

ABSTRAK

PENERAPAN METODE FMEA DAN FTA DALAM MENGIDENTIFIKASI PENYEBAB KERUSAKAN KELISTRIKAN MOTOR MATIC DI BENGKEL RESMI HONDA

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Bengkel Resmi Honda merupakan unit layanan otomotif yang bertugas memastikan performa kendaraan roda dua tetap optimal, terutama pada aspek sistem kelistrikan. Namun, dalam beberapa bulan terakhir, terjadi peningkatan jumlah kerusakan pada komponen kelistrikan motor matic, yang berdampak pada kepuasan pelanggan dan efektivitas layanan. Penelitian ini bertujuan untuk mengidentifikasi dan menganalisis penyebab utama kerusakan sistem kelistrikan menggunakan dua metode analisis, yaitu *Failure Mode and Effect Analysis* (FMEA) dan *Fault Tree Analysis* (FTA). Pengumpulan data dilakukan melalui wawancara, observasi langsung, serta telaah dokumen Laporan Kerja Harian (LKH) selama dua bulan. Berdasarkan hasil FMEA, ditemukan empat komponen dengan nilai *Risk Priority Number* (RPN) tertinggi yaitu *Accu Battery* (RPN=378), *Sekering (Fuse)* (RPN=168), *Spul (Stator Comp)* (RPN=160) dan *Wire Harnes* (Kabel putus) (RPN=120). Analisis lanjutan menggunakan FTA mengungkapkan bahwa penyebab dominan meliputi usia aki yang telah melampaui batas pakai, kelalaian pengguna dalam mematikan kunci kontak, korsleting pada kabel akibat pemasangan yang tidak standar, serta masuknya debu dan air ke rumah spull dan Gesekan terus-menerus dengan bodi atau rangka kendaraan (abrasi). Hasil penelitian ini diharapkan menjadi acuan bagi pihak bengkel dalam merancang program perawatan *preventif*, meningkatkan pelatihan teknisi, serta menyusun prosedur pemeriksaan kelistrikan yang lebih komprehensif untuk menekan angka kerusakan berulang dan meningkatkan kepuasan pelanggan.

Kata Kunci: *Failure Mode And Effect Analysis* (FMEA), *Fault Tree Analysis* (FTA), Perawatan *Preventif*, Sistem Kelistrikan motor matic.

ABSTRACT

Implementation of FMEA and FTA Methods in Identifying The Causes of Electrical Failures in Automatic Motorcycles in An Authorized Honda Workshop

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Honda Authorized Workshop is an automotive service unit tasked with ensuring optimal performance of two-wheeled vehicles, especially in the electrical system aspect. However, in recent months, there has been an increase in the number of damages to the electrical components of automatic motorcycles, which has an impact on customer satisfaction and service effectiveness. This study aims to identify and analyze the main causes of electrical system damage using two analytical methods, namely Failure Mode and Effect Analysis (FMEA) and Fault Tree Analysis (FTA). Data collection was carried out through interviews, direct observation, and review of the Daily Work Report (LKH) documents for two months. Based on the FMEA results, four components were found with the highest Risk Priority Number (RPN) values, namely Accu Battery (RPN = 378), Fuse (RPN = 168), Spool (Stator Comp) (RPN = 160), and Wire Harness (Broken cable) (RPN = 120). Further analysis using FTA revealed that the dominant causes include battery age that has exceeded the usage limit, user negligence in turning off the ignition, short circuits in the cables due to non-standard installation, as well as the entry of dust and water into the spool housing, and Continuous friction with the vehicle body or frame (abrasion). The results of this study are expected to be a reference for workshops in designing preventive maintenance programs, improving technician training, and developing more comprehensive electrical inspection procedures to reduce the number of recurring damages and increase customer satisfaction.

Keyword: Automatic motorcycle electrical system, Failure Mode and Effect Analysis (FMEA), Fault Tree Analysis (FTA), Preventive Maintenance.