

NEWSLETTER



*of
the
Coal Research Forum*

EDITOR'S MUSINGS:

I just happened to notice my editorial for the September 2010 newsletter in which I was bemoaning the demise of the England football team in the World Cup. This year we are celebrating the newly crowned England cricket team as the No. 1 in the world – it makes a change to be good at something! And so to the third and final newsletter for 2011, which the officers of the CRF hope that you will find informative, not just in telling you what we are doing with coal but more generally in what is happening in 'energy world'.

The venue and date for the biennial CRF conference, now well-known as simply the ECCRIA conference – in this case No. 9 –, has been agreed. It will be returning to the University of Nottingham and will take place between the 10th and 12th September 2012. Nottingham was one of the early venues when in 1998 the event was much smaller and simply known as the 2nd UK National Meeting on Coal Research & Its Applications. Further information and timelines will be circulated as in the past so watch out for developments!

An important joint event has been planned for September 2011 in conjunction with the Combustion Engineering Association and the Energy Sector of the Royal Society of Chemistry. It is entitled "The European Industrial Emissions Directive" and has attracted speakers in key areas of the topic. It has been well publicised and I hope all those of you interested in attending are able to do so. The intention is that a full series of notes of the event will appear in the next newsletter.

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Student Bursaries for 2011-2012

Up to 6 travel and subsistence bursaries for up to £300 are on offer to bona-fide full-time students wishing to attend appropriate National and International coal-related conferences. To apply, please send the abstract submitted to the conference with a brief supporting letter from your supervisor to:

Prof. J.W. Patrick
School of Chemical & Environmental Engineering
The University of Nottingham
University Park
Nottingham NG7 2RD

The requirements for eligibility for award of a bursary are that the recipient will submit a short report about his or her impressions of the conference to the Newsletter Editor for inclusion in the next edition. In addition, the report will provide some brief details of the beneficiary, their topic of study and the reasons for wishing to attend the conference.

Report on participation at the 5th International Conference on Clean Coal Technologies (CCT2011), Zaragoza, Spain, 8th -12th May 2011

From Timipere Salome Farrow of the University of Nottingham

I attended the Fifth International Conference on Clean Coal Technologies held in Zaragoza Spain from 8th – 12th of May 2011 with financial support from Coal Research Forum. About 225 delegates from 27 countries attended the conference. The conference focused on clean coal technologies and the recent research and development in clean coal utilisation geared towards meeting the low carbon future targets. The two key note sessions addressed the need for research and development to employ technologies that will reduce carbon intensity in power industries.

The programme had oral presentation for three days and 100 papers were presented in parallel sessions and technical papers. There was also a day for full poster presentation and a conference diner in the evening. The parallel oral sessions gave me room to attend presentations on research topics of interest, which is on oxy-fuel co-firing of biomass and coal. Also these presentations made me to appreciate and understand more about biomass and coal co-firing from laboratory investigation to pilot scales. Some of the presentations were on SO_x and NO_x control during oxy-fuel coal combustion. I also attended presentations on co-gasification of biomass and coal in air and oxy-fuel firing. Furthermore, the presentations from companies such as Doosan Power Systems, Air Liquide etc carrying out oxy-fuel technology gave me insight into the feasibility of oxy-fuel as a carbon capture technology especially in meeting the UK's 80% CO₂ emission reduction target by 2050.

The most important aspect of the conference was the fact that I presented my research findings to people from different countries that are working in similar field or interested in my research. My topic was on the impact of biomass on coal char burnout under air and oxy-fuel conditions. With the increasing demand for energy and the presence of low rank coal in the market, the efficiency of coal char burnout becomes important. Therefore, my presentation focused on how biomass will affect coal char burnout during co-firing under oxy-fuel and air firing with particular emphasis on the potential catalytic effect of biomass-contained alkali and alkaline metals on coal char burnout. The questions asked and contributions made after my presentation gave me opportunity to understand more about oxy-fuel co-firing.

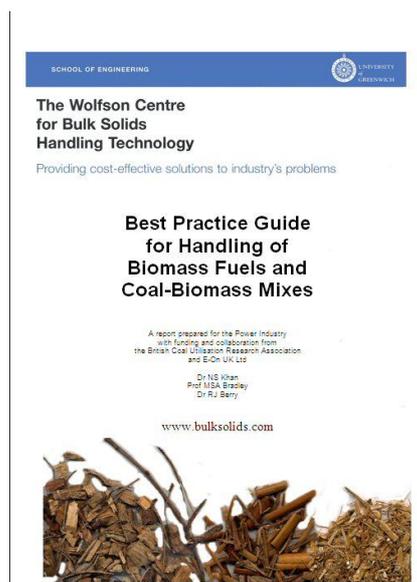
Overall, the conference was a great success, with well organised refreshments, lunch and a wonderful dinner. Also, it has given me an opportunity to network with both students and industrial workers on one on one basis.

Best Practice Guide on Biomass Handling and Biomass/Coal Co-handling.

The Wolfson Centre for Bulk Solids Handling Technology has produced a report entitled Best Practice Guide on Biomass Handling and Biomass/Coal Co-handling. This was prepared for the Power Industry with funding and collaboration from the British Coal Utilisation Research Association and E-ON UK Ltd by former PhD student, Dr NS Khan as part of his project with the aid of his supervisors, Prof MSA Bradley and Dr RJ Berry.

The report arose as a direct output of the project, which set out to look at identifying and resolving common problems of fuel handling in co-firing of coal and biomass; however the findings are equally applicable to handling of biomass alone. The study involved the active participation of E-ON UK in collating experiences gained over the period from about 1999 to 2007, as well as extensive characterisation and handling trials at The Wolfson Centre. The resulting document is intended as a guide for engineers, maintenance personnel, managers and procurement executives with responsibility for obtaining and operating equipment for handling of biomass either alone or mixed with coal, in solid-fuel-fired power stations.

To obtain your copy, please email your name and postal address to wolfson-enquiries@gre.ac.uk or ring 020 8331 8646.



ARTICLES FROM THE TECHNICAL PRESS

There's shale in them thar (Chinese) Hills! 24th April 2011, Aizu Chen, Business on MSNBC.com

China has spent tens of billions of dollars buying into energy resources from Africa to Latin America to slake the unquenched thirst for fuel from its growing industry and burgeoning cities. But China may have more energy riches under its own soil than policy makers in the world's second-largest economy ever dared imagine. Once deemed too costly to extract, shale gas has turned around U.S. dependence on foreign gas imports. Just a few years ago, the United States was building scores of expensive facilities to import liquefied natural gas (LNG), looking

at booming long-term demand forecasts and wondering which countries would supply the huge volume of imports it needed. Just over a year ago, Beijing awakened to a technology revolution that has unlocked massive reserves of gas trapped within shale rock formations in the United States.

http://www.msnbc.msn.com/id/42681074/ns/business-world_business/

China coal imports likely to decline as prices soar

25th April, Liu Yiyu, The China Post

The high international price of coal will hit Chinese demand for imports, as consumers turn to cheaper, domestically produced coal. Imports fell by 26% in the first quarter of 2011 on a year-on-year basis, the National Energy Administration (NEA) said on Friday China imported 32.4 million tons of coal in the first quarter of the year, 26.4% less than in the same period in 2010.

