



MAKAR TECHNOLOGIES LTD

Your Electronic
Systems Lifecycle
Partner

Design & Innovation • Manufacturing • Cable Assembly • Service Support

Manufacturing Services:

Our manufacturing processes are all carried out in a UK based, modern facility supported by highly advanced technology.

Manufacturing Services Include:

- PCB Assembly (Surface Mount and PTH)
 - Box Build and Product Assembly
 - Cable Assembly & Wire Harness Manufacture
 - Test, Inspection and Repair Services
 - BGA Assembly and Rework
 - Rapid Prototyping to Mixed Volume Production
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Design Support:

Helping you turn your product idea's into a reality, our creative and experienced design team can take your product from specification generation through to final production and assembly.

Design Services Include:

- Electronic Design
 - Software and Firmware Design
 - PCB Layout
 - Motion Control Design (Motor Drive and Motor Sub-Systems)
 - Mechanical Design Support
 - Design for Manufacture and Test (Cost Efficient Solutions)
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Market Sectors:

Makar Technologies currently cater for a range of markets.

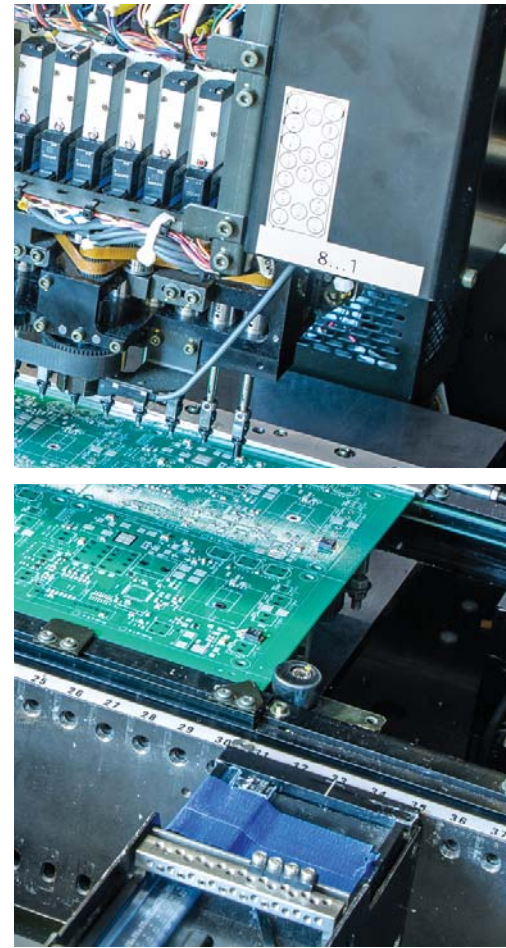
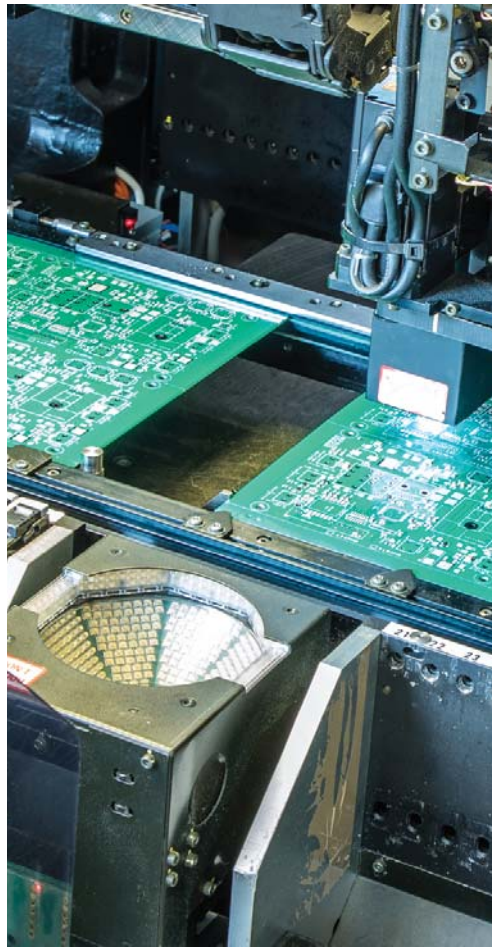
Markets Include:

- Defence and Aerospace
 - Oil and Gas
 - Mobility
 - Industrial and Commercial
 - Automotive
-

Please contact Makar Technologies manufacturing team on +44(0)1309 675837 with any questions, or alternatively - email any enquiries through to enquiries@makartechnologies.com



MAKAR TECHNOLOGIES LTD



PCB Assembly

At Makar Technologies, we offer a range of PCB services from our advanced, modern manufacturing facility based in the UK. Catering to a wide range of sectors, our capabilities range from rapid prototyping to medium-high volume PCB assembly.



