DESIGN RECOMMENDATIONS FOR THE FEASIBILITY OF AUTOMOTIVE PARTS REMANUFACTURING: A CASE STUDY IN INDONESIA

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ABSTRACT

The number of cars in Indonesia increases significantly in recent years and the production of new cars has caused substantial environmental impacts. Remanufacturing is considered to be a way to alleviate the impacts, as it cuts the amount of waste being landfilled, conserves energy and reduces virgin materials consumption. Automotive parts remanufacturing transforms used and worn car parts and components into functional parts that, at least, match the performance of the newly manufactured parts. Remanufacturing is a complex process involving the full cycle of production, from design to manufacture, thus requires a careful determination of the design features that support remanufacturing processes. This study aims to identify what design features automotive parts should possess so that the parts can be remanufactured. We analyzed the remanufacturing process of six frequently replaced automotive parts, i.e. shock absorber, clutch disc, alternator, brake pad, tie rod, and compressor, and came up with the design characteristics that make the remanufacturing process feasible. This paper offers design recommendations linked to the existing literature. The findings of our study have been validated by a number of automotive practitioners.

Keywords: remanufacturing, automotive parts, design recommendation, Indonesia.