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Nota di contenuto	Part 1: Exergy -- Exergy Analysis of a Hybrid Solar-Wind-Biomass System with Thermal and Electrical Energy Storage for a Community -- Exergetic Evaluation of a High-Pressure Hydrogen Production System -- Exergetic Performance Assessment of a Binary Geothermal Power Plant -- Exergetic Assessment of a Hybrid Steam Biomass Gasification and SOFC System for Hydrogen, Power and Heat Production -- Exergoeconomic Analysis of a Hybrid Steam Biomass Gasification-Based Tri-Generation System -- Exergoeconomic Analysis of a Cascade Active

Magnetic Regenerative Refrigeration System -- Energy and Exergy Analysis of Solar-Driven ORC Integrated with Fuel Cells and Electrolyser for Hydrogen and Power Production -- Application of Scroll Expander in Cryogenic Process of Hydrogen Liquefaction -- Energy and Exergy Analysis of an Integrated Solar Based Hydrogen Production and Liquefaction System -- Energy and Exergy Analysis of Copper-Chlorine (Cu-Cl) Based Integrated Systems for Hydrogen Production -- Simulation and Exergy Analysis of a Copper-Chlorine Thermochemical Water Decomposition Cycle for Hydrogen Production -- Energy and Exergy Analysis of a Combined Multigeneration System -- Energy and Exergy Analysis of a Zero Emission Power Plant for Co-Production of Electricity and Methanol -- Thermodynamic Analysis of Geothermally Driven High-Temperature Steam Electrolysis System for Hydrogen Production -- Thermodynamic Analysis of a Solar Driven Tri-Generation System for Building Applications -- Thermodynamic and Cost Analyses of a Residential Hybrid PV-Fuel Cell-Battery System for a Canadian House -- Thermodynamic Assessment of Waste Heat Operated Combined Compression—Absorption Refrigeration System -- Thermoeconomic Optimization of Scroll-Based Organic Rankine Cycles with Various Working Fluids -- Efficiency Assessment of Crude Oil Distillation Systems -- Performance Assessment of a Hybrid Solid Oxide Fuel Cell-Gas Turbine Combined Heat and Power System -- Performance Assessment of a Small Solar Pond Stratified With Magnesium Chloride Water -- Performance Assessment of a Recuperative Helium Gas Turbine System -- Investigation of Exergy Ratios of a Solar Pond at Various Reference Temperatures -- Assessment of Desalination Technologies Integrated with Renewable Energy Sources in Turkey -- Exergetic Performance of a Low Bypass Turbofan Engine at Takeoff Condition -- Exergetic Analysis of a Vertical Ground-Source Heat Pump System with Wall Heating/Cooling -- Energy and Exergy Analysis of an R134a Automotive Heat Pump System for Various Heat Sources in Comparison with Baseline Heating System -- Energy and Exergy Analyses of a Perlite Expansion Furnace -- Thermodynamic Performance Evaluation of a Geothermal Drying System -- Performance Evaluation for Different Configurated HRSGs -- Investigation of Energy Efficiency by Making Exergy Analysis in the Cement Sector -- Part 2: Energy -- Energy Analysis of Scroll Compressor Conversion into Expander for Rankine Cycles with Various Working Fluids -- Energy Analysis of Hydrogen Production from a Hybrid Wind Turbine Electrolyzer System -- Evaluation of Thermal Characteristics of a Borehole Thermal Energy Storage System -- Design and Assessment of a Net Zero Energy House -- A Compact Design of Water Heating-Humidification Processes for Solar HDD Systems -- Investigation of Humidity Effects on the Thermal Comfort and Heat Balance of the Body -- Thermal Comfort Analysis of Novel Low Exergy Radiant Heating Cooling System and Energy Potential Comparing to Conventional Systems -- Comparison of Alternating-Current Losses in Two-Layer Superconducting Cables Constructed by Shell-Type and Solid-Core Cylindrical Wires -- Influences of Ferromagnetic Deflectors Between Layers of Superconducting Power Transmission Cables on Transport Current Losses -- Multi Modal Structure for the Management of Energies in a Residential Home -- Quantum Dots Conjugated E. Coli Living Cells as Fluorescent Reporters to Detect Cytotoxicity of Chemicals -- Mathematical Modeling of a Small Scale Compressed Air Energy Storage System -- Use of Transparent Insulation Materials as One of Measures of Improving Energy of Structures -- Experimental Insulation Performance Evaluation of Aerogel for Household Refrigerators -- Full Scale Experimental Studies of a Passive Cooling