The level of workmanship and cleanliness of the PCB's received cannot be faulted. Makar Technologies now have a key supplier status in our supply chain.

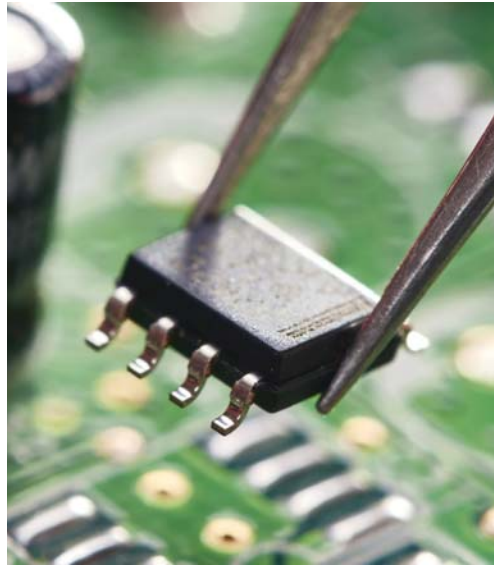
Process Control Engineer, Oil & Gas Company



Your Electronic Systems Lifecycle Partner



MAKAR TECHNOLOGIES LTD



PCB Assembly

Whether you have a new design or an existing product, we will support your manufacturing requirements, meeting your price and delivery expectations.

Surface Mount Technology:

- PTH Assembly (Conventional Through Hole)
- AOI (Automated Optical Inspection)
- Conformal Coating
- RoHS / Non-RoHS
- Manufacture to Defence, Aerospace and Harsh Environment Standards
- DFMT (Design for Manufacture & Test) Support
- 3D and X-Ray Inspection (360x Magnification)
- Wash plant and zero-ion cleanliness/contamination tester
- Staff Trained to IPC 610 Class 3 (on-site trainer)

Surface Mount Capability:

- Advanced pick and place machinery
- Component handling down to and including 0201
- BGA and QFP placement
- PCB sizes up to 457mm x 407mm
- Simple to complex PCBA's

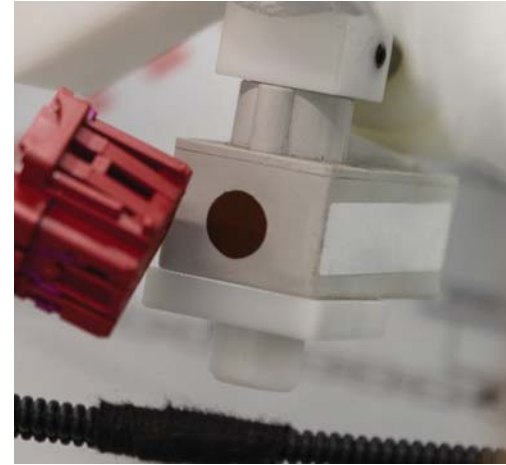
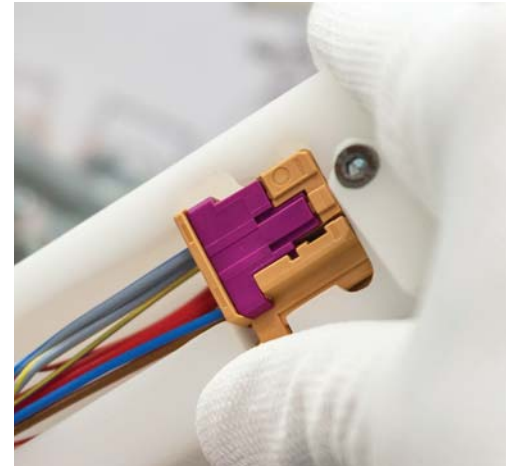
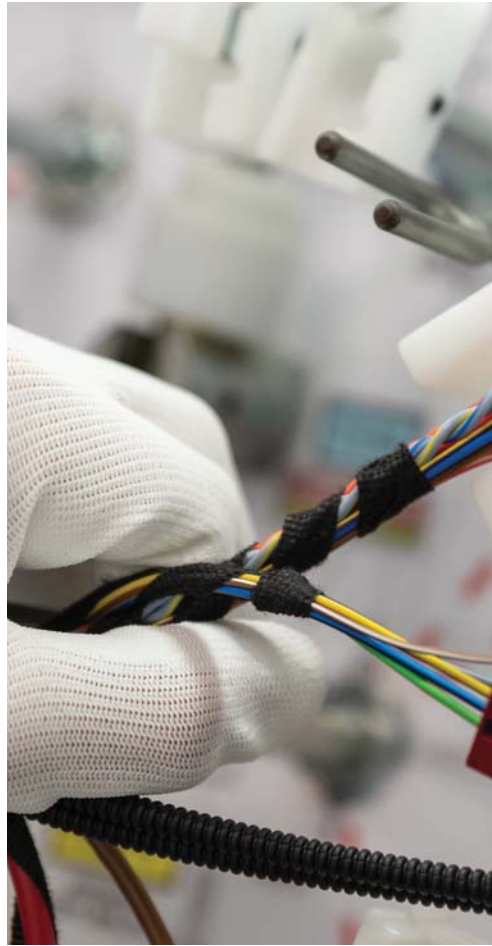
Makar Technologies currently cater for a range of markets, the core markets being: Defence & Aerospace, Oil & Gas, Industrial & Commercial, Mobility, Automotive, Consumer, & Many More.

