SMRU Instrumentation/SMRU Consulting

Instrumentation Technician

Employed by: SMRU Consulting (wholly owned subsidiary of University of St Andrews)

Location: St Andrews, Scotland

Contract: Full-time, Permanent

Responsible to: Head of Instrumentation

About SMRU Instrumentation

The Sea Mammal Research Unit (SMRU), located within the School of Biology and the Scottish Oceans Institute at the University of St Andrews, is a world-leading research group specialising in the biology of marine mammals. SMRU research depends on the development of new approaches that deliver information on the behaviour of marine animals and their environment.

This capability is delivered by SMRU Instrumentation, which designs and manufactures a range of advanced biologging and telemetry systems for attachment to animals that collect, compress, and transmit data. These devices are sold to SMRU and a wide range of international research organisations and colleagues. They are high-value instruments deployed in demanding field conditions. Precision, reliability, and meticulous quality control are fundamental to everything we do.

Role Summary

The Instrumentation Technician is responsible for the assembly, encapsulation, and testing of biologging instruments, and for the diagnosis and repair of tag faults. PCB population is mainly outsourced; the postholder assembles and integrates electronic and mechanical tag components, tests tags at all stages of production, and carries out encapsulation using epoxy resin systems under vacuum to ensure tags can operate on diving marine animals.

The postholder reports to the Head of Instrumentation and works as part of the production team. They will carry out work allocated by the Head of Instrumentation, following established build procedures and test protocols, while exercising personal initiative and technical judgement to resolve faults and build-related problems that arise during production. They will be an active and supportive member of the team, contributing to shared objectives and maintaining consistently high standards of workmanship.

Key Responsibilities

1. Tag Assembly & Encapsulation

- Assemble SMRU Instrumentation tags and sub-modules from supplied components and sub-assemblies, integrating electronic and mechanical elements to defined build specifications. PCB population is mainly outsourced; the postholder carries out component and module-level assembly, wiring, and integration work.
- Carry out encapsulation of finished tag assemblies using epoxy resin systems under vacuum, ensuring complete protection of electronics against the extreme environmental conditions encountered during deployment — including pressure, low temperatures, and physical stress from animal behaviour.
- Handle fragile and high-value components — including glass bead thermistors, radio frequency transmitters, pressure transducers, and oceanographic sensors — with the precision and care required to avoid damage during assembly.

- Follow build procedure documentation accurately and consistently, maintaining the standards of workmanship required for reliable, repeatable production output.
- Carry out all assembly and encapsulation work in accordance with relevant health and safety procedures, using appropriate PPE and following safe working practices at all times.
- Maintain a clean, organised, and safe workbench and working environment, ensuring tools and equipment are correctly used and stored.

2. Tag Testing

- Carry out functional and performance testing of assembled tags and sub-modules at all defined test point stages of the production process, using established test protocols and specialist test and measurement equipment.
- Calibrate tag sensors — including pressure, conductivity, and wet/dry sensors — and verify that radio systems relay test data correctly, ensuring all tags perform to required specifications before encapsulation and despatch.
- Configure and program tags using specialist software interfaces, verifying correct operation of all sensors and communication systems.
- Record and document all test results fully and accurately, and present test summaries in graphical form to colleagues to support review and decision-making.
- Maintain accurate records in the group's database and associated systems, ensuring full traceability of each tag's build and test history.
- Identify and report deviations from expected test results, escalating issues as appropriate.
- Operate and maintain specialist test equipment — including oscilloscopes, multimeters, signal generators, and variable bench power supplies — safely and in accordance with instructions.

3. Tag Fault Finding & Repair

- Diagnose and resolve faults arising during tag assembly and testing, applying technical knowledge, initiative, and systematic fault-finding techniques to identify root causes and implement effective solutions.
- Investigate faults in returned or failed tags, using specialist diagnostic equipment and software tools to analyse tag behaviour, interpret serial data outputs, and determine the nature and location of hardware or software issues.
- Carry out component-level repair of printed circuit board assemblies, including removal and replacement of surface-mount components using hot air rework stations and associated tools.
- Document fault findings clearly and accurately, providing sufficient detail to allow issues to be tracked, analysed for trends, and escalated for design or procedural review where necessary.
- Contribute to the identification of recurring faults or production issues, supporting the continuous improvement of tag quality and production processes.

