

CASE STUDY

ARC SUPPRESSION TECHNOLOGIES



Australian Rail Track Corporation NSW, Australia

SECTOR

Railway Management and Maintenance

PROBLEM

Cam contacts in the lift gate mechanisms at railway level crossings were requiring frequent inspection and maintenance due to the damaging effects of arcing that occurs each time the gates are raised or lowered. Failure to conduct this contact maintenance could lead to improper gate operation and profound safety concerns.

SOLUTION

Install small, inexpensive NOsparc® arc suppressors (MGXDC1F024) in lift gate mechanisms to increase the operational lifetime of the cam contacts by a factor of 10x and greatly reduce planned contact cleaning and replacement.

INCREASING THE SAFETY OF LEVEL CROSSINGS AND REDUCING MAINTENANCE ON LIFT GATE CAM SWITCHES IN THE AUSTRALIA RAILWAY SYSTEM

The Australian Rail Track Corporation (ARTC), which is owned by the Commonwealth of Australia, manages more than 8,500 route kilometers of interstate rail track throughout much of Australia. This extensive network manages intercity passenger services and the transportation of many critical commodities, including coal, iron ore, agricultural products and general freight. The Values section of the ARTC web site presents the following message about the preeminence of safety in ARTC operations:

NO HARM

In our world, safety is everything. We care about our people, environment and communities. It doesn't matter how big or small, doing things safely means doing things right.

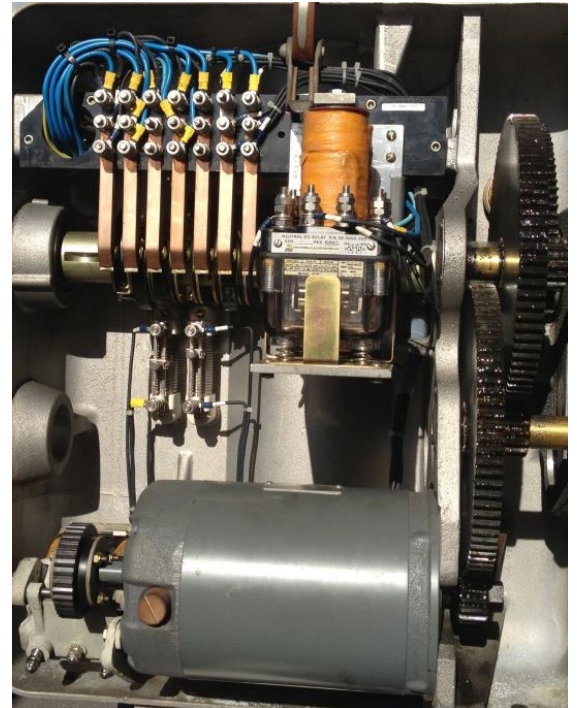
Foremost among the ARTC's safety concerns are level crossings – high-risk areas where rail traffic intersects with road traffic at the same level. At many of these crossings, combinations of lights, booms, gates, audible warning devices or lit signs warn pedestrians and motorists that rail traffic is approaching. The reliable operation of these systems is critical, including the raising and lowering of the lift gates found at many of these crossings.

There are more than 20,000 railway level crossings in Australia and many of them fall in the domain of the ARTC. Approximately 100 incidents at railway level crossings occur annually in Australia, resulting in an average of 37 deaths each year. These incidents also generate millions of dollars in losses due to casualties, and damages to property and freight. Interestingly, ARTC data for the last five years show level crossing incidents are more likely to occur in rural areas than metropolitan areas, with 82 per cent of collisions and 76 per cent of reported near hits occurring in a rural location.

The ARTC goes to great lengths to ensure that the crossing gates at these level crossings operate reliably. Each gate, regardless of how remote its location, is regularly inspected and tested. This includes the cam contacts that operate the lift gates, which are inspected, cleaned and brushed to remove the grit and oxidation caused by the arcing that occurs each time the contacts open or close. The more frequently the boom is operated, the more cleaning and maintenance is required on the cam contacts during the required monthly inspections. Without this planned maintenance, a lift-motor switch would be in danger of failing, possibly leading to a devastating train/vehicle collision.

In the summer of 2013, the ARTC was searching for a way to suppress the arcing in the contacts that switch the lift gate mechanism. They reasoned that if they could largely eliminate the arcing, the life of the contacts would be greatly extended, their switching reliability enhanced, and the amount of time devoted to cleaning and replacing contacts would be significantly reduced. Their search led them to discover NOsparc® arc suppressors from Arc Suppression Technologies, a company based in Minneapolis, Minnesota.

This new, patented technology virtually eliminates arcing within any automated switch (including electromechanical relays, contactors, or in this case cam-actuated switches) – quite a feat considering that arcing has been an accepted liability in power switching for more than 150 years. In October 2013, the ARTC began a 12-month field trial of NOsparc products in three high-traffic level crossing locations the Newcastle, New South Wales area. At the conclusion of this test, the ARTC found that NOsparc arc suppressor technology successfully solved the contact burnout problem and reduced the time devoted to contact cleaning and maintenance at each level crossing location. Arc Suppression Technologies also expects that its inexpensive NOsparc products will extend the operational life of these ARTC contacts by a factor of ten.



LIFT GATE CONTROL BOX AT LEVEL CROSSING

About NOsparc® Arc Suppressors

NOsparc® arc suppressors from Arc Suppression Technologies extend the operating life of power contactors and other automated switches by at least 10X, producing enormous cost savings in replacement contactors and motors, scheduled maintenance, and unscheduled downtime. Robust NOsparc products eliminate 99.9% of contact arcing energy at its source, and have immediate uses in thousands of commercial and industrial applications. Never before has there been an off-the-shelf solution to contact arcing that operates across a broad range of AC and DC power applications. Patented and UL Certified.

SUCCESSFUL TRIALS LEAD TO EXPANDED ROLLOUT

The successful trials have since led to ARTC recommendations to install the arc suppressors throughout a broader section of the ARTC network so as to significantly reduce maintenance costs while simultaneously improving level crossing boom reliability and safety at high-risk level crossings across Australia.

Hundreds of thousands level crossings are in place around the world and many of them employ the same type of crossing gate mechanisms as those used in Australia. Arc Suppression Technologies aims to more widely penetrate this significant market by reinforcing the life-saving and cost-saving features of its NOsparc products.

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