Roof in Hot Arid Areas -- Investigation of Latent Heat Storage Systems for Green Building Applications -- Short and Long-Term Solar Radiation Estimation Method -- Energy Saving With Double-Skin Glazed Facades in Multi-Storey Buildings -- A New Approach for Compressor &Turbine Performance Map modelling by Using ANFIS Structure -- Performance Estimation of Gas Turbine System via Degree-Day Method -- Evaluation of Turkish Electricity Demand Projections -- Optimized Analysis of Cold Energy Utilization for Cold Storage Project of Xingtan LNG Satellite Station -- Comparison of Different Turbulent Models in Turbulent Forced Convective Flow and Heat Transfer Inside Rectangular Cross-Sectioned Duct Heating at the Bottom Wall -- Three Dimensional Numerical Analysis of Thermal Output of a Steel Panel Radiator -- Combined Effect of Viscous Dissipation on The Coupling of Conduction and Mixed Convection Along a Vertical Slender Hollow Cylinder -- Effect of Radiation-Conduction Interaction on Mixed Convection From a Slender Cylinder -- Novel Fin Design for the Panel Type Radiators Using CFD -- Hydrodynamic Aspects of Oscillating Flow Through Porous Media Consisting of Steel Spheres -- Flow and Heat Transfer Characteristics of an Empty Refrigerated Container -- Numerical Simulation of 1-D Compression Stroke Using Smoothed Particle Hydrodynamics -- Performance Evaluation of Eco-Friendly Humidifying Material Using Hwangto -- Common Applications of Thin Layer Drying Curve Equations and Their Evaluation Criteria -- Experimental Study of Thin Layer Drying Behavior of a Fish -- Comparing Corn Drying in Fluidized Bed Dryer and Convective Tray Dryer -- Investigation of Drying Characteristics of Blueberry Using a New Solar Air Collector Design -- Part 3: Environment -- Exergy Based Sustainability Indicators for a Single Layer Solar Drying Process -- Investigating the Exergetic and Environmental Effects of Subcooling and Superheating Processes on the Performance of Direct Expansion Systems -- Investigation of Exergetic and Environmental Performance of HFCs with 20 Year and 100 Year GWP -- Performance Evaluation in the Heavy Metal Removal of Bio-Char Produced from Tomato Factory Waste -- Ecological Performance Analysis of Irreversible Brayton Cycle -- Environmental Effect Evaluation of Topography and Natural Gas Usage on Air Quality: A Case Study of K. Mara -- Efficient Anionic Dyes Adsorption on Activated Algerian Clays -- Part 4: Renewable Energy -- Investigation of Turbidity Effect on Transmission of Heat in a Solar Pond -- Performance Analysis of a Solar Pond for Different Dimensions -- Parametric Analysis of Pumped Storage Hydropower-Coupled Wind Turbine Plants -- Torrefaction of Agriculture and Forestry Biomass Using TGA-FTIR-MS -- Model Based Performance Analysis of a Concentrating Parabolic Trough Collector Array -- Wind Energy Resource Assessment of Ergan Mountain Ski Center - Erzincan, Turkey -- Investigation of the Use of Solar Thermal Buffer Zone in Buildings -- Determination of a Geothermal Energy Field with Audio-Magnetotelluric (AMT) Data at the South of Manisa, Turkey -- Energy Production from Municipal Solid Waste Using Plasma Gasification -- Prediction of Daily Average Global Solar Radiation and Parabolic Monthly Irradiation Model Parameters for Turkey -- Comparison of Energy Performance and Static Loads on a Building Integrated Wind, Solar and Rain Water Harvester -- A Solar Energy Calculation Study for the Buildings in Bayburt in Order to Get Optimum Benefit from the Sun Directly -- Part 5: Hydrogen Production and Fuel Cell -- Economic Assessment of Three Biomass-Based Hydrogen Production Systems -- A Dynamic Simulation Study of a Small Scale Hydrogen Production System for a High Temperature Proton Exchange Fuel Cell -- Optimization of the Operation Conditions in Direct Borohydride Fuel Cell with Carbon Supported Au Anode -- A

New Carbon Nanotube-Supported Pt-Ru Anodic Catalyst by Reverse Microemulsion for Direct Methanol Electro-Oxidation -- Evaluation of Biohydrogen Production Potential from Sewage Sludge -- Asphaltene as Light Harvesting Material in Dye-sensitized Solar Cell -- Part 6: Fuels and Combustion -- Plasma-Fuel Systems Utilization for Ecological and Energy Efficiency of Thermal Power Plants -- Plasma Technologies of Solid and Gaseous Fuels Processing -- Three Dimensional Numerical Modelling of Hydrogen, Methane, Propane And Butane Combustions in a Spherical Model Combustor -- Development of a Reduced Mechanism for N-Haptane Fuel in HCCI Engines -- Comparison of Natural Gas Fired and Induction Heating Furnaces -- Chemical Thermodynamics of Hydrocarbon Compositions in Natural Gas Field, Northeast of Thailand -- Use of Hazelnut Oil Ethyl Ester as a Fuel in Pre-Chamber Diesel Engine -- Mathematical Model of Petroleum Dynamics in Closed Conduit -- A Statistical Analysis of Lean Misfires in a Gasoline Engine and the Effect of Hydrogen Addition.

Sommario/riassunto

This thorough and highly relevant volume examines exergy, energy, and the environment in the context of energy systems and applications, and as a potential tool for design, analysis, and optimization. It further considers their role in minimizing and/or eliminating environmental impacts and providing for sustainable development. In this regard, several key topics ranging from the basics of the thermodynamic concepts to advanced exergy analysis techniques in a wide range of applications are covered. This book also: · Enlightens readers to exergy’s connection with three essential areas: energy, environment, and sustainable development · Provides numerous examples, practical applications, and case studies to put theory into practice · Has an easy-to-follow style, starting from the fundamental concepts and working to advanced systems and their applications making it suitable for use in the classroom · Provides many study problems that foster critical thinking and skills development, with a wide range of applications, from basic to integrated.