Analisis *Energy Productivity Ratio* Pada Pabrik Gula (Studi Kasus: PG Madukismo)

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Abstrak

PG Madukismo merupakan industri gula yang memproduksi gula pasir. Dalam produksinya, PG Madukismo menghasilkan gula pasir yang berkualitas. Masa produksi tahun 2022 dimulai pada periode Mei – Oktober. Dalam memproduksi gula pasir pada tahun 2022, perusahaan masih mengalami permasalahan pada penggunaan energi listrik yang kurang efisien. Penelitian ini dilakukan dengan tujuan untuk melakukan analisis kelayakan operasi produksi gula pasir di PG Madukismo dan mengidentifikasi *input* energi apa yang paling tinggi penggunaannya. Analisis kelayakan operasi ini dilakukan menggunakan metode *Energy Productivity Ratio* dengan tahapan yaitu menghitung *input* energi material, menghitung *input* energi material yang dikonversi, menghitung *output* energi material, dan menghitung nilai EPR. Hasil penelitian menunjukkan bahwa pada masa produksi tahun 2022 periode Mei – Oktober, EPR yang didapatkan pada bulan Mei yaitu listrik 1,2 dan ketel 1,16, EPR yang didapatkan pada bulan Juni yaitu listrik 1,72 dan ketel 1,68, EPR yang didapatkan pada bulan Juli yaitu listrik 1,93 dan ketel 1,92, EPR yang didapatkan pada bulan Agustus yaitu listrik 1,98 dan ketel 1,98, EPR yang didapatkan pada bulan September yaitu listrik 2,14 dan ketel 2,14, EPR yang didapatkan pada bulan Oktober yaitu listrik 2,44 dan ketel 2,45. Berdasarkan hasil EPR yang didapatkan lebih dari 1 maka produksi gula pasir di PG Madukismo masih layak untuk dilanjutkan. *Input* energi yang paling tinggi penggunaannya pada masa produksi gula pasir tahun 2022 yaitu tebu dengan nilai energi yang dihasilkan sebesar 431.885.993,55 MJ untuk listrik dan 6.544.947.856,93 MJ untuk ketel.

***Kata kunci*:** *Energi, Energy Productivity Ratio, Kelayakan Operasi*

Energy Productivity Ratio Analysis at Sugar Factory

(Case Study: PG Madukismo)

ABSTRACT

PG Madukismo is a sugar industry that produces granulated sugar. In its production, PG Madukismo has quality granulated sugar. The 2022 production period starts in the May – October period. In making granulated sugar in 2022, the company is still encountering problems with the inefficient use of electrical energy. This research was conducted to analyze the feasibility of sugar production operations at PG Madukismo and identify which energy inputs have the highest usage. This operational feasibility analysis was carried out using the Energy Productivity Ratio method with the stages of calculating material energy input, calculating converted material energy input, calculating material energy output, and calculating the EPR value. The results showed that during the 2022 production from May to October, the EPR obtained in May was 1.2 electricity and 1.16 boilers. The EPR received in June was 1.72 for electricity and 1.68 for boilers. The lowest EPR was acquired in July. Electricity was 1.93, and the boiler was 1.92, EPR obtained in August, namely electricity 1.98 and boiler 1.98, EPR obtained in September, electricity 2.14 and boiler 2.14, EPR got in October, namely electricity 2.44 and boiler 2.45. Based on the EPR results received more than 1, the granulated sugar production at PG Madukismo is still feasible to continue. The energy input with the highest usage during granulated sugar production in 2022 is sugarcane, with an energy value of 431,885,993.55 MJ for electricity and 6,544,947,856.93 MJ for boilers.

Keywords: Energy, Energy Productivity Ratio, Operational Feasibility

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