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Improving Access to Underground Coal Operators' Conference Papers

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IMPROVING ACCESS TO UNDERGROUND COAL OPERATORS' CONFERENCE PAPERS

Michael Organ, Naj Aziz and Jan Nemcik

ABSTRACT: The annual Underground Coal Operators' Conference (UCOC) has been held at the University of Wollongong since 1998. In February 2010 it celebrated its 10th anniversary. During that period a total of 332 conference papers were published within the ten printed volumes of proceedings. From December 2008 digital copies were made available online via the UCOC website (<http://ro.uow.edu.au/coal>) within the University of Wollongong's open access repository Research Online (<http://ro.uow.edu.au>). The UCOC website is linked to other relevant sites available to mining engineering researchers at Wollongong and all papers are easily located through an internal search engine, using author, title and keyword searches. Download of individual conference papers is free of charge and usage statistics are monitored by the conference conveners. Since going live, visitors to the site from more than 130 countries have downloaded over 85 000 individual conference papers. Online availability has greatly improved access for students, researchers and mine professionals world-wide. It has also enhanced the reputation of the University of Wollongong as the centre of excellence in teaching and research in mining engineering, with a keen interest in promoting mining technology nationally and internationally. This paper discusses the national and international impact of free online access to the UCOC papers.

INTRODUCTION

The annual Underground Coal Operators' Conference (UCOC) has been held at the University of Wollongong since 1998. Jointly organised by the Mining Engineering Group of the School of Civil Mining and Environmental Engineering, University of Wollongong, the Illawarra Branch of The Australasian Mining and Metallurgy (AusIMM) and the Mine Managers Association of Australia, it is an international conference drawing practitioners in the field from all corners of the globe. Printed volumes of proceedings have seen limited circulation via dispersal to conference attendees and placement in various library collections.

During the second half of 2008 the opportunity to improve access to this significant collection of research material by making it freely available online was presented to the conference conveners by the University Library at the University of Wollongong. A new conference module within Research Online (<http://ro.uow.edu.au>) – the University of Wollongong's open access repository – was being rolled out and the Manager Repository Services sought content from past and future conferences which could be digitally archived. Following campus-wide promotion of this new feature, he was approached by Professor Naj Aziz, convenor of UCOC, who was interested in the possibilities offered by providing online access to the substantial collection of UCOC papers. Digital files were subsequently secured and from December 2008 through to March 2010 a collection of 332 papers were uploaded to a new UCOC website (<http://ro.uow.edu.au/coal>) located within Research Online.

The previous UCOC websites – comprising the University of Wollongong Coal Mining Science and Technology website (<http://research.uow.edu.au/coal/>) and a dedicated conference information site (<http://www.coalconference.net.au/>) - contained a wealth of information on the conference and related topics, however they did not provide access to copies of the conference papers. The present UCOC section of Research Online remedies this omission and also maintains linkage to up-to-date mining websites at the Faculty of Engineering websites through a 'Conference website' link. These sites cover topics such as longwall mining (<http://www.uow.edu.au/eng/longwall/>), bord and pillar mining (<http://www.uow.edu.au/eng/pillar/>) and coal and gas outburst (<http://www.uow.edu.au/eng/outburst/>), and provide an important adjunct to the archived conference papers and current conference websites.

UCOC on Research Online is, as far as the authors are aware, the only coal mining website of its type that is freely available for the use of students, engineers and professionals in the field. Since its creation at the end of 2008, UCOC papers have been accessed more than 100 000 times via internet search

engines such as Google or direct links. This represents a major increase on the perhaps hundreds of researchers who would have had access to this material through its printed form. A more detailed assessment of the success of the UCOC website in exposing conference papers to global researchers is outlined below.