The international coal price had increased to US\$120 a ton by March 31 from US\$90 a ton in the same period last year, boosted by strong demand from reconstruction projects in Japan after the March 11 earthquake, and the diminished supply from Australia in the wake of widespread flooding late last year.

<http://www.chinapost.com.tw/business/asia-china/2011/04/25/299967/China-coal.htm>

German nuclear exit could be costly

25th April 2011, unattributed, UPI.com

If Germany drops nuclear power as a source of energy, it could mean a hefty bill for power consumers, experts have warned. Should Germany shut down all of its 17 nuclear power reactors by 2017, the electricity bill of an average German household would rise by around \$200 in the following year, a study commissioned by the German Industry Federation BDI indicated. The energy research institute r2b energy consulting in Cologne said in the study that a speedy exit from nuclear would cost Germany \$48 billion, with \$34 billion in extra costs for the industry, and \$13 billion for private consumers. (The figures don't include money spent on renewables or grid modernization.)

http://www.upi.com/Top_News/Special/2011/04/25/German-nuclear-exit-could-be-costly/UPI-43961303761149/

Google: renewable energy is long-term effort

27th April 2011, Timothy Gardner, Reuters

Google Inc has not given up on its goal of making renewable energy cheaper than coal for consumers but it is not predicting victory soon, its director of green business operations said. "We are still moving forward," said Rick Needham, in an interview at the company's office in Washington. "I think that is an important goal and a very aspirational goal, but we are doing what we can." The Internet search giant said in late 2007 it would invest hundreds of millions of dollars in solar, wind and geothermal technologies to help make renewables cost competitive with coal, reviled by environmentalists for its emissions. Google's co-founder Larry Page, now the company's chief executive, said then the company was optimistic the goal could be met in years, not decades.

<http://www.reuters.com/article/2011/04/27/us-google-cleanenergy-idUSTRE73Q8IR20110427>

Turning coal into methane using nanotechnology

5th May 2011, unattributed, PhysOrg.com

University of Alberta researcher wants to adapt a bioconversion process that occurs naturally over millions of years into a fast-moving production that breaks down coal and captures methane gas in storage tanks. A University of Alberta researcher has received special funding to turn underground coal seams into methane gas, a less environmentally harmful source of energy. Mechanical engineering professor Sushanta Mitra wants to adapt a bioconversion process that occurs naturally over millions of years into a fast-moving production that breaks down coal and captures methane gas in storage tanks. Mitra says bioconversion of coal to methane has great potential for improving the environment globally.

<http://www.physorg.com/wire-news/66034015/turning-coal-into-methane-using-nanotechnology.html>

Air Products' Proprietary Technology On-stream at World's Premier Demonstration of Oxyfuel CO₂ Capture and Storage at Vattenfall

5th May 2011, Air Products , Newswire.com

Air Products today announced its proprietary carbon dioxide (CO₂) capture, purification and compression system at Vattenfall AB's research and development facility in Schwarze Pumpe, Germany is on-stream and performing a key role in the world's premier demonstration of Oxyfuel carbon capture. Vattenfall, one of Europe's leading energy companies, held an inaugural ceremony today at the facility which hosts what is viewed globally as the preeminent CO₂ oxyfuel project. Air Products' technology is focusing specifically on the purification and compression of Oxyfuel combustion flue gas during the scheduled three year demonstration project.

<http://www.prnewswire.com/news-releases/air-products-proprietary-technology-onstream-at-worlds-premier-demonstration-of-oxyfuel-co2-capture-and-storage-at-vattenfall-121335444.html>

Physicist Group's Study Raises Doubts on Capturing Carbon Dioxide From Air

9th May 2011, John Collins Rudolf, The New York Times

Over the last few years, some of world's brightest minds have become fascinated with a seemingly simple idea: easing the threat of climate change by pulling carbon dioxide out of the air. But a new study casts serious doubts on whether such efforts will ever yield an economically viable tool for fighting global warming. The study, released on Monday by the American Physical Society, the world's second-largest group of physicists, finds that while removing carbon dioxide from ambient air is technically feasible, the cost is likely to remain prohibitively high. The report concluded it would cost at least \$600 a ton to capture carbon dioxide from the air, compared with an estimated cost of about \$80 a ton to capture the gas from a typical coal power plant.

http://www.nytimes.com/2011/05/10/science/earth/10carbon.html?_r=2

Carbon Trust reveals UK emissions likely to rise into the 2020s

11th May 2011, Guy Shrubsole, Left Foot Forward

The Carbon Trust has today released new data revealing how the UK's total carbon emissions are likely to rise into the 2020s, despite legally-binding targets to cut domestic emissions by a third. The figures, shown in the graph below and available for download [here](#), have been calculated by including emissions embodied in the goods and services that the UK imports – often called 'outsourced emissions' – and adding these to the official tally of domestic emissions.

<http://www.leftfootforward.org/2011/05/carbon-trust-reveals-uk-emissions-likely-to-rise-into-the-2020s/>

Federal Pollution Laws Drive Chicago-Area Coal Plant Out of Business

11th May 2011, Maria Galucci, Reuters

An 85-year-old coal plant near Chicago is going out of business after new federal air quality rules ultimately made the old facility too costly to be worth operating. The 515-megawatt State Line Power Station in Hammond, Ind., will join some 17,000 megawatts of coal-fired electricity scheduled for retirement in the next few years, in light of rising coal prices and tighter mercury and air toxics standards proposed by the U.S. EPA. Richmond, Virginia-based Dominion Resources told financial analysts this month that it had opted not to bid State Line's power capacity in an upcoming auction for the 2014 to 2015 planning period.

<http://www.reuters.com/article/2011/05/11/idUS132244608220110511>

University of British Columbia lab seeks process to convert greenhouse gas emissions to fuel

11th May 2011, Randy Shore, Vancouver Sun

University of British Columbia scientists are working to harness the sun's energy to power a process that converts the planet-threatening greenhouse gas carbon dioxide into a useful fuel. David Wilkinson, executive director of the Clean Energy Research Centre at UBC, says concentrated CO₂ emissions from power plants combined with water can be converted to methane, methanol, formic acid and other fuels suitable for combustion or electric cells using known chemical processes.

<http://www.vancouversun.com/technology/seeks+process+convert+greenhouse+emissions+fuel/4762480/story.html>

FACTBOX-Colombia's top three coal exporters

12th May 2011, Jack Kimball, Reuters

Coal production in Colombia, the world's No. 5 exporter, rose 6 percent to 20.3 million tonnes in the first quarter of 2011 while exports jumped nearly 10 percent, the national mining regulator said on Thursday. The Andean country's coal industry is dominated by big thermal producers with their own port and rail facilities. Energy Minister Carlos Rodado said coal production would jump 17% to 87 million tonnes this year, uncomfortably close to the capacity limit of ports. Colombia's top three coal exporters: Cerrejon, Drummond and Prodeco, see full article for more details.

