stations, operating to standards of workmanship; IPC 610 levels 1 & 2 target conditions.

CIL is able to provide specialised soldering of high temperature components and substrates, where soldered surfaces are prepared and pre-conditioned prior to the soldering process, backed up with XRF testing and X-Ray inspection of joints and surfaces.

Our Automated Soldering includes both Leaded and Lead-free wave soldering and Lead-free Selective soldering equipment. Hand soldering to internationally recognised standards as well as CIL Employees holding National Awards for hand Soldering.



PCBA Cleaning, Conformal Coating & Potting

PCBA Cleaning

Custom Interconnect has a process matched Cleaning system based upon the MB TECH NC25 System and Zestron Chemistry. An extensive trial and approval process, including agreement with our Customers ensured this system matches all expectations and matches our additional processes, such as Conformal Coating and Potting.

CIL also uses a Contanimeter which uses both IPC and DEF STD levels of cleanliness as benchmarks.

Conformal Coating

Following a specified board cleaning regime we can provide a Conformal Coating service using either a controlled dip and withdraw system, or a spray system, boards or assemblies can be masked to prevent coating ingress.

Potting or Component Staking

Within the High Reliability sectors some components or assemblies require complete or partial encapsulation, using a variety of materials and application or staking methods, Custom Interconnect has a wealth of experience in the selection and application of such materials.



Testing and Inspection

General

At CIL Quality Standards or Workmanship standards, Materials we source and the Processes chosen are verified against known or established Standards. We develop, with the customer, a test and Inspection plan as part of our NPI Process from the inspection or testing of incoming materials to the in-process controls required for ongoing production, and tests to be adopted for final product release.

Our Quality Assurance Team and Test Engineering Support group will work with our clients to ensure that we only supply 100% inspected and fully tested product, that operate to planned and expected levels of operation, safety and reliability.

Goods Inwards Acceptance

Materials and Components can be verified at Goods Receipt ensuring that critical parameters have been met by the supplier, Inspection schedules are created and administered by CIL Quality Assurance and observes inspection and testing history and experience, the results of which also feeds the Supplier Monitoring system of supplier "Quality" attributes.

In-Process Inspection

In-Process Inspection of Electronics Assembly produced at CIL uses a series and combinations of "First Off" machine or process verifications Batch Inspections and Automated Optical Inspections. CIL uses Marantz 22X series Inspection Stations, which reduces operator fatigue and capitalises on the extensive image library function to store multiple images and component details. CIL also uses Blundell Inspectoscan system for assistance in complex conventional assemblies.

In Process Testing

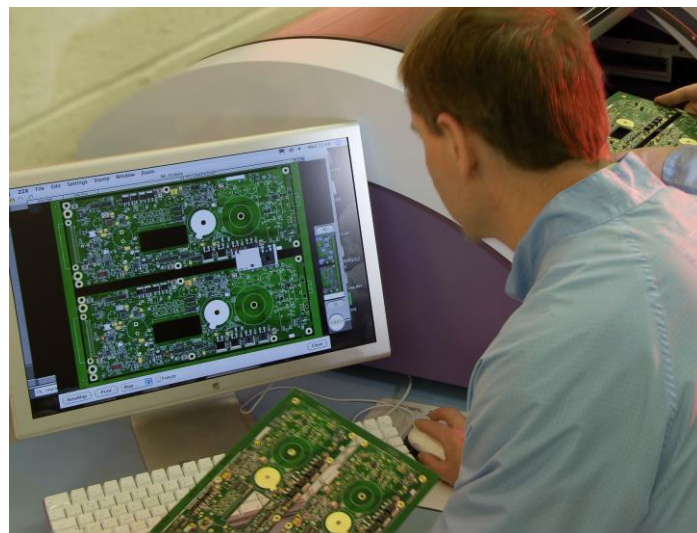
In conjunction with Inspection processes we recommend a level of testing which verifies the assembly of components fitted their respective values and operational characteristics. Using a predictive software tool we are able to provide customers with an expected "Test Coverage" for Flying Probe Fixtureless testing a quick and easy method of presenting electronics assemblies for functional testing to a very high confidence level. CIL has 3 Takaya Flying Probe Test Stations, all providing a very reliable and repeatable In Circuit Test of components.

Functional Testing

CIL has established itself as one of the leading providers of testing solutions available with high capability in the High Temperature Electronics, Communications and RF sectors. In addition to this high skill set we have an array of available equipment and platforms such as JTag and Labview, in addition to custom made testing jigs and fixtures, and proprietary equipment.

Combinational Testing can be conducted using Automated Terdyne Testing

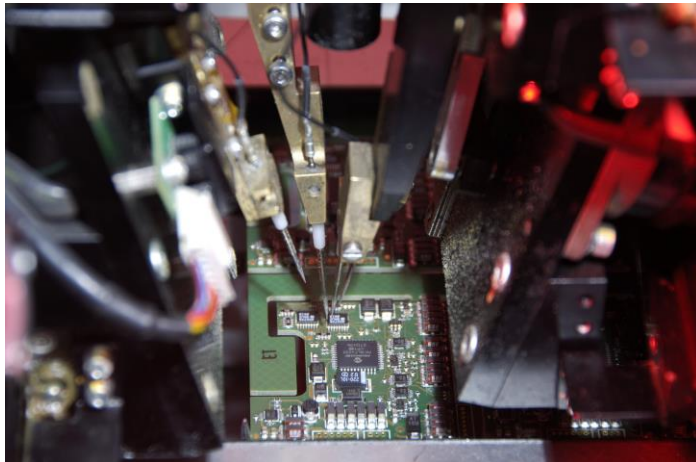
We can offer Test screening such as Temperature Cycling, Humidity and RF Shielding and Screening. Some testing we conduct are in unique environments such as Non-Magnetic and Open Channel and Frequency testing.



Primary Test Equipment

Listed below are a selection of the Primary Test Stations and Equipment we have available at CIL:-

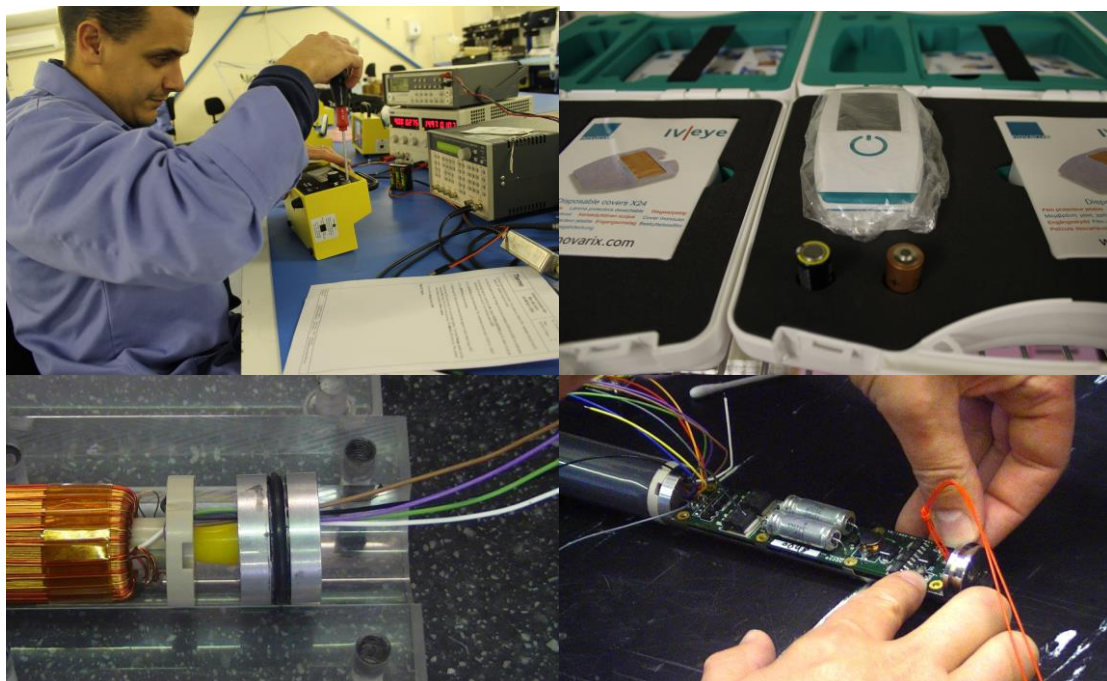
- 3 off Takaya Flying Probe Test Stations
- Teradyne Z1820VP ICT/Functional Test Station
- Various Signal & Function Generators
- Spectrum Analysers
- Labview Stations with IEEE interfacing
- JTag Boundary Scan
- Temperature Cycling with Humidity, 15 degrees per/min
- Various Meters, Power Supplies and obligatory test equipment.
- Screened Room
- Soak Testing



Product Box Build & Testing

General

Custom Interconnect has established a Product Build Facility in full support of our Electronics Production resource. Comprising a stand alone environmentally controlled facility equipped with its own clean-room for the assembly of optical and electro-optical devices and sensors. Equipped with a Goods Acceptance and Finished Goods Storage, and providing the essential services required for the manufacture and testing of Electronics Assemblies.



Our Product Build facility is producing Test Equipment for the Nuclear Industry, Medical Devices to ISO 13485 and Down Hole Oil & Gas Probes & Gauges.

CIL can also accommodate "Back to Base" repair and Product upgrades for customers including specified levels of refurbishment.

Rapid Prototyping

General

A specialised manufacturing service provided for Engineers by Engineers. Customers are encouraged to communicate directly to Custom Interconnect Engineering group regarding the Manufacturing of early models and prototypes. Their time scales, and the technical requirements of Materials and Processes required.

Using a Fast-track quoting and estimating system prices and commercial options can be supplied quickly to enable any materials procurement to proceed at pace ensuring that production turn around may be optimised.

Production may utilise Hand Placement or Machine Build or if appropriate a combination thereof, whilst ensuring that project and engineering tasks and objectives are met. Additional quantities, "Beta" or secondary production runs can then be planned in with Full NPI Controls but taking account of the early production experiences and learning, an ideal scenario for both parties.

Please contact Rapid Team at rapid@cil-uk.co.uk