

ABSTRAK

Judul: Perbandingan Analisis Struktur Tower SUTT 150 kV menggunakan Response Spectra dan Time History, Nama: Iqramullah Altriaz Fassa, Nim: 41119110042, Dosen Pembimbing: Suci Putri Elza, S.T.,M.T., 2021

Beban gempa merupakan salah satu variabel utama dalam perencanaan struktur, beban gempa perlu didesain dengan benar sebelum diaplikasikan pada model struktur. Perbedaan metode desain gempa juga mempengaruhi respon struktur dan kestabilannya saat masa layan. Metode desain gempa yang digunakan adalah analisis dinamik response spectra dan time history (analisis riwayat waktu). Pada gempa time history, parameter pengambilan sampel data gempa dibatasi pada spektrum maksimum tertarget yang merujuk pada analisis dinamik response spectra. Selanjutnya spektrum sampel time history akan diskalakan hingga mendekati target spektrum, agar didapat spektrum gempa yang memimik seperti gempa aslinya. Diharapkan aplikasi beban gempa time history pada model struktur dapat mewakili kondisi aslinya saat terjadi gempa. Pada tahap akhir, respon struktur terhadap dua metode desain gempa akan dibandingkan. Beban gempa time history dan response spectra menyebabkan gaya geser dasar dan perpindahan nodal maksimum yang berbeda. Gaya geser dasar dan perpindahan nodal maksimum yang lebih besar diakibatkan oleh beban gempa time history. Sedangkan pada sisi struktur, rasio kapasitas masing-masing batang bernilai sama, dikarenakan beban maksimum kritis tidak terjadi pada kombinasi beban gempa.

Kata kunci: SUTT, Gempa, Response Spectra, Time History, Struktur

ABSTRACT

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Earthquake load is one of the main variables in structural planning, earthquake loads need to be designed properly before being applied to the structural model. Differences in earthquake design methods also affect the response of the structure and its stability during service life. The earthquake design method used is dynamic analysis of response spectra and time history (time history analysis). In earthquake time history, earthquake data sampling parameters are limited to the maximum targeted spectrum which refers to the dynamic analysis of the response spectra. Furthermore, the spectrum of the time history sample will be scaled to approach the target spectrum, in order to obtain an earthquake spectrum that mimics the original earthquake. It is hoped that the time history earthquake load application on the structural model can represent the original condition when an earthquake occurred. In the final stage, the response of the structure to the two seismic design methods will be compared. Earthquake load time history and response spectra cause different base shear forces and maximum nodal displacements. The larger base shear and maximum nodal displacement are caused by time history earthquake loads. While on the structural side, the ratio of the capacity of each rod is the same, because the maximum critical load does not occur in the combination of earthquake loads.

Keyword: SUTT, Earthquake, Response Spectra, Time History, Structure