ANALISIS PENGENDALIAN KUALITAS PRODUK JIG CROS MENGGUNAKAN METODE SEVENTOOL DAN FAILURE MODE EFFECT ANALYSIS (FMEA)
(STUDI KASUS : CV TRISTAR MANDIIRI)

Rizal Husain Nugroho[1], Ferida Yuamita[2]
Program Studi Teknik Industri, Universitas Teknologi Yogyakarta, Jl. Glagahsari No63, Warungboto, Kec. Umbulharjo, Kota Yogyakarta, Daerah Istimewa Yogyakarta 55164 e-mail:
[*1]rizal husain nugroho, [2]ferida yuamita@uty.ac.id

Abstrak

Dalam industri manufaktur, pengendalian kualitas merupakan aspek krusial dalam menjaga konsistensi produk dan memenuhi kepuasan pelanggan. CV Tristar Mandiri menghadapi permasalahan berupa cacat produk jig cross, khususnya pada aspek dimensi dan permukaan, yang memengaruhi performa produk akhir. Penelitian ini bertujuan untuk menganalisis faktor penyebab cacat dan memberikan usulan perbaikan melalui penerapan metode Seven Tools dan Failure Mode and Effect Analysis (FMEA). Data dikumpulkan selama periode 11 Februari hingga 11 Maret 2025, mencatat 10 dari 50 unit jig cross mengalami cacat (dimensi: 3 unit, permukaan: 7 unit). Metode Seven Tools digunakan untuk menganalisis pola cacat melalui alat seperti check sheet, diagram pareto, histogram, scatter diagram, peta kendali, dan diagram fishbone. Hasil analisis menunjukkan bahwa cacat permukaan merupakan jenis cacat dominan (70%). Selanjutnya, metode FMEA digunakan untuk mengidentifikasi dan mengevaluasi risiko kegagalan. Nilai Risk Priority Number (RPN) tertinggi untuk cacat dimensi adalah 144 yang disebabkan oleh kesalahan pembacaan gambar teknik oleh operator, sedangkan untuk cacat permukaan adalah 144 akibat penggunaan tools yang tumpul. Usulan perbaikan meliputi pelatihan operator, kalibrasi alat ukur secara berkala, perawatan mesin CNC, serta standardisasi prosedur kerja. Dengan penerapan usulan tersebut, diharapkan CV Tristar Mandiri dapat menekan jumlah cacat produk dan meningkatkan kualitas produksi secara berkelanjutan.

Kata Kunci: Pengendalian kualitas, Seven Tools, FMEA, RPN.

QUALITY CONTROL ANALYSIS OF JIG CROSS PRODUCTS USING SEVEN TOOL AND FAILURE MODE EFFECT ANALYSIS (FMEA) METHOD

(CASE STUDY : CV TRISTAR MANDIRI)

Rizal Husain Nugroho[1], Ferida Yuamita[2]

Industrial Engineering Study Program, University of Technology Yogyakarta, Jl. Glagahsari No63, Warungboto, Kec. Umbulharjo, Kota Yogyakarta, Daerah Istimewa Yogyakarta 55164

e-mail:

[*1]rizal husain nugroho, [2]ferida yuamita@uty.ac.id

Abstract

In the manufacturing industry, quality control is a crucial aspect in maintaining product consistency and meeting customer satisfaction. CV Tristar Mandiri faces problems in the form of defects in jig cross products, especially in the dimensions and surface aspects, which affect the performance of the final product. This study aims to analyze the factors causing defects and provide improvement suggestions through the application of the Seven Tools method and Failure Mode and Effect Analysis (FMEA). Data collected during the period of February 11 to March 11, 2025, recorded 10 out of 50 jig cross units had defects (dimensions: 3 units, surfaces: 7 units). The Seven Tools method was used to analyze defect patterns through tools such as check sheets, Pareto diagrams, histograms, scatter diagrams, control charts, and fishbone diagrams. The results of the analysis showed that surface defects were the dominant type of defects (70%). Furthermore, the FMEA method was used to identify and evaluate the risk of failure. The highest Risk Priority Number (RPN) value for dimensional defects was 144 caused by errors in reading engineering drawings by operators, while for surface defects it was 144 due to the use of blunt tools. Proposed improvements include operator training, regular calibration of measuring instruments, CNC machine maintenance, and standardization of work procedures. By implementing these recommendations, CV Tristar Mandiri is expected to reduce the number of product defects and continuously improve production quality.

Keywords*: Quality control, Seven Tools, FMEA, RPN.*

DAFTAR PUSTAKA

Annandita, A.R. And Rochmoeljati, Rr. (2020) 'Analysis Defect Products In Silencers Using The New Seven Tools Method Alifia', *La Multiapp*, 01(01), Pp. 1–6. Available At: Https://Doi.Org/10.37899/Journallamultiapp.V6i2.1986.

Ansyah, N.A. And Sulistiyowati, W. (2022) *Analysis Of Quality Control Of Shrimp Crop Products With Seven Tools And Fmea Methods (Case Study : Ud. Djaya Bersama) Analisa Pengendalian Kualitas Produk Kerupuk Udang Dengan Metode Seven Tools Dan Fmea (Studi Kasus : Ud. Djaya Bersama)*.

Firdaus, A. *Et Al.* (2023) 'Pengendalian Kualitas Produk Cacat Menggunakan Metode Seven Tools Di Cv Berkat Anugrah', *Jurnal Mahasiswa Teknik Industri)*, 6(2).

Fitria Novi Ariestiyani, Moch.T.S. (2020) 'Analysis Of Phonska Fertilizer Product Quality Control Using Seven Tools Method With Fmea: A Case Study Fitria', 01(01), Pp. 1–6. Available At: Https://Doi.Org/10.37899/Journallamultiapp.V6i1.1850.

