

ABSTRACT

UD. Hidayah Abadi is a small and medium enterprise (SME) engaged in bag production and faces challenges in the form of failure to achieve production targets and high volumes of production waste. The main waste produced is in the form of scraps of cloth, leftover thread, and used engine oil that have the potential to pollute the environment. This study aims to identify activities that cause waste, measure the efficiency of the production process based on added value, and evaluate the environmental impacts caused by the waste. The Green Lean Manufacturing approach is used with the Value Stream Mapping (VSM) method, Process Activity Mapping (PAM), and Life Cycle Assessment (LCA) simulation using the ReCiPe method. The results of the study showed that the total production cycle time was successfully reduced from 231.52 minutes to 195.82 minutes, resulting in an efficiency of 15.43%. The environmental impact evaluation showed that denim fabrics dominate with emissions of 748.8 kg CO₂-eq, almost 1.5 times higher than canvas fabrics which produce 520.5 kg CO₂-eq. Parachute fabric and polyester lining produced emissions of 143.0 kg CO₂-eq and 103.8 kg CO₂-eq, respectively. These four textile materials collectively contributed more than 95% of the total greenhouse gas emissions of all materials analyzed. Improvement proposals were developed using a kaizen approach, focusing on human, machine, material, method, and environmental factors to support the efficiency and sustainability of the production process.

Keywords: *green lean manufacturing, kaizen, life cycle assessment, production waste, value stream mapping*