

ABSTRAK

Kereta api merupakan salah satu alat transportasi penumpang dan barang yang mempunyai keunggulan. Keunggulan/kelebihan tersebut antara lain dalam hal kapasitas angkut, efisien, aman, ramah lingkungan, dan kelancaran dalam operasi transportasi dibanding angkutan yang lain. Sehingga diperlukan performa yang baik pada lokomotif yang di gunakannya, semakin tinggi keandalan yang diperlukan *carbon brush* pada Traksi Motor. Penelitian ini bertujuan Mengetahui penyebab kerusakan *carbon brush*, Memberikan usulan interval waktu penggantian *carbon brush* traksi motor lokomotif yang optimal., serta nilai *reliability* (keandalan) pada mesin Traksi motor. Penelitian ini menggunakan metode *Reliability Centered Maintenance* (RCM) dengan tahapan menentukan batasan sistem dan *functional block*, analisis FMEA untuk menentukan kegagalan tertinggi dengan perhitungan nilai RPN, *Logic Tree Analysis* (LTA), pengujian distribusi, perhitungan MTTF dan MTTR, perhitungan waktu interval perawatan dan biaya perawatan. Berdasarkan hasil analisis dan perhitungan dapat diperoleh nilai fungsi kepadatan probabilitas sebesar dan nilai kumulatif kepadatan probabilitas sebesar. Selanjutnya, usulan interval waktu perawatan komponen *carbon brush* yang distribusi statistik kerusakan *Log normal* didapatkan rekomendasi pergantian setiap 2705 jam dengan ekspektasi biaya harapan sebesar Rp 866.130,99. Sehingga lebih menghemat biaya sebesar 402.000 dibandingkan sebelumnya pertahun, setelah menerapkan metode *Realibility centered maintenance* (RCM).

Kata kunci: Perawatan, RCM, Keandalan, *Age replecment*.

ABSTRACT

Train is one of transportation that has advantages to delivery passanger and goods efficiently. Those include transportation capacity, efficient, safety, environmentally friendly, and smooth transportation operations compared to other transportation. The operator must be keep the locomotive on peak performance, the higher reliability required carbon brush on Motor Traction. This research aims is determine the causes of carbon brush damage, provide suggestions for optimal locomotive motor traction carbon brush replacement time, as well as reliability values on motor traction engines. This study uses the Reliability Centered Maintenance (RCM) method with stages of determining system limits and functional blocks, FMEA analysis to determine the highest failure with RPN value calculation, Logic Tree Analysis (LTA), distribution testing, MTTF and MTTR calculations, maintenance interval time calculations and maintenance costs. Based on the results of analysis and calculation, the value of the probability density function can be obtained by and the cumulative value of the probability density beforer. Furthermore, the proposed maintenance time interval of carbon brush components for which the distribution of normal log damage statistics is recommended obtained on 2705 hour with expected cost expectations is Rp 866.130,99. That saves more costs of 402.000 compared to the previous year, after applying the RCM method.

Keywords: *Maintenance, Reliability Centered Maintenance, age replcement*