1. Record Nr. UNINA9910392745803321

Titolo	Additive Manufacturing Hybrid Processes for Composites Systems / / edited by António Torres Marques, Sílvia Esteves, João P. T. Pereira, Luis Miguel Oliveira
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-44522-4
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (346 pages)
Collana	Advanced Structured Materials, , 1869-8433 ; ; 129
Disciplina	621.988
Soggetti	Manufactures Ceramics Glass Composites (Materials) Composite materials Mechanics Mechanics, Applied Manufacturing, Machines, Tools, Processes Ceramics, Glass, Composites, Natural Materials Solid Mechanics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	State-of-the-art-review and Roadmap -- New Design and Modelling Approaches -- New Material Concepts -- New Process Concepts -- DfX based Systems Design for FRP Hybrid AM -- Path Generation, Control and Monitoring -- Experimental Testing and Process Parametrization -- Reliability and NDT Methods -- Case studies.
Sommario/riassunto	This book focuses on the emerging additive manufacturing technology and its applications beyond state-of-the-art, fibre-reinforced thermoplastics. It also discusses the development of a hybrid, integrated process that combines additive and subtractive operations in a single-step platform, allowing CAD-to-Part production with freeform shapes using long or continuous fibre-reinforced thermoplastics. The book covers the entire value chain of this next-generation technology,

from part design and materials composition to transformation stages, product evaluation, and end-of-life studies. Moreover, it addresses the following engineering issues: • Design rules for hybrid additive manufacturing; • Thermoplastic compounds for high-temperature and -strength applications; • Advanced extrusion heads and process concepts; • Hybridisation strategies; • Software ecosystems for hAM design, pre-processing, process planning, emulating and multi-axis processing; • 3D path generators for hAM based on a multi-objective optimisation algorithm that matches the recent curved adaptive slicing method with a new transversal scheme; • hAM parameters, real-time monitoring and closed-loop control; • Multiparametric nondestructive testing (NDT) tools customised for FRTP AM parts; • Sustainable manufacturing processes validated by advanced LCA/LCC models.