<http://www.reuters.com/article/2011/05/12/colombia-coal-exporters-idUSN0621358220110512>

Natural gas is no climate change 'panacea', warns IEA

6th June 2011, Fiona Harvey, The Guardian

Natural gas is not the "panacea" to solve climate change that fossil fuel industry lobbyists have been claiming, according to new research from the International Energy Agency (IEA). Gas is likely to make up about one-quarter of the world's energy supply by 2035, according to the study, but that would lead the world to a 3.5C temperature rise. At such a level, global warming could run out of control, deserts would take over in southern Africa, Australia and the western US, and sea level rises could engulf small island states. Nobuo Tanaka, executive director of the IEA, told a press conference in London: "While natural gas is the cleanest fossil fuel, it is still a fossil fuel. Its increased use could muscle out low-carbon fuels such as renewables and nuclear, particularly in the wake of Fukushima. An expansion of gas use alone is no panacea for climate change."

<http://www.guardian.co.uk/environment/2011/jun/06/natural-gas-climate-change-no-panacea>

Coal-to-liquid fuels poised for a comeback

9th June 2011, Alison Crimmins, MIT News

With rising energy prices, could coal-to-liquid conversion become an economical fuel option? Converting coal into liquid fuels is known to be more costly than current energy technologies, both in terms of production costs and the amount of greenhouse gases the process emits. Production of coal-to-liquid fuel, or CTL, has a large carbon footprint, releasing more than twice the lifecycle greenhouse gases of conventional petroleum fuels. However, with the rise in energy prices that began in 2008 and concerns over energy security, there is renewed interest in the conversion technology.

<http://web.mit.edu/newsoffice/2011/coal-to-liquid-fuels.html>

A Green Solution, or the Dark Side to Cleaner Coal?

14th June 2011, Keith Bradsher, The New York Times

Six massive silos stand beside the industrial port of Lianyungang in north-eastern China and hold seemingly contradictory promises: They could help improve the quality of China's polluted air, but they might also contribute to faster global warming. The silos, which are scheduled to start operation in July, are designed to blend cleaner-burning imported coal with China's own high-polluting domestic coal, which is contaminated with sulfur and dust.

Coal blending will produce a mixture that will help electric utilities meet China's steadily tightening environmental regulations. It will also increase the efficiency of coal-fired plants by slightly reducing the quantity of coal needed. Burning less coal means less greenhouse gases emitted. But critics argue there is a darker side to cleaner coal.

http://www.nytimes.com/2011/06/15/business/energy-environment/15iht-sreCHINA15.html?_r=2

New Partnership Explores Biomass as a Clean Fuel Source

15th June 2011, unattributed, PRWeb

Renewable Fuels Technologies and the Schatz Energy Research Center (SERC) today announced a research partnership. Together with Humboldt State University's Department of Forestry they will study torrefaction – a heat process that removes water and breaks down forest waste, producing a dry material that burns cleanly. The research partners' ultimate goal is to develop a renewable replacement for coal. RFT has made available its demonstration-scale, mobile torrefaction prototype for research, experiments, and evaluations. Mobile torrefaction holds great promise in converting woody biomass to clean fuel: the greatest cost to industry has been transporting it from the forest source to a conversion site. Fuel, equipment and logistics costs have, until now, greatly reduced biomass' commercial viability.

<http://www.prweb.com/releases/2011/6/prweb8569918.htm>

US and Russian scientists awarded Global Energy Prize

17th June 2011, unattributed, Ecogeneration.com

Dr. Arthur H. Rosenfeld and Dr. Philipp Rutberg will each receive the Global Energy Prize in a ceremony in St Petersburg, Russia, as part of the St Petersburg International Economic Forum. The Global Energy Prize is one of the world's most respected awards in energy science, awarding \$US1 million every year. The Prize has become increasingly important as governments, energy companies and consumers all seek to address existing and projected energy shortfalls. Dr. Rosenfeld, 84, is a University of California Berkeley physicist who served on the California Energy Commission for ten years. His groundbreaking work in energy efficiency is estimated to have saved the United States economy billions of dollars. Dr. Philipp Rutberg was awarded the Prize in recognition of his work developing energy plasma technologies which can convert waste materials into synthetic fuels.

http://ecogeneration.com.au/news/us_and_russian_scientists_awarded_global_energy_prize/061364/

Germany to Store Wind Power in Mountains

20th June 2011, Susan Kraemer, cleantechnica.com

In an interesting marriage of clean and dirty tech, Deutsche Welle is reporting that the state government of Lower Saxony in Germany is looking into repurposing old abandoned coal mines inside the Harz mountains as pumped storage for wind power. The idea has attracted approval not only from environmentalists in the region, who like the invisibility of the storage, but also from former coal miners, who like the idea of the disused coal mines being put to good use as a kind of "green battery" for wind power. "The tradition of mining is so great in the Harz region, that they want to see the mines back in use again, so there are practically no critics of the project," noted Marko Schmidt, an engineer for Lower Saxony's Energy Research Center, who came up with the concept.

<http://cleantechnica.com/2011/06/20/germany-to-store-wind-power-in-mountains/>

Self-Cleaning Anodes Could Facilitate Cost-Effective Coal-Powered Fuel Cells

21st June 2011, unattributed, RedOrbit.com

Using barium oxide nanoparticles, researchers have developed a self-cleaning technique that could allow solid oxide fuel cells (SOFCs) to be powered directly by coal gas at operating temperatures as low as 750°C. SOFCs can operate on a wide variety of fuels, and use hydrocarbons gases directly – without a separate reformer. The fuel cells rely on anodes made from nickel and a ceramic material known as yttria-stabilized zirconia. Until now, however,

carbon-containing fuels such as coal gas or propane could quickly deactivate these Ni-YSZ anodes, clogging them with carbon deposits – especially at lower operating temperatures. To counter this problem, researchers have developed a technique for growing barium oxide nanostructures on the anodes. The structures adsorb moisture to initiate a water-based chemical reaction that oxidizes the carbon as it forms; keeping the nickel electrode surfaces clean even when carbon-containing fuels are used at low temperatures.

http://www.redorbit.com/news/science/2067797/selfcleaning_anodes_could_facilitate_costeffective_coalpowered_fuel_cells/

China Energy, Seamwell to Build \$1.5 Billion 'Clean Coal' Plant

27th June 2011, Sally Bakewell, Bloomberg

China Energy Conservation & Environmental Protection Group, a state-owned project developer, will build a \$1.5 billion "clean coal" plant in Inner Mongolia with U.K.-based Seamwell International Ltd. The companies agreed to collaborate on the electric power plant that'll harvest its energy from gasified coal deep underground, the first commercial plant of its size in the world, according to a statement today from Seamwell. The plant on the YiHe Coal Field will produce power by the end of 2014 or 2015, Matthew Idiens, president of Normanton, West Yorkshire-based Seamwell, said in an e-mail. It will generate 1,000 megawatts of electricity for about 25 years.

<http://www.bloomberg.com/news/2011-06-26/china-energy-seamwell-to-build-1-5-billion-clean-coal-plant.html>

Sarkozy Announces 1 Billion Euros Towards Nuclear Energy Research

27th June 2011, unattributed, Trend Az

French President Nicolas Sarkozy on Monday announced 1 billion Euros (1.4 billion dollars) in spending on nuclear energy research and nuclear safety, as part of a 35-billion-euro (49.7-billion-dollar) programme of investment in innovation, reported dpa. Nuclear energy received the bulk of a total 1.3 billion Euros set aside for renewable energy as part of an ambitious programme of investment in innovation, Sarkozy said in a briefing to the nation on the state of the 18-month-old spending programme. In just his fourth press conference at the Elysee Palace since becoming president in 2007, Sarkozy defended the programme from accusations by the opposition Socialists of profligacy.

