

1. Record Nr.	UNINA9910787583303321
Autore	Zhao Xiao-Ling
Titolo	FRP-strengthened metallic structures // Xiao-Ling Zhao
Pubbl/distr/stampa	Boca Raton : , : CRC Press, , 2014
ISBN	1-138-07433-0 0-429-20743-3 0-415-46821-3
Descrizione fisica	1 online resource (280 p.)
Collana	Spon research FRP-strengthened metallic structures
Classificazione	TEC009020TEC021000TEC063000
Disciplina	624.1/8923 624.182 624.18923
Soggetti	Building, Iron and steel - Materials Buildings - Maintenance - Materials Fiber-reinforced plastics Adhesives
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Front Cover; Contents; Preface; Acknowledgments; Notation; Author; Chapter 1 - Introduction; Chapter 2 - FRP composites and metals; Chapter 3 - Behaviour of the bond between FRP and metal; Chapter 4 - Flexural strengthening of steel and steel-concrete composite beams with FRP laminates; Chapter 5 - Strengthening of compression members; Chapter 6 - Strengthening of web crippling of beams subject to end bearing forces; Chapter 7 - Enhancement of fatigue performance; Back Cover
Sommario/riassunto	This book comprehensively covers the behavior and design of fiber reinforced polymer strengthened metallic structures based on existing international research. It begins by outlining the applications, existing design guidance, and the special characteristics of FRP composites within the context of their use in the strengthening of metallic structures. It addresses the bond behavior between FRP and metal, and the strengthening of members, then looks at bending, compression and concentrated forces, and the improvement of fatigue performance.

It serves as a detailed resource for engineers, researchers, and graduate students--

Preface A significant amount of metallic structures are aging. The conventional method of repairing or strengthening aging metallic structures often involves bulky and heavy plates that are difficult to fix and prone to corrosion, as well as to their own fatigue. Fibre-reinforced polymer (FRP) has great potential in strengthening metallic structures, such as bridges, buildings, offshore platforms, pipelines, and crane structures. The existing knowledge of the carbon fibre-reinforced polymer (CFRP)- concrete composite system may not be applicable to the CFRP-steel system because of the distinct difference between the debonding mechanism of the former and latter, alongside the unique failure modes for steel members and connections. Several design and practice guides on FRP strengthening of metallic structures were published in the UK, United States, Italy, and Japan. However, the following topics are not covered in detail: bond behaviour between FRP and steel, strengthening of compression members, strengthening of steel tubular members, strengthening against web crippling of steel sections, and strengthening for enhanced fatigue and seismic performance. The present book not only contains descriptions and explanations of basic concepts and summarises the research performed to date on the FRP strengthening of metallic structures, but also provides some design recommendations. Comprehensive, topical references appear throughout the book. It is suitable for structural engineers, researchers, and university students who are interested in the FRP strengthening technique--
