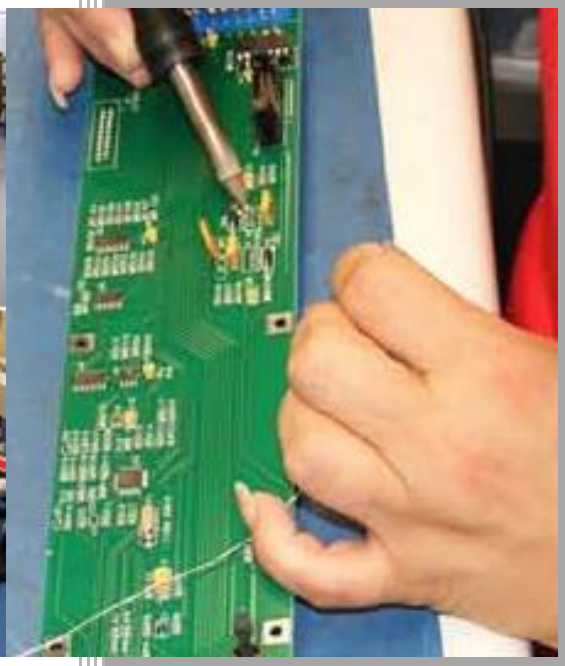
Allendale Electronics

Capability Study



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Experience + Technology + Innovation = Allendale Electronics

One Dependable Service

1.0 History Of Allendale Electronics

Allendale Electronics, situated on the South Shore of Nova Scotia, was founded in 1973 by Ben Pooley, evolving from its beginnings as an electronic repair shop servicing and maintaining household electronics to its present high-tech board and system manufacturer.
The following points map this evolution:

- 1973 Electronics repair shop
- Late 1975 – 80s Hand soldering of Through Hole Components
- 1986 First expansion
  - Manual Placement of components
  - Manual Inspection and Rework Team
  - Wave Solder Machines
- 1987 – 90`s Surface Mount
  - Hand pick and place
  - Small reflow ovens
  - Manual Inspection
  - Reduction in reworking
- 1991
  - First Pick and Place Machine
- Late 90`s Second expansion
  - First Automated (ECM) 20 [to 25 components a minute]
  - Automated cleaning process
  - Moved to Lockeport
  - Certified Professionals
- 2004 IPC610
  - PCB build certification
  - In house instructors
- 2006-07 Third expansion

Company Founder

Ben Pooley

First Automated Machine

My12™ Pick and Place Machine

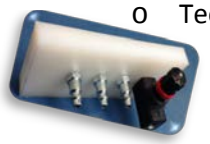
- Two buildings
- Pick and Place machine (MY12) [200 components a minute]
- Solder Paste Printer (My500)
- Component conditioning and storage
- Automated optical inspection equipment

Allendale Technologies WIZZ™ Products

- 2008 ISO certification

- Recent developments
  - Testing of assemblies
  - Canadian Controlled Goods register
  - Technology Development Services
    - Design for manufacture
    - Mechanical box modification
    - PCB circuit board layout
  - Allendale Technologies WIZZ™ Products
  - IPC 610 Training services

Ex. Box Modification



- Future
  - Custom Test Fixtures
    - Bed of nails testing
  - Site support
    - Process Evaluation
    - Installation Support
    - Staff Secondment

2.0 Service Capabilities

Allendale Electronics offers a range of Turnkey, Consignment and Technology development services for today's electronics industry.

2.1 Consignment Manufacture

Whether Allendale Electronics is contracted to do all the component buy or part buy, Allendale Electronics has a full stock management system including bar coding identification and inventory stock management using MiSys™ software.

MiSys™ enables Allendale Electronics to efficiently monitor internal and external component stock levels and availability.

2.2 High Reliability

Value and condition of components and printed circuit boards should be assessed before assembly. Proper handling of components ensures that integrity is not compromised during board assembly process. The process includes the evaluation and proper handling of moisture sensitive components (MSL).

Poorly handled components do not always show up as an inspection or initial test failure. This can lead to issues that are hard to diagnose and trend. High Reliability Assembly, is a process that ensures the assemblies built at Allendale Electronics will continue to work over their expected life and will not have any premature failure due to poor handling or manufacturing processes.

Over the years Allendale Electronics has developed systems to verify the condition of these components on delivery. Much of the knowledge for these methods of working has come from the investment in IPC training and methods. (More details seen in 2.3.1 Component Conditioning)

2.3 Turnkey Manufacture

Full Dock to Stock Manufacture comprising of all or selected elements listed below. A full suite of services to meet our clients' specific needs.

McDry™ Cabinet

2.3.1 Component Conditioning

Some components need to undergo treatment before storage or assembly. We use a bake process for Moisture Sensitive components and some Printed Circuit Boards.

Allendale Electronics has two baking systems, slow bake in less than 1% Relative Humidity and quick bake for less sensitive or high temperature rated components. Once the condition of the component is assured they will be correctly stored.

Storage in our McDry™ cabinets or MyData™ Tower System protects the conditioning of components.

