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| Nota di contenuto | Cover -- Half-title -- Title -- Copyright -- Contents -- Preface -- 1. Units And Common Terms: Système International d'unités -- SI Units -- The Derived SI Units together with Names and Symbols -- 2. Heat -- Specific heat -- 3. Thermal Expansion -- Expansion of Metals -- Expansion of Liquids -- Restricted Thermal Expansion -- 4. Heat Transfer -- Conduction -- Convection -- Radiation -- Combined |

Modes -- 5. Laws Of Perfect Gases -- Boyle's Law -- Charles' Law -- Combination of Boyle's and Charles' Laws -- The Ideal Gas (Characteristic) Equation -- Universal Gas Constant -- Dalton's Law of Partial Pressures -- Specific Heats of Gases -- Energy Equation (Closed Systems) -- Enthalpy -- Energy Equation (Open Systems) -- 6. Expansion and Compression of Perfect Gases -- Compression of a Gas in a Closed System -- Expansion of a Gas in a Closed System -- Determination of n from a Graph -- Ratios of Expansion and Compression -- Relationships between Temperature and Volume, and between Temperature and Pressure, when pV = C -- Work (Energy Transfer) -- The Relationship between Heat Energy Supplied and Work Done -- 7. IC Engines: Elementary Principles -- The Four- Stroke Diesel Engine -- The Two- Stroke Diesel Engine -- Modern Two- Stroke Designs -- Petrol Engines -- Mean Effective Pressure and Power -- Brake Power and Mechanical Efficiency -- Fault Finding - Morse Test -- Thermal Efficiency -- Heat Balance -- Clearance and Stroke Volume -- 8. Ideal Cycles -- Constant Volume Cycle -- Diesel Cycle -- Dual Combustion Cycle -- Carnot Cycle -- Reversed Carnot Cycle -- Other Ideal Cycles -- Mean Effective Pressure -- Non- ideal Cycles -- Miller Cycle -- 9. Reciprocating Air Compressors -- Effect of Clearance -- Work Done Per Cycle -- Neglecting clearance -- Including clearance -- Multi- stage Compression -- 10. Steam -- Steam Tables -- Mixing Steam and Water.
Throttling of Steam -- Throttling Calorimeter -- Separating Calorimeter -- Combined Separating and Throttling Calorimeter -- Air in Condensers -- 11. Entropy -- Entropy of Water and Steam -- Temperature- Entropy Chart for Steam -- Isothermal and Isentropic Processes -- Enthalpy- Entropy (h-s) diagram -- 12. Turbines -- The Impulse Turbine -- The Reaction Turbine -- Nozzles -- Isentropic Efficiency -- Velocity Diagrams for Impulse Turbines -- Force on Blades -- Velocity Diagrams for Reaction Turbines -- Ideal Cycles -- Actual Steam Cycles -- Thermal Efficiency -- Gas Turbine Cycles -- 13. Combustion In Boilers and IC Engines -- Capacity and Equivalent Evaporation -- Boiler Efficiency -- Feed Water -- Principles of Combustion (Applicable to Boilers and Internal Combustion Engines) -- Composition of Flue/Exhaust Gases -- Exhaust Gas Analysis -- 14. Refrigeration -- Ozone Depleting Substances (ODSs) -- Refrigerants -- Refrigerant gases -- Working Cycle -- The Circuit of the Refrigerant -- Capacity and Performance -- Solutions to Test Examples -- Selection of Examination Questions - Management Level -- Solutions to Examination Questions - Management Level -- Selection of Examination Questions - Higher Level -- Solutions to Examination Questions - Higher Level -- Index.

Sommario/riassunto

This authoritative textbook will cover the principal topics in thermodynamics for officer cadets studying Merchant Navy Marine Engineering Certificates of Competency (CoC) as well as the core syllabi in thermodynamics for undergraduate students in marine engineering, naval architecture and other marine technology related programmes. It will cover the laws of thermodynamics and of perfect gases, their principles and application in a marine environment.This new edition will be fully updated to reflect the recent changes to the Merchant Navy syllabus and current pathways to a sea-going engineering career, including National Diplomas, Higher National Diploma and degree courses. This new content will focus on how the the formulae and calculations apply to the actual workplace, and these updates will open up the potential market in the UK as well as appealing to more of the international market. Each chapter has fully worked examples interwoven into the text, with test examples at the end of each chapter.

Other revisions include new material on combined steam and motor propulsion systems, expanded sections on different IC engine cycles, information on the modern use of steam and gas turbines for the production of electrical power, and more.