<http://en.trend.az/regions/world/europe/1897381.html>

Newcastle was a tropical paradise

27th June, unattributed, The Telegraph

Newcastle was once a tropical paradise similar to the islands in the Bahamas, research into geothermal energy has discovered. Scientists drilling deep beneath the city have discovered fossil evidence of exotic shells and coral. The 300-million year old rocks were extracted from limestone 1,000 feet below the ground during a £900,000 green energy project to harness geothermal power from the earth's crust. Engineers watched a plume of steam gush from a borehole in Newcastle City centre when the drilling reached its target depth at dawn today. The renewable resource will be used to heat hundreds of homes and provide power to buildings near St James' Park.

<http://www.telegraph.co.uk/earth/energy/geothermalenergy/8600465/Newcastle-was-a-tropical-paradise.html>

China's Imminent Collision With Peak Coal

4th July, Minqi Li, Business Insider

World coal production is dominated by China. China's coal production is projected to peak in 2027 with a peak production level of 5.1 billion tons. World (excluding China)'s coal production is projected to peak in 2027 with a peak production level of 4.1 billion tons. Coal is mainly used for "base load" electricity generation (to meet the part of the electricity demand that requires constant flows) and is an essential input in the iron and steel industry. In 2008, coal accounted for 22% of the world's energy consumption in the industrial sector (including non-energy uses)

and 4% of the energy consumption in the residential and commercial sector. Coal accounted for 41% of the world's electricity generation (IEA 2010).

<http://www.businessinsider.com/chinas-imminent-collision-with-peak-coal-2011-7>

Global warming lull down to China's coal growth

5th July 2011, Richard Black, BBC News

The lull in global warming from 1998 to 2008 was mainly caused by a sharp rise in China's coal use, a study suggests. The absence of a temperature rise over that decade is often used by "climate sceptics" as grounds for denying the existence of man-made global warming. But the new study, in Proceedings of the National Academy of Sciences, concludes that smog from the extra coal acted to mask greenhouse warming. China's coal use doubled 2002-2007, according to US government figures. Although burning the coal produced more warming carbon dioxide, it also put more tiny sulphate aerosol particles into the atmosphere which cool the planet by reflecting solar energy back into space. The researchers conclude that declining solar activity over the period and an overall change from El Nino to La Nina conditions in the Pacific Ocean also contributed to the temperature plateau

<http://www.bbc.co.uk/news/science-environment-14002264>

German parliament set to okay clean coal bill

7th July 2011, Christiaan Hetzner, Reuters

Germany's lower house is expected to pass legislation that would open up EU funding for technology that traps greenhouse gases from burning coal, one week after parliament voted to phase out nuclear power in the next decade. Utility group Vattenfall Europe has applied for EU aid for a controversial pilot plant in the economically underdeveloped region of Brandenburg, the only so-called carbon capture and storage (CCS) facility currently foreseen for Germany due to widespread opposition by local residents.

<http://www.reuters.com/article/2011/07/07/us-germany-coal-idUSTRE7663ZY20110707>

DOE funds carbon capture in Virginia

12th July, Kate Taylor, TG Daily

Virginia Tech researchers plan to inject some 20,000 tons of carbon dioxide (CO₂) into a coal bed methane field in southwest Virginia, as part of a Department of Energy project. Last week, the DOE said it planned to expand its research to make sure that long-term geologic carbon dioxide storage is safe and environmentally secure, and has allocated more than \$45 million to the effort. "The proposed research will test the ability to inject CO₂ into coal seams that cannot be mined, as well as the potential to enhance the coal bed methane recovery," says Michael Karmis, director of the Virginia Center for Coal and Energy Research.

<http://www.tgdaily.com/sustainability-features/57166-doe-funds-carbon-capture-in-virginia>

Peel and UK Coal could build 11 EfW plants

12th July, Nick Mann, letsrecycle.com

Plans to develop waste-to-energy facilities on 11 UK Coal sites in the North of England and the Midlands took a major step forward yesterday (July 11) after the coal giant's shareholders approved plans to establish a joint venture for the project with Peel Environmental. The move comes just seven months after Jonson Cox joined UK Coal, which is the country's largest mining company, as executive chairman. Mr Cox joined from Anglian Water and has previous experience in the recycling and waste sector when he was chief executive of Valpak between 2002 and 2004, where he was credited with streamlining the scheme.

<http://www.letsrecycle.com/news/latest-news/waste-management/peel-and-uk-coal-could-build-11-efw-plants>

Why are fossil fuel assets Triple-A rated?

12th July, James Murray, The Guardian

Why are the stocks and shares of carbon-intensive firms Triple-A rated when they face significant legislative, reputational and environmental risks in virtually every geography in

which they operate? It is a question that is gaining traction among green investors and one which looks set to gain fresh momentum following the release of a report today investigating how the valuation of many fossil fuel firms is based on coal, oil and gas assets that climate change policies may ultimately stop them from exploiting. Entitled Unburnable Carbon - Are the world's financial markets carrying a carbon bubble?, the report analyses the fossil fuel reserves of the top 100 listed coal companies and the top 100 listed oil and gas companies, and concludes that if the world is to achieve the internationally agreed target of limiting average temperature rises to 2°C, only 20% of these reserves can be accessed.

<http://www.guardian.co.uk/environment/2011/jul/12/fossil-fuels-coal>

China to be top coking coal importer – consultant

12th July 2011, Diana Kinch, MarketWatch

China, until recently a net exporter of coking coal, is set to become the world's biggest importer of the steelmaking ingredient by 2015, causing "dizzying" upwards pressure on prices, a Brazil-based coal industry consultant told Dow Jones Newswires. "Five years ago, China was a net exporter of coking coal, and about three years ago started to import small tonnages, such as 4 million to 5 million tons a year," said Luiz Sarcinelli, a Rio de Janeiro-based coal consultant with Sage Consultoria Tecnica Ltda. "But now, China's importing 40 million tons a year and could overtake Japan, which imports around 100 million tons, in 2015, to become the world's biggest importer."

<http://www.marketwatch.com/story/china-to-be-top-coking-coal-importer-consultant-2011-07-12>

Underground coal gasification has key role to play in Southern Africa

13th July 2011, Brindaveni Naidoo, Engineering news

Clean coal energy technologies combined with legislative incentives would complement the development of renewable energy, such as solar, wind and biomass, Coal Wealth Botswana executive director Michael Nightingale said on Wednesday. Speaking at an underground coal gasification (UCG) conference, in Johannesburg, he said based on existing assumptions and production rates, South Africa's coal reserves would only last for another 140 years, and could be dramatically reduced if conventional and less efficient power generation and industrial methods continued to be used.

