



# Academic

## INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

“TEN YEARS WORKING TOGETHER FOR A SUSTAINABLE FUTURE”

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## Application of Method 3R (Reuse, Remanufacture, and Recycling) in a Machine Line Based on Circular Economy

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### Abstract

Given the demands of the market and maintaining competitive conditions, many companies are looking for technologies that enable them to innovate their processes and products. The environmental impact related to the exploitation of natural resources can be considered a problem due to the linear production-consumption flow. Therefore, this work focuses on the study of real initiatives to develop environmentally friendly processes and their results in relation to the concept of circular economy in the application of the 3R method in a line of machining. With an applied methodological approach and exploratory objective, we divided the application into three phases: (1) Reuse and Redistribution; (2) Remanufacturing and (3) Recycling. The products are machined in a turning line, where cutting tools (inserts) are the most commonly used objects. It can be observed that in the linear production model, there is an increase in tool disposal. Applying the concepts of based on circular economy we have a gain in the useful life of the cutting tools without the need to modify the production parameters. It is concluded that it is possible to apply the concepts of circular economy, but there is a need for everyone involved in the production process.

**Keywords:** *Circular Economy, Machining, 3R, Automotive Industry*

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