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Hunt Class HMS Middleton (M34) at sea

Hunt Class HMS Hurworth (M39) on patrol in the English Channel

MPE TEMPEST power line filter with low line-to-earth current leakage

TEMPEST power line filters for Hunt Class upgrade

As part and parcel of new systems being retrofitted to the vessels in a major upgrade, in March 2021 MPE manufactured and supplied TEMPEST power line filter sets for four of the six Royal Navy Hunt Class minehunters currently in service. Orders for the remaining two vessels are expected in the near future.

Design assistance for the project was provided to BAE Systems Maritime – Maritime Services at Portsmouth by MPE engineering and sales personnel during the latter half of 2020. Maritime Services is one of three divisions of BAE Systems Maritime, specialising in the repair and maintenance of Royal Navy vessels, as well as product development, naval training and through-life support.

At 750t displacement, 60m length, 10.5m beam and 2.2m draught, Hunt Class mine countermeasure vessels (MCMVs) are the largest Royal Navy warships of GRP construction. That contributes to the vessel's very low magnetic signature required for mine countermeasure operations. Each vessel has a crew of 45 with five officers. The vessels were designed not just for minehunting and minesweeping duties but also for patrol missions.

Traditionally, when installed, the TEMPEST power line filters from MPE would be grounded via a connection to the steel bulkhead of the ship. However, because of the glass reinforced plastic (GRP) construction of the Hunt Class platform, particular attention had to be paid to the earthing solution for the filters.

MPE delivered two custom TEMPEST power line filter designs. They feature low line-to-earth leakage capacitance to meet Def-Stan 59-411 and Mil-Std-461, thus reducing AC leakage current-to-earth. Non-magnetic materials were incorporated where possible to reduce the magnetic signature of the filter, and grounding was provided via external earth studs on both the input and output compartments of the filter.

A high attenuation performance of 100dB was provided in compliance with NATO TEMPEST SDIP-27 and SDIP-29 Standards, across a frequency range of 100kHz to 10GHz.

Filter design and selection were completed in conjunction with BAE Systems Maritime Services. Supplied through MPE's authorised UK distributor SACA UK, the TEMPEST filters were subsequently installed by Babcock International.

MPE's involvement with the Hunt Class platform continues a long and proud history of MPE filters being specified for Royal Navy applications. MPE products have previously been or are currently in operational use on Vanguard and Astute Class submarines, QEII aircraft carriers, Type 45 destroyers, Type 23 frigates, Type 26 frigates and Sandown Class minehunters.

You can download your personal copy of the comprehensive, six-page datasheet on MPE's low-leakage TEMPEST power line filters for marine applications from here