<http://www.engineeringnews.co.za/article/underground-coal-gasification-has-key-role-to-play-in-southern-africa-2011-07-13>

Carbon dating technique to aid energy from waste

14th July 2011, Gerard Wynne, Reuters

Carbon dating is commonly used to estimate the age of ancient artefacts, exploiting the fact that a particular type of carbon disappears, or decays, at a fixed rate, so that the amount left behind clocks how much time has passed. A recently adapted technique, developed by the Energy Research Center of the Netherlands, takes monthly samples of the carbon-14 in the smokestack of power plants. It tallies that with the energy produced to estimate how much carbon dioxide in the flue gas came from burning ancient fossil fuels and how much from greener, younger fuels such as wood, crop waste and other so-called biomass. The practice of co-firing biomass with coal is increasing as power plants try to pare carbon costs and earn green energy incentives. "(This) is enabling easy and accurate differentiation between CO2 emissions created from fossil and biogenic, renewable fuels," said the UK's National Center for Biorenewable Energy, Fuels and Materials (NNFCC), a lobby group.

<http://www.reuters.com/article/2011/07/14/us-energy-biomass-britain-idUSTRE76D3DO20110714>

Why Coal Prices Will Soar in the Coming Years

19th July, Richard Heinberg, oilprice.com

World energy policy is gripped by a fallacy — the idea that coal is destined to stay cheap for decades to come. This assumption supports investment in 'clean-coal' technology and trumps

serious efforts to increase energy conservation and develop alternative energy sources. It is an important enough assumption about our energy future that it demands closer examination. There are two reasons to believe that coal prices are likely to soar in the years ahead. First, a spate of recent studies suggests that available, useful coal may be less abundant than has been assumed — indeed that the peak of world coal production may be only years away. One pessimistic study published in 2010 concluded that global energy derived from coal could peak as early as 2011. Second, global demand is growing rapidly, largely driven by China. Demand rose modestly in the 1990s (0.45% per year), but since 2000 it has been surging at 3.8% per year. China is both the world's biggest producer of coal (40% of global production) and its biggest consumer. Its influence on future coal prices should not be underestimated.

<http://oilprice.com/Energy/Coal/Why-Coal-Prices-Will-Soar-in-the-Coming-Years.html>

Carbon Capture Hopes Dim as AEP Says It Got Burned at Coal Plant 21st July 2011, Ken Wells and Benjamin Elgin, Bloomberg

Timothy O'Connor, a climate-change policy analyst for the Environmental Defense Fund, a New York-based advocacy group, says "carbon storage can help serve as a bridge until we get to those zero and ultralow carbon energy sources that wean us from fossil fuels." Yet only two years in, the future of CCS is in jeopardy. On July 14, AEP pulled the plug on its CCS efforts, citing a weak economy and the "uncertain status of U.S. climate policy." CEO Morris said AEP and its partners "have advanced CCS technology more than any other power generator with our successful two-year project to validate the technology. But at this time it doesn't make economic sense to continue." The dimming of CCS's promise reflects a broader national retreat from the goal of reversing climate change. In private and, to some degree, in public, the company and its executives express frustration that they tried to do the right thing --only to end up burned.

<http://www.bloomberg.com/news/2011-07-21/carbon-capture-hopes-dim-as-aep-says-it-got-burned-at-coal-plant.html>

Beacon Power opens 20MW flywheel energy storage plant in New York 22nd July 2011, unattributed, Energy Business Review

Beacon Power has opened a newly completed 20MW flywheel energy storage facility in New York, US. The plant, located in Stephentown, utilizes 200 high-speed Beacon flywheels for providing fast-response frequency regulation services to the New York grid with no fuel consumption.

<http://utilitiesnetwork.energy-business-review.com/news/beacon-power-opens-20mw-flywheel-energy-storage-plant-in-new-york-220711>

Carbon Capture and Utilization - Using CO₂ to manufacture fuel, chemicals, and materials

25th July 2011, unattributed, Policy Innovations

Capture and storage of CO₂ is defined by most international bodies, including the UK Department of Energy and Climate Change (DECC), as referring to capture of CO₂ from point sources combined with geological storage of CO₂. While carbon capture and geological storage (CCS) can make a significant contribution to carbon dioxide abatement in the United Kingdom and abroad, there is also the possibility of CO₂ utilisation in building material production, for fuels or in the chemical industry. This paper explains that, in parallel to CCS, capture and utilisation of CO₂ (CCU) can contribute to a green economy and suggests that possibilities for funding technology development be considered.

http://www.policyinnovations.org/ideas/policy_library/data/01612

Coal-bed methane could help keep lights on

25th July 2011, Garry White and Rowena Mason, The Daily Telegraph

What was once a threat could now be an opportunity. Methane in coal mines, a canary's worst enemy, could contribute to Britain's energy security as North Sea reserves dwindle. Industry

experts believe that coal-bed methane (CBM) can be extracted and captured from the UK's plentiful coal deposits in a way that is less environmentally damaging than extracting shale gas. <http://www.telegraph.co.uk/finance/commodities/8658228/Coal-bed-methane-could-help-keep-lights-on.html>

Cleaner coal? The answer lies below

26th July 2011, Giles Parkinson, Climate Spectator

Professor Behdad Moghtaderi, the deputy-Director of the Priority Research Centre for Energy at the University of Newcastle, has filed patents over a new system that would allow coal-fired generators to use geothermal power to pre-heat water and improve the thermal efficiency by as much as 30 per cent – with corresponding reductions in coal use and emissions. Moghtaderi says most coal-fired power stations are situated in areas that have good geothermal resources. The coal deposit often acts as a thermal blanket over hotter rocks below. The sort of heat necessary to make this system work – around 120°C to 150°C – can probably be found at relatively shallow depth using conventional technology.

SA could see its first hybrid power station after Kusile

27th July 2011, Loni Prinsloo, Engineering News on line

A hybrid power station, which would combine concentrated solar power and coal, could be an option for South Africa, a speaker at the Renewable Energy Africa conference said on Wednesday, 27th July. South Africa's National Energy Research Institute (Saneri) CEO Kadri Nassiep said that senior officials from State-owned utility Eskom indicated at a National Planning Commission workshop that a hybrid model could be considered for a third power station, after the construction of the coal-fired Medupi and Kusile plants.

<http://www.engineeringnews.co.za/article/sa-could-see-its-first-hybrid-power-station-after-kusile-2011-07-27>

Alberta to contribute \$285 million to \$1.5-billion coal gasification project

28th July 2011, Karen Kleiss, Edmonton Journal

The Alberta government announced Wednesday it will contribute \$285 million to a coal gasification project that will tap into a deep, unmineable “stranded coal” seam northwest of Edmonton. The Swan Hill Synfuels project will cost \$1.5 billion to build and will eventually fuel 300 megawatts of power generation — enough energy to power one in four Edmonton homes for 40 years. The company and the government say the new plant will combine the stable, low-cost energy supply typical of coal-fired generators with the lower environmental impact typical of natural gas. Energy Minister Ron Liepert said the \$285-million provincial investment will benefit Albertans by helping to create an inexpensive, reliable and more environmentally friendly energy source. “This project, with the carbon capture and storage, clearly will meet — if not exceed — (federal emissions) standards,” Liepert said, adding the federal government is expected to announce new, stringent performance standards for coal-fired electricity generation by the end of the year.