4. Assisting in New Tag Development

- Assist the Development Team in the practical development and build of new telemetry tag systems, including prototype assembly and early-stage testing.
- Contribute ideas and observations from hands-on experience of assembly and testing to support the design team in identifying practical improvements or potential issues.
- Participate in occasional fieldwork where the opportunity arises, to develop first-hand understanding of the practical aspects of tag attachment.
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5. Health, Safety & Compliance

- Adhere to all health and safety requirements applicable to the tag production laboratory, including COSHH procedures, PPE requirements, and safe working practices for the equipment and materials used in assembly and testing.
- Follow the University's Code of Practice for Workshops and the SMRU Instrumentation Laboratory Code of Practice, and raise any safety concerns with the Laboratory Manager promptly.
- Attend occupational health monitoring appointments as required.
- Ensure that chemical and hazardous material handling is carried out in accordance with relevant COSHH assessments and safety data sheet guidance.

6. Stock, Equipment & Administration

- Monitor stock levels of production consumables and components used in tag assembly, flagging shortfalls to the Laboratory Manager in good time to avoid disruption to the production schedule.
- Maintain accurate records and logs as required, including test data entry, equipment usage, and tag serial number tracking.
- Keep specialist equipment clean, calibrated, and in good working order, reporting any faults or maintenance requirements promptly.

7. Team Contribution & Development

- Work cooperatively and flexibly as part of the production team, providing support to colleagues and contributing to the achievement of shared production targets and deadlines.
- Be receptive to guidance and instruction from the Laboratory Manager and Production Engineer and actively seek to develop skills and knowledge as new tag variants and production techniques are introduced.
- Assist in the induction and on-the-job guidance of new or less experienced colleagues as required, sharing knowledge of standard procedures and equipment use.
- Undertake further training and continuing professional development on a routine basis, keeping skills up to date with developments in tag design, production techniques, and relevant standards.

Knowledge, Qualifications & Experience

The following knowledge, experience, and skills are required to undertake the full remit of this post. Full training and support will be provided in role-specific techniques where required.

Essential

- Previous experience as an electronics technician or in a similar role, with proven practical experience of electronics assembly within a production environment, including PCB assembly, component assembly, and soldering (surface mount and leaded components).
- Ability to carry out repairs to PCB assemblies, including removal and replacement of components using rework tools.
- Experience using electronic test and measurement equipment.
- Ability to follow and work from technical documentation (build procedures, test protocols, wiring diagrams) accurately and consistently.
- Meticulous attention to detail and a systematic, scientific approach to testing and fault finding.
- Ability to document test results clearly and present test summaries in graphical form (e.g. using MS Excel).
- Proficiency in MS Word and MS Excel for documentation and data recording purposes.
- Ability to read and interpret mechanical drawings.

- Dependable, trustworthy, and capable of working with minimal supervision, including against non-negotiable deadlines.
- Effective communication and interpersonal skills, with the ability to integrate into a small, dedicated team.
- Knowledge of and commitment to health and safety requirements in an electronics workshop or laboratory environment.

Desirable

- HNC, HND, or equivalent qualification in related discipline.
- Experience with electronics encapsulation techniques, including epoxy resin systems or vacuum encapsulation.
- Familiarity with COSHH procedures and hazardous materials handling in a workshop or laboratory context.
- Experience configuring or testing embedded electronic systems, or using serial terminal/interface software.
- Experience with marine or field-deployed instrumentation, telemetry systems, or similar high-reliability equipment.
- Interest in marine biology, animal tracking, or environmental science.

Personal Skills & Attributes

- Effective communication and interpersonal skills, with the ability to work cooperatively as part of a small, close-knit team.
- Sound analytical and problem-solving capability, including the ability to deal calmly and systematically with unforeseen faults or difficulties.
- High level of manual dexterity, precision, and hand-eye coordination, with the ability to sustain concentration over extended periods of detailed assembly work.
- Ability to provide a high-quality, consistent standard of work, responding to production needs within deadlines and to defined quality standards.
- Proven planning and organisational capability, with the ability to manage own workload and prioritise tasks effectively.
- Committed to continuous professional development and maintaining up-to-date knowledge and skills.
- A conscientious and reliable approach, with consistently high standards of workmanship and attention to detail.

Why Join SMRU Instrumentation?

- Work on meaningful technology deployed globally in marine science and conservation.
- Develop highly specialist skills in electronics assembly and encapsulation in a unique and technically challenging environment.
- Be part of a small, collaborative team producing instruments that directly support world-leading scientific research.
- Opportunity to grow technical expertise as the product range and production processes continue to develop.
- Commitment to staff development, CPD, and professional growth.