Our dedicated support team go above and beyond to manage your product through the production phase, offering advice and recommendations along the way to ensure maximum efficiency and the highest quality.

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MAKAR TECHNOLOGIES LTD



Cable Assemblies and Wiring Harnesses

We offer a wide range of electrical wiring assembly services, with all experienced production operators working to IPC-A-620.



Makar now produce all cable assemblies in our robotic systems, from the simplest to the most complex assemblies; even offering suggested improvements on the designs.

Lead Electronics Engineer, Robotics Company



Your Electronic Systems Lifecycle Partner



MAKAR TECHNOLOGIES LTD



Cable Assemblies and Wiring Harnesses

Operating in a variety of sectors, the team can offer:

- High Quality Cable Harnesses and Wiring Looms
- High Volume Production with Competitive Low Costs
- Rapid Turnaround using automated machinery

From standard cable preparation to complex cable assemblies, looms and harnesses, our skilled and experienced operators use automated and semi-automated cable cutting, stripping and crimping machinery to consistently produce high quality assemblies at the required volume, price and lead time.

Our wiring capabilities include the following and more:

- Wiring Looms
- Complex Cable Assemblies
- Wiring Harness
- Cable Preparation (cut, strip and termination of wires)
- Ribbon Cable
- RF / Coaxial assembly
- Patch cables
- Potted / encapsulated assemblies
- Cable modifications and repair

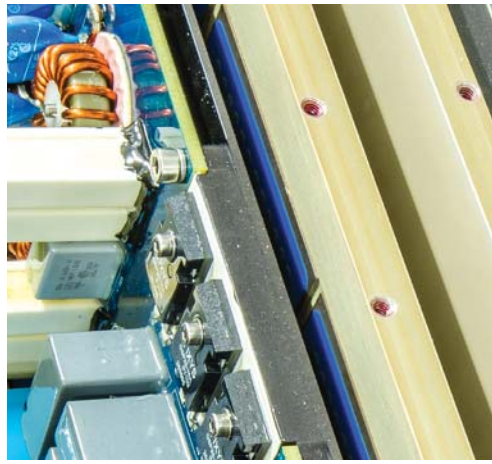
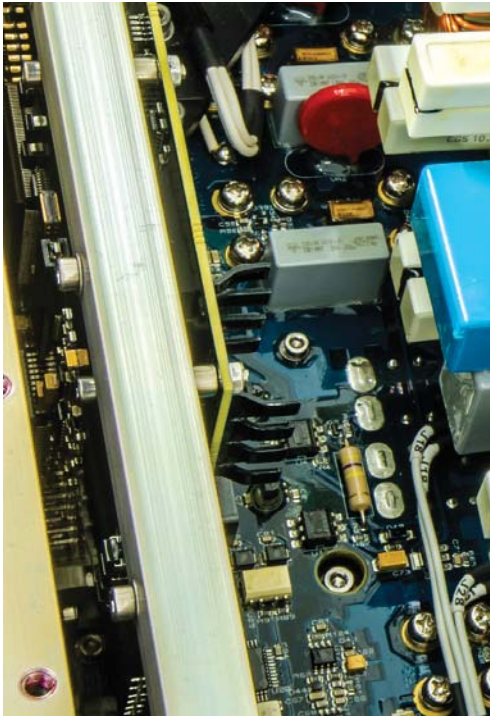
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MAKAR TECHNOLOGIES LTD



