

Why Alstom Spain is counting on PMA® TRUST™ modular support system

Cable routing is made easy regardless of its complexity

PMA

ABB's modular support system PMA® TRUST™ for conduits and cables in the rail industry

The roof of a tram is a complex space that contains a wide variety of electrical components including high-voltage cables, communication systems, and other critical equipment. ABB's PMA® modular support system PMA® TRUST™ is the perfect solution for safe and reliable fixation.



Made in Spain

Smooth and sustainable mobility

Citadis™ trams, for cities worldwide

Deeply rooted in the Spanish railway tradition, Alstom has been manufacturing trains in Spain for over 150 years, with a long history of innovation and commitment to Spain's economic and industrial development. In 2018 Alstom signed a contract with Verkehrsgesellschaft Frankfurt am Main GmbH (VGF), the transport operator in Frankfurt am Main, Germany, for the supply of 43 Citadis trams. The contract requires Alstom to repair equipment





All materials used in rail vehicles must comply with
EN 45545-2
 standard on rail-sector safety

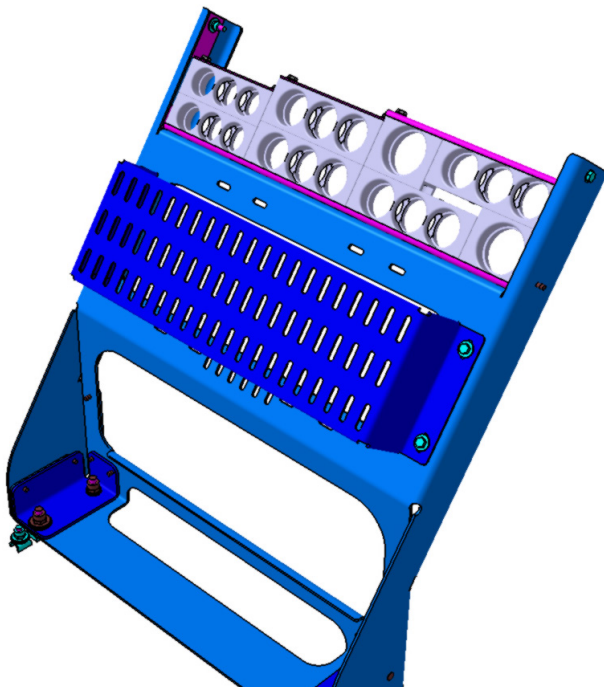
and provide training and warranty services. For rolling stock like the Citadis tram, roof transitions of electrical cables and conduits are an essential part of ensuring the safe and efficient operation of the vehicle. They must be designed and manufactured to the highest standards to ensure that they can withstand operating conditions and provide reliable and safe electrical power to the entire tram.

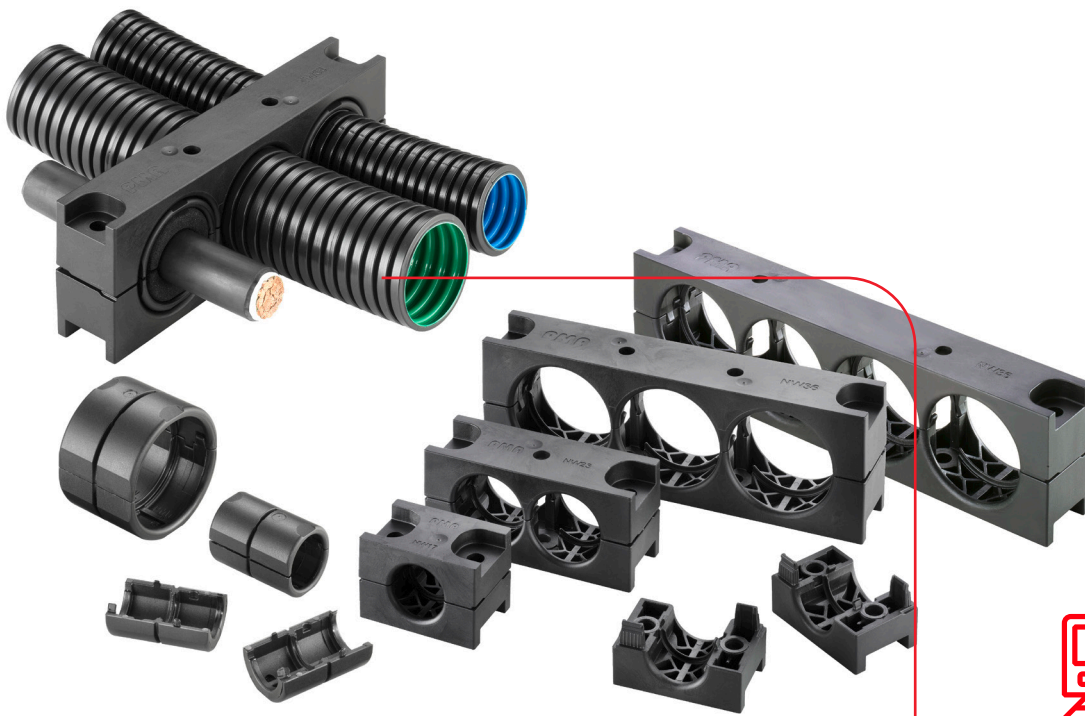
“For optimal installation and fixation of cables and conduits”

Alstom had a need to combine the fixing of different sizes of conduits and cables and it was critical to respect their positioning for correct operation. On the other hand, a standard and modular system was required to allow quick and easy installation of the cable protection.

A certified solution compliant with the EN 45545-2 standard on railway safety was required to support the cable protection system and install the conduits and cables in the carriage transition on the roof of the vehicle. Stringent requirements apply to this type of weather exposed solution on the roof of rail vehicle carriages – compliance with rail standards, adaptability, use of cables and conduits from a single source, and high weather-resistance. The PMA® TRUST™ system was the perfect solution for the application.

Another key consideration is the size and shape of the transitions. They must be carefully designed to ensure that they are compatible with the size and shape of the tram's roof, as well as the specific electrical components that they will be connecting to.





Perfect solution for routing cables and conduits on trains:

PMA® TRUST™ modular support system

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The modularity of the PMA Trust system allowed ALSTOM and PMA team to design together a solution that combined several sizes of conduits and cables.

Alstom and ABB Spain have a longstanding relationship which is why they relied on the local ABB team to define a PMA solution that leveraged the full range of PMA® TRUST™ support system to solve their need for compliance and reliability. Together with Alstom Engineering, the local ABB team defined a PMA solution incorporating the full range of products in the new PMA® TRUST™ solution: multiholder supports, cable adapters and conduit reducers.

The PMA® TRUST™ modular support system is a lightweight, compact solution with high impact-resistance. Thanks to the new design, external dimensions are reduced to the very minimum and internal spacing between adjoining conduits is very small. Each element can hold different combinations of both conduits and cables in various sizes.

“We needed the ABB PMA team to provide us with a solution that met our needs”

The new modular support system offers total installation flexibility complying with numerous of installation requirements, so that cable routing is made easy regardless of its complexity. Thanks to the modular system, installation time is kept to a minimum. Multiple conduits and cables in various sizes can be clamped in one element which is then secured with just two screws. Moreover, this is a 45545-2 certified solution - a standard that applies to all manufacturers of rail vehicles. Once the PMA® TRUST™ system is installed, it provides a reliable and secure cable routing system for the electrical components on the tram. This helps to ensure the components remain protected and are able to function reliably even in harsh conditions. Raul Fuentealmilla, responsible for electrical systems at ALSTOM Spain: “ABB PMA products are known for their high quality, which is why we asked ABB to provide us with a solution. We are very satisfied with the results.”





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

ABB and ALSTOM in Spain

ABB Spain and ALSTOM Spain have joined forces to deliver innovative solutions that help improve the efficiency and sustainability of the Spanish rail network. Both companies have a long history as suppliers to the rail industry and have collaborated on successful projects. Their successful relationship is built on shared expertise in the rail sector.

ALSTOM SPAIN

Alstom has played a pioneering role in Spain's rail sector, with its involvement in the introduction of the high-speed train, the country's first driverless metro, state-of-the-art signalling systems and the return of the modern tram to our cities. With local and international focus, Alstom teams in Spain lead mobility projects worldwide. Local centres of excellence for digital mobility and manufacturing sites have driven the development of railway projects in 23 countries.

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