<http://www.edmontonjournal.com/technology/Alberta+backs+clean+energy+scheme/5168211/story.html>

Significant Biomass Power Generation: Still Waiting in the Wings

28th July 2011, Chris Zygarlicke, Biomass Power & Thermal

Over the past year, I have been in interesting meetings with a variety of national and international leaders of energy businesses and federal institutions regarding biomass- and fossil-based energy. The Energy & Environmental Research Center has a long legacy of working both in fossil energy and renewable energy. In the early formative years, between the 1950s and the 1980s, the focus was primarily on coal. As I see it right now, there is a real struggle to determine where biomass's place is in the energy scheme worldwide. The real drivers for biomass utilization continue to be competitive costs, reduction in carbon emissions and, to a lesser degree, the need to dispose of unwanted or hazardous waste.

<http://biomassmagazine.com/articles/5678/significant-biomass-power-generation-still-waiting-in-the-wings/>

Notts could be at centre of a 'clean coal' breakthrough

29th July 2011, Mark Patterson, Nottingham Post

As far as the UK is concerned, the coal mining era appears to be slowly drawing to a close. Britain now imports more coal than it produces to feed its coal-fired power stations, whose numbers are dwarfed by nuclear and gas-fired power stations plus an increasing quantity of hydro schemes and wind farms. Yet those who write off a future for coal in Britain may be premature. In Britain remaining coal seams may soon be exploited thanks to a technique called Underground Coal Gasification (UCG), in which coal is literally burned underground to produce a gas called syngas. When this raw syngas is cleaned it can be used to generate electricity. The technique is being explored along Britain's east coast and is regarded by some as a more environmentally acceptable method of tapping Britain's vast fossil fuel reserves – provided that the CO₂ generated can be captured. Indeed, some energy experts believe tapping into coal in this way will be essential for the UK's energy supply in the years ahead. "We've got millions of tonnes of coal off-shore right up the east coast to Scotland," says Prof Colin Snape, an efficient fossil fuel technologies expert at the University of Nottingham. "And we are going to need coal to contribute towards Britain's energy security. We've just had two cold winters with low wind, which isn't what you want for wind turbines. The best option for exploiting coal is UCG but we need a commitment from the Government to demonstrate that the technology can both capture CO₂ and is commercially viable for the big utility companies."

<http://www.thisisnottingham.co.uk/Notts-centre-clean-coal-breakthrough/story-13033625-detail/story.html>

Why America has to get off coal

29th July 2011, Michael Brune and Michael R Bloomberg, CNN

Editor's note: Michael Brune is executive director of the Sierra Club. Michael R. Bloomberg is mayor of New York City. Bloomberg Philanthropies recently donated \$50 million to the Sierra Club's Beyond Coal campaign. One of the frightening new realities in Washington is that many strongly held policy positions are built on untruths. One of the most persistent untruths is that we can't afford to move away from coal-powered electricity. The truth is, we can't afford not to quit coal. The cost consumers pay for power does not reflect the true cost of burning coal. Pollution from coal triggers asthma attacks, a disease that affects 20 million Americans and burdens our health care system. The toxic mercury released from old, outdated coal plants is the single biggest source of mercury emissions in America, making it a potential source of harm to pregnant women and children.

<http://edition.cnn.com/2011/OPINION/07/29/bloomberg.brune.coal/index.html>

Clean Coal Plant Suspended Amid Energy Uncertainty

1st August 2011, unattributed, Laboratory Equipment

General Electric and the Univ. of Wyoming announced they have suspended plans to build a \$100 million joint clean coal research facility near Cheyenne amid uncertainty in the nation's energy policy, lower natural gas prices and tepid demand for electricity. Construction of the High Plains Gasification-Advanced Technology Center was expected to begin this year and finish in late 2012. The plant would have been a test site for turning coal into gas, which burns more cleanly than coal. The project had reached the bidding phase. The university and GE were reviewing proposals from the two firms competing to build the plant when GE decided to suspend the project, says Bill Gern, the university's vice president for research and economic development.

<http://www.laboratoryequipment.com/news-clean-coal-plant-suspended-amid-energy-uncertainty-080111.aspx?xmlmenuid=51>

Large Global Potential for Negative CO₂ Emissions Through Biomass Linked With Carbon Dioxide Capture and Storage

3rd August, unattributed, Science Daily

Combining biomass with carbon dioxide capture and storage could result in an annual global potential of up to 10 gigatonnes of negative CO₂ emissions in the year 2050. This is one of the main findings of a study commissioned by IEA Greenhouse Gas R&D Programme to the global energy consultancy company Ecofys. Compared to the almost 31 gigatonnes of global energy-related CO₂ emissions in 2010, this represents a huge CO₂ emissions reduction potential.

<http://www.sciencedaily.com/releases/2011/08/110803111005.htm>

Slowing Climate Change by Targeting Gases Other Than Carbon Dioxide

4th August, unattributed, Science Daily

Carbon dioxide remains the undisputed king of recent climate change, but other greenhouse gases measurably contribute to the problem. A new study, conducted by NOAA scientists and published online August 3 in *Nature*, shows that cutting emissions of those other gases could slow changes in climate that are expected in the future.

<http://www.sciencedaily.com/releases/2011/08/110803133522.htm>

U.S. Debt Deal Kills Off Prospects of Renewable-Power Support

5th August, Jim Efstathiou Jr and Christopher Martin, Bloomberg

U.S. government support for renewable energy may plunge from record levels, setting back the use of wind and solar power before they can compete on their own with oil, gas and coal. Direct spending, tax breaks and research funding pushed federal renewable-energy subsidies to \$14.7 billion in 2010, according to Alan Beamon, director of the Energy Information Administration's Office of Electric, Coal, Nuclear and Renewables Analysis. Project developers are lining up for subsidies approved in the 2009 stimulus bill as incentives expire and the deficit-reduction deal dims prospects for future backing of solar panels and wind farms.

Really Cheap, Really Clean Electricity from Boron

9th August 2011, Thomas Blakeslee, Renewable Energy World

This is going to be an exciting winter. Two different revolutionary green energy solutions are about to take giant steps. After 60 years of dangerous nuclear power based on bomb technology, we may finally see nuclear energy that is clean, safe and cheap as dirt. If we could achieve 100% efficiency, $E=MC^2$ tells us that one ounce of matter could be converted to *seventy million dollars worth of electricity!* But today's nuclear plants use only a fraction of a percent of the energy in the fuel. The rest remains as dangerous radioactive waste. The neutrons produced create dangerous waste and heat, which must then be converted to electricity. About 80% of the cost of existing nuclear plants is for the steam plant that converts about 1/3 of the heat to electricity and disposes of the other 2/3 as waste heat to a nearby body of water.

<http://www.renewableenergyworld.com/rea/blog/post/2011/08/really-cheap-really-clean-electricity-from-boron>

Nuclear power research programs awarded \$39 million

9th August 2011, unattributed, Power Engineering

The Department of Energy (DOE) said that it has awarded up to \$39 million in research grants aimed at developing nuclear energy technologies and training and educating the next generation of leaders in the U.S. nuclear industry. The grants will support up to 51 projects at 31 colleges and universities around the country. Other universities, industry leaders, and national laboratories will serve as collaborators and research partners. The projects selected for negotiation of award cover four nuclear energy research fields including Fuel Cycle Research and Development; Reactor Concepts Research, Development and Demonstration; Nuclear Energy Advanced Modelling and Simulation; and Transformative Research.

