A Question of Design

Are we building into the Type 26 Frigates a fault that, like the propulsion problem in the Type 45 Destroyers, will have to be rectified at a later date?

Earlier this year, at HMS Sultan, I was shown the diesel electric power arrangement that is to be fitted into the new Type 26 Frigates. The diesel engine, prime mover for the system, was mounted on rubber vibration damping feet to a steel raft, which was in turn to be flexibly mounted onto the ships structure, with similar but slightly larger rubber feet. As the Type 26's are intended to be ultra quiet anti submarine platforms, the intention is of course that as little vibration as possible will be allowed to transfer through the vessel's structure and into the water column as acoustic noise that could be picked up by a listening submarine or seabed array.

A drive shaft passed from the diesel to the electrical generator, which was not on the steel raft but was instead solidly mounted directly onto what would be a part of the ships structure. When I asked if there was a flexible coupling between the diesel and the electrical generator I was told that there was not and when I further asked why, the reply was that it was not thought to be necessary. I found this reply both perplexing and troubling.

The diesel prime mover will inevitably lean and heave on its flexible mounting as the vessel works in a seaway. It will also vibrate freely on its rubber feet. Should there not therefore be some form of take up in the drive shaft that goes to another part of the system that is rigidly fixed? Since seeing the set up I have wondered at the longevity of the bearings at each end of that shaft, the possible damage done to either or both the diesel and electrical generator and the amount of noise that could actually be transferred into the ships structure and thus the water column.

I am not a naval architect or even a marine engineer and I may have been briefed by someone who was not in full possession of the facts. With 45 years of seagoing experience however and at least half of that on diesel electric vessels, one of which was a quiet running survey ship, I wonder if this small point has been overlooked among the thousands of other problems that the design teams have had to overcome. Surely the answer would be to mount both the diesel and electrical generator on the same raft with a flexible coupling in the shaft between the two. The only thing that would then go to and come from the raft would be the flexible fuel, bonding and electrical cables.

When things start to go wrong it is sometimes the person who is standing back from the control desk or the action at hand that spots a detail, missed by those more intensely involved. I therefore offer this critic as a question from someone in the back row, to be acknowledged or rebuffed by those with far more knowledge of the subject than myself.

Fred Dupuy