



POSITION DESCRIPTION

Position Title:	Senior Mechanical Engineer
Cluster / Business Unit / Division:	NSTLI/Australian Synchrotron/Operations
Section or Unit:	Engineering – Mechanical Engineering
Classification:	Band 6
Position Description Number:	PD-1720
Work Contract Type:	Technical

POSITION PURPOSE

The Senior Mechanical Engineer is responsible for supporting the team by taking design concepts through analysis, design and implementation phases in the delivery of a solution. They may be required to take on ownership of a technical system relating to the machine or beamlines and will be expected to be developing skills in a specialist area of expertise.

ORGANISATIONAL ENVIRONMENT

ANSTO is the national organisation for nuclear science and technology. We focus on undertaking leading edge research, delivering innovative scientific services and providing specialised advice to government, industry, academia and other research organisations.

The Australian Synchrotron provides world-leading technical capability, and the nucleus around which new science and industry networks form as researchers interact. The synchrotron delivers better and faster experimental techniques that not only enhance current fundamental and applied research, but also open up new avenues of investigation to Australian science. The facility promotes international collaboration to enable leading-edge research and development, and is a hub for research that greatly benefits Australia and its regional neighbours.

The Engineering Department is a group of multi-disciplined teams tasked with supporting the technical development and ongoing operational support of the facility. The technical scope encompasses the accelerator and beamline systems as well as their supporting technical infrastructure. To meet this challenge the Department is required to develop and maintain specialist skills and capability which are to be applied to the delivery of often technically challenging projects.

ACCOUNTABILITIES & RESPONSIBILITIES

Key Accountabilities

- Develop conceptual / detailed design of scientific instrumentation to be used in a radiation environment, in most instances following through with hands on build and commissioning. This enables beamlines to continually evolve by placing higher performance demands on the performance of the equipment, often necessitating complete redesign
- Conduct research as required to solve technical unknowns and challenges on assigned projects or in supporting the accelerator / beamlines or other technical systems
- Perform Engineering analysis and simulation more akin to a purely scientific role, using high end analysis tools such as FEA software, input from X ray and magnetic property simulations and scientific software packages
- Provide Beamline/Accelerator technical support, guidance and advice on technical issues; participate in discussions relating to technical requirements, feasibilities and trouble shooting of most beamline technical issues

- Project management of technical projects as assigned including leading a multi-disciplinary team in the delivery of desired project outcomes or focused on the delivery of a piece of hardware or functionality
- Technical system ownership, that includes identifying and ensuring maintenance is carried out and identifying future issues and upgrades
- Undertake additional duties as required and during period of leave of other staff

Decision Making

- The position is fully accountable for the accuracy, integrity and quality of the content of advice provided and is required to ensure that decisions are based on sound evidence, but at times may be required to make effective judgements under pressure or in the absence of complete information or expert advice
- The position determines and sets priorities on assigned projects and tasks e.g. technical design direction, implementation and testing strategies
- Makes decisions in relation to the creation and maintenance of policies for safety / operational requirements of a system or lab they may be responsible for
- Daily delivery of knowledge specific to their area of expertise
- The levels of authority delegated to this position are those approved and issued by the Chief Executive Officer. All delegations will be in line with the ANSTO Delegation Manual AS-1682 (as amended or replaced).

Key Challenges

- Make complex technical engineering decisions which may have high impact on the technical outcome of an assigned piece of work, based on advanced engineering techniques and theory. Often this will be done in an environment of ‘one offs’ requiring an appropriate approach to risk management strategies such as simulation, prototyping, etc;
- Create technical concepts for proposed and assigned work for the purposes of evaluating viable solutions and assessing end function, performance, technical risks and budget estimation.
- Interpretation of scientific requirements into engineering technical requirements from which solutions will be based. Often this will require a good understanding of the scientific principals associated with the challenge being set by the beamline or accelerator.
- Maintain a wide breadth of technical knowledge and design principals required to support the engineering delivery of beamline and accelerator projects and support activities.

KEY RELATIONSHIPS

Who	Purpose
Internal	
Department Head / Manager	<ul style="list-style-type: none"> • Regularly or as required to discuss ‘beyond the norm’ needs to complete a project or task, priorities where higher level input is required and to provide advice on technical feasibility/practicality on challenges relevant to their areas of responsibility
Members of team and other engineering groups	<ul style="list-style-type: none"> • As required, to provide expert technical advice and guidance depending on the scope of work carried out
Beamline scientists	<ul style="list-style-type: none"> • Weekly or as often as require to provide technical advice in trouble shooting or discussing technical options; discuss projects brought to engineering and keep them informed on project progress, challenges, request clarification of performance requirements and

	to identify possible solutions; communicate perceived technical problems on a beamline before they happen and provide suggestions if required
External	
Experts/colleagues at other facilities	<ul style="list-style-type: none"> As required depending on requirements to maintain knowledge of technical developments at other facilities which may be relevant and transferrable. Seek advice and provide advice as required
Specialist contractors/suppliers	<ul style="list-style-type: none"> Monthly or as required, to seek specialist services or advice or to purchase specialist equipment

POSITION DIMENSIONS

Staff Data	
Reporting Line	Reports to the Group Leader Mechanical Engineer
Direct Reports	Nil
Indirect Reports	Nil

Special / Physical Requirements	
Location:	Clayton Working in different areas of designated site/campus as needed
Travel:	May be required to travel to ANSTO sites interstate May be required to travel internationally
Physical:	Office based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer) Labour intensive physical requirements (sitting, standing, frequent manual handling up to 20kg) Working in a loud environment Public speaking Industrial facility physical requirements (lifting, standing for long periods, operating machinery, equipment and manipulators) Wearing personal protective equipment for the handling of hazardous and/or radioactive materials
Radiation areas:	May be required to work in radiation areas under tightly regulated conditions Perform duties with and in an area where hazardous chemicals or materials are handled under tightly controlled safety conditions
Hours:	Willingness to work extended and varied hours based on operational requirements After hours work may be required for short and infrequent periods
Clearance requirements:	Satisfy ANSTO Security and Medical clearance requirements

Workplace Health & Safety	
Specific role/s as specified in AG-2362 of the ANSTO WHS Management System	All Workers Officer (definitions found in appendix 1 of AG-2362) Other specialised roles identified within the guideline a position holder may be allocated to in the course of their duties

ORGANISATIONAL CHART

On file.

KNOWLEDGE, SKILLS AND EXPERIENCE

1. Degree level or higher in Mechanical or Mechatronics Engineering.
2. Skills in design and development of one off precision instrumentation to be used in a synchrotron radiation environment.
3. The ability to use 3D design software is essential along with functional abilities in the use of FEA software and familiarity of high end capabilities.
4. The ability to quickly understand scientific concepts in X Ray and Accelerator physics to a sufficient level where design decisions can be made in discussions with scientists.
5. The ability to communicate and collaborate with various technical groups, engineers, scientists other experts in their field to gain accurate and relevant information.
6. Ability to work autonomously
7. Ability to take on high end FEA analysis such as CFD analysis, and Non linear Analysis Techniques.
8. Developing ability in a specialist skill unique to particle accelerators and X ray environments.
9. Project management skills

VERIFICATION

This section verifies that the line manager and appropriate senior manager/executive confirm that this is a true and accurate reflection of the position.

Line Manager		Delegated Authority	
Name:	Brad Mountford	Name:	Dean Morris
Title:	Head of Engineering	Title:	Head of Operations
Signature:		Signature:	
Date:		Date:	