RESEARCH ONLINE

Research Online (<http://ro.uow.edu.au>) is an open access digital archive promoting the scholarly output of the University of Wollongong. It makes use of the Bepress Digital Commons software platform (<http://www.bepress.com/ir/>). Research Online allows visitors to browse research material by:

- Faculty or administrative unit;
- Series and journals;
- Conferences;
- Thesis;
- Authors;
- Image Galleries;
- Document Type.

The UCOC website is a series within Research Online and is accessed from the home page under the Faculty of Engineering heading within the Faculty of administrative unit link. The site arranges the material chronologically for ease of browsing and contains a search engine which allows identification of individual conference papers by author, title or keyword.

Research Online facilitates open access to digital copies of research publications. It does this by using various internet protocols and programming tools to ensure that material placed on Research Online is visible to search engines such as Google. Searches on topics of relevance to the UCOC will return results which are clear and concise, thereby encouraging researchers to visit the site, assess the content via the information contained on the metadata pages, and download a digital copy of the conference paper itself. Every UCOC paper on Research Online contains an individual descriptive page, whilst the downloaded documents themselves include a system-generated cover page, which provides detailed citation information in the following form:

This conference paper was originally published as Atkins, A, Zhang, L and Yu, H, Applications of RFID and mobile technology in tracking of equipment for maintenance in the mining industry, in Aziz, N (Ed), 10th Underground Coal Operators' Conference, University of Wollongong and The Australasian Institute of Mining and Metallurgy, 2010, 350-358. (<http://ro.uow.edu.au/coal/326/>).

Research Online makes available a substantial amount of bibliographic and descriptive information to search engines such as Google. Not only are author, title and publication details visible, but also abstracts, and in many cases – where optical character recognition (OCR) has been applied to the pdfs - the full text of the paper itself is searched by Google. With such a wealth of data available, the chances of a researcher in the field coming across a UCOC paper are substantially increased. Evidence for this is found in the number of people accessing the site, by how many conference paper pdfs are downloaded, and by subsequent citation rates.

Research Online also contain a statistics package which can be used in conjunction with Google Analytics to gauge the level of access to various sections of the site, including individual UCOC papers. These statistics can be access via the local system administrator and conference conveners. They provide basic information on “hits” to the site (i.e. the number of times a link to the metadata page or pdf file is opened), the number of full text downloads, and the various countries and domains from which site access is sought. A detailed statistical analysis of use of the UCOC site to date is presented below.

STATISTICAL SURVEY OF ACCESS TO THE UCOC WEBSITE

Access and downloads

According to statistics generated by the Research Online system, as of 1 January 2011 the 332 conference papers on the UCOC website had been accessed, or ‘hit’, over 100,000 times. This included both browsing of the individual metadata or descriptive pages for each conference paper, plus full text

downloads of pdf copies of the papers themselves. All items received at least 50 hits, with 80% receiving more than 100 hits and 11% more than 500 hits. The five most popular papers had each been accessed over 1 000 times. These figures reveal the high visibility of material placed on Research Online and made accessible via the internet.

Perhaps of most significance is the fact that there have been more than 85 000 full text downloads of conference papers to the end of 2010. This indicates that individual researchers and professionals in the field have actually made the effort to download the full paper and, it can be assumed, read it, rather than merely browsed the citation and abstract. Such downloads can lead to increased citation rates for individual authors, further referrals to the UCOC site and the opening of communication between individual authors and researchers. The latter can of course lead to future collaboration. By increasing online visibility of the conference papers, and enabling easy access to digital copies, Research Online is supporting the aims of the conference conveners in dispersing research findings relating to the area of coal mining operations. It is clear that Research Online has greatly increased the impact of the conference, which was previously limited only to those able to attend in person, or perhaps access printed copies of the proceedings.