Sub-Assembly and Final Product Build

Makar Technologies offer Electro-Mechanical sub-assembly services, integrating our core services into a final product solution. This may entail encapsulating PCB Assemblies and Cable Assemblies into a Metal Work or Plastic Enclosure which can then be fully loaded with firmware and processed through final functional testing.



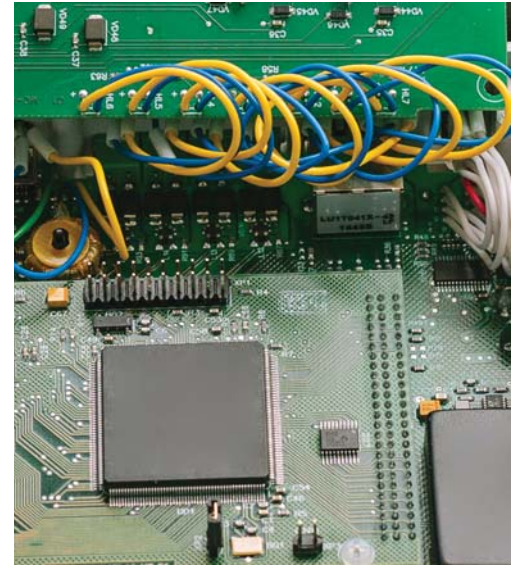
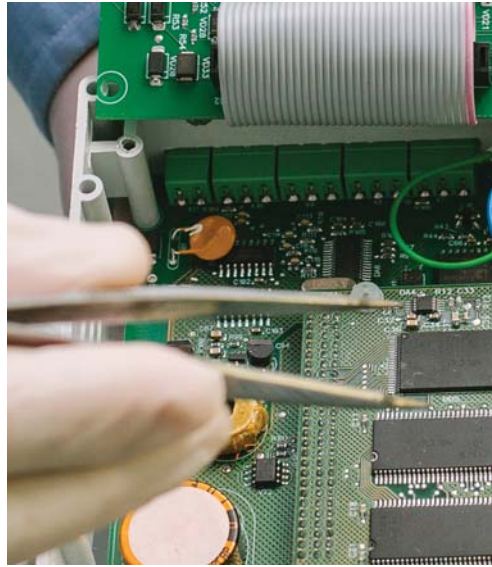
They are an excellent group of committed people to work with and on top of this are able to provide all of the things a purchaser looks for - Lead Time, Price and Quality.

Purchasing Manager, Defence Company





MAKAR TECHNOLOGIES LTD



Sub-Assembly and Final Product Build

Sub-Assembly services include:

- Simple to complex customised enclosures
- Integration of PCB and Cable Assemblies
- Board level testing to final product functional testing
- Loading of firmware onto IC's within enclosure
- Management of external and environmental testing
- Metal work finishing and environmental protection
- Packaging of final products and delivery to customer or end user

Whether it is a commercial product or a ruggedized, harsh environment solution, we can support your needs through low to high volume production.

To support our service offering, we have the following in place:

- Dedicated account/project management
- MRP system controlling stock and production
- Assigned contract teams and dedicated assembly lines
- Packaging to the clients specification
- UK and International delivery
- Stock holding and/or consignment stocks
- Life-time service support including obsolescence management
- Full repair and refurbishment programmes
- Trusted supply chain for low cost through to highly advanced solutions

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MAKAR TECHNOLOGIES LTD



Test, Inspection & Repair

Our advanced repair and rework capabilities are supported by state-of-the-art equipment including 360° X-Ray Inspection and an IR BGA Rework Station that allow repair and rework activities to be undertaken on a wide range of electrical and electromechanical equipment.



