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OPTIMIZING BIOBUTANOL PRODUCTION FROM AGROINDUSTRIAL BY-PRODUCTS: A MULTI-CRITERIA ANALYSIS APPROACH TOWARDS A CIRCULAR ECONOMY

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Abstract – Biobutanol is a more efficient alternative to petrol than bioethanol and can be used as a partial or complete substitute for petrol in unmodified internal combustion engines. Sustainable production of the biobutanol depends on the used feedstock source and its pretreatment methods, selected enhancing strategy of microorganism strain, acetonebutanolethanol fermentation effectiveness, and solvent recovery techniques. The aim of this paper is to find the most optimal set of technological solutions for the production of biobutanol from agroindustrial by-products for cost effective manner in line with circular economy principles. Identification of the optimal solution set for efficient biobutanol production for agroindustrial by-products will be done by using multi-criteria analysis (MCA). This paper provides MCA results and methodology description.

Keywords – Acetone-butanol-ethanol (ABE) fermentation; agroindustrial byproducts; biobutanol; biofuels; circular economy; feedstock source; multi-criteria analysis (MCA); petrol alternative; solvent recovery techniques