Paper popularity

Access and full text download statistics for UCOC papers reflect both the time papers are available online and individual popularity. It is obvious that the longer an item is on open access, then the greater the number of hits and downloads it receives. However this alone cannot account for the number or variation in such statistics. Popularity is an overriding factor, though it is a difficult term to define and may be affected by a number of factors, including content of the conference paper, title, abstract information and authorship. For example, two papers with non-descriptive titles - 'Improving Relations' and 'Contemporary developments in training' - figure at number 4 and 14 (viz. 71 and 46 hits) in the list of least accessed papers (Table 1), though other papers with more specific and relevant titles (e.g. 'Mine gas initiative North Rhine-Westphalia', 68 hits and ranked number 3) also figure low on the list. It is therefore difficult to ascertain the effect of a descriptive title on popularity. A concise abstract may be a more significant factor than the title.

Table 1 - Paper accessed ranking between 1st December 2008 and 31st December 2010

(a) Ten most accessed papers

No.	Title	URL	Conference Year	Total Hits
1	Pike River Coal - Hydraulic Mine Design on New Zealand's West Coast	http://ro.uow.edu.au/coal/43	2008	2357
2	Development of In-House Coal Seam Permeability Testing Capabilities	http://ro.uow.edu.au/coal/49	2008	1310
3	Current Status and Future Prospects of Mining Subsidence and Ground Control Technology in China	http://ro.uow.edu.au/coal/94	2009	1050
4	Crinum Mine, 15 Longwalls 40 Million Tonnes 45 Roof Falls - What did we Learn?	http://ro.uow.edu.au/coal/2	2008	1021
5	Advances in Surface Seismic Acquisition, Processing and Interpretation	http://ro.uow.edu.au/coal/41	2008	1009
6	A Web-Based Database for Assessing Roadway Development Performance	http://ro.uow.edu.au/coal/89	2009	1077
7	Estimation of Coal Pillar Strength by Finite Difference Model	http://ro.uow.edu.au/coal/79	2009	898
8	Gate Road Development in High Gas Content Coal Seams at Karaganda Basin Coal Mines, Kazakhstan	http://ro.uow.edu.au/coal/85	2009	892
9	Application of Financial Risk Analysis for Project Evaluation at a Large Coal Mine	http://ro.uow.edu.au/coal/29	2008	835
10	Improving fundamental stockpile management procedures	http://ro.uow.edu.au/coal/263	2009	800

(b) Ten least accessed papers

No.	Title	URL	Conference Year	Total Hits
1	Improvement Programs through Systems Management In Relation to Mine Development	http://ro.uow.edu.au/coal/284	2009	36
2	New Legislative Framework and the Role of Geotechnical and Gas Drainage Professionals	http://ro.uow.edu.au/coal/219	2009	34
3	Mine gas initiative North Rhine-Westphalia - part of EnergyAgency.NRW	http://ro.uow.edu.au/coal/216	2009	31
4	Improving Relationships	http://ro.uow.edu.au/coal/312	2010	28
5	Contrasts in gas sorption at Dartbrook and South Bulli collieries	http://ro.uow.edu.au/coal/169	1998	27
6	The nature of underground heating as indicated by numerical modelling	http://ro.uow.edu.au/coal/236	2009	26
7	Gas Emission Modelling of Gate Road Development	http://ro.uow.edu.au/coal/276	2009	25
8	Improving colliery performance through one big team, or many teams	http://ro.uow.edu.au/coal/213	2009	23
9	Joint industry planning platforms for coal export supply chains	http://ro.uow.edu.au/coal/233	2009	21
10	Sampling surficial sediments of a river receiving minewater discharges	http://ro.uow.edu.au/coal/256	2009	15

In regards to length of online availability as a factor, the most popular paper – ‘Pike River Coal - Hydraulic Mine Design on New Zealand's West Coast’ (<http://ro.uow.edu.au/coal/43>) with 2 357 hits, was uploaded on 14 December 2008, as was ‘The Use of Downhole Presometers Implications for Modern Underground Mines’ (<http://ro.uow.edu.au/coal/42>) with only 210 hits. Once again, length of time available on open access was not the major factor in determining the level of access and popularity of an item.

