# Position Details

## Research Scientist/Engineer- CSOF6

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| The following information is for applicants | |
| Advertised Job Title | Senior Research Engineer - Mechanical/Cryogenics |
| Job Reference | 77193 |
| Tenure | Indefinite |
| Salary Range | AU$115k to AU$135k pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Sydney (Lindfield) NSW |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | Australian Citizens Only |
| Position reports to the | Team Leader – Electromechanical Development |
| Client Focus – Internal | 20% |
| Client Focus – External | 80% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Scott Martin via email at [scott.martin@csiro.au](mailto:scott.martin@csiro.au) or phone +61 2 9413 7746 |
| How to apply | Apply online at <https://jobs.csiro.au/>  Internal applicants please apply via **Jobs Central**  If you experience difficulties when applying, please email [careers.online@csiro.au](mailto:careers.online@csiro.au) or call 1300 984 220. |

### Role Overview

The role of Research Engineer Staff in CSIRO is to conduct innovative research/engineering leading to scientific achievements that are aligned with CSIRO’s strategies. You may be engaged in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. You will have the opportunity to build and maintain networks, play a lead role in securing project funds, provide scientific leadership and pursue new ideas and approaches that create new concepts.

CSIRO has established a world-leading scientific capability in High Temperature Superconducting (HTS) electronic devices, circuits and sensors to develop advanced magnetometry. The Senior Research Engineer role will develop the mechanical and cryocooler modules of the sensor system to achieve challenging performance targets in ruggedness, reliability and noise/vibration suppression.

This role is offered on a full-time, part-time (minimum 0.8 FTE) or job share basis (if circumstances permit).

### Duties and Key Result Areas

* Design and develop cryocooler-based cryogenic instruments and high vacuum systems for advanced superconducting sensors/detectors for commercial and research projects.
* Improve cryocooler-based systems by applying thermodynamic principles, heat transfer modelling and thermal properties of materials.
* Design and develop (in collaboration with scientists, software engineers and electronic engineers) the mechanical supports, enclosures and fixtures for laboratory and field-based prototypes.
* Support other senior scientists by providing specialist advice to assist superconducting electronic device characterization using cryocoolers for the projects listed above.
* Design, construct, operate and troubleshoot a range of vacuum systems including small and large scale UHV systems and thin film deposition systems for a range of projects.
* Act as a trusted advisor, utilising knowledge of client’s business and understanding of their underlying needs.
* Within broad guidelines, use professional expertise, knowledge of other disciplines and research experience/achievement to formulate, develop and complete an approved research program with general direction as to the aims of their activities.
* Communicate research results to clients and the scientific community through oral and written reports, which may include the preparation of documents for patent applications.
* Provide advice to policy makers and inform and transfer knowledge to non-scientific audiences.
* Undertake feasibility studies, demonstrating a considerable degree of originality, creativity and innovation in solving problems and introducing new directions and approaches.
* Maintain confidentiality when working with commercially sensitive/confidential information.
* Communicate openly, effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Work collaboratively as part of a multi-disciplinary, regionally dispersed research team to carry out tasks in support of CSIRO’s scientific objectives.
* Adhere to the spirit and practice of CSIRO’s Values, Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* Other duties as directed.

## **Required Competencies**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Identifies critical stakeholders and influences them via an influential third party, for example through an established network, to gain support for sometimes contentious proposals/ideas.
* **Resource Management/Leadership:** Sets up and maintains effective and efficient work teams and manages performance and resources, to achieve objectives. Chooses appropriate management strategies and communication styles to maintain high levels of motivation and productivity. Gives feedback for development purposes and provides support and direction for improvement.
* **Judgement and Problem Solving:** Anticipates and manages problems in ambiguous situations. Develops and selects an appropriate course of action and provides for contingencies. Evaluates, interprets and integrates complex bodies of information and draws logical conclusions, synthesises proposals and defends options with reasoned arguments.
* **Independence:** Assesses the risk and opportunity of identified strategies, options and actions. Overcomes problems and setbacks in achieving goals. Invariably includes consideration of value-added future impact on bottom line when determining the optimal and efficient use of resources.
* **Adaptability:**Demonstrates flexibility in thinking and adapts to, and manages, the increasing rate of organisational change by adjusting strategies, goal and priorities.

## **Selection Criteria**

#### Essential

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A PhD or an equivalent combination of qualifications and research experience in a relevant field such as mechanical engineering or cryogenics.
2. Design skills using CAD-based package.
3. Demonstrated systems design skills along with mechanical background.
4. Knowledge and demonstrated usage of thermodynamic principles, including heat transfer modelling and thermal properties of materials.
5. The ability to work effectively as part of a multi-disciplinary, regionally dispersed research team.
6. Demonstrated ability to undertake original, creative and innovative research by generating and pursuing novel ideas and solutions to scientific research problems.
7. High level of written and oral communication skills.

## **Desirable**

1. A demonstrated publication history of authorship on scientific papers in peer reviewed journals and/or reports, grant applications or inventorship on patent applications.
2. Hands on experience in using and developing cryogenic instruments, cryocoolers and high vacuum systems.
3. FEM based software such as COMSOL, Solidworks or others.
4. Experience with magnetic sensors and RF electronics.
5. Experience with magnetic and EMF shielding techniques/materials.
6. Solid-state electronic device processing experience.
7. Expertise in vacuum processing and equipment.

Special Requirements

Appointment to this role may be subject to conditions including provision of a national police check as well as other security/medical/character clearance requirements.

* The successful candidate will be required to obtain and maintain a security clearance at a Negative Vetting Level 2.

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* 1. People First
  2. Further Together
  3. Making it Real
  4. Trusted

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