

ABSTRAK

Energi listrik merupakan kebutuhan penting dalam mendukung operasional fasilitas olahraga seperti Atom Sports Center. Penggunaan energi listrik yang tidak dikelola secara optimal dapat meningkatkan biaya operasional. Berdasarkan data awal, lapangan padel memiliki nilai Intensitas Konsumsi Energi (IKE) tertinggi dibandingkan area lainnya, meskipun masih termasuk dalam kategori efisien. Selain itu, biaya listrik lapangan padel mengalami perubahan setiap bulan dan belum selalu sebanding dengan total jam *booking*. Oleh karena itu, diperlukan analisis lebih lanjut untuk mengidentifikasi peluang peningkatan efisiensi energi listrik dari faktor penggunaan dan biaya operasional. Penelitian ini bertujuan untuk menghitung nilai IKE, mengidentifikasi Potensi Hemat Energi (PHE), menganalisis penyebab, dampak, serta tindakan pengendalian menggunakan *Bow Tie Analysis* (BTA), dan menentukan prioritas strategi penurunan biaya listrik menggunakan *Analytical Hierarchy Process* (AHP). Penelitian menggunakan pendekatan kuantitatif yang didukung data kualitatif. Data diperoleh melalui observasi, wawancara, data penggunaan energi listrik, biaya listrik, total jam *booking*, dan standar IKE. Pengolahan data dilakukan melalui perhitungan IKE, identifikasi PHE, penyusunan BTA, penyusunan alternatif strategi berdasarkan tindakan pengendalian, serta penentuan prioritas strategi menggunakan AHP. Hasil penelitian diharapkan dapat memberikan usulan strategi peningkatan efisiensi penggunaan energi listrik pada lapangan padel Atom Sports Center.

Kata kunci: Energi listrik, Intensitas Konsumsi Energi (IKE), Potensi Hemat Energi (PHE), *Bow Tie Analysis* (BTA), *Analytical Hierarchy Process* (AHP).

ABSTRACT

Electrical energy is essential for supporting the operations of sports facilities like Atom Sports Center. Suboptimal management of electrical energy usage can lead to increased operational costs. Preliminary data indicate that the padel courts exhibit the highest Energy Consumption Intensity (ECI) value compared to other areas, although they still fall within the efficient category. Furthermore, electricity costs for the padel courts fluctuate monthly and do not always correlate with total booking hours. Therefore, further analysis is required to identify opportunities for improving electrical energy cost regarding usage patterns and operational costs. This study aims to calculate the ECI value, identify Energy Saving Potential (ESP), analyze causes, impacts, and control measures using Bow Tie Analysis (BTA), and prioritize strategies for enhancing electrical energy efficiency using the Analytical Hierarchy Process (AHP). The study employs a quantitative approach supported by qualitative data. Data were gathered through observations, interviews, and records of electrical energy usage, electricity costs, total booking hours, and ECI standards. Data processing involved calculating ECI, identifying ESP, constructing BTA models, formulating strategic alternatives based on control measures, and prioritizing strategies using AHP. The study's findings are expected to provide proposed strategies for improving electrical energy efficiency at the Atom Sports Center padel courts.

Keywords: Electrical energy, Energy Consumption Intensity (ECI), Energy Saving Potential (ESP), Bow Tie Analysis (BTA), Analytical Hierarchy Process (AHP).