With most of the papers only being online for 12-18 months it is too early to make statements at this stage in regards to general trends re access and download rates. Table 1 show the first ten most accessed and the last ten least accessed papers out of the total 332 papers, covering the period December 2008 to 31 December 2010. The appendix lists full text downloads between December 1st, 2008 and December 31st, 2010. It is clear from these and the more fulsome set of associated statistics that:

- There is a small correlation between the length of time available online and the number of times an item is accessed or downloaded.
- Popularity of papers can be measured by the number of times they are accessed and downloaded.
- Reasons for the popularity of any individual paper are unclear. It may be related to content (e.g. title, abstract, full text), relevancy to particular trends in the sector, identification as readings in academic teaching and research programs, or interest in the work of particular authors.
- The papers from any one conference are no more popular or heavily accessed than those from any other conference, though there is a slight preference for the most popular papers to be associated with post 2004 conferences, with the top 20 papers so identified. No reason for this has been identified.
- The least accessed papers are from 2010, though this is a short term factor related to limited online availability.

Access by subject topic

The categorisation of the papers online is in accordance with the topics that were listed in the call for papers at the home page of the conference website (<http://www.coalconference.net.au/>). In general, most of the published papers are related to underground operations; however there are also a few papers on surface mining as the conference is fundamentally intended for underground mining operation. Topics covered in the various aspects of mining include:

- 1) heading development;
- 2) mining methods; longwall, bord and pillar, top coal caving and hydraulic mining; mine geology;
- 3) equipment and machinery performances;
- 4) ground control and strata management;
- 5) Instrumentation;
- 6) rock bolting;
- 7) mine subsidence;
- 8) mine ventilation, gas drainage and outburst control;
- 9) mine fires and control, mine dust and control;
- 10) risk management;
- 11) mine management and mine contract.

Table 2 and Figure 1 show the percentages of access for papers download by subject category between 2008 and 2010, based on data extracted from Research Online.

Table 2 - Access by topic by percentage

Subject topics	Access (%)
1. Heading development	7.0
2. Mining methods and geology	25.0
3. Equipment and machinery performances	4.6
4. Ground control and strata management	10.6
5. Instrumentation	3.4
6. Rock bolting	5.74
7. Mine subsidence	4.65
8. Mine ventilation gas drainage and outburst control	19.53
9. Mine fires and control, mine dust and control	8.2
10. Risk management	7.7
11. Mine management and mine contract	10.6

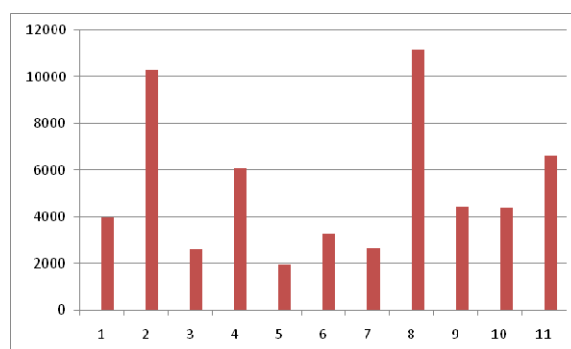


Figure 1 - Number of paper downloads per subject topic between December 2008 and August 2010

It is clear that the highest proportion of hits were in the mining methods category at 25%, followed by the mine gases and outburst control category at 19.5%. The lowest percentage was on equipment and machinery, which was expected as many papers on mining methods had sections on equipment and machinery and other topics like ground control. Thus the percentage distribution by subject cannot, to all intents and purposes, be accurately categorised.

Some subject topics had greater coverage with greater numbers of papers in the conference proceedings in comparison to others with a lower percentage of papers. Also, the relatively higher proportion of the mining methods section was attributed to the fact that this section contained papers on geology, strata control and sometimes on equipment utilisation, which could also be included in the equipment and machinery section and ground control. Similarly the section on mine ventilation, mine gas and outburst control, with the second high access rate at 19.25%, was due to the high numbers of papers on these topics.