<http://www.power-eng.com/articles/2011/08/nuclear-power-research-programs-awarded-39-million.html>

Coal is critical to America's future

10th August, Steve Miller, CNN

Editor's note: Steve Miller is president and CEO of the American Coalition for Clean Coal Electricity, a coal industry group. This essay is a response to a previous Opinion article, "Why America has to get off coal."

Environmental interest groups recently rejoiced at the news that New York Mayor Michael Bloomberg's foundation was donating \$50 million to the Sierra Club's "Beyond Coal" campaign. However, this campaign -- if successful -- would do more than move America beyond coal. It would go a long way to moving America beyond jobs, economic growth, energy security and global competitiveness. There are challenges inherent with using every energy resource. But if the United States backs away from any of our domestic resources because it poses challenges, we will soon find ourselves with fewer, more expensive supplies of energy. The job before us is to provide political and private sector leadership that addresses these challenges. Rather than a plan to limit choices, these times require leadership to increase the sources of affordable, reliable, environmentally compatible energy. These times require leadership to spur competition that will hold down price increases and generate technological innovations to reduce emissions globally.

<http://edition.cnn.com/2011/OPINION/08/10/miller.coal.clean/>

Coal sorting technology boosted by Arnot results

12th August 2011, unattributed, Mining Weekly

Extensive tests undertaken at the Arnot colliery, in Mpumalanga, South Africa have proven that X-ray sorting is a viable dry process technique for the destoning of coarse raw coal. The sorter is capable of processing up to 150 t/h of coarse raw coal and effectively removing the bulk of the contaminant stone, resulting in a significant improvement in the quality of the coal. X-ray sorting of coal is an advanced technology, which is increasingly gaining ground over more conventional coal processing techniques. In conventional coal processing, the density difference between coal and shale, or stone, is used to separate the coal from the unwanted contaminants. X-ray sorters are able to distinguish lighter coal from heavier minerals, based on the differences in atomic density. In an X-ray sorter, coal is radiated with X-rays and the amount of radiation that passes through the coal is measured. More radiation is absorbed by stone than by coal and, hence, it becomes possible to distinguish between coal and shale by using this technique. The technology employed to sort coal from shale requires that the coal is exposed to the X-ray source on a particle-by-particle basis to allow each particle to be scanned and classified as either coal or shale. Once the classification has been made, if the particle is accepted as coal, it is allowed to fall onto the product conveyor. If classified as shale, it is rejected by applying a pulse of compressed air that blows the particle over a divider onto the reject conveyor.

<http://www.miningweekly.com/article/coal-sorting-technology-boosted-by-arnot-results-2011-08-12>

University of Kentucky Gets \$14.5 Million for Carbon Capture Research

16th August 2011, unattributed, The Southsider

The University of Kentucky Research Foundation has been awarded \$14.5 million in funding from the U.S. Department of Energy (DOE) for work aimed at making carbon capture systems more effective and cost-efficient at coal-fired power plants. The Power Generation and Utility Fuels group at UK's Center for Applied Energy Research (CAER) will take the lead on the project, which will focus on a heat integration method of carbon capture that uses waste heat from other plant technologies. Coal-fired power plants could be retrofitted to incorporate the proposed process, which would improve overall plant efficiency. The goal for the new technology, according to a DOE media release, will be at least 90 percent removal of CO₂ with electricity cost increases of no more than 35%.

<http://www.southsidermagazine.com/articles-c-2011-08-16-98550.113117-uk-gets-145-million-for-carbon-capture-research.html>

Solar Could be as Cheap as Coal by 2015, Chinese Report Says

17th August 2011, Brian Merchant, Treehugger

If the government-linked reports are to be believed, then China's all set to double its solar capacity by the end of the year -- up to 2 Gigawatts, in fact. That was (somewhat) surprising news alone. But the solar industry is pointing out that buried in the same report was a projection that solar power will be as cheap as -- or cheaper than -- coal in less than five years.

Reuters [reports on the part of the study](#) that has the solar world talking:

"The solar feed-in tariff, the price of solar-generated electricity, could drop below 0.80 Yuan (12.5 cents) for each kilowatt-hour (kWh) by 2015, which would be on par with conventional coal-fired power tariffs by that time, according to a report by the Energy Research Institute, led by the National Development and Reform Commission (NDRC)."

The optimistic finding has the solar industry buzzing. This morning, the Solar Trade Association sent out a notice stating harping on the Chinese report. Its chairman, Howard Johns, said in a statement that the "news that Chinese researchers anticipate solar could be as cheap as coal power by 2015 follows many reports this year predicting solar is set to achieve a major cost breakthrough with sustained investment today."

The finding is pretty consistent with other reports that predict solar will hit parity with coal by the end of the decade.

<http://www.treehugger.com/files/2011/08/solar-cheap-coal-china-report.php#ch02>

Coal-Gen 2011: Coal-Fired Generators Prepare for a Fight, an Industrial Info News Alert

18th August, Brock Ramey, Market Watch

As Coal-Gen 2011 opened its doors yesterday in Columbus, Ohio, one important message was stated repeatedly by the conference's keynote speakers: No matter what happens, the coal generation fleet is here to stay. Keynote speakers included executives from American Electric Power Company Incorporated (AEP) (Columbus), Peabody Energy Incorporated (St. Louis, Missouri) and Tennessee Valley Authority (TVA) (Knoxville, Tennessee). AEP CEO Michael G. Morris more or less summed up the feeling of the speakers and the audience in the form of a question: Does the Environmental Protection Agency (EPA) and the current administration have any idea what they are doing?

http://www.marketwatch.com/story/coal-gen-2011-coal-fired-generators-prepare-for-a-fight-an-industrial-info-news-alert-2011-08-18?reflink=MW_news_stmp

Coal-Gen 2011: We Cannot Afford to Force Coal-fired Power From the Market, an Industrial Info News Alert

19th August, Brock Ramey, Market Watch

The second day of the Coal-Gen 2011 conference in Columbus, Ohio, brought a new round of less-than-kind words directed at the U.S. Environmental Protection Agency (EPA) by representatives of the coal-fired electric power generation sector. Yesterday morning brought a panel discussion that included Robert Wayland, leader of the Energy Strategies Group for the EPA; Carl Weilert, principal APC engineer for Burns & McDonnell (Kansas City, Missouri); John Hendricks, manager of Environmental Services at American Electric Power Company Incorporated (AEP) (Columbus); and others. While the disagreements were many, the EPA and power industry representatives on the panel did find one point on which to agree: We cannot afford to lose coal as a fuel source for base load power generation. While there is a need for a more stabilized mix of sources for generation, at this point in time, coal simply cannot be replaced or forced out of the market if U.S. power generation is to be maintained at current levels or increased as demand grows.

http://www.marketwatch.com/story/coal-gen-2011-we-cannot-afford-to-force-coal-fired-power-from-the-market-an-industrial-info-news-alert-2011-08-19?reflink=MW_news_stmp

IPAC-CO2 Welcomes New Federal Regulations

19th August 2011, unattributed, PR Newswire

Carmen Dybwad, CEO of IPAC-CO2 Research Inc., welcomed today's announcement that the Government of Canada is moving forward with regulations for the coal-fired electricity sector. IPAC-CO2 works to gain public and regulator confidence in the geological storage of carbon dioxide as a sustainable energy and environmental option by providing independent performance assessments of carbon capture and storage (CCS) projects. "This is great news for the Carbon Capture and Storage (CCS) industry because it eliminates regulatory uncertainty in Canada," she said after Environment Minister Peter Kent made the announcement at the Shand power plant near Estevan, Sask. "We can now all roll up our sleeves and continue to work together to dramatically reduce greenhouse gas emissions." Minister Kent said the proposed regulations will apply a stringent performance standard to new coal-fired electricity generation units and those coal-fired units that have reached the end of their economic life. "This will help reduce greenhouse gas emissions and improve air quality for all Canadians for generations to come," he said. "We are taking action in the electricity sector because we recognize the potential for significant emissions reductions. We are committed to build on our strength in the electricity sector and to lead the world in clean electricity generation." The new Canadian standard will be based on parity with the emissions performance of high-efficiency natural gas generation. The standard will promote the replacement of coal-fired units that are reaching the end of their economic life, and will encourage investment in cleaner generation technologies, such as high efficiency natural gas generation and renewable energy, as well as the use of carbon capture and storage.

