Parallel-middle-body and stern-form relative significance in the wake formation of single-screw large ships

Ketut Suastika, author

Abstrak

The relative significance of the parallel middle body and stern form in the wake formation of single-screw large ships and their contribution to the ship’s viscous resistance are studied by using computational fluid dynamics (CFD). A 10450-DWT tanker is considered by varying the ratio of the parallel-middle-body’s length to the ship’s length (Lmb/L) and by varying the shape of the stern form from a V-like to a U-like underwater stern transom section. In all the calculations, the principal dimension and the displacement of the ships are kept constant. A larger value for the parallel-middle-body relative length (Lmb/L) of ships with the same stern form results in a larger drag coefficient but does not affect the nominal wake fraction significantly. A change in the shape of the underwater stern form, from a V-like to a U-like section, results in a much larger drag coefficient ascribed to the much larger wake fraction. The stern form dominantly affects the nominal wake fraction and the ship’s viscous resistance compared to the parallel-middle-body relative length.