

PRESS RELEASE

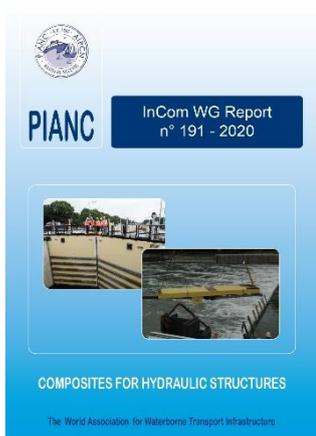


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NEW PIANC PUBLICATION AVAILABLE

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The World Association for Waterborne
Transport Infrastructure



Title: 'Composites for Hydraulic Structures'

Author's: InCom Working Group 191

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Introduction:

Composites have been evolving over the years and are making major in-roads into the marine, aviation and other industries where corruptions and self-weight are the major impediments to advancing the state-of-the-art. Civil Works engineers have been reluctant to take advantage of these composite materials and systems, partially because of the absence of well documented success stories, accepted design and construction practices or specifications, limited understanding of composite system behavior, absence of training in design, construction, evaluation and repair, higher initial costs in some applications and others including unfavorable reputation for recycling. A few navigational structures using fiber reinforced polymer (FRP) composites have recently been designed, manufactured and installed in the United States of America, France, United Kingdom, the Netherlands, and other countries. US Army Corps of Engineers is embarking on higher volume applications of composites for navigational structures. Use of composites not only enhances service life of navigational structures and results in lower maintenance cost, but also lowers the embodied energy; thus partially fulfilling carbon footprint reduction goals of the Paris agreement.

This report is aimed at summarizing the state of the art of FRP composites for hydraulic structures including design, construction, evaluation and repair. For clarity and brevity, only essential concepts related to composites, major manufacturing methods, key structural characteristics and engineering science issues of composites are briefly included in the report, while more in-depth general discussions related to composites are directed for deeper exploration by readers through an extensive set of references provided in this report. Emphasis is placed on applications of composites in waterfront, marine, navigational structures including lock gates, gates and protection systems. Design of composite hydraulic structures is presented or referenced for the cases available, such as design of FRP Recess Panel, Wicket Gates, Miter Gates, FRP gates and repair of corroded Steel Piles. This is followed by discussions on operation and maintenance guidance including nondestructive inspection and evaluation techniques. Cost considerations are discussed in Chapter 7. The report concludes with summary remarks and recommendations.

This report is a living document that would be modified as technical advances take place with time. Intention is to provide up-to-date information on composite design, manufacturing and evaluation methodologies that are applicable for fabrication and maintenance of navigational structures, including development and implementation of green composites. It is expected to be useful for those decision-makers in government, consultants, designers, contractors, maintenance and rehab engineers whose focus is to minimize traffic interruptions while maximizing cost effectiveness.

NOTE: The objective of this report is to provide information and recommendations on good practice. Conformity is not obligatory and engineering judgement should be used in its application, especially in special circumstances. This report should be seen as an expert guidance and state of the art on this particular subject. PIANC disclaims all responsibility in case this report should be presented as an official standard.

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