INTISARI

Perkembangan teknologi konstruksi membawa perubahan signifikan dalam merancang dan membangun gedung. Salah satu inovasi terbesar teknologi *yaitu Building Information Modeling* (BIM), memfasilitasi pemodelan digital dari bentuk fisik dan fungsi bangunan. Integrasi antara Revit dan Robot memungkinkan perancang untuk membuat model struktural, melakukan analisis, dan memperbarui model lebih cepat dan akurat.

Penelitian ini menganalisis struktur dan merancang konfigurasi tulangan gedung Gelanggang Inovasi dan Kreativitas Universitas Gadjah Mada Zona A dengan integrasi perangkat lunak Revit dan Robot. Bangunan yang telah dimodelkan pada Revit diekspor ke Robot *Structural Analysis* untuk dilakukan analisis struktur terhadap berbagai kombinasi beban. Data yang kita dapatkan dari analisis struktur digunakan sebagai dasar perancangan tulangan kolom dan balok.

Hasil analisis antara Robot Structural Analysis dan ETABS terdapat perbedaan antara 1,61% sampai 2,62% pada gaya geser, 0,72% sampai 3,37% pada momen lentur. Hasil desain elemen struktur diperoleh hasil yang sama pada elemen kolom dan pelat lantai, tetapi berbeda pada elemen balok dengan perbedaan luasan perlu sebesar 3,56% sampai 4,48%. Integrasi Autodesk Revit dan Autodesk Robot menawarkan potensi besar untuk meningkatkan koordinasi, efisiensi, dan kualitas dalam proses perancangan struktur, tetapi memiliki tantangan terkait dengan spesifikasi perangkat keras, kompleksitas, investasi, standarisasi, dan keterbatasan fitur.

Kata kunci: analisis struktur, perancangan tulangan, robot *structural analysis*, gedung gelanggang inovasi dan kreativitas

ABSTRACT

The development of construction technology has brought significant changes in designing and constructing buildings. One of the biggest innovations of technology is Building Information Modeling (BIM), facilitating digital modeling of the physical shape and function of buildings. The integration between Revit and Robots allows designers to create structural models, perform analyses, and update models faster and more accurately.

This study analyzes the structure and designs the rebar configuration of the Innovation and Creativity Building of Gadjah Mada University Zone A with the integration of Revit and Robot software. Buildings that have been modeled on Revit are exported to Robot Structural Analysis for structural analysis of various load combinations. The data we get from structural analysis is used as the basis for designing column and beam reinforcement.

The results of the analysis between Robot Structural Analysis and ETABS showed a difference between 1.61% to 2.62% in shear force, 0.72% to 3.37% in bending moment. The results of the design of structural elements were obtained with the same results on column elements and floor slabs, but different on beam elements with a difference in the necessary area of 3.56% to 4.48%. The integration of Autodesk Revit and Autodesk Robot offers great potential to improve coordination, efficiency, and quality in the structural design process, but it has challenges related to hardware specifications, complexity, investment, standardization, and feature limitations.

Keywords: *Structural Analysis, Rebar Design, Robot Structural Analysis, Building Courts of Innovation and Creativity*