Access by country

Access to the UCOC website from both national and international browsers can be ascertained from statistical information generated internally within Research Online and also externally by Google Analytics. From these two sources - which provide variations in their statistical returns due to differing counting methodologies - it is clear that between December 2008 and December 2010 the UCOC website was accessed by researchers in more than 130 countries. Table 3, using Research Online data, lists initiation of full text downloads by location over that period, based on analysis of the two digit top level domain (e.g. au, nz). It should be noted that the two digit top level domain does not apply to the United States, except on rare occasions when the domain .us is used. Therefore, in Table 3 a figure has been allocated to those visitations from sites with no two digit top level domain, assuming that the vast majority are from the US, though this is not always the case.

Table 3 - Frequency of access to Underground Coal Operators' Conference papers by country December 2008 to October 2010 (Source: Research Online)

Country	Frequency	Country	Frequency	Country	Frequency
Virgin Islands	1	Jamaica	6	Norway	59
Azerbaijan	1	Latvia	6	Chile	61
Cambodia	1	Bolivia	6	Belgium	62
Uzbekistan	1	Italy	7	Taiwan	62
Maldives	1	Denmark	7	Portugal	72
Bahamas	1	Kuwait	8	Greece	87
Iceland	1	Nepal	8	Philippines	95
El Salvador	1	Trinidad and Tobago	8	Netherlands	98
Guatemala	1	Bangladesh	9	Peru	100
North America	1	Bosnia	10	Mexico	118
Senegal	1	Morocco	10	Egypt	119
Armenia	1	Jordan	11	Vietnam	138
Respublica Srpska	2	Qatar	13	Pakistan	143
Costa Rica	2	Honduras	15	Ivory Coast	138
Rwanda	2	Libya	16	Singapore	156
Puerto Rico	2	Mongolia	16	Colombia	158
Angola	2	Kenya	12	Thailand	158
Dominican Republic	2	Zimbabwe	17	Russian	162
Laos	2	Sri Lanka	17	Japan	167
Mauritius	2	Slovenia	17	South Korea	184
Guam	2	Israel	21	Romania	196
Uruguay	2	Zambia	22	Brazil	216
Luxembourg	2	Ireland	23	Italy	218
Fiji	2	Ethiopia	23	Malaysia	218
Western Samoa	2	Tanzania	23	Spain	230
Ecuador	3	Botswana	23	France	235
Montenegro	3	Slovak Republic	24	Poland	268
Cuba	3	Hungary	26	Turkey	369
Belarus	3	Finland	27	Germany	412
Estonia	3	Bulgaria	31	New Zealand	432
Algeria	3	Ghana	34	China	655
Cameroon	3	Argentina	34	Indonesia	668
Mozambique	4	Venezuela	35	Hong Kong	758
Lesotho	4	Austria	35	Canada	816
Bahrain	4	Czech Republic	39	Zambia	1008
Sweden	4	Ukraine	43	United Kingdom	1386
Georgia	5	Saudi Arabia	43	India	2368
Kazakhstan	5	Sweden	50	Australia	23246
Oman	5	Nigeria	57	United States	30966

It is clear that the number of visits from any country was dependent on the status of the mining industry in that particular country. In general the access population was higher from recognised coal mining countries such as the United States, India, Germany, Poland, Russia and Turkey, as well as Australia,

which commands the highest rate of access. Countries with lower access rates included Armenia, Cuba, and Uruguay where there is little interest in coal mining. Figure 2 uses Google Analytics data for the UCOC website covering the period January 2009 to June 2010. It identifies a total of 4 329 visits to the UCOC website from 56 different countries, with the top 10 from those with significant coal mining industries.

