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Poster paper

Retrofitting versus replacement for obsolete remote shunting unit (RSU) systems

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Wilmar's original remote shunting unit (RSU) solution has been made obsolete and a solution to manage the risks associated with this is required. In Wilmar's current locomotive control system solution, the RSU system utilises a CANBus to communicate inputs from the remote control to the automotive controller. In comparison, the original RSU solution uses discrete outputs to communicate commands to the locomotives programmable logic controller (PLC), which is not CANBus enabled. These differences make it difficult to simply replace the obsolete RSU solutions with an off-the-shelf remote-control solution. This poses a significant challenge as these obsolete RSU systems inevitably start to breakdown, given that enabling single-operator operation of locomotives is critical to Wilmar's business.

One solution to the problem is to replace the existing locomotive control systems and make them compatible with the CANBus RSU system. Although this solution would have many benefits, it would come at a significant and unnecessary cost and result in many other system components being replaced before their end of life. Another solution would be to find an RSU that carries similar architecture to the original control system. This option would result in yet another system type for the business to manage. In view of benefits and disadvantages both of these replacement-based options, a retrofitting approach is instead being considered.

For this retrofitting approach, Wilmar will be using an automotive controller to facilitate communication between the new RSU system and old locomotive PLCs. The automotive controller will be used as a translator, reading the inputs from the new RSU system through the CANBus and utilising connectors that mimic the old RSU system as outputs, allowing Wilmar to readily retrofit the current RSU system to older locomotives as their RSU systems breakdown.