

ABSTRAK

Penelitian ini bertujuan merancang strategi mitigasi risiko sisa pada aktivitas *hot work* pengelasan GMAW di PT Semen Indonesia Logistik (SILOG). Aktivitas tersebut memiliki potensi bahaya Keselamatan dan Kesehatan Kerja (K3) yang tinggi, seperti percikan api, panas berlebih, kebakaran, serta cedera pekerja, sehingga memerlukan pengendalian risiko yang efektif. Penelitian ini menggunakan pendekatan deskriptif dengan metode kualitatif dan kuantitatif. Analisis *Failure Mode and Effect Analysis* (FMEA) digunakan untuk menentukan prioritas risiko berdasarkan nilai *Risk Priority Number* (RPN), sedangkan *Fault Tree Analysis* (FTA) digunakan untuk mengidentifikasi akar penyebab risiko. Hasil penelitian menunjukkan bahwa risiko dipengaruhi oleh faktor manusia, peralatan, lingkungan kerja, serta lemahnya pengawasan dan penerapan prosedur kerja. Risiko prioritas yang ditemukan meliputi pengawasan yang tidak optimal, area kerja yang tidak dibersihkan dan diamankan, alat yang tidak diperiksa sebelum digunakan, serta penggunaan APD yang tidak lengkap. Strategi mitigasi difokuskan pada *engineering control*, seperti penataan area kerja, penguatan sistem pengawasan, serta pemeriksaan peralatan kerja secara berkala. Penelitian ini berkontribusi terhadap pencapaian SDG 3 (*Good Health and Well-being*), SDG 8 (*Decent Work and Economic Growth*), dan SDG 9 (*Industry, Innovation and Infrastructure*) melalui peningkatan keselamatan kerja dan penguatan sistem industri yang berkelanjutan.

Kata kunci: K3, hot work, GMAW, risiko sisa, FMEA, FTA, engineering control, health risk, decent work and economic growth, industry innovation and infrastructure

ABSTRACT

This study aims to design a residual risk mitigation strategy in GMAW welding hot work activities at PT Semen Indonesia Logistik (SILOG). These activities have a high potential for Occupational Safety and Health (OHS) hazards, such as sparks, excessive heat, fire, and worker injuries, thus requiring effective risk control. This study uses a descriptive approach with qualitative and quantitative methods. Failure Mode and Effect Analysis (FMEA) is used to determine risk priorities based on the Risk Priority Number (RPN) value, while Fault Tree Analysis (FTA) is used to identify the root causes of risks. The results show that risks are influenced by human factors, equipment, the work environment, and weak supervision and implementation of work procedures. Priority risks found include suboptimal supervision, work areas that are not cleaned and secured, tools that are not checked before use, and the use of incomplete PPE. Mitigation strategies are focused on engineering controls, such as organizing work areas, strengthening the monitoring system, and regular inspection of work equipment. This research contributes to the achievement of SDG 3 (Good Health and Well-being), SDG 8 (Decent Work and Economic Growth), and SDG 9 (Industry, Innovation, and Infrastructure) by improving occupational safety and strengthening sustainable industrial systems.

Keywords: OHS, hot work, GMAW, residual risk, FMEA, FTA, engineering control, health risk, decent work and economic growth, industry innovation and infrastructure