

ABSTRACT

This report aims to describe the calculation of laminar flow field around a simple hull-like geometry of a ship using the software Ansys and OpenFOAM.

PROBLEM STATEMENT

For a laminar flow, analyse the fluid (here, sea water) around the hull geometry. Use suitable laminar model. Calculate the drag force and drag coefficients.

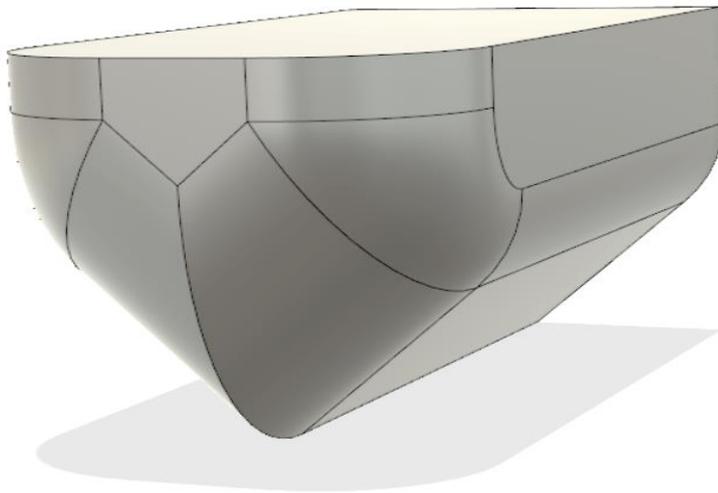


figure 1*

Following initial conditions are assumed to solve the problem:

Fluid flow(water) = 20 knots, 10.2889 m/s Laminar flow

Assuming material, Steel = $7850.00 \text{ Kg}/\text{m}^3$

Total Surface area of the hull = 768.35 m^2

Total Volume of the hull = 1401.724 m^3

Density of sea water = 1029 kg/m³

Overall length = 20 m

Constant air and water properties

**Figure 1 created using Autodesk FUSION 360*