<http://www.prnewswire.com/news-releases/ipac-co2-welcomes-new-federal-regulations-128098948.html>

The myth of mountaintop removal mining

19th August, Beth Wellington, The Guardian

CNN correspondent Soledad O'Brien's "recent piece on mountaintop removal (MTR) in the Appalachian Mountains" has the troubling title, "Steady job or healthy environment: what [sic] would you choose?" How about we choose both? In any case, MTR does not, despite industry claims, deliver employment to offset its environmental damage. It's simply a win-win for Big Coal and its political supporters, and a lose-lose for ordinary people who live in mining areas. Whatever the industry would have you believe, basing an economy on coal is not a sustainable development plan. A "study by the Appalachian Regional Commission" noted the effects of mining on employment in Central Appalachia: "*As employment in Central Appalachia's mining sector has declined over time...many counties that were already typically experiencing relatively poor and tenuous economic circumstances...have been unable to successfully adapt to changing economic conditions.*"

<http://www.guardian.co.uk/commentisfree/cifamerica/2011/aug/19/mountaintop-removal-mining>

EPA plans wave of coal plant shutdowns lawmakers say will send energy costs soaring

21st August 2011, unattributed, The Daily Mail

The Environmental Protection Agency (EPA) is planning to shut down a number of coal-fired power plants in a controversial bid to curb pollution in the U.S. The shutdowns are part of a new effort to regulate Mercury, smog, ozone, greenhouse gases, coal ash and water intake over the next 18 months. However, rising tensions are resulting between environmental, industry groups and Republican members of the House, who say the regulations will result in higher electric bills, more blackouts and fewer jobs. Edison Electric Institute, which represents investor-owned utilities, and the American Legislative Exchange Council have slammed the plans as 'EPA's Regulatory Train Wreck.'

<http://www.dailymail.co.uk/news/article-2028414/EPA-plans-wave-coal-plant-shutdowns-lawmakers-say-send-energy-costs-soaring.html?ito=feeds-newsxml>

Invensys Simulation Software Now Online at U.S. DoE's Clean-Coal R&D Facility

22nd August 2011, unattributed, Sys-Con Media

Operations Management, a global provider of technology systems, software solutions and consulting services to the manufacturing and infrastructure operations industries, announced that the U.S. Department of Energy (DOE) has deployed a first-of-a-kind operator training simulator for an integrated gasification combined cycle (IGCC) power plant with carbon capture using innovative simulation software-based training solutions from Invensys.

<http://www.sys-con.com/node/1952538>

EPA Regulations to Shut Down Coal Plants and Raise Energy Prices

22nd August 2011, Brian Koenig, New American

The Environmental Protection Agency (EPA) is sketching out a regulatory blueprint designed to control pollution levels from coal-fired power plants, and lying under the torrent of new regulations will be mercury, smog, water intake, coal ash, and greenhouse gases. Over the next 18 months, the EPA will put forth efforts to curb mercury emissions, place limits on smog-forming compounds such as sulfur-dioxide, enact new rules for coal-ash waste, and implement new standards to contain greenhouse-gas emissions from oil refineries and power plants. "This year is going to be critical for paving a pathway for reducing carbon-dioxide pollution because of those EPA rules," suggested Daniel Weiss of the Center for American Progress. "Assuming, that is, they're not stopped." Industry leaders and congressional members note that the EPA's new regulations will place an onerous burden on the coal industry, because they will force coal-fired power plants to install costly new renovations — or, in many cases, shut down altogether.

<http://www.thenewamerican.com/tech-mainmenu-30/environment/8700-epa-regulations-to-shut-down-coal-plants-and-raise-energy-prices>

North Sea can host 135 GW wind power capacity

23rd August 2011, unattributed, REVE

The North Sea could become home to offshore wind energy farms with a combined generating capacity as high as 135 GW by 2030, as per a study conducted as part of an international project chaired by the Energy Research Centre of the Netherlands. Belgium, Denmark, The Netherlands, Norway and the UK have coastlines around the North Sea. The study was undertaken by Windspeed, an offshore wind energy consulting firm.

http://www.evwind.es/noticias.php?id_not=13042

Masdar, RTI and US Department of Energy partner in Revolutionary CCS Research Project

23rd August, unattributed, Al Bawaba

Masdar today announced its collaboration with RTI International, an independent non-profit research institute, on a high potential carbon capture technology research project set to revolutionize the carbon capture and storage (CCS) space. The project will examine the use of solid sorbent technology for the capture of carbon dioxide (CO₂) from coal and gas-fired power station flue gases, targeting a significant cost reduction in carbon dioxide capture over the best available technology today. The US Department of Energy (DoE) and Masdar are co-funding the innovative research in an agreement that sees Masdar provide an additional US\$0.7 million in funding to the US Department of Energy's core US\$3-million budget.

<http://www.albawaba.com/business/pr/masdar-rti-and-us-department-energy-partner-revolutionary-ccs-research-project-389593>

Researcher probes underground world of methane-producing bacteria

23rd August 2011, Dave Cooper, Montreal Gazette,

Bacteria that feed on coal seams and create methane gas could be coaxed to produce more of the clean-burning fuel, a new source of energy locked in the world's vast coal deposits. That's one of the goals of a major project begun this summer at the University of Alberta, part of a

three-year national study that aims to shed some light on the little understood microscopic world of anaerobic bacteria, which live in coal and produce methane, which is recovered through coal bed extraction. Methane is the same gas that causes deadly explosions in coal mines. "We are studying the methanogenesis process, part of the metabolic cycle of the micro-organisms," said Sushanta Mitra, associate professor of mechanical engineering and director of the micro- and nano-scale transport laboratory at the National Institute for Nanotechnology. That involves identifying the different micro-organisms in various coal seams; understanding what chemicals can be added to natural communities of bacteria to encourage them to produce more methane; what factors limit the rate of natural production; and how fluid moves through coal. Developing sensors and monitoring tools, and then moving to field testing with major natural gas producer EnCana Corp. will follow.

<http://www.montrealgazette.com/technology/Researcher+probes+underground+world+methane+producing+bacteria/5297215/story.html>

Codexis Presents Carbon Capture Update at DoE/NETL Conference 24th August, unattributed, PR Newswire

Codexis, Inc. presented important technical progress in its carbon capture program yesterday at the CO₂ Capture Technology