QUANTITY TAKE-OFF CALCULATION USING BIM REVIT FOR STEEL FRAME BUILDING STRUCTURES

(*Special study* : PT CSK-CEMERLANG SAMUDRA KONTRINDO)

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ABSTRACT

This study aims to analyze and compare the results of structural building volume calculations between conventional methods and BIM (Building Information Modeling) methods using Autodesk Revit software. The case study of PT CSK-CEMERLANG SAMUDRA KONTRINDO was conducted on the CFA Plant factory construction project owned by PT Cemerlang Samudra Kontrindo. BIM was chosen for its ability to present 3D models and automatically generate accurate and efficient Quantity Take Off (QTO) data. The recommendations include mastering the use of Autodesk Revit to enhance knowledge and insights in the construction industry, as well as the importance of precision in modeling to ensure accurate measurements. In this study, the data collected consisted of as-built drawings and budget cost plan data. This data was then modeled in Autodesk Revit to obtain Quantity Take Off results, which were then compared with conventional calculations using Excel based on 2D drawings. The analysis results showed significant differences in time efficiency and data accuracy between the two methods. From the Revit design results, the Quantity Take Off extracted from the Revit model indicated that the Revit modeling and conventional methods yielded a concrete volume QTO of = 225.28 m³. For the QTO results of reinforcement and steel, the total data for the entire project is = 248,911.56 kg. From the conventional results, the total is = 227.6 m³ using 2D drawings and Excel calculations, resulting in a conventional calculation for the entire project of = 265,224.1 kg. Based on the comparison between the Autodesk Revit (QTO) calculation and the conventional method, the difference between the Revit and conventional values is = 6.15%.

Keywords: Autodesk Revit 2022, Building Information Modeling (BIM), Conventional Method, Quantity take off.