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Nota di contenuto	; 1. Research developments that contributed to the landscape of longwall roof support design over the past 25 years / Thomas M. Barczak -- ; 1.1. Introduction -- ; 1.2. The Mine Roof Simulator -- ; 1.3. Longwall Shield Supports -- ; 1.4. Standing Roof Supports -- ; 1.5. The Ground Reaction Curve -- ; 1.6. Closing Remarks -- ; 1.7. Disclaimer -- References -- ; 2. Study on the factors influencing the load capacity of shield / Jingyi Cheng and Syd S. Peng -- ; 2.1. Introduction -- ; 2.2. Research Method and Site Description -- ; 2.3. Effect of Setting Load on the Loading Characteristics of Shield -- ; 2.4. Yielding -- ; 2.5. Effect of Shearer's Cutting and Advance of Neighboring Shield on Shield Load -- ; 2.6. Conclusions -- Acknowledgments -- References -- ; 3. Structural engineering principles in coal mine ground control -- the common link between empirical models, numerical models, and practical solutions / Russell Frith -- ; 3.1. Introduction -- ; 3.2. Overview of Ground Control Assessment and Design Methods -- ; 3.3. Relevant Structural Engineering Principles -- ; 3.4. Examples of Rock Mass Behavior Conforming to Structural Engineering Principles -- ; 3.5. Discussion -- References -- ; 4. Rock failure above and below chain pillars: implications for strength and fluid flow between goafs / Winton J. Gale -- ; 4.1. Introduction and Background -- ; 4.2. Stress Changes and Rock Failure About Longwall Panels -- ; 4.3. Computer Modeling of the

Process -- ; 4.4. Effects of Fracture Above Pillars on Hydraulic Conductivity -- ; 4.5. Conclusions -- References -- ; 5. Overburden response to longwall mining / Hua Guo, Qingdong Qu and Deepak Adhikary -- ; 5.1. Introduction -- ; 5.2. Stratified Rocks and Mechanical Characteristics -- ; 5.3. General Understanding of Overburden Response to Longwall Mining -- ; 5.4. Field Monitoring of Overburden Deformation Processes -- ; 5.5. Stress Changes and Distribution About Longwall Faces -- ; 5.6. Integrated Study of Hydrogeological Response to Longwall Mining -- ; 5.7. Significance of Overburden Response in Longwall Gas Emission -- ; 5.8. Future Trends in Overburden Response Study -- Acknowledgments -- References -- ; 6. Surface subsidence characteristics and damage protection techniques of high-intensity mining in China / Guo Wenbing, Bai Erhu and Yang Darning -- ; 6.1. Definition of High-Intensity Mining and Its Current Status -- ; 6.2. Surface Subsidence Characteristics Caused by High-Intensity Mining -- ; 6.3. Features of Overburden Rock Failure Due to High-Intensity Mining -- ; 6.4. Surface Subsidence Control and Mining Damage and Protection Technology of Buildings (Structures) in Chinese Coal Mines -- ; 6.5. Engineering Examples -- References -- ; 7. Ground control during pillar recovery with continuous miners / Christopher Mark -- ; 7.1. Introduction -- ; 7.2. Ground Control Theory of Pillar Recovery -- ; 7.3. Global Stability -- ; 7.4. Local Stability Risk Factors -- ; 7.5. Work Procedures and Worker Location -- ; 7.6. Rib Falls, Coal Bursts, and Airblasts -- ; 7.7. Conclusions -- References -- ; 8. Nondestructive testing of bolt support quality and stability control of coal mine roadways / Xie X. Miao, Hou Q. Zhang, Yu Wu and Yan L. Chen -- ; 8.1. Introduction -- ; 8.2. Mechanism and Equipment of Nondestructive Testing of Bolt Support Quality -- ; 8.3. Testing of Bolt Support Quality and Warning of Surrounding Rock Instability In Coal Mine Roadways -- ; 8.4. Conclusions -- References -- ; 9. Practical coal mine ground control -- operator's perspective / Daniel W.H. Su -- ; 9.1. Coal Pillar Design -- ; 9.2. Horizontal Stress Impact and Management -- ; 9.3. Longwall Caving and Hydraulic Fracturing -- ; 9.4. Roof Geology Reconnaissance and Applications -- ; 9.5. Deep Mine Design Considerations -- ; 9.6. Exploration and Mapping -- ; 9.7. Important Parameters Affecting Induced Stresses in the Sandstone and Abutment Pressures in the Gateroad Pillars -- ; 9.8. Design Changes Implemented to Reduce Longwall-Induced Stresses in the Sandstone and the Gateroad Pillars -- ; 9.9. Surface Seismic Monitoring -- ; 9.10. Effects of Longwall-Induced Subsurface Deformations on the Mechanical Integrity of Shale Gas Wells Drilled Over a Longwall Abutment Pillar -- ; 9.11. Site Description and Geotechnical Instrumentations -- ; 9.12. Site Geology -- ; 9.13. 3D Finite Element Simulations -- ; 9.14. Results of Geotechnical Instrumentation and 3D Finite Element Analyses -- ; 9.15. Potential of Employing the Field-Instrumentation-Calibrated Abaqus Model to Evaluate Well Casing Stability Under Different Overburden Geology and Well Casing Design -- ; 9.16. Discussions -- References -- ; 10. The use of cable bolts or ground control -- current applications and future innovation / Stephen C. Tadolini and Dennis R. Dolinar -- ; 10.1. Introduction -- ; 10.2. Cable Bolt Design and Manufacturing -- ; 10.3. Tensioned Cable Bolting Systems -- ; 10.4. Indented PC-Strand Cable Bolts -- ; 10.5. Summary and Conclusions -- Acknowledgment -- References -- ; 11. Rock failure process analysis method (RFPA) for modeling coal strata movement / Chun-an Tang and Tao Xu -- ; 11.1. Introduction -- ; 11.2. Rock Failure Process Analysis Method -- ; 11.3. Case Studies -- ; 11.4. Conclusions -- Acknowledgments -- References -- ; 12. Thick seam coal mining and its ground control / Jiachen Wang and Yang Li -- ; 12.1. Thick Seam

Coal Mining -- ; 12.2. Ground Control in Thick Coal Seam Mining -- ; 12.3. Conclusions -- References -- ; 13. Experience in ground control evaluation of longwall recovery using numerical modeling and in situ monitoring / Peter Zhang -- ; 13.1. Conventional Longwall Recovery -- ; 13.2. Predriven Longwall Recovery Room -- ; 13.3. Numerical Modeling and In Situ Monitoring of Predriven Longwall Recovery Room -- ; 13.4. Shield Recovery in Using Predriven Recovery Room -- ; 13.5. Design Considerations of Roof Support in Using Predriven Recovery Room -- References.

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Sommario/riassunto

This book covers all recent advances in coal mine ground control, the most advanced subsystem of the rapidly advancing coal mining systems.

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