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Enabling Integrated Production of Electric Vehicles in Automotive Final Assembly: Realization of an Expert Study

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Abstract : In the past years, the automotive industry has changed significantly. Innovative mobility concepts have become more important, and electric vehicles see a chance of replacing vehicles with combustion engines in the long term. However, the coming years will be characterized by coexistence. In this context, there are two possible production scenarios: One the one hand, electric vehicles could be manufactured in bespoke assembly lines. Concerning the uncertainty regarding sales figures development, this alternative boasts a high investment risk. Therefore, an integrated assembly building upon existing structures also seems a feasible solution. This empirical study aims at validating hypotheses concerning theoretical and practical challenges of the integrated production in the final assembly. In order to take a test of approaches of the research by analyzing censored feedback of professionals, these hypotheses are validated in the framework of an expert study. For this purpose, hypotheses have been generated on the basis of a requirements analysis and a concept specification. Thereupon, a list of question has been implemented and deduced from the hypotheses to execute an online- and written-survey and interviews with professionals. The interpretation and evaluation of the findings includes an inter-component comparison for the electric drivetrain. Furthermore, key drivers for a sufficient integrated product and process design are presented.

Keywords : automotive industry, final assembly, integrated manufacturing, product and process development
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