

## INTISARI

Kesalahan jarak tepi *rivet* pada struktur *fuselage* pesawat NC212i dapat memengaruhi integritas struktural. Penelitian ini bertujuan untuk menganalisis pengaruh ketidaksesuaian jarak tepi *rivet* (5 mm aktual vs. 7 mm spesifikasi) terhadap kekuatan struktur. Metode analitik dan simulasi *Finite Element Analysis* (FEA) menggunakan *software* SolidWorks diterapkan untuk mengevaluasi kekuatan struktur dan menentukan *margin of safety* (MS). Hasil analisis menunjukkan bahwa *stringer* dengan jarak tepi *rivet* 5 mm masih mampu menahan beban operasional, dengan nilai MS positif untuk berbagai mode kegagalan, yaitu *shear failure* (5.64), *bearing failure* (1.15), *shear-out failure* (1.56), *tension failure* (6.73), dan *shear-bearing failure* (1.80). Simulasi FEA mengungkapkan tegangan geser maksimum (259.41 MPa) dan tegangan tarik maksimum (406.31 MPa) berada di bawah batas kekuatan material. Validasi hasil simulasi menunjukkan kesalahan relatif di bawah 5%, mengindikasikan keakuratan model. Temuan ini memberikan acuan teknis bagi industri kedirgantaraan dalam mengevaluasi ketidaksesuaian jarak tepi *rivet*.

**Kata kunci:** Analisis kekuatan, *rivet*, *stringer*, jarak tepi *rivet*.

## ABSTRACT

*Incorrect edge distance of rivets in the fuselage structure of the NC212i aircraft can affect structural integrity, particularly in the stringer area between frames 12 and 13. This study aims to analyze the effect of non-conforming rivet edge distance (5 mm actual vs. 7 mm specification) on structural strength. Analytical methods and Finite Element Analysis (FEA) simulations using SolidWorks software were employed to evaluate structural strength and determine the margin of safety (MS). The analysis results indicate that the stringer with a 5 mm rivet edge distance can still withstand operational loads, with positive MS values for various failure modes, including shear failure (5.64), bearing failure (1.15), shear-out failure (1.56), tension failure (6.73), and shear-bearing failure (1.80). FEA simulations revealed maximum shear stress (259.41 MPa) and maximum tensile stress (406.31 MPa), both below the material strength limits. Validation of the simulation results showed a relative error of less than 5%, indicating model accuracy. These findings provide technical references for the aerospace industry in evaluating non-conforming rivet edge distances.*

**Keywords:** *strength analysis, rivet, stringer, rivet edge distance.*