

Research Briefs

Knowledge Bank

A serious problem in coming years is the widespread loss of industry knowledge through significant levels of workforce retirement, particularly as 'baby boomers' leave the industry.

As outlined in the November 2009 Research Briefs, the CRC for Rail Innovation has a vision to address this challenge. Having identified a strong demand for a centrally-managed rail information portal, the CRC for Rail Innovation is leading the development of a rail Knowledge Bank in conjunction with a range of industry collaborators, including QR, ARA/Informa, RTSA and RTAA.

A beta version of the Knowledge Bank has been developed, and a Reference Panel has been formed to steer the upcoming rollout of the live Knowledge Bank.

With the committed and anticipated levels of industry collaboration, the Knowledge Bank will not only provide an extremely valuable resource to the domestic rail industry, but also serve to enhance Australia's reputation internationally as a leader in rail knowledge and innovation.

Projects Updates

R3.103 Short Pitch Irregularities

This project will deliver software which greatly refines rail irregularity data obtained from AK rail inspection cars. The refined data will enable a more targeted allocation of maintenance funds and resources.

The software is currently being tested by some of the CRC's industry participants, with initial testing producing positive results. With ongoing testing and refining the software, the next step will be integration of the CRC software into supply maintenance management software to the rail industry so it is available for use by the rail industry.

R3.107 Integrated Wear Fatigue Lubrication

The Integrated Wear Fatigue Lubrication Model project delivered a decision support model that establishes economic strategies for rail lubrication and grinding, inspection and rail replacements.

A key deliverable from the project is software designed to predict and inform rail lubrication, grinding and maintenance practices.

The software is currently in a testing and fine-

tuning phase with CRC industry participants. Pending successful testing, the software and supporting strategy document can be packaged via third-party development, and licensed for widespread use by the rail industry.

R1.102 Environmental Regulations

The CRC for Rail Innovation research into rail environmental regulation details more than 150 pieces of legislation and over 50 pieces of supporting documentation (such as guidelines and strategies). Key findings are a need for harmonisation in the structure and administration of regulatory processes, and in the actual prescriptive regulations to reduce overall compliance costs. The three reports produced can be found [here](#).

A single national body responsible for formulating and applying economic policy/planning and a single national body responsible for operational regulation across all modes of transport is the optimal long-term solution.

The CRC is continuing its research in this area with a new project, "Costing Environmental Legislation", about to start.

Projects Updates (Cont.)

R1.111 Skilled Migration

Following the successful Skilled Migration Forum in November last year, Southern Cross University is continuing to make significant headway in drawing together of industry leaders to address skilled migration issues.

A Skilled Migration Creativity Hub is underway, providing a forum for collaboration between stakeholders, skilled migrants and the rail industry. This will soon be supported by a dedicated website.

The major deliverable from the project will be a Skilled Migration Information Kit, which will summarise research findings into a set of

strategies and recommendations for the rail industry.

A preliminary Skilled Migration Information Kit will be launched at the Rail Careers 2010 conference in Brisbane, to be held 13th and 14th of May. The preliminary Information Kit launch will enable the research team to seek further industry feedback and comments before the final Skilled Migration Information Kit launch later in the year.

For full details on the Rail Careers 2010 conference, please go to the Informa website, at <http://www.informa.com.au/conferences/transport/rail/rail-careers>

New Projects

The Board approved four projects at its March meeting. Two of these projects (Route Knowledge and Capturing Driver Strategies) will use the new Human Factors Simulation Laboratory that the CRC is building. The Crashworthiness project will assist in the development of standards to make rollingstock safer for passengers and staff. The Track Design project is the culmination of a significant body of track research and will deliver a tool for track design.

R2.112 Capturing Driving Strategies

This project seeks to develop an understanding of how drivers acquire different driving strategies. To explore the value of exposure to different experienced drivers the project will seek to identify the driving strategies and techniques that experienced drivers use, together with some of the problems and pitfalls to be avoided. This project is closely related to the proposed Route Knowledge Acquisition project.

R2.113 Route Knowledge

There is an increasing need within the rail industry to train drivers faster and more effectively. To meet future demand for drivers, training programs must become more efficient and existing drivers need to be used more effectively. To address this need, the project aims to develop an enhanced training program using simulator-based scenarios to enhance driver competencies and reduce training time.

R3.114 Crashworthiness of Rolling Stock

This project will survey a number of recent significant Australian rail accidents in detail and on the basis of these, and the scenarios used in overseas crashworthiness standards, consider whether there is a need to develop scenarios for inclusion into the RISSB AS 7520 "Railway rolling stock - Body structural requirements" standards for locomotive and passenger rolling stock. The project will also produce criteria for assessing the design performance and testing of the Collision Energy Management System. The project outputs will contribute to performance based design standards leading to safer design and improved human occupant safety.

R3.117 Track Design and Analysis for Impact and Cyclic Loads

High Impact and cyclic loads on railway lines can cause significant track deformation leading to poor track geometry. In order to mitigate this problem, the concept of the inclusion of geogrid and ballast mat in the rail track will be assessed through comprehensive laboratory testing and field monitoring.

The design procedures will be proposed and included in the existing user-friendly comprehensive Sophisticated Methods of Analysis for Rail Track (SMART) software tool developed by the CRC for the analysis, design and management of the track substructure under cyclic loading. The SMART tool, in conjunction with the findings of this project is expected to become the most comprehensive track design and analysis tool available to industry.

