

ABSTRAK

Zulkarnain, Hindriansyah. 2025. *Evaluasi Efektivitas Dan Kelayakan Sistem Penangkal Petir Menggunakan Flash Franklin Pada Gedung Universitas Maritim Raja Ali Haji Senggarang*. Skripsi. Tanjungpinang: Program Studi Teknik Elektro. Fakultas Teknik dan Teknologi Kemaritiman. Universitas Maritim Raja Ali Haji. Pembimbing I : Tonny Suhendra, S.T., M.Cs. Pembimbing II : Falatehan, S.T., M.M.

Penelitian ini bertujuan untuk mengevaluasi efektivitas dan kelayakan sistem penangkal petir tipe Flash Franklin yang terpasang pada Gedung Fakultas Teknik dan Teknologi Kemaritiman Universitas Maritim Raja Ali Haji (UMRAH) Senggarang. Evaluasi dilakukan untuk menilai kemampuan sistem dalam melindungi instalasi kelistrikan dari sambaran petir berdasarkan standar IEC 62305. Metode penelitian meliputi observasi lapangan, pengukuran nilai resistansi pentanahan, analisis data sambaran petir melalui *strike counter*, serta perhitungan radius dan sudut proteksi. Hasil penelitian menunjukkan bahwa sistem proteksi petir yang ada belum memenuhi standar teknis IEC 62305 maupun spesifikasi Flash Franklin ESE. Nilai resistansi pentanahan mencapai rata-rata 31,73 Ω , jauh di atas batas maksimum 5 Ω yang direkomendasikan, sedangkan radius proteksi tiang setinggi 20 meter hanya mencakup sebagian area gedung. Data *Strike Counter* mencatat empat sambaran selama periode 2021–2025, menunjukkan efektivitas penangkapan petir yang rendah dibandingkan frekuensi hari guruh rata-rata 48–55 hari per tahun di wilayah Tanjungpinang. Dengan demikian, sistem penangkal petir di Fakultas Teknik UMRAH dinyatakan belum efektif dan tidak layak digunakan, sehingga diperlukan perbaikan instalasi, peningkatan sistem pentanahan, serta penambahan titik penangkal petir agar perlindungan dapat berjalan optimal.

Kata Kunci: Efektivitas, Kelayakan, Penangkal Petir, Flash Franklin, IEC 62305, Pentanahan.

ABSTRACT

Zulkarnain, Hindriansyah. 2025. *Evaluation of the Effectiveness and Feasibility of Lightning Protection System Using Flash Franklin in the Raja Ali Haji Senggarang Maritime University Building*. Thesis. Tanjungpinang: Electrical Engineering Study Program. Faculty of Maritime Engineering and Technology. Raja Ali Haji Maritime University. Supervisor I: Tonny Suhendra, S.T., M.Cs. Supervisor II: Falatehan, S.T., M.M.

This study aims to evaluate the effectiveness and feasibility of the Flash Franklin lightning protection system installed at the Faculty of Engineering Building, Raja Ali Haji Maritime University (UMRAH) Senggarang. The evaluation was conducted to assess the system's ability to protect electrical installations from lightning strikes based on the IEC 62305 standard. The research methods included field observations, measurement of Grounding resistance values, analysis of lightning strike data using a strike counter, and calculations of protection radius and angle. The results showed that the existing lightning protection system did not meet the technical requirements of IEC 62305 or the specifications of the Flash Franklin ESE. The average Grounding resistance value reached 31.73 Ω , which is far above the recommended maximum limit of 5 Ω , while the protection radius of the 20-meter-high rod covered only part of the building area. The Strike Counter recorded four strikes during the 2021–2025 period, indicating low lightning capture effectiveness compared to the average of 48–55 thunderstorm days per year in the Tanjungpinang area. Therefore, the lightning protection system at the UMRAH Faculty of Engineering is considered ineffective and unfit for use. Improvements to the installation, enhancement of the Grounding system, and the addition of lightning rods are recommended to achieve optimal protection performance.

Keywords: *Effectiveness, Feasibility, Lightning Protection, Flash Franklin, IEC 62305, Grounding.*