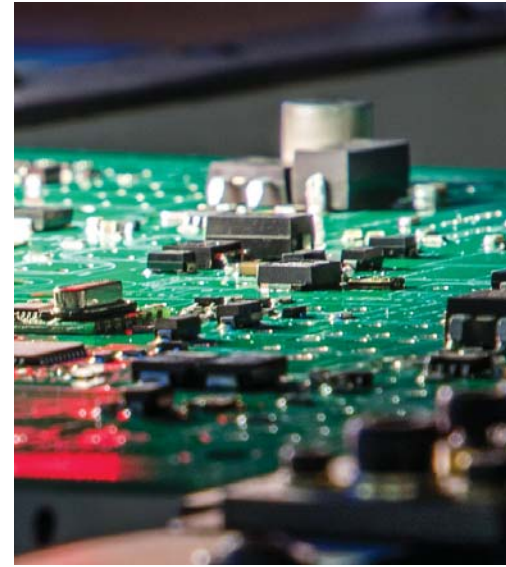
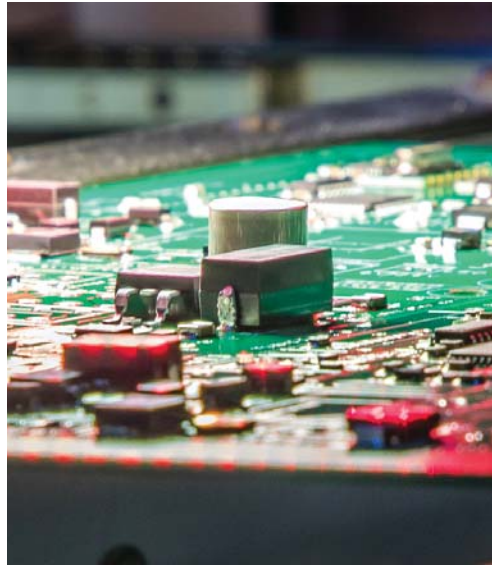
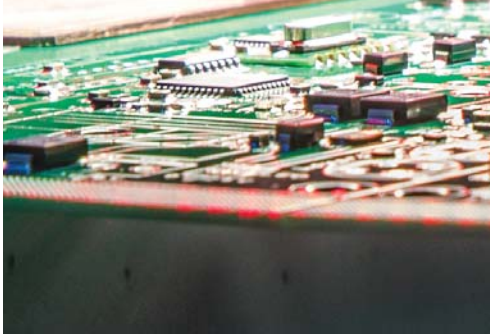
The staff have been extremely helpful with everything we have asked them to do, the level of work which they carried out for us has been of an extremely high level. Brilliant company to be working with.

Electronics Engineer, Agricultural Technology Business





MAKAR TECHNOLOGIES LTD



Test, Inspection & Repair

We offer Through-Life support services for both Makar Technologies designed or third party products including repair, modification and rework, obsolescence management and documentation support.

Test, Inspection & Repair services include:

- Automatic Optical Inspection (AOI)
- In-Circuit Testing (ICT)
- Functional Testing and Component Screening (X-Ray Inspection).
- Infra-Red BGA Rework
- Final Product Acceptance Testing (ATP)
- IC programming as part of the test process
- Support for obsolete parts
- Data analysis of fault trends and reliability support
- PCB and component replacement
- Product refurbishment and upgrading of parts

We work with our customers to develop customised test solutions, where required, through our Design for Test (DFT) services, ensuring comprehensive and optimised product testing. Our design team can also support by designing custom test rigs to meet your products functional testing requirements.

Our technical team can also offer on-site customer support so to inspect, debug and repair your product where possible without having to leave your facility/application.

All repairs are carried out in accordance with IPC 610 and IPC 620 by our staff who are qualified by our on-site certified trainer.

