

1. Record Nr.	UNINA9910827241603321
Autore	Poullikkas Andreas
Titolo	Introduction to power generation technologies [[electronic resource] /] / Andreas Poullikkas
Pubbl/distr/stampa	New York, : Nova Science, c2009
ISBN	1-61728-525-0
Edizione	[1st ed.]
Descrizione fisica	1 online resource (198 p.)
Collana	Energy science, engineering and technology series
Disciplina	621.31/21
Soggetti	Electric power production
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- INTRODUCTION TO POWERGENERATION TECHNOLOGIES -- CONTENTS -- PREFACE -- ABOUT THE AUTHOR -- 1. INTRODUCTION -- 1.1. DEFINITION OF THERMODYNAMICS -- 1.2. ENERGY BALANCE APPROACH -- 1.3. HEAT AND WORK -- 1.4. FIRST LAW OF THERMODYNAMICS -- 1.4.1. The Non-Flow Equation -- 1.4.2. The Steady Flow Energy Equation -- 1.5. SECOND LAW OF THERMODYNAMICS -- 1.6. FUELS -- 1.6.1. Heavy Fuel Oil -- 1.6.2. Gasoil -- 1.6.3. Coal -- 1.6.4. Natural Gas -- 1.6.5. Liquefied Natural Gas -- 1.7. COMBUSTION -- 1.8. POLLUTION AND THE ENVIRONMENT -- 1.8.1. Primary Emissions -- 1.8.1.1. Sulphur Dioxide Emissions -- 1.8.1.2. Nitrogen Oxides Emissions -- 1.8.1.3. Dust Emissions -- 1.8.2. Carbon Dioxide Emissions -- 1.8.3. Environmental Legislation -- 1.8.4. Pricing Environmental Pollution -- 1.9. ALTERNATIVE ENERGY SOURCES -- 1.10. FUTURE SUSTAINABLE ENERGY SYSTEMS -- 2. POWER PLANTS -- 2.1. THE RANKINE CYCLE -- 2.1.1. Regenerative Cycle -- 2.1.2. Reheat Cycle -- 2.2. THE SIMPLE-CYCLE GAS TURBINE -- 2.3. THE GAS TO GAS RECUPERATION CYCLE -- 2.4. THE COMBINED CYCLE -- 2.5. THE BRAYTON - KALINA CYCLE -- 2.6. THE BRAYTON - BRAYTON CYCLE -- 2.7. THE BRAYTON - DIESEL CYCLE -- 2.8. THE BRAYTON - STIRLING CYCLE -- 2.9. THE BRAYTON - FUEL CELL CYCLE -- 2.10. THE CHEMICAL RECUPERATION CYCLE -- 2.11. MAST CYCLES -- 2.11.1. The Cheng Cycle -- 2.11.2. The steam injected cycle with topping steam turbine -- 2.11.3. The Turbo Charged Steam Injected Cycle -- 2.11.4. The DRIASI Cycle -- 2.11.5. The Evaporation Cycle --

2.11.6. The HAT Cycle -- 2.11.7. The LOTHECO Cycle -- 2.11.8. The Wet Compression Cycle -- 2.12. NUCLEAR POWER -- 2.12.1. Nuclear Fission -- 2.12.2. Nuclear Fusion -- 2.13. THE INTERNAL COMBUSTION ENGINE -- 3. CARBON CAPTURE AND STORAGE TECHNOLOGIES -- 3.1. THE PULVERIZED COAL TECHNOLOGY WITH CCS -- 3.2. THE IGCC CYCLE.  
3.3. THE NATURAL GAS COMBINED CYCLE TECHNOLOGY WITH CCS -- 3.4. OXYFUEL COMBUSTION -- 3.5. COMPARISON OF CO<sub>2</sub> CAPTURE TECHNOLOGIES -- 4. DIRECT SOLAR RES TECHNOLOGIES -- 4.1. THE PHOTOVOLTAIC TECHNOLOGY -- 4.1.1. Basics of PVs -- 4.1.2. Principle of Operation -- 4.1.3. PV Technologies -- 4.1.3.1. Crystalline Silicon Solar Cells -- 4.1.3.2. Thin-Film Solar Cells -- 4.1.4. PV Systems -- 4.1.4.1. PV Modules -- 4.1.4.2. Batteries -- 4.1.4.3. Power Conditioning -- 4.1.4.4. Generators -- 4.1.5. PV Power Systems -- 4.1.5.1. Grid Connected Systems -- 4.1.5.2. Stand Alone Systems -- 4.1.5. Summary on PVs -- 4.2. SOLAR THERMAL -- 4.2.1. Available Solar Thermal Power Technologies -- 4.2.1.1. Parabolic Trough Technology -- 4.2.1.2. Solar Towers -- 4.2.1.3. Solar Dishes -- 4.2.1.4. Solar Chimney -- 4.2.2. Thermal Storage -- 4.2.3. Solar Thermal Power Plants Around the World -- 4.2.3.1. Solar Thermal Power Plants in Operation -- Solar Electric Generating System -- Nevada Solar One -- PS10 -- Andasol 1 and 2 -- 4.2.3.2. Solar Thermal Power Plants under Construction -- Solnova 1 -- PS20 -- Solar Tres -- Ibersol 1 -- 4.2.4. Overall Comparison -- 5. INDIRECT SOLAR RES TECHNOLOGIES -- 5.1. THE WIND TURBINE TECHNOLOGY -- 5.2. BIOMASS ENERGY -- 5.3. GEOTHERMAL ENERGY -- 5.4. HYDROPOWER -- 5.5. TIDAL ENERGY -- 5.6. WAVE ENERGY -- 6. DISTRIBUTED GENERATION -- 6.1. DG DEFINITION -- 6.2. THE FUEL CELL TECHNOLOGY -- 7. STORAGE TECHNOLOGIES -- 7.1. FLYWHEEL STORAGE TECHNOLOGIES -- 7.2. BATTERY STORAGE TECHNOLOGIES -- 7.3. SUPERCAPACITOR STORAGE TECHNOLOGIES -- 7.4. HYDROGEN STORAGE TECHNOLOGIES -- 7.5. PNEUMATIC STORAGE TECHNOLOGIES -- 7.5.1. Liquid-Piston Technology -- 7.5.2. Compressed Air Energy Storage -- 7.6. PUMPED STORAGE TECHNOLOGY -- 7.7. OVERALL COMPARISON -- REFERENCES -- INDEX.

---