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Sommario/riassunto

Analyzing the main problems in the real-time control of parallel hybrid electric powertrains in non-road applications, which work in continuous high dynamic operation, this book gives practical insight in to how to maximize the energetic efficiency and drivability of such powertrains. The book addresses an energy management control structure, which considers all constraints of the physical powertrain and uses novel methodologies for the prediction of the future load requirements to optimize the controller output in terms of an entire work cycle of a non-road vehicle. The load prediction includes a methodology for short term loads as well as for an entire load cycle by means of a cycle detection. A maximization of the energetic efficiency can so be achieved, which is simultaneously a reduction in fuel consumption and exhaust emissions. Readers will gain a deep insight into the necessary topics to be considered in designing an energy and battery management system for non-road vehicles and that only a combination of the management systems can significantly increase the performance of a controller.