INTISARI

Profil baja ringan memiliki dimensi ketebalan relatif tipis dengan rasio dimensi lebar setiap elemen profil terhadap tebalnya sangat besar, sehingga rawan terhadap tekuk. Dalam SNI 8399:2017, menyebutkan toleransi untuk ketidaksempurnaan geometri *Bow (bw)* (dalam arah tegak lurus Z-Z), *Twist* (*h*) (Arah X-X), *Camber* (δ), profil C, Z, U. SNI 8399:2017 belum dijelaskan seperti apa penurunan kekuatan kolom terhadap ketidaksempurnaan geometri tersebut. Dalam penelitian ini dilakukan analogi terhadap pengukuran ketidaksempurnaan geometri pelat kerucut terpancung yang dilakukan Pariatmono, 1994. Pada penelitian Pariatmono, data dari sumbu melingkar dirobah menjadi sumbu horizontal dengan cara mengambil beberapa sudut dalam lingkaran, dalam penelitian ini diambil setiap 6º (60 data dalam satu baris) dan dijadikan data-data tersebut sebagai data dengan perilaku probablistik. Kemudian dari 60 batang yang didapat, dilakukan analisis Fourier untuk mendapatkan persamaan ketidaksempurnaan geometri. Dari 60 batang tersebut didapat masing-masing koefisien Fourier. Kemudian diambil rata-rata, rata-rata +10%, +20%, +30%, +40%, +50% serta -10%, -20%, -30%, -40% dan -50% nilai standar deviasinya. Dari 11 batang tersebut dilakukan analisis tekuk non linier menggunakan ANSYS *Workbench* 2022 R1. Analisis probabilistik batang tekan terhadap ketidaksempurnaan geometri yang dilakukan pada penelitian ini belum dapat secara pasti memberikan gambaran umum batasan ketidaksempurnaan geometri.

Kata kunci: Baja Ringan; Ketidaksempurnaan geometri; Tekuk; Lendutan.

ABSTRACT

Mild steel profiles have relatively thin thickness dimensions with the ratio of the dimensions of the width of each profile element to the thickness is very large, making it prone to bending. In SNI 8399:2017, mentions tolerances for geometric imperfections Bow (bw) (in the perpendicular direction Z-Z), Twist (h) (X-X direction), Camber, profiles C, Z, U. SNI 8399: 2017 has not been explained what kind of decrease in column strength against (δ) these geometric imperfections. In this study, an analogy was made to the measurement of imperfections in the geometry of the decapitated cone plate conducted by Pariatmono, 1994. In Pariatmono's research, data from the circular axis was changed into a horizontal axis by taking several angles in a circle, in this study it was taken every 6º (60 data in one row) and used as data with probablistic behavior. Then from the 60 rods obtained, Fourier analysis was carried out to obtain geometric imperfection equations. From these 60 bars obtained each Fourier coefficient. Then the average is taken, averaging +10%, +20%, +30%, +40%, +50% and -10%, -20%, -30%, -40% and -50% of the standard deviation values. Of the 11 rods, a non-linear buckling analysis was carried out using ANSYS Workbench 2022 R1. The probabilistic compressive analysis of geometric imperfections conducted in this study has not been able to definitively provide a general idea of the limits of geometric imperfections.

Keywords: *Cold Formed Steel; Initial Deflection; Buckling, Deflection.*