

A Comparison of Manufacturing and Remanufacturing Energy Intensities with Application to Diesel Engine Production

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Abstract

Climate change reports and policies relating to end-of-use products, CO₂ emissions, and energy are causing manufacturers to examine their operations closely. Several reports have touted the economic and environmental benefits of remanufacturing, including claims of significant reductions in terms of energy and CO₂ emissions. However, large-scale remanufacturing of heavy equipment engine components has not been closely examined and no standard procedure exists to quantify the benefits of remanufacturing. A methodology is presented for determining the energy intensity and benefits of remanufacturing as compared to new manufacturing, and this is applied to a diesel engine example. These findings are used to estimate the embodied manufacturing/remanufacturing energy across multiple use cycles.

Keywords: Environmental; Lifecycle; Remanufacturing