



POSITION DESCRIPTION

Academic Positions

(In addition to the Position Classification Standards)

Position Title:	Research Fellow	Level:	A or B
Faculty/Division:	Engineering	Department/Location:	School of Civil Mining and Environmental Engineering

Primary Purpose of the Position:

A Mechatronics Engineer is required within the Faculty of Engineering at the University of Wollongong to conduct Underground Coal Mining research into new ways of automating parts of the mining process. The appointee will work within multi-disciplinary teams from Mining Engineering, Mechatronics Engineering and Materials Engineering. They will have access to the latest technology and exposure to real industry needs. The appointee will need to collaborate with industry and local equipment manufacturers in order to generate results that can be used in production.

Position Environment:

An ACARP (Australian Coal Association Research Program) funded research program at UOW, within the School of Civil, mining and Environmental Engineering, is aimed at the development of a polymeric material and application system to replace steel mesh in longwall coal mine roadways, the application of which can be automated, thereby removing personnel from the immediate face area. The material development program is well advanced, and a sprayable formulation has been developed. Pilot-scale trials using a hand-held spray applicator are about to commence, and we now seek a mechatronics/automation engineer to examine automation options for the underground coal environment and develop an automated spray application system that can be attached to a continuous mining machine, the operation of which can be either fully automated, or remotely controlled. This is a one year appointment with the possibility of extension.

Duties include:

- Examination of options for automated spray application of the polymer roof support formulation
- Design, construction and in-house testing of an automated application technology
- Trial application using a small-scale test rig
- Integration of the automated spray technology into the existing coal cutting process and automated self-drilling bolt technology to produce a completely automated roadway support system.

Major Accountabilities/Responsibilities:

Responsibilities		Outcome	Office Use Only
1.	Initiate, conduct and manage research activities in, process control and industrial robotics.	On-time completion of overall project milestones in-line with the needs and expectations of ACARP	
2.	Administrative duties as specified by the Head of School	On-time completion of assigned tasks to an acceptable standard	

3.	I Observe principles and practices of Equal Employment Opportunity	To ensure fair treatment in the workplace	
4.	Have OH&S responsibilities, accountabilities and authorities as outlined in the OHS Roles and Responsibilities Document	To ensure a safe working environment for self & others.	

Reporting Relationships:

Position Reports to:	Assoc. Prof. Ernest Baafi and Dr. Stephen van Duin
The position supervises the following positions:	TBA
Other Key Contacts:	Profs. Chris Cook (Dean)

Key Relationships:

Contact/Organisation:	Purpose & Frequency of contact
School of Mechanical, Materials & Mechatronic Eng and School of Civil, Mining and Materials Eng	Fortnightly meetings
Gary Gibson and Associates (Industry Monitor)	Monthly meetings
ACARP – Roadway Development Task Group	Quarterly Reviews

Key Challenges:

1. Provide high quality research in industrial robotics and process control
2. Maintain external funding for research activities.
3. Where possible publish research findings in high quality international journals.
4. Ensure that research outcomes are utilised effectively for the betterment of society.

Knowledge & Skills:

Essential:

- Project Management experience for defined timeline
- Thorough knowledge of mechatronic machine processes and design for fabrication
- Knowledge and excellent competence in computer languages, Labview, C++,.....
- Excellent report writing and presentation skills for industry

Education & Experience:

Essential:

- Engineering Degree in Mechanical or Mechatronics
- Experience with motion and logic control
- Experience of high speed data acquisition
- Experience in collaborative research with industry
- Experience of computer based process control

Personal Attributes:

- Excellent communication skills in English so as to communicate and report findings to senior industry personnel
- Ability to conduct research in a team and to participate in collaborative research
- Enthusiasm for research

Approval:

Approved by Head of Unit: _____

Date: _____

Approved by Personnel: _____

Date: _____