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Mobile Assembly of Electric Vehicles: Decentralized, Low-Invest and Flexible

Authors : Achim Kampker, Kai Kreiskoether, Johannes Wagner, Sarah Fluchs

Abstract : The growing speed of innovation in related industries requires the automotive industry to adapt and increase release frequencies of new vehicle derivatives which implies a significant reduction of investments per vehicle and ramp-up times. Emerging markets in various parts of the world augment the currently dominating established main automotive markets. Local content requirements such as import tariffs on final products impede the accessibility of these micro markets, which is why in the future market exploitation will not be driven by pure sales activities anymore but rather by setting up local assembly units. The aim of this paper is to provide an overview of the concept of decentralized assembly and to discuss and critically assess some currently researched and crucial approaches in production technology. In order to determine the scope in which complementary mobile assembly can be profitable for manufacturers, a general cost model is set up and each cost driver is assessed with respect to varying levels of decentralization. One main result of the paper is that the presented approaches offer huge cost-saving potentials and are thus critical for future production strategies. Nevertheless, they still need to be further exploited in order for decentralized assembly to be profitable for companies. The optimal level of decentralization must, however, be specifically determined in each case and cannot be defined in general.

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