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Nota di contenuto	Introduction -- Motivation for a holistic view of the storage-vehicle-environment system -- Complexity, importance and overall system dependency of the vehicle operating strategy -- Interaction between sub and super systems of an FESS -- Optimization of the storage use in the super system -- Optimization in the sub system -- Rotor -- Housing -- Storage -- Stationary FESS -- an opportunity "outside the automotive sector" -- Summary and outlook.
Sommario/riassunto	Storing energy is one of the most crucial engineering challenges of the 21st century. Energy storage systems are not only essential for the long overdue transition to renewable energy sources, but are also of special importance for all mobile applications. Flywheel energy storage systems (FESS) can be used in hybrid vehicles as an alternative to chemical batteries or supercapacitors and have enormous potential for future improvement of their energetic properties. In the first section of the book, the supersystem analysis, FESS are placed in a global context using a holistic approach. External influencing parameters such as the vehicle, driver, operating strategy and corresponding socio-psychological aspects are analyzed with regard to their interaction with the energy storage device. Optimal use cases are derived and the development goals relevant for market success are defined. In the

second section, the consideration of the FESS subsystem, critical FESS components responsible for the achievement of the technical target properties are identified. Specific solutions for the design of the key FESS subsystem components for minimizing production cost are presented and validated through empirical studies on their most critical elements (e.g. housing, bearings and rotor), as well as through complete system prototypes. This book is a translation of the original German 1st edition Schwungradspeicher in der Fahrzeugtechnik by Armin Buchroithner published by Springer Fachmedien Wiesbaden GmbH, part of Springer Nature in 2019.

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