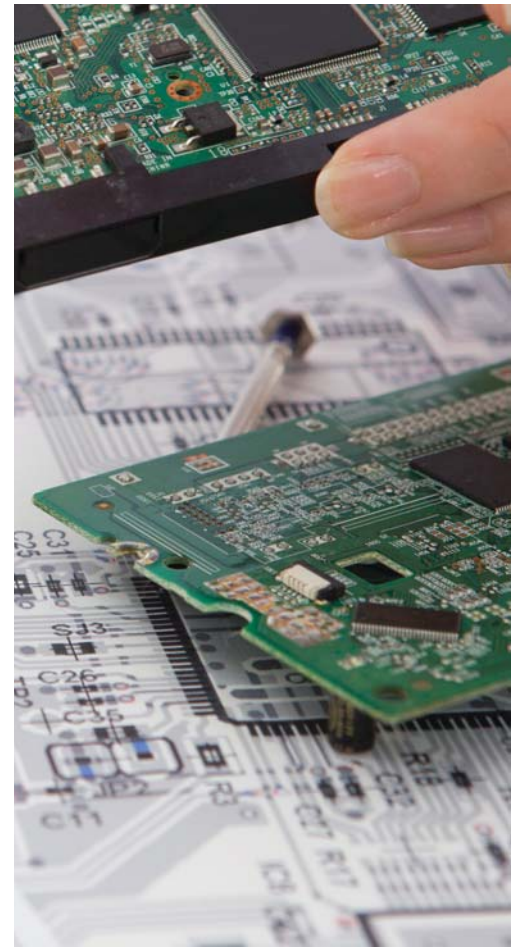
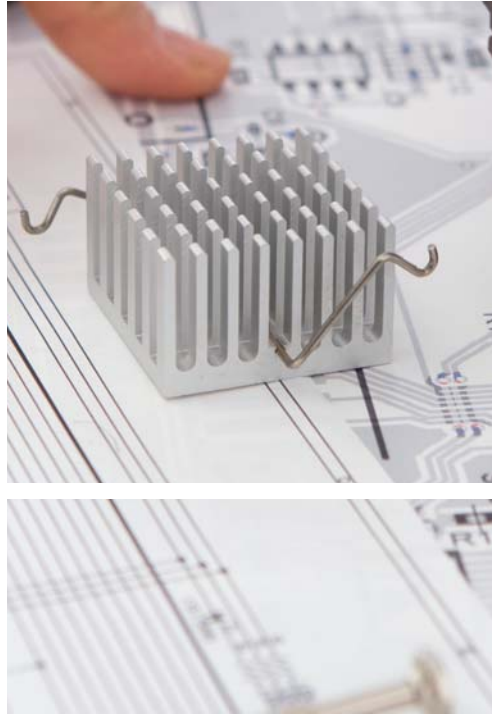
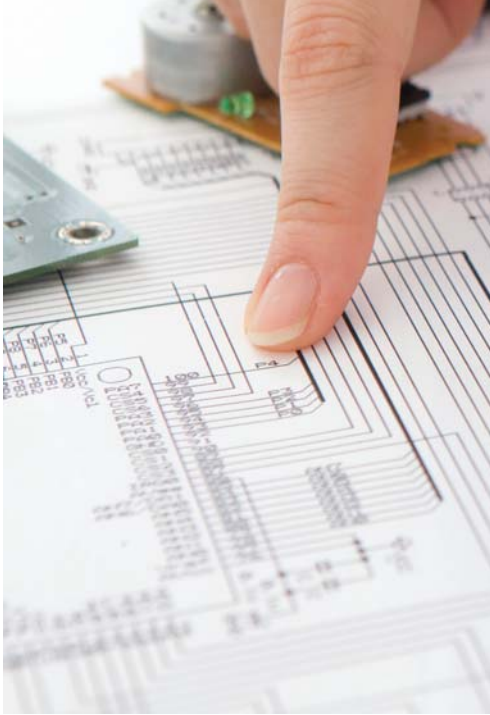
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Motion Control Design

Specialising in the field of motion control design, the team at Makar Technologies offer you a bespoke sub-system solution which can include a motor, motor drive/controller, gearbox, actuator, enclosure and associated cabling. Where the sub-system is not required, we can offer design and sourcing support for any of the above items.



