HANDBOOK OF MECHANICAL ENGINEERING CALCULATIONS

Tyler G. Hicks, M.E., P.E. Editor

International Engineering Associates Member: American Society of Mechanical Engineers United States Naval Institute American Merchant Marine Museum Foundation

Second Edition

McGRAW-HILL

New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto

CONTENTS

Contributors and Advisers ix Preface xi Acknowledgments xvii How to Use This Handbook **xix**

Part 1 Power Generation

Section 1	Modern Power-Plant Cycles and Equipment	1.1
Section 2	Steam Condensing Systems and Auxiliaries	2.1
Section 3	Combustion	3.1
Section 4	Steam Generation Equipment and Auxiliaries	4.1
Section 5	Feedwater Heating Methods	5.1
Section 6	Internal-Combustion Engines	6.1

Part 2 Plant and Facilities Engineering

Section 7	Pumps and Pumping Systems	7.1
Section 8	Piping and Fluid Flow	8.1
Section 9	Air and Gas Compressors and Vacuum Systems	9.1
Section 10	Materials Handling	10.1
Section 11	Heat Transfer and Heat Exchange	11.1
Section 12	Refrigeration	12.1

Part 3 Environmental Control

Section	13	Wastewater Treatment and Control	13.1
Section	14	Water-Supply and Storm-Water System Design	14.1
Section	15	Plumbing and Drainage for Buildings and Other	
		Structures	15.1
Section	16	Heating, Ventilating, and Air Conditioning	16.1
Section	17	Solar Energy	17.1
Section	18	Environmental Control and Energy Conservation	18.1

Part 4 Design Engineering

Section	19	Shafts,	Flywheels,	Pulleys,	and	Belts for	r Power		
		Transm	ission	-				19.	1

CONTENTS

Section 20	Gear Design and Application	20.1
Section 21	Transmissions, Clutches, Roller-Screw Actuators,	
	Couplings, and Speed Control	21.1
Section 22	Bearing Design and Selection	22.1
Section 23	Spring Selection and Analysis	23.1
Section 24	Mechanical and Electrical Brakes	24.1
Section 25	Hydraulic and Pneumatic Systems Design	25.1
Section 26	Metalworking and Nonmetallic Materials Processing	26.1

Bibliography B.I Index 1.1