1.	Record Nr.	UNINA9910392742903321
	Autore	Radojcic Dejan
	Titolo	Reflections on Power Prediction Modeling of Conventional High-Speed Craft / / by Dejan Radoji
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
	ISBN	3-319-94899-7
	Edizione	[1st ed. 2019.]
	Descrizione fisica	1 online resource (111 pages)
	Collana	SpringerBriefs in Applied Sciences and Technology, , 2191-530X
	Disciplina	623.812
	Soggetti	Mechanical engineering
		Neural networks (Computer science)
		Mathematical models
		Mechanical Engineering
		Mathematical Models of Cognitive Processes and Neural Networks
		Mathematical Modeling and Industrial Mathematics
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	1 Introduction -- 1.1 Objectives -- 1.2 Conventional High-Speed Craft (HSC) -- 1.3 Resistance, Propulsion, and Power Prediction -- 1.4 Common Mistakes -- 1.5 Excluded Topics -- References -- 2 Mathematical Modeling -- 2.1 Statistical Modeling -- 2.2 Model Extraction Tools -- 2.3 Hardware -- 2.4 Conclusions on Mathematical Modeling -- References -- 3 Resistance And Dynamic Trim Predictions -- 3.1 An Overview of Early Resistance Prediction Mathematical Models -- 3.2 Types of Mathematical Models for Resistance Prediction -- 3.3 Systematic Series Applicable to Conventional High-Speed Craft -- 3.4 Mathematical Modeling of Resistance and Dynamic Trim for High-Speed Craft -- 3.5 Future Work – Stepped Hulls -- 3.6 Mathematical Model Use -- 3.7 Recommended Mathematical Models for Resistance and Dynamic Trim Prediction -- References -- 4 Propeller's Open-Water Efficiency Prediction -- 4.1 An Overview of Modeling Propeller's Hydrodynamic Characteristics -- 4.2 Mathematical Modeling of KT, KQ, and O of High-Speed Propellers -- 4.3 Loading Criteria for High-Speed Propellers -- 4.4 Recommended Mathematical Models for High-

Speed Propellers -- References -- 5 Additional Resistance Components And Propulsive Coefficients -- 5.1 Evaluation of In-Service Power Performance -- 5.2 Resistance Components – Calm and Deep Water -- 5.3 Resistance in a Seaway -- 5.4 Resistance in Shallow Water -- 5.5 Propulsive Coefficients -- 5.6 Recommended References for Evaluation of Additional Resistance Components and Propulsive Coefficients -- References -- 6 Power Prediction -- 6.1 Power and Performance Predictions for High-Speed Craft -- 6.2 Classics -- 6.3 Modernism -- 6.4 Another Perspective -- References -- 7 Concluding Remarks -- References.

| Sommario/riassunto | This SpringerBrief focuses on modeling and power evaluation of high-speed craft. The various power prediction methods, a principal design objective for high-speed craft of displacement, semi-displacement, and planing type, are addressed. At the core of the power prediction methods are mathematical models for resistance and propulsion efficiency. The models are based on the experimental data of various high-speed hull and propeller series. The regression analysis and artificial neural network (ANN) methods are used as an extraction tool for this kind of mathematical models. A variety of mathematical models of this type are discussed in the book. Once these mathematical models have been developed and validated, they can be readily programmed into software tools, thereby enabling the parametric analyses required for the optimization of a high-speed craft design. This book provides the foundational reference for these software tools, and their use in the design of high-speed craft. High-speed craft are very different from conventional ships. Current professional literature leaves a gap in the documentation of best design practices for high-speed craft. This book is aimed at naval architects who design and develop various types of high-speed vessels. |