DEFORMATION ANALYSIS OF SURAMADU BRIDGE DUE TO WIND EFFECT USING GPS KINEMATIC METHOD

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Abstract

Deformation is one factor to be reckoned for structural health monitoring of Suramadu Bridge. Vibration caused by the influence of various dynamic loads on the bridge, either live load or dead load as dynamic wind loads, becoming a factors causing lateral deformation. If vibrations occur in excess and accumulate in a certain time, it will cause bridge structure damage.

GPS is a positioning technology with high accuracy positioning. Observation of the deflection position of a point on the bridge obtained through kinematic GPS measurements can be used as an analysis of vibration patterns that occurs in Suramadu Bridge.

The results of GPS measurements in this study did not obtained a high precise result because errors and biases due to cable stay around the measurement location can not be avoided. Outliers is an effect of error and biased. Small outliers on Januari makes lateral deflection < 5 cm, and big outliers on Mei caused lateral deflection > 5 cm. With Moving average filter, noise caused environment condition around the point can be reduce.

Key Word : Deformation, Suramadu Bridge, GPS, Moving Average Filter
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