

Ensuring smooth railway operations in Korea with ABB's PMA® Cable Protection solutions

Rail switches are crucial to rail infrastructure

PMA

Smooth switching of trains from one track to another keeps 140 million people moving.



Korail is the national rail operator in **South Korea** operating the majority of the country's rail services

Railway track switches (points) are crucial to all rail operations. The signaling, detection and locking systems built into and around switches have to be protected against the rigors of everyday operations and often harsh environments. Any disruption can significantly reduce network capacity.

Korail, the Korea Railroad Corporation, is the national railway operator in South Korea, operating the majority of the passenger and freight train services in the country. KORAIL operates intercity, regional, commuter, metro and freight trains throughout South Korea. Part of this network is the Seoul Metropolitan Subway, a metropolitan railway system consisting of 23 rapid transit, light metro, commuter rail and people mover lines located in northwest South Korea. Some regional lines in the network stretch out beyond the Seoul Metropolitan Area to rural areas that lie over 100 km (62 mi) away from the capital. The Korail railway system relies on approximately 10,000 rail switches to smoothly divert trains from one track to another.



The project team installed a test installation along side a new track switch to test and analyze the functionality and performance of the of new cable protection solution. The results have been very convincing.



The project team tested and analyzed the
new rail switches
with a trackside prototype

Rail switches are crucial for enhancing safety, reducing maintenance and improving the reliability of daily rail operations. As Korail and Seoul Metropolitan Subway continue to expand and carry more passengers, significant investment in existing infrastructure is required in order to accommodate with increased demand. Updating the existing rail switches was identified as playing a vital role in these efforts, as building new tracks is always a difficult option. Korail decided to join forces with Seoul Metro to implement and upgrade the rail separation units on their networks.

Founded in 1984, Mahani Electric Co Ltd (MEC) is one of the leading distributors of imported electrical components in Korea. MEC supplies devices in various markets such as the sensors and connectors industries. MEC has been chosen to provide electrical and electronic components for the complete upgrading solution of the track switches.

Due to their long-lasting and successful partnership, Korail and Seoul Metropolitan Subway have partnered with MEC to provided electrical and electronic components for the complete track-switch upgrade solution.



Very flexible with good impact resistance and self-extinguishing properties

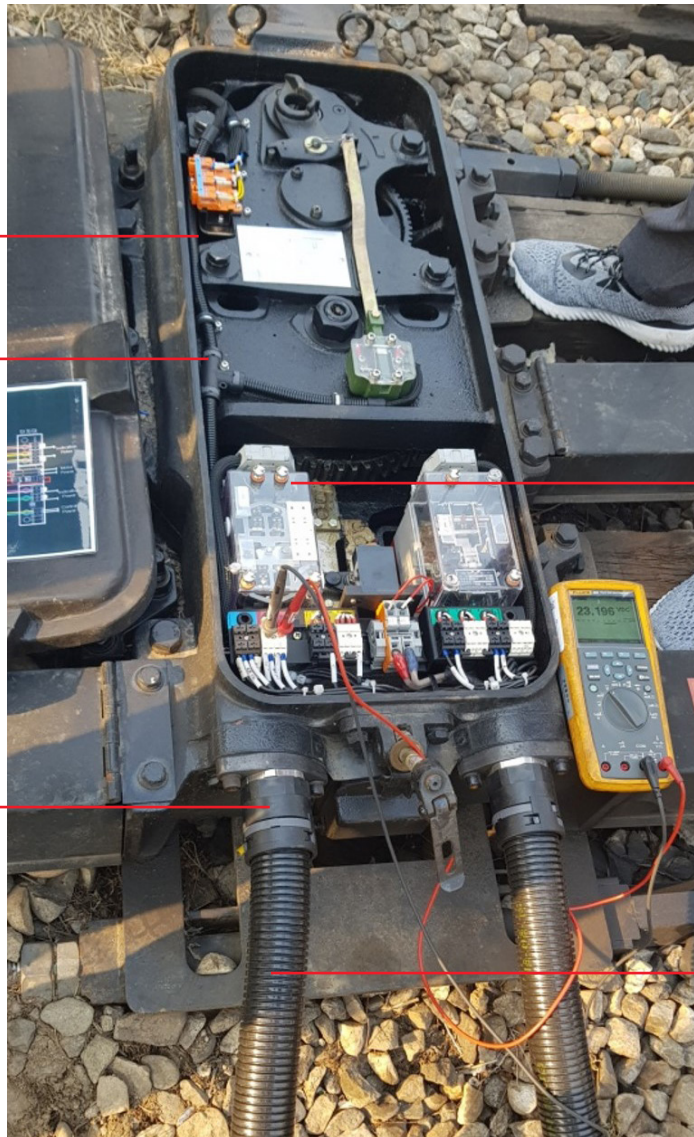
LLPA conduit

One-piece, polyamide T-junction for flexible conduits

T-Piece

IP 68 ingress protection with high thread and system connection strength

NVNV Fitting



Braided protection, an alternative way to bundle and protect electrical cables

PMA Jack

Flexible, ideal for track side applications, very long life time, >20 years

XVCS1H Conduit

Korail and Seoul Metro experienced the outstanding quality and performance of PMA products when using the PMA cable protection system in train operation for many years. Thanks to the very positive experience with PMA products in rolling stock applications, Korail and Seoul Metro together with MEC decided to choose PMA products for a successive upgrading of all track separation units enhance the required safety level of operational safety. 10,000 units require upgrading in the next several years.

“Rail switches play a crucial role in daily rail operations.”

Planners and engineers from MEC, Korail, Seoul Metro and ABB PMA formed a project team to find the best solution to upgrade all track separation units and support the required safety level of operation. The project team spoke to operators, maintainers and designers and learned that the existing track switches date from the 70s and 80s and have a waterproofing (road flushing) problem due to the low quality of connectors and their long period in service.

The project team discussed what performance they would want if Seoul Metro and Korail could redesign the switch from scratch. Ingress protection, UV- and temperature resistance, along with durability and safety, were identified as key requirements. MEC and ABB PMA proposed updating the existing switches using the highly flexible XVCS1H conduit.

Together with the T-Piece fittings and PMA Jack braids, they form a very flexible solution to protect and route cables inside the limited space of switch boxes. Outside boxes at the rail track, the LLPA - a flexible, heavy-duty conduit for track side applications with a very long lifetime and excellent weathering resistance - was recommended to the customer. Together with the PMAFIX IP68 - NVNV Fitting, the solution with IP 68 ensures excellent ingress protection and weathering resistance for trackside installations, such as rail switches.

Manny Park from Manhee Electric (MEC): “The collaborative efforts of our project team have generated remarkable synergies that have resulted in an innovative and reliable cable protection solution that sets new standards for durable rail switch equipment.”



With its PMA® cable protection range, ABB provides a comprehensive portfolio of conduits, screw connections and accessories for the most varied markets and applications.

PMA and MEC

Since its establishment in 1984, Manhee Electric (MEC) has been the exclusive domestic agent for European manufacturers of factory automation equipment. It has been working together with PMA since 2009. MEC supply devices such as sensors and connectors to various markets and industries. It is committed to acquiring new and advanced applied technology and introducing it to users for product localization. It focuses on providing prompt service right across Korea by building agency networks throughout the nation.

Korail South Korea

Korail, short for the Korea Railroad Corporation, is the national railway operator in South Korea. It operates the majority of the passenger and freight train services in the country. Korail plays a significant role in the transportation infrastructure of South Korea, connecting various cities and regions through its extensive rail network. KORAIL operates intercity/regional, commuter/metro and freight trains throughout South Korea.

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