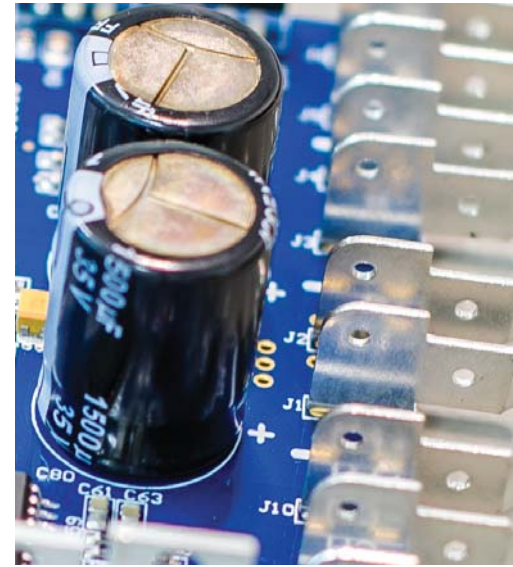
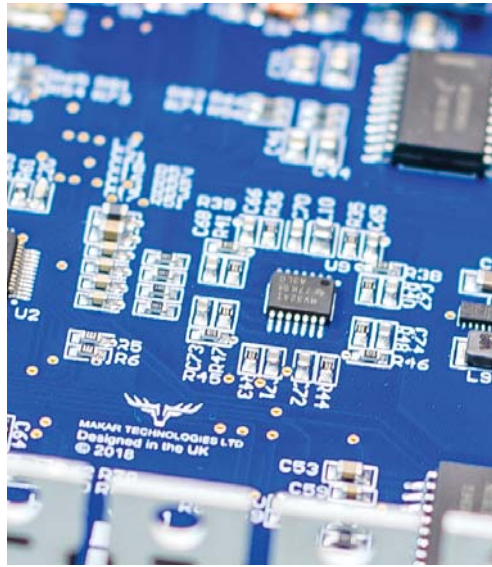
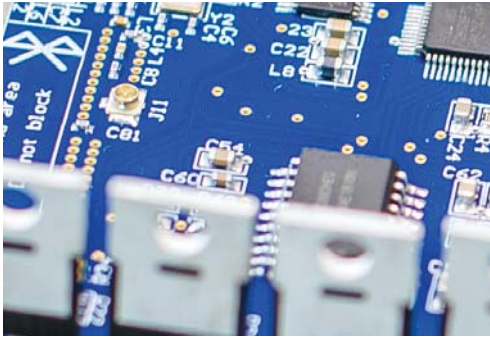
Working with Makar Technologies design team has been extremely beneficial to our company. Developing new motion control designs and improving our existing technology to remove quality issues that we have previously experienced.

Managing Director, Medical Equipment OEM





MAKAR TECHNOLOGIES LTD



Motion Control Design

Our design capabilities include:

Motor Drive Hardware:

- Schematic design
 - Power electronics (inverters, SMPS)
 - Analog and digital circuits
- Component selection
- PCB layout
- Designs to meet your specific weight and dimension requirements with an optimised balance between reliability, functionality and cost

Motor Drive Software/Firmware:

- Embedded processor SW coding: Model based design (Simulink), C/C++, Assembler
- Various DSP/DSC platforms (Texas Instruments, Analog Devices, Nexperia, Silicon Laboratories and more), CPLD (Xilinx).
- Application programs for client (GUI), for debugging and for automated final approval test.

Testing:

- Test rig design
- Board level and System level test procedure and documentation
- Verification and validation to customer requirements
- Production final test procedure

Technical:

- All motor types: PM BLDC, DC Servo, Induction motors
- Advanced control techniques such as observer based, field oriented control and field weakening
- Torque control, speed control and position control systems
- Application specific tailored functions, optimised control
- Various communication links including:
 - Wired (CAN-BUS, RS-232 and more)
 - Wireless (Sub-GHz wireless, Bluetooth and more)
- Extended range of Voltage, Current and Power ratings
- Choice of motor position feedback methods: Hall encoder, optical encoder, resolver, sensor-less, observer based position reading

Operational Conditions and Compliance:

- Design for High Temperature, High Shock and Vibration
- EMC filtering and immunity
- SIL certified protection functions

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We are focused on building strong partnerships with our customer base, supporting you by streamlining your electronics/electro-mechanical supply chain.

Manufacturing HQ:

10, Enterprise Park, Forres, IV36 2AB, Scotland

T: +44 (0)1309 675 837

E: enquiries@makartechnologies.com

W: www.makartechnologies.com

Design Support:

T: +44 (0)1416 286 800

E: enquiries@makartechnologies.com

Southern Facility:

T: +44 (0)1442 780 711

E: enquiries@makartechnologies.com

