IRIS INSTITUTE FOR RESOURCE INDUSTRIES AND SUSTAINABILITY

CQUniversity AUSTRALIA RESEARCH

2nd IRIS POSTGRADUATE STUDENTS CONFERENCE:

Resourcing for the Future

BE WHAT YOU WANT TO BE

Wayside Lubricator Placement Model for Heavy Haul Lines

Md Gyas Uddin, PhD candidate, CRE

Effective rail curve lubrication plays an important role in rail wheel interface friction management. Therefore Wayside lubrication method is widely used in rail industry to provide cost effective lubrication and reduce rail/wheel wear, energy consumption, maintenance cost and noise. Research on lubrication practice in Australian heavy haul networks is limited. The performance of lubricants in the track could have significant difference based on weather conditions, track/traffic characteristics, dispensing equipment, lubricant type and dedication of lubricator's maintenance activities. There is a need for considering the effect of applicator bars (short and long bars), location and position of bars on the gauge face of the rail, track geometry, direction of traffic and other important factors. Wayside lubricator placement for maximum benefits is a function of product carryover and product carryover is affected by many track and traffic based parameters. Thus it is essential to generate model of lubricator placement based on combined effect of lubricants, applicator bars, locations and track/traffic characteristics. Experimental field data is collected and analysed for development of the model and estimation of model parameters. A worldwide literature review has been completed on the current lubricator technology to determine the best practice in heavy haul industry. Experience on lubrication current practice shows that mechanical or hydraulic systems need relatively higher maintenance requirements, and do not activate effectively at low train speeds. But the electric lubricators need low-maintenance and perform better with significant control of grease application. The Objective of the research is to minimise lubricant consumption and the number of lubricators necessary to achieve the desired gauge face coefficient of friction (μ) through optimal placement of the lubricators. Optimal settings of the electric lubricators were evaluated and found there was minimal wastage of grease with coal traffic.

The latest knowledge of optimal placement of lubricators was achieved to optimise lubrication management strategy. Controlled in-field testing has been undertaken on the Queensland Rail network to establish the reliability, efficiency and cost-benefit analysis of wayside lubricators.