

## National Industry PhD Program Scholarship: Track Cycling Measurement System

**Adelaide University and AusCycling Ltd invite applications for this industry PhD project, developing a velodrome-based track cycling training and drag analysis system.**

### Program overview

#### Degree

Doctor of Philosophy

#### Research area

Mechanical engineering / Fluid dynamics

#### Academic supervisor

Prof Richard Kelso

#### Industry partner

AusCycling

#### Expected commencement

Late 2026-Early 2027

### The successful candidate will receive:

- Admission to a PhD program at Adelaide University;
- An Adelaide University Research Scholarship for 4 years, paid at \$53,635 p.a., and a tuition fee waiver;
- Supervision from research specialists at Adelaide University and AusCycling;
- Industry embedment with AusCycling; and
- Access to professional development opportunities through the University's Graduate Research and Innovation Training program.

### Project Details

Track cycling is a high-profile Olympic and Paralympic sport, featuring over 32 medal events at the Paris 2024 Games. Australia is a leading nation but maintaining competitiveness for Los Angeles 2028 and Brisbane 2032 will require advances in knowledge and technology, particularly in aerodynamics. Coaches need accurate, real-time measurements of a rider's drag area (CdA), which quantifies aerodynamic efficiency, to optimise performance during training. However, current systems are significantly affected by air movement within the velodrome, leading to inaccurate results.

This project addresses this limitation by measuring air velocity ahead of each rider in real time, enabling precise CdA calculation during training. We aim to develop a velodrome-based track cycling training and drag analysis system that does not require specialized hardware to be fitted to riders or bicycles, improving accuracy, reducing cost and minimizing delays during training sessions. Current systems, typically employing a single air-speed sensor attached to the bicycle, do not capture the complex, turbulent air movements ahead of each cyclist. The new system will couple high-fidelity air movement measurements at track level with a Computational Fluid Dynamics (CFD) model to determine the detailed flow field ahead of each rider, thereby providing enhanced-accuracy, real-time measurements of the flow impacting the cyclist.



This industry PhD project will be undertaken in collaboration with Adjunct Professor Richard Kelso of the School of Electrical and Mechanical Engineering and research specialists at AusCycling Ltd.

### Eligibility Requirements

This opportunity is open to applicants that can meet the requirements for PhD admission at Adelaide University (including English language proficiency in the relevant academic area), and who can demonstrate suitable experience in mechatronic, mechanical, sports or aerospace engineering (through a high-quality Honours or Masters degree). A pre-requisite will be strong results in fluid-dynamics courses, with preference given to applied study components and experience. Instrumentation, MatLab coding and CFD experience are strongly

preferred. In addition, an ability to collect, analyse, interpret, and present data should be demonstrated. Some design experience, particularly in the use of sensors and electronics components, is desirable. Computer-aided design skills are desirable.

The candidate will also require strong communication and interpersonal skills. They will be expected to support industry partners in the education of athletes and coaches on the aims and benefits of the project, including the communication of complex concepts to individuals without strong technical (engineering) backgrounds. They will also need to engage with sports staff such as coaches and biomechanists to ensure that the desired outcomes are achieved.

The successful candidate must be able to enrol as a full-time PhD student at the University in the year of the offer. They must remain based in Adelaide, South Australia for the duration of the award.

Students that have previously completed a PhD program are, unfortunately, ineligible for the National Industry PhD Program.

## Expressions of Interest

To apply for this opportunity, please email the following documents to principal supervisor Richard Kelso ([richard.kelso@adelaide.edu.au](mailto:richard.kelso@adelaide.edu.au)) with the subject line 'National Industry PhD Program application':

- CV
- Cover Letter (of not more than 2 pages) outlining your interest in the PhD project and describing how your background and research area align with the project
- Degree certificates and relevant academic transcripts, with translations of non-English documentation

Applications close on **30 November 2026**. Please note that applications will be shortlisted on a rolling basis, and the scholarship advertisement may be withdrawn early if a suitable candidate is identified.

## About the National Industry PhD Program

The National Industry PhD Program is an Australian Government initiative to enhance workforce

mobility among graduate researchers, and to promote knowledge transfer between academia and industries across all areas. PhD candidates under this program are connected with academic supervisors and industry-based researchers, to co-design innovative, applied research projects. Through their doctoral candidature, students will experience research in both university and industry settings, and undertake specialised training in research translation and commercialisation.

## Enquiries

For enquiries about this opportunity please contact Adjunct Professor Richard Kelso: [richard.kelso@adelaide.edu.au](mailto:richard.kelso@adelaide.edu.au)

## General Enquiries

For further information about the National Industry PhD Program, or research degrees at Adelaide University, please contact the [Adelaide University Graduate Research School](#).