Gustany, E.W., Hariyanto, A. And Haryudiniarti, A.N. (2023) 'Analysis Of Quality Control Of 800ml Lubricant Bottle Leaks With Seven Tools Method At Pt. Efg', *Jurnal Teknik Industri Terintegrasi*, 6(4), Pp. 1260–1271. Available At: Https://Doi.Org/10.31004/Jutin.V6i4.20388.

Halizah, Z.N. And Sumarna, A.D. (2023) *The Quality Control Using Seven Tools Method For Defect Product On Scanner Production*.

Husain, [1], Karim, A. And Sari, M.P. (2023) 'Analisis Seven Tools Dan Fmea Produk Fillet Ikan Patin Pada Cv Xyz', *Japti: Jurnal Aplikasi Ilmu Teknik Industri*, 4(2), Pp. 69–77. Available At: Www.Journal.Univetbantara.Ac.Id/Index.Php/Japti.

Iriyanto, A. *Et Al.* (2024) 'Reducing Sachet Noodle Defects By Applying The Seven Tools And The Fmea Method', 7(1), Pp. 257–262.

Iskhaq, M. And Wasiur Rizqi, A. (No Date) 'Quality Control Analysis On Nylon Monofilament Net Production Process Using The Seven Tools Method And Fmea At Pt Arida', Viii(4), Pp. 7370–7378.

Kresna Agung Yudhistira, Mochammad Basjir, Unung Lesmanah, Nur Robbi, Dan S. (2024) 'Analisis Pengendalian Kualitas Produk Tiang Listrik Dengan Metode Seven Tools Dan Fmea (Failure Mode Effect Analysis) Di Pt Xy', *Jornal Of Research And Technology*, 10.

Luthfi, A. *Et Al.* (2023) 'Analisis Pengendalian Kualitas Pada Tempe Menggunakan Metode Seven Tools Dan Fmea', *Jurnal Teknologi Dan Manajemen Industri Terapan (Jtmit)*, 2(3), Pp. 212–223.

Nur Herawati, A. *Et Al.* (2024) 'Mengurangi Cacat Produksi Kaos Dengan Metode Seven Tools Dan Failure Mode And Effect Analysis (Fmea) (Studi Kasus Home Industry Tc)', *Jurnal Mahasiswa Teknik Industri*, 7(1).

Nur'aini, V. And Andesta, D. (2024a) 'Analisis Pengendalian Kualitas Produksi Papan Fiber Semen Dengan Metode Seven Tools Dan Fmea Pada Pt. Xyz', *G-Tech: Jurnal Teknologi Terapan*, 8(2), Pp. 1166– 1173. Available At: Https://Doi.Org/10.33379/Gtech.V8i2.4162.

Nur'aini, V. And Andesta, D. (2024b) 'Analisis Pengendalian Kualitas Produksi Papan Fiber Semen Dengan Metode Seven Tools Dan Fmea Pada Pt. Xyz', *G-Tech: Jurnal Teknologi Terapan*, 8(2), Pp. 1166– 1173. Available At: Https://Doi.Org/10.33379/Gtech.V8i2.4162.

Nurjaman, B., Insan Waluya, A. And Sasmi, W.T. (2024) 'Quality Control Of Head Cylinder Products Using The Seven Tools Approach At Pt Otomotif Indonesia', 10(2), Pp. 335–344.

Paradika Rossadi And Sumiati Sumiati (2023) 'Analisis Pengendalian Kualitas Produk Midsole Dengan Metode Seven Tools Dan Failure Mode Effect Analysis Pada Pt.Xyz', *Jurnal Penelitian Rumpun Ilmu Teknik*, 3(1), Pp. 98–110. Available At: Https://Doi.Org/10.55606/Juprit.V3i1.3176.

Prasmana, M.F., Andesta, D. And Hidayat, H. (2023) 'Analysis Of The Causes Of Defects In The Timber Production Process Using The Fmea (Failure Mode Effect Analysis) Method Approach At Pt. Kqw', *Jurnal Sains Dan Teknologi Industri*, 20(2), P. 639. Available At: Https://Doi.Org/10.24014/Sitekin.V20i2.21837.

Putra Kristianto, F. And Fadli, F. (2023) *Bidang: Teknik Dan Manajemen Industri Topik: Rekayasa Dan Manajemen Kualitas Pengendalian Kualitas Produk Cabinet Furniture Dengan Metode Seven Tools Dan Failure Mode And Effect Analysis (Fmea) Di Cv. X*.

Saputra, A.D. And Nugroho, A.J. (No Date) *Pengendalian Kualitas Produk Kopi Menggunakan Metode Seven Tools Dan Failure Mode And Effect Analysis (Fmea) Di Umkm Dharma Coffee*.

Syarifuddin, A. And Misbah, A. (2023) 'Analysis Of Quality Control Of Defects In 500 Ml Plastic Bottle Products Using Fault Tree Analysis And Fmea Methods At Pt. Berlina Tbk Pandaan', *Jurnal Sains Dan Teknologi Industri*, 21(1), P. 131. Available At: Https://Doi.Org/10.24014/Sitekin.V21i1.24827.

Verana Kartika Sari And Yusuf Widharto (2019) 'Analisis Penyebab Defect Pada Raw Material Kertas Rol Dengan Menggunakan Metode Seven Tools & Solusi Perbaikan Dengan Metode Failure Mode And Effect Analysis (Fmea) (Studi Kasus: Pt. Masscom Graphy)', *Industrial Engineering Online Journal*, 8(2), Pp. 1–6