

**CALCULATION OF MATERIAL REQUIREMENTS AND WEIGHT
ESTIMATION OF THE STRUCTURE OF BLOCK 3 OF A 5700KL OIL
TANKER SHIP USING THE MATERIAL TAKE OFF METHOD AND
CONSTRUCTION MODELING**

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ABSTRACT

Material requirement calculation and structural weight estimation are essential aspects of oil tanker construction planning, as they significantly affect cost efficiency, safety, and vessel performance. This study aims to calculate the material requirements and estimate the structural weight of Block 3 of an oil tanker using the Material Take Off (MTO) method and 3D construction modeling. The MTO method was carried out based on construction drawings and technical specifications, while the 3D modeling was performed using Rhinoceros software to obtain the structural weight estimation. The results showed that the total structural weight of Block 3 calculated using the MTO method was 200,301.43 kg (200.3 tons), while the 3D Rhinoceros model produced a total structural weight of 190,674.30 kg (190.6 tons). The difference between the two methods was 9,627.12 kg, with a deviation of -4.81%, which is still within the acceptable tolerance limit of $\pm 5\%$. These findings indicate that both methods provide a good level of agreement and can be used as references for material requirement calculation and structural weight estimation in oil tanker construction planning.

Keywords: oil tanker, Block 3, material take off, structural weight estimation, computational modeling.