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Large Floating Structures

Technological Advances

 Springer

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Preface

The recent decades have been marked by an unprecedented acceleration in the growth of the world's population. Now standing at over seven billion people, the world's population is expected to rise in this fashion until most countries become fully developed. The need to accommodate this expanding population through new spaces for habitation, work, infrastructure, recreation, storage, and food production; and the necessities of exploiting land-locked resources have increased pressure on governments to release and rezone near-city land-parcels for urban expansion. Ocean space colonisation is one way in which engineers, architects, and urban planners have been engaging with the challenge of providing more space and energy resources for people.

This book surveys key projects that have seen the construction of large floating structures or have attained detailed conceptual designs. These projects add valuable vision to the existing discourse, and include:

- Floating performance stage at the Marina Bay, Singapore
- Yumemai floating swing arch bridge of Osaka, Japan
- Floating oil storage bases in Kamigoto and Shirashima islands, Japan
- Ujina floating ferry pier and Kan-on breakwater, Japan
- Floating offshore wind turbine in Nagasaki, Japan
- Large marine concrete structures in the North Sea, Norway
- Mega-Float in Tokyo Bay, Japan
- Large spar drilling and production platforms
- OTEC platforms
- Mobile offshore base
- Lilypad—a floating ecopolis

This compilation of key floating structures in a single volume captures the innovative features that mark the technological advances made in this field of engineering, and will provide a useful reference for ideas, analysis, design, and construction of these unique and emerging urban projects to offshore and marine engineers, urban planners, architects, and students.

C.M. Wang
B.T. Wang

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Group. Professor Wang's research interests are in the areas of structural stability, vibration, optimization, nanostructures and very large floating structures. He has published over 400 technical papers and seven books on the aforementioned areas. His recent awards include the Keith Eaton Award 2014, the Grand Prize in the Next Generation Container Port Challenge 2013, the IES Prestigious Engineering Achievement Award 2013, the IES/IStructE Best Paper Award 2010 and the Lewis Kent Award 2009.



B.T. Wang is a lawyer at Allens, Sydney, Australia. He holds a Master of Laws (Juris Doctor) and a Master of Public Policy and Management from Monash University, as well as a Bachelor of Architecture with Honours from the University of Melbourne. He was a Public Transport Authority CEO Scholar, a finalist in the 2014 Australian Law Awards, and has been a Project Manager with the Infrastructure Delivery team within the State Government of Western Australia. Having worked across a number of sectors including Rail, Defence, Heritage, and Education, his projects have received awards such as the Master Builders Excellence in Construction Award and National Sustainability Award. His research interests lie in the intersection of Public Policy, Law and Infrastructure, and he is drawn to new ways of conceptualizing the city, such as through Ocean Space Colonisation and Technologies.