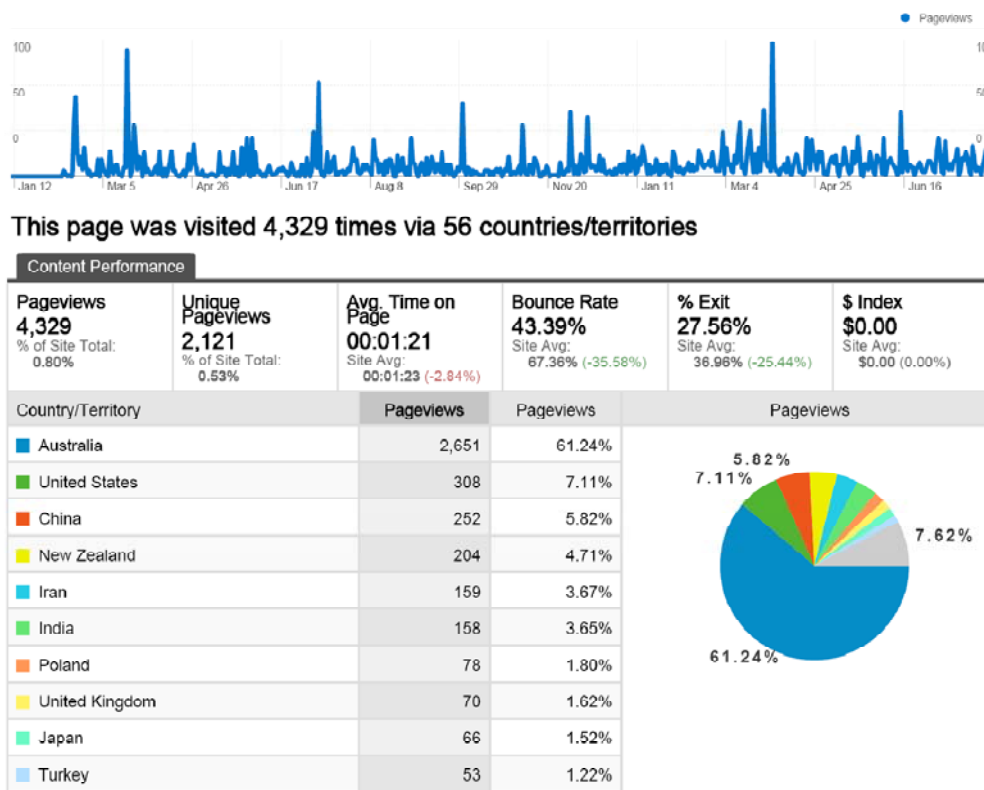


Figure 2 - Visits to the Underground Coal Operators' Conference website by country January 2009 to June 2010 (Source: Google Analytics)

As expected, Australia was the highest accessing country with more than 61.24%, followed by the United States and China at 7.11% and 5.82 % respectively. At the bottom end of the scale, and not shown in the figure, are countries such as Armenia and the Virgin Islands, with a single visit. These figures, whilst varying somewhat from those generated by Research Online, nevertheless reveal similar access trends. Google identifies 4 329 visits to the UCOC website homepage, whilst Research Online lists 88,000+ hits to the site as a whole, which includes all those pages below the level of the homepage and thereby accounts for the discrepancy. A full-text downloads of the Coal Operators' Conference papers, between December 1st 2008 and December 31st 2010, is shown in the Appendix.

SUMMARY

The online access to the Coal Operators' Conference website is a useful exercise for the benefit of the mining education, the mining industry and research organisations. It provided an opportunity for access from remote locations on a variety of coal mining issues as the conference is a multi-topic event covering a variety of topics of vital importance to the industry operation.

Placement of the Coal Operators' Conference papers online access has enhanced the reputation of the University of Wollongong as the centre of excellence in teaching and research in mining engineering with keen interest in promoting mining technology nationally and internationally. Equally benefited are both The Illawarra Branch of the Aus IMM and Mine Managers Association of Australia.

Appendix - Full-text downloads of Undeground Coal Operators' Conference papers between 1-12-2008 and 31-12-2010

Title	URL	First published	Total
Pike River Coal - Hydraulic Mine Design on New Zealand's West Coast	http://ro.uow.edu.au/coal/43	12/14/2008	2357
Development of In-House Coal Seam Permeability Testing Capabilities	http://ro.uow.edu.au/coal/49	12/15/2008	1310
Current Status and Future Prospects of Mining Subsidence and Ground Control Technology in China	http://ro.uow.edu.au/coal/94	02/15/2009	1050
Crinum Mine, 15 Longwalls 40 Million Tonnes 45 Roof Falls - What did we Learn?	http://ro.uow.edu.au/coal/2	2008/1/12	1021
Advances in Surface Seismic Acquisition, Processing and Interpretation	http://ro.uow.edu.au/coal/41	12/14/2008	1009
A Web-Based Database for Assessing Roadway Development Performance	http://ro.uow.edu.au/coal/89	02/15/2009	939
Estimation of Coal Pillar Strength by Finite Difference Model	http://ro.uow.edu.au/coal/79	02/15/2009	898
Gate Road Development in High Gas Content Coal Seams at Karaganda Basin Coal Mines, Kazakhstan	http://ro.uow.edu.au/coal/85	02/15/2009	893
Application of Financial Risk Analysis for Project Evaluation at a Large Coal Mine	http://ro.uow.edu.au/coal/29	2008/3/12	835
Improving fundamental stockpile management procedures	http://ro.uow.edu.au/coal/263	2009/8/3	800
Geological and Geotechnical Influences on the Caveability and Drawability of Top Coal in Longwalls	http://ro.uow.edu.au/coal/4	2008/1/12	798
An Approach to Addressing Explosive Related Accidents by Implementing Strategic Training	http://ro.uow.edu.au/coal/28	2008/3/12	794
Airborne Geophysical Techniques	http://ro.uow.edu.au/coal/40	12/14/2008	780
Coal Age - A Longwall Look at Tomorrow	http://ro.uow.edu.au/coal/265	2009/8/3	769
An Empirical Approach in Prediction of the Roof Rock Strength in Underground Coal Mines	http://ro.uow.edu.au/coal/12	2008/2/12	720
Ground Control in Coal Mines in Great Britain	http://ro.uow.edu.au/coal/31	2008/10/12	719
Dragline Digging Methods in Australian Strip Mines - A Survey	http://ro.uow.edu.au/coal/278	2009/9/3	710
How to use pre-employment medical examinations and comply with Anti-Discrimination Legislation	http://ro.uow.edu.au/coal/286	2009/9/3	701
Reducing Coal Mine GHG Emissions Through Effective Gas Drainage and Utilisation	http://ro.uow.edu.au/coal/103	02/15/2009	690
Use of contractors for mining operations	http://ro.uow.edu.au/coal/222	2009/8/3	676
CMRR - Practical Limitations and Solutions	http://ro.uow.edu.au/coal/7	2008/1/12	671
A Website on Coal and Gas Outburst Management	http://ro.uow.edu.au/coal/50	12/15/2008	659
Corrosion Protection of Rock Bolts by Epoxy coating and its Effect on Reducing Bond Capacity	http://ro.uow.edu.au/coal/10	2008/1/12	654
Double Shear Testing of Bolts	http://ro.uow.edu.au/coal/172	02/16/2009	652
Effect of Grouting on Longwall Mining Through Faults	http://ro.uow.edu.au/coal/3	2008/1/12	631
Wear of Dragline Wire Ropes	http://ro.uow.edu.au/coal/120	02/16/2009	628
A Simulation Model for Roadway Development to Support Longwall Mining	http://ro.uow.edu.au/coal/88	02/15/2009	625
Dendrobium Mine: From Paper to Production	http://ro.uow.edu.au/coal/125	02/16/2009	587
Improving coal mining production performance through the application of Total Production Management	http://ro.uow.edu.au/coal/243	2009/8/3	577
Strata Control in Underground Coal Mines: A Risk Management Perspective	http://ro.uow.edu.au/coal/204	02/19/2009	576
Current In-seam Drilling Techniques	http://ro.uow.edu.au/coal/193	02/17/2009	573

Continue.....

Title	URL	First published	Total
Polymer-Based Alternative to Steel Mesh for Coal Mine Strata Reinforcement	http://ro.uow.edu.au/coal/9	2008/1/12	571
Application of Enhanced Gas Recovery to Coal Mine Gas Drainage Systems	http://ro.uow.edu.au/coal/104	02/15/2009	568
Strategic Planning for the Future	http://ro.uow.edu.au/coal/123	02/16/2009	546
Longwall Mining Through Faults at Moranbah North	http://ro.uow.edu.au/coal/138	02/16/2009	528
Designing for Efficient Installation and Relocation of Trunk and Panel Conveyors at Donaldson Coal, Tasman Mine	http://ro.uow.edu.au/coal/25	2008/3/12	525
System Management Approach to Improvements in Longwall Development	http://ro.uow.edu.au/coal/86	02/15/2009	524
A Review of Spontaneous Combustion Incidents	http://ro.uow.edu.au/coal/153	02/16/2009	519
Technology Knowledge Base for Coal Mining: Websites at the University of Wollongong	http://ro.uow.edu.au/coal/30	2008/3/12	506
A Comparison Between Hoek-Brown and Bieniawski Criteria for Coal and Rocks	http://ro.uow.edu.au/coal/261	2009/8/3	506
Stress corrosion cracking of rock bolts	http://ro.uow.edu.au/coal/258	2009/8/3	504
A Case Study on Longwall Mining under the Tidal Waters of Lake Macquarie	http://ro.uow.edu.au/coal/56	12/16/2008	503
Why Uniaxial Compressive Strength and Young's Modulus Are Commonly Poor Indicators of Roadway Roof Stability - Except in the Tailgate	http://ro.uow.edu.au/coal/33	2008/10/12	502
Rapid generation of control charts for analysis of complex gas mixed in crisis situations	http://ro.uow.edu.au/coal/240	2009/8/3	497
Airborne and Terrestrial Laser Scanning - Applications for Illawarra Coal	http://ro.uow.edu.au/coal/54	12/16/2008	496
Analysis and Research on Influencing Factors of Coal Reservoir Permeability	http://ro.uow.edu.au/coal/21	2008/2/12	486
Innovative Approach to Maintaining Mine Ventilation During Fan Upgrade at Carborough Downs Mine, June 2008	http://ro.uow.edu.au/coal/97	02/15/2009	480
Exploration for Results: Moura Coal Mine	http://ro.uow.edu.au/coal/133	02/16/2009	467
Hydraulic coal mining developments in New Zealand	http://ro.uow.edu.au/coal/237	2009/8/3	466
Optimisation of the Bolt Profile Configuration for Load Transfer Enhancement	http://ro.uow.edu.au/coal/11	2008/1/12	458
Prediction of Surface Subsidence Due to Inclined Very Shallow Coal Seam Mining Using FDM	http://ro.uow.edu.au/coal/93	02/15/2009	453
Assessment of an Underground Coal Mine Fire: A Case Study From Zonguldak, Turkey	http://ro.uow.edu.au/coal/108	02/15/2009	448
Gas Content Estimation Using Initial Desorption Rate	http://ro.uow.edu.au/coal/100	02/15/2009	447
An Assessment of Load Transfer Mechanism Using the Instrumented Bolts	http://ro.uow.edu.au/coal/53	12/16/2008	447
Methods of Interpreting Ground Stress Based on Underground Stress Measurements and Numerical Modelling	http://ro.uow.edu.au/coal/39	12/14/2008	443
Coming of Age for Low-Density Explosives	http://ro.uow.edu.au/coal/126	02/16/2009	435
Risk Management in Mines - The Six Sigma Way	http://ro.uow.edu.au/coal/26	2008/3/12	429
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