

**Perbandingan Respons Struktur Akibat Beban Gempa Dan
Pengaruh Angin Pada Gedung Bertingkat Tinggi
(Studi Kasus: Gedung Menara Rektorat Kampus UNTIRTA Sindangsari)**

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ABSTRAK

Gedung menara rektorat kampus UNTIRTA diklasifikasikan sebagai gedung bertingkat tinggi yang memiliki risiko beban lateral cukup besar, diantaranya beban angin dan beban gempa. Analisis beban angin pada struktur gedung dipengaruhi oleh ketinggian gedung, sedangkan analisis beban gempa dipengaruhi oleh massa gedung. Berdasarkan ketinggian serta lokasi yang rawan terhadap beban angin dan beban gempa, maka perlunya penelitian dalam merencanakan gedung menara rektorat kampus UNTIRTA yang mampu menahan beban tersebut untuk menjamin keandalan bangunan.

Penelitian ini bertujuan untuk membandingkan respons struktur akibat beban gempa dan pengaruh angin pada gedung bertingkat tinggi dimana respons struktur yang ditinjau yaitu *story drift*, *displacement*, dan *story shear*. Penelitian ini menggunakan metode pembebanan gempa dinamik respons spektrum berdasarkan SNI 1726-2012 dan pembebanan angin berdasarkan SNI 1727-2013.

Hasil penelitian menunjukkan bahwa pengaruh tekanan angin rencana pada gedung menara rektorat kampus UNTIRTA berdasarkan data BMKG yaitu $0,0135 \text{ kN/m}^2$ tidak memenuhi persyaratan tekanan angin desain minimum berdasarkan SNI 1727-2013 sebesar $0,77 \text{ kN/m}^2$. Tekanan angin rencana yang rendah dikarenakan gedung menara rektorat kampus UNTIRTA terletak jauh dari pantai namun memiliki risiko kegempaan cukup tinggi, sehingga pembebanan akibat beban gempa menghasilkan respons struktur yang lebih besar meliputi *story drift*, *displacement*, dan *story shear* secara berturut-turut yaitu sebesar 43,56%, 76,62%, dan 64,98% terhadap beban angin.

Kata Kunci : Beban Angin, Beban Gempa, Menara, Respons Struktur.

Comparison of Structural Responses Due to Seismic Load and Wind Effect on High-rise Building

(Case Study: Rectorate Tower Building of UNTIRTA Campus Sindangsari)

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ABSTRACT

The rectorate's tower building of UNTIRTA Campus is classified as a high-rise building that has a considerable risk of lateral loads, including wind and seismic loads. Analysis of wind load on building structures is influenced by the height of the building, while the analysis of seismic load is influenced by the mass of the building. Based on the height and location that are prone to wind loads and earthquake loads, the need for research in planning rectorate's tower building of UNTIRTA Campus that is able to withstand these burdens to ensure the reliability of the building.

This study aims to compare the structure response due to earthquake loads and the effect of wind on high-rise buildings where the reviewed structural responses are story drift, displacement, and story shear. This study uses dynamic seismic loading response spectrum method based on SNI 1726-2012 and wind loading based on SNI 1727-2013.

The results showed that the effect of planned wind pressure on the UNTIRTA campus rector building based on BMKG data is $0,0135 \text{ kN} / \text{m}^2$ did not meet the minimum design wind pressure requirements based on SNI 1727-2013 is $0,77 \text{ kN/m}^2$. The low wind pressure plans is because the UNTIRTA campus rector building is located far from the coast but has a high seismic risk, so loading due to earthquake loads results in a larger structural response including successive story drifts, displacements, and story shears is 43,56%, 76,62% and 64,98% of wind loads.

Keywords : Seismic load, Strutural Response, Tower, Wind Load.