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Components; 3.3.1 Explosives; 3.3.1.1 Categories of Explosives; 3.3.1.2 Chemistry of Explosives; 3.3.1.3 Explosive Thermo chemistry; 3.3.1.4 Chemical Kinetics; 3.3.1.5 Factors That Affect Explosives; 3.3.1.6 Explosive Power; 3.3.2 Explosive Train; 3.3.2.1 Detonators; 3.3.2.2 Fire Set and Cabling; 3.4 Interaction of Detonation Waves with Materials; 3.4.1 Impedance; 3.4.2 Gurney Equations; 3.4.3 Taylor Angle Approximation; 3.5 Summary; Bibliography; 4. Measurement Techniques; 4.1 High Power Electrical Measurements 4.1.1 Voltage Measurements 4.1.1.1 Resistive Voltage Divider; 4.1.1.2 Capacitive Voltage Divider; 4.1.1.3 Optical Voltage Monitors; 4.1.2 Current Measurements; 4.1.2.1 Pure Resistive Shunt Method; 4.1.2.2 Rogowski Coil; 4.1.2.3 Pearson Current Monitor; 4.1.2.4 Current Viewing Resistor; 4.1.2.5 Cavity Current Monitor; 4.1.2.6 Magneto-Optical Current Sensor; 4.1.3 Power and Energy Measurements; 4.2 Pulsed Electric and Magnetic Field Measurements; 4.2.1 B-Dot Probes; 4.2.2 D-Dot Probes; 4.2.3 Current Monitor Transformer; 4.2.4 Antennae; 4.2.4.1 Dipole Antenna; 4.2.4.2 Monopole Antenna 4.2.4.3 Log Periodic Antenna 4.2.4.4 Vivaldi Antenna; 4.2.5 Thin Film Sensors; 4.3 Detonic Measurement Techniques; 4.3.1 Time of Arrival Detectors; 4.3.2 Surface Displacement Detectors; 4.3.3 Stress Versus Time Detectors; 4.3.3.1 Piezoresistive Gages; 4.3.3.2 Piezoelectric Gages; 4.3.4 Cinematographic and Flash X-Ray Techniques; 4.3.4.1 Shadowgraphs; 4.3.4.2 Rotating-Mirror and Rotating-Drum Cameras; 4.3.4.3 Image Converter and Electronic Cameras; 4.3.4.4 Flash X-Ray Radiography; 4.4 Summary; Bibliography; 5. Flux Compression Generators; 5.1 Classifications of FCGs; 5.2 Historical Perspectives 5.3 Principles of Operation

Sommario/riassunto

Explosive pulsed power generators are devices that either convert the chemical energy stored in explosives into electrical energy or use the shock waves generated by explosives to release energy stored in ferroelectric and ferromagnetic materials. The objective of this book is to acquaint the reader with the principles of operation of explosive generators and to provide details on how to design, build, and test three types of generators: flux compression, ferroelectric, and ferromagnetic generators, which are the most developed and the most near term for practical applications. Containing a