MyData™ Tower

Allendale Electronics has a fully Anti-Static working environment, including full static dissipative flooring and work stations, anti-static smocks, ground zero earthing system and anti-static test stations.

2.3.2 Cables and Looming

Inter-board connections, cables and looming are assembled by our IPC-WHMA-A-620B certified assemblers. Allendale Electronics has a substantial collection of crimping tools as well as automated cutting and cable printing machines.

2.3.3 Testing

Initial power-up, pre-production and functional testing can be performed. Allendale Electronics can assist with writing suitable test procedures to reduce the amount of functional testing by our clients on receipt of the product.

In-circuit and pre-assembly programing for a selection of PIC and Atmel Processors is also available.

Over the next 12 months Allendale Electronics will be investing in LabView™ automated test environment (ATE).

2.3.4 Troubles hooting

My500™ Solder Paste Printer

Allendale Electronics with its vast experience, technology staff and adaptable automation systems has the ability to troubleshoot the manufacturing process on the fly. This is important in an industry where component obsolescence is a regular occurrence and other issues like footprint and routing errors are easily made.

Allendale Electronics operate a My500 solder paste printing machine, one of only two in Canada. Changes in component foot prints or errors made during the design process are simple to overcome. Allendale Electronics has the ability to adjust the print program on the fly, even in mid production run. This is a huge cost saving over traditional solder stencils as typically these issues would result in a complete new set up cost and loss in production time.

The My12 Pick and Place machine can place 200+ components a minute. During placement the My12 tests each passive component against pre-set test values, any component outside tolerance is rejected.

Allendale Electronics can implement a number of inspection techniques as part of the client requirements or as a troubleshooting process. This includes RTX Xray for BGA (Ball Grid Array) and BTC (Bottom Terminated Connection) components and also Digital Microscopy 380x magnification, particularly useful when using our online portal (see section 2.3.8).

These are only some examples of Allendale Electronics capability in this area, it is important to recognise that Allendale Electronics provides real built in flexibility with the production process.

2.3.5 Inspection and Automated Optical Inspection

AOI Inspection

During the manufacturing process all medium and large quantity runs are inspected using AOI (Automated Optical Inspection). The AOI's main function is to perform inspections on components for presence, orientation, positioning, value, colour and solder connection. Other application specific functions can also be programed.
The AOI is used as part of Allendale Electronics 1st Article inspection process. The first circuit board is inspected by our IPC certified inspectors to ensure the quality of the product is in accordance to the relevant IPC standard (see section 4.3). The board parts are fully checked against the bill of materials. When the process has produced three identical boards to the required standard, the AOI is programed using the 1st Article. This ensures all subsequent board inspected by the AOI well meet the standard of the 1st Article.

2.3.6 Assembly Conformance Reporting

During and at the end of each production run, Assembly Conformance Reporting is performed and logged in the production file. Issues that affect the quality of the product or the efficiency of the production run are reported to our clients via a conformance

report. Savings in
production time that can be achieved on the next production run are flagged and used in the quoting process and passed on to our clients.

2.3.7 Development and Product Support

Prototyping, small batch runs and part builds can all be achieved with quick turn around due to the flexibility of the automated MyData™ assembly equipment. The MyData™ system enables our technicians to quickly and effectively amend the assembly and solder print programs.

Design engineers don't need to shy away from using space and cost effective packages like BGAs and BCTs which are hard to prototype. Individual components can be placed, inspected and reworked to ensure engineers don't waste time troubleshooting assembly issues during the prototype and pre-production stage of development.

Hand assembly prototypes are assembled by IPC 610 trained assemblers and technicians.

Printed Circuit Board (PCB) lay out services are available.

2.3.8 Customer Portal Virtual Office

Enter our customer portal so you can directly contact the team working on your projects. This web-based service gives you a seat in our building. This secure encrypted service enables desktop and file sharing, and using Microscopy, provides high resolution imagery of your product. The service creates a seamless interface between our clients' and the Allendale Electronics professionals.

2.4 Component Level Training

Allendale Electronics offers a range of training courses for inspection, soldering, harness and cabling.

The courses are flexible depending on our clients' needs and offer hands on training as well IPC certification.

The Allendale Electronics Instructors are certified to supply training on the following IPC standards:

- IPC-A-610 Inspection criteria
- IPC-J-STD-001 Process development for the assembly of electronic assemblies
- IPC-WHMA-A-620B Harness and cables
- IPC-7711/21 Repair and modification

Courses are typically hosted at the Allendale Electronics Facility and can range from 2 days to 1 week in duration depending on the required training program.

3 Meet the Team

Cyril Meagher – President and General Manager

Cyril is a Certified Electronic Engineering Technologist who graduated from NBCC, Moncton Campus in 1981. In 2010 he received his Certified Electronics Program Manager (CEPM) certificate from IPC.

He has worked in electronic manufacturing services since 1985; he has extensive experience in the assembly and testing of electronic systems including high voltage power supply applications, RF, and general industrial applications.

In 1995 Cyril was hired as Quality Manager for Allendale Electronics Ltd. He has been President and General Manager of Allendale Electronics Ltd since 2002.

Noelle Wolfe – Production Manager

Noelle has been with the Allendale Electronics for over 17 years. Certified IPC trainer (CIT) for IPC610, IPC-7711/7721 Rework & Repair and specialist for J-STD-001 & IPC-A-620. She is trained in the implementation of lead free low clean solder systems by Circuit Technology Center, and has over a decade of experience managing and training production staff to achieve the rigorous levels of the IPC standards and implementation of these working practices into the work area. (See section 4.1 for details about IPC standards)

Tara Hiltz – Quality Control Supervisor

Tara started at the company in 2004 and is a Certified IPC J standard and IPC 620B instructor (CIT) and a specialist in IPC610. She is responsible for managing and maintaining client and sub-contract conformance and non-conformance reporting and is trained in the implementation of first article inspection. (See section 4.1 for details about IPC standards)

Bruce Jefferson – Production Support Technician

Production Support Technician, 4 years community college education in component level service, test and repair.

Attended MyData™ training course for production automation programming and maintenance.

Over 8 years' experience of programming Pick and Place, Solder Printing and Automatic Optical Inspection machines.

Guy Tipton – Technical Advisor

Guy is a technology developer with a history of working in the energy sector throughout Europe and North America.

Educated at West Oxford Technical Collage and Oxford Brookes University in the United Kingdom.

Over 20 years' experience of Intellectual Property commercialisation, Concept to Market Delivery.

Background in electronics
design, hazardous area and territorial certification, information systems and programming.

Jennifer Nicoll – Materials Manager

Jen started with Allendale Electronics in 2008 after completing an Electrical Construction and Industrial Certification.

In 2013 she completed a Purchasing and Supply Chain Management course. She is responsible for controlling inventory, ordering components, and managing the companies MRP System.

Amanda Hupman – Marketing Support

Amanda has been with the company since 2008. She started as an Assembly Technician and has worked in every department in the company since. She completed a LEAN Manufacturing Course in 2010 and is responsible for Continuous Improvement Projects throughout the organization.

Educated at the Nova Scotia Institute of Technology in Halifax.

Melissa Buchanan – Inside Sales

Melissa has been with the company since 2007 and is responsible for managing customer relations and generating quotes. Her experience as an assembly technician helps to accurately determine time estimates when completing labor quotes. She is the main point of contact between Allendale Electronics and its customers.

4 Certificates and Awards

- 1992 Shelburne County Business award
- 2003 Provincial Partnership Apprentice award
- 2004 Business Excellence Award (Shelburne Area of Commerce)
- 2005 IPC (Interconnections and Packaging of Electronic Circuits) Certification
- 2005 SMTA (Surface Mount Technology Association) Award
- 2009 ISO (International Standards Organisation) Certification

4.3 IPC Implemented Standards

IPC is an industrial association accredited by ANSI (American Nation Standards Institute) and is known globally for its standards dealing with the assembly of electronics and associated interconnections.
Allendale Electronics implements the following standards throughout the production process.

- IPC-A-610
  Acceptability of Electronic Assemblies.
- IPC-7711
  Rework of Electronic Assemblies.

- IPC-7721
  Rework, Modification and Repair of Electronic Assemblies.
- IPC-J-STD-001
  Requirements for Soldering Electrical and Electronic Assemblies.
- IPC-WHMA-A-620B
  Requirements and Acceptance for Cable and Wire Harness Assemblies.

5 What our Clients say about us

Allendale Electronics conducts annual studies on our performance based on client feedback and active survey. In the highlights shown below it should be noted that our product delivery ranges from low volume pre-production and prototyping to high volume stable fully commercialised products.

5.3 Satlantic

Exceptional...the lowest RMA of all board population houses, I consider this an extremely valuable asset for Allendale.

Above and beyond expected with regards to delivery.

Jane Crawford
Purchasing and Inventory Control
Satlantic

5.4 Ocean Sonics

Allendale Electronics works to a high degree of professionalism and value. Unlike many of their competitors, Allendale Electronics has invested heavily in the cutting edge technology and processes necessary to ensure that prototype quantities will be produced with the same degree of precision that my production orders receive. Whether I order 5 units or 500, I can count on Allendale Electronics to produce consistent high-quality workmanship.

Jay Abel
Ocean Sonics

5.5 Fossil Power

The Staff and company as a whole are very easy to deal with.

5.6 Galaxy Battery

Hi Danine,

The wiring harnesses were great and worked out well. We will be ordering more harnesses when an order is received from our customer. Thanks again and have a great day.

Todd Thornhill

5.7 Akoostix Inc

Dear Cyril,

I hope that things are going well for you.

I happened to be talking to another in the industry and I heard that from their experience your quality and service often exceeds that of [redacted] *while your prices are competitive. I hope that is translating into some good business for you, but I've also run across companies that don't know you very well, especially how much capability you've added to do more complicated builds.*

You might want to consider a bit of a marketing push to get the word out if business is still a little slow. Those that know you feel that you have the fundamentals down pat so you should be benefiting from that hard work.

All the best!
Joe Hood President / Chief Technical Officer - Akoostix Inc

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