

ABSTRAK

Mesin Rotary Kiln merupakan peralatan utama dalam proses produksi semen yang beroperasi secara kontinu sehingga keandalannya perlu dijaga untuk menghindari gangguan produksi. Kerusakan pada komponen Rotary Kiln dapat menyebabkan *downtime* yang berdampak pada menurunnya efektivitas operasi perusahaan. Oleh karena itu, diperlukan strategi perawatan yang tepat untuk menjaga keandalan mesin dan meminimalkan potensi terjadinya kerusakan.

Penelitian ini bertujuan untuk mengidentifikasi komponen kritis pada mesin Rotary Kiln serta merancang strategi perawatan menggunakan metode *Reliability Centered Maintenance II* (RCM II). Data yang digunakan berupa data kerusakan dan perbaikan mesin Rotary Kiln periode Januari 2023–Desember 2025. Identifikasi komponen kritis dilakukan menggunakan *Failure Mode and Effects Analysis* (FMEA), sedangkan penentuan strategi perawatan dilakukan berdasarkan tahapan analisis RCM II.

Hasil penelitian menunjukkan bahwa terdapat tiga komponen kritis pada mesin Rotary Kiln, yaitu Firebrick Lining, Primary Fan, dan Main Drive. Berdasarkan analisis RCM II, strategi perawatan yang direkomendasikan untuk seluruh komponen kritis adalah *Scheduled On Condition Task* berupa inspeksi berkala. Interval inspeksi yang direkomendasikan untuk *firebrick lining* adalah 394,41 jam operasi (16 hari), *primary fan* 1.012,75 jam operasi (42 hari), *main drive* 1.178,32 jam operasi (49 hari). Rancangan interval tersebut diharapkan dapat menjadi acuan dalam pelaksanaan perawatan guna menjaga keandalan mesin Rotary Kiln dan mengurangi risiko kerusakan yang tidak terencana. Penelitian ini juga mendukung pencapaian SDGs poin 9, yaitu *Industry, Innovation and Infrastructure*, melalui upaya peningkatan keandalan peralatan industri.

Kata kunci: *Reliability Centered Maintenance II*, FMEA, Rotary Kiln, komponen kritis, strategi perawatan.

ABSTRACT

The Rotary Kiln is one of the main pieces of equipment in the cement production process that operates continuously; therefore, its reliability must be maintained to prevent production disruptions. Failures in Rotary Kiln components can cause downtime and reduce operational effectiveness. Consequently, an appropriate maintenance strategy is required to maintain machine reliability and minimize the potential for unexpected failures.

This study aims to identify critical components of the Rotary Kiln and develop a maintenance strategy using the Reliability Centered Maintenance II (RCM II) method. The data used in this study consist of failure and repair records of the Rotary Kiln from January 2023 to December 2025. Critical components were identified using Failure Mode and Effects Analysis (FMEA), while the maintenance strategy was determined through the RCM II analysis process.

The results indicate that three critical components were identified in the Rotary Kiln, namely the firebrick lining, primary fan and main drive. Based on the RCM II analysis, the recommended maintenance strategy for all critical components is a Scheduled On Condition Task in the form of periodic inspections. The recommended inspection intervals are 394.41 operating hours (16 days) for the firebrick lining, 1,012.75 operating hours (42 days) for the primary fan, 1,178.32 operating hours (49 days) for the main drive. These inspection intervals are expected to serve as a reference for maintenance implementation to maintain Rotary Kiln reliability and reduce the risk of unplanned failures. This study also supports the achievement of Sustainable Development Goal (SDG) 9, Industry, Innovation and Infrastructure, through efforts to improve industrial equipment reliability.

Keywords: *Reliability Centered Maintenance II, FMEA, Rotary Kiln, critical components, maintenance strategy.*