

1. Record Nr.	UNINA9910483478303321
Autore	An Zhen
Titolo	Structural and thermal analyses of deepwater pipes // Chen An [and three others]
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] Â©2021
ISBN	3-030-53540-1
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (XIII, 234 p. 114 illus., 87 illus. in color.)
Disciplina	621.867209162
Soggetti	Underwater pipelines
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Part I - Limit Strength of Sandwich Pipes -- Sandwich Pipes -- Sandwich Pipes Filled with Steel Fiber Reinforced Concrete -- Sandwich Pipes Filled with PVA Fiber Reinforced Cementitious Composites -- Buckle Propagation of Sandwich Pipes -- Sandwich Pipe: Reel-Lay Installation Effects -- Part II - Dynamics of Fluid-Conveying Pipes -- Integral Transform Solutions of Solid and Structural Mechanics Problems -- Pipes Conveying Gas-Liquid Two-Phase Flow -- Pipes Conveying Vertical Slug Flow -- Pipes Conveying Horizontal Slug Flow -- Axially functionally graded pipes conveying fluid -- Part III - Thermal Analysis of Multilayer Pipelines Fundamentals of Thermal Analysis -- Steady State Thermal Analysis -- Steady-State Analysis of Heavy Oil Transportation Analysis of Direct Electrical Heating -- Transient Analysis of Multilayer Composite Pipelines with Active Heating.
Sommario/riassunto	This book focuses on advanced methods for the structural and thermal analysis of deepwater pipelines and risers. It discusses the limit strength of sandwich pipes, including finite-element analysis using Python scripts, collapse of sandwich pipes with cementitious/polymer composites, buckle propagation of sandwich pipes, dynamic behavior of subsea pipes, flow-induced vibration of functionally graded pipes, two-phase flow-induced vibration of pipelines, vortex-induced vibration of free-spanning pipelines, and the thermal analysis of composites pipes with passive insulation, active heating, and phase

change material layers. It also explores structural analysis using finite element analysis and the integral transform technique for fluid-structure interaction. Lastly, the use of lumped parameter formulations combined with finite differences for the thermal analysis of pipelines is examined.
