ABSTRAK

PENGUKURAN MODULUS YOUNG STAINLESS STEEL DENGAN ANALISIS GETARAN MENGGUNAKAN APLIKASI AUDIA

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Telah dilakukan penelitian untuk mengukur nilai modulus Young *stainless steel* dengan analisis getaran menggunakan aplikasi *AudiA* yang terpasang pada *smartphone*. Suara getaran *stainless steel* yang direkam *smartphone* ditampilkan dalam grafik hubungan intensitas suara getaran terhadap waktu oleh aplikasi *AudiA*. Grafik hubungan intensitas suara getaran terhadap waktu kemudian diubah ke bentuk grafik *Fast Fourier Transform* (FFT) menggunakan aplikasi AudiA untuk memperoleh frekuensi alami dari getaran *stainless steel.* Nilai modulus Young ditentukan dengan analisis grafik hubungan frekuensi alami terhadap satu per kuadrat panjang *stainless steel* yang berdasar pada persamaan *Euler-Bernoulli.* Nilai modulus Young yang diperoleh dari hasil penelitian adalah (2317±392) GPa

Kata kunci: Modulus Young, *stainless steel,* analisis getaran, aplikasi *AudiA,* frekuensi alami

ABSTRACT

MEASUREMENT OF YOUNG MODULUS OF STAINLESS STEEL BY VIBRATION ANALYSIS USING AUDIA APP

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Research has been conducted to measure the Young's modulus value of stainless steel by vibration analysis using the AudiA application installed on a smartphone. The sound of stainless steel vibration recorded by the smartphone is displayed in the graph of the relationship between vibration intensity and time by the AudiA application. The graph of the relationship between vibration intensity and time was then converted to a Fast Fourier Transform (FFT) graph by the AudiA application to obtain the natural frequency of stainless steel vibration. The Young's modulus value was determined by analyzing the graph of the relationship between the natural frequency and one square of the length of stainless steel based on the Euler-Bernoulli equation. The Young's modulus value obtained from the research results is (2317±392) GPa.

Keywords: *Young's modulus, stainless steel, vibration analysis, AudiA application, natural frequency*