



New cable protection technology
Improved performance and safety with
multilayer solutions for the rail industry

PMA

New multilayer technology sets the standard

The highest product characteristics in rail applications

Over a period of many years, ABB's PMA products have proven their dependability in railway construction projects around the world. This is the reason why large corporations have chosen PMA as their supplier.

Our new innovative railway engineering multilayer product line provides protection and safety for cables on intercarriage jumper connections, bogies, roof installations and under-carriage installations.

Multilayer conduit with inner and outer layer for improved safety and performance

The new PMA multilayer technology allows combinations of materials for optimal product characteristics in rail applications.

An innovative multilayer manufacturing technology creates a corrugated conduit with two layers of material. This multilayer solution provides additional protection and safety thanks to the combination of two specially modified polyamides with different material characteristics.

The new material combinations significantly improve the overall performance of the conduits..

To meet all customers' application requirements and provide full planning flexibility, PMA offers two different multilayer solutions for the rail industry:

XPCSF conduit with orange inner layer for highly dynamic external installations in railway vehicles

The highly flexible XPCSF conduit with an orange inner layer is the optimal product for external applications. The combination of two different layers offers the highest level of fire safety with EN 45545-2 HL3, excellent dynamic characteristics, weathering resistance and very good ageing characteristics.

XPCS conduit with green inner layer for external applications

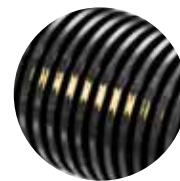
The combination of a green PA 6 inner layer and black PA12 outer layer provides a very good balance of characteristics with an optimized price-performance ratio.

Maintenance planning thanks to the multilayer wear indicator

The multilayer conduits are highly abrasion resistant. However, if high levels of abrasion do cause wear, the multilayer conduit provides a wear indicator. Two differently coloured, specially formulated polyamide layers, indicate the extent of the wear which has occurred. This enables you to plan for upcoming maintenance at the first signs of abrasion.

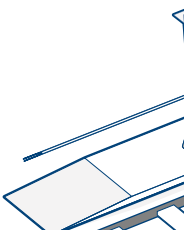


Combination of two different layers for improved performance and safety. The layers indicate the extent of the wear which has occurred.



The key benefits:

- Excellent dynamic characteristics
- Improved fire safety with EN 45545-2 HL3 classification
- Outstanding ageing characteristics





A new standard in comprehensive end-to-end cable protection solutions

Together with PMA's tried and tested product range of fittings and accessories in various sizes, the XPCSF and XPCS conduits with new state-of-the-art multilayer technology offer a comprehensive and sustainable end-to-end cable protection solution for the rail industry.

Cable protection solutions for every possible situation in the rail industry meeting all standards

On the roof, under the carriage or for couplings, the PMA multilayer conduits XPCSF and XPCS are compatible with our PMAFIX and PMAFIX Pro fittings, giving you the flexibility to combine every end-to-end cable protection solution you need. The available conduit sizes range from NW10 to NW48, to offer a solution for every situation. Our conduits and fittings are fully compliant with EN 45545-2. All multilayer conduits are REACH and RoHS compliant.

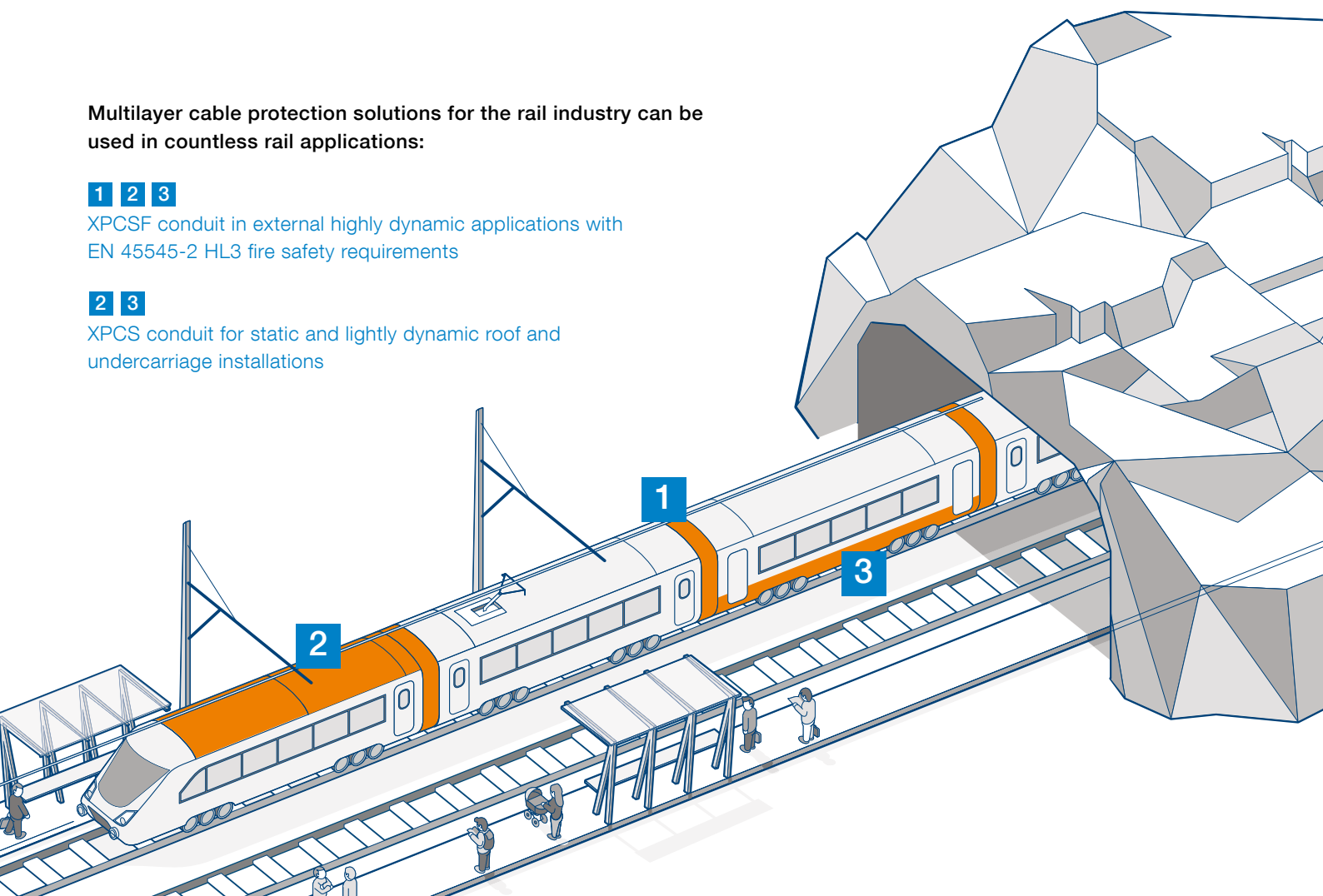
Multilayer cable protection solutions for the rail industry can be used in countless rail applications:

1 2 3

XPCSF conduit in external highly dynamic applications with EN 45545-2 HL3 fire safety requirements

2 3

XPCS conduit for static and lightly dynamic roof and undercarriage installations



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