



Full Speed Ahead

Voith turbo chooses to protect the cables installed on the diesel motors of their track vehicles with PMA cable protection products. Significantly increasing the reliability of the vehicles and reducing Time out of operation.

Dipl.-Ing. Ullrich Höltkemeier

Probably very few people are aware that the reliability of track vehicles is partially dependent upon an inconspicuous black polyamide corrugated conduit which protects the cables against stone impacts, water and dust, heat and aggressive rodents – Cable Protection made by PMA.

Diesel motors for track vehicles

Voith Turbo, specialists for hydrodynamic propulsion systems for use on the road, on tracks, on ships and in industrial applications is a division of Voith GmbH.

Answering to the question, how Voith turbo became involved in supplying diesel motors to the rail industry, Andreas Wegmann, Head of Motor technology at Voith Turbo replied "Voith Turbo manufactures under-frame drive systems for track vehicles. Until three years ago the diesel motor was the only major component which had to be bought in. In order to supply customers with

a complete system from one source, Voith Turbo began a co-operation with MAN Truck and Bus, including the development of diesel motors for track vehicles. The focus of the co-operation has been upon railway specific requirements in particular the legally limited emission levels for the rail sector.

The first Voith rail motor is equipped with a two stage exhaust turbocharger, exhaust back feed and particle catalytic converter. It was developed on the platform of the new MAN V-motor series. During the development between Voith turbo and MAN Truck and Bus particular attention was paid to upon the suitability for rail transport, the reduction of emissions, reliability and cost effectiveness. The motor was trimmed for the requirements of rail transport industry with respect to form, thermodynamics and optimised combustion. For diesel motors for track vehicles Voith turbo chooses PMA cable protection from PMA Germany."



Conduits in use: Track drive system – Voith Power packs.

Cable Protection for the Next Generation

Cables in and on track vehicles are exposed to and must be protected against various external influences. Essentially components from the PMAFIX and PMAFLEX product lines, which were specially developed for demanding applications in track vehicles, are used.

Heinz Seedorf, Key Account Manager PMA Germany commented *“We believe the new motors will also be used in the Voith power packs. Along with turbogearing, cooling systems, axle gearing, drive shafts, highly elastic couplings, and drive control systems all these complex applications are interesting potential applications for our innovative cable protection systems. Also on other components within the power pack and for the cable connections within the power pack PMA products are used. In the main part PMAFIX IP68 fittings, PCS conduits, and accompanying accessories.”*

Cable protection on track vehicles

The PMA cable protection system provides high level sealing performance against water including high pressure water jets and submersion due to flooding.

The PMAFIX IP68 system is in use worldwide particularly in rail rolling stock applications. These proven fittings have been developed a step further to create the PMAFIX Pro product line combining the outstanding characteristics of the existing PMA product range with the experience gained in countless applications worldwide. Under the name PMAFLEX 30 different conduit types are available for technically demanding cable protection applications. Conduit diameters from 7 mm up to 125 mm in heavy duty to light grade, from pliable to highly flexible. The PCS conduit type is primarily used in external dynamic rail applications.

The excellent basic characteristics of the modified PA12 raw material make the product particularly suitable for situations where continuous high intensity sunlight can be expected.

Voith Turbo chooses PMA cable protection



Turbo gearbox T211: 100 bis 160 km/h, 350 kW max input power. Cables protected by PMA conduit.

Conclusions

Heinz Seedorf: *“The PCS conduit was specially developed for highly demanding dynamic outdoor applications, it is manufactured from a modified PA12 material which through special additives has excellent resistance to weathering. In static applications, which represent the majority of applications, a life time of over 25 years can be achieved.*

So Voith has a product in use which meets all their requirements. The advantages of the PMA products in use at Voith turbo are full compliance with all international standards. Many termination possibilities in different configurations. Very good support services during the design in phase, local representatives, fast delivery of samples and short delivery lead times.”

Dipl.-Ing. Ullrich Höltkemeier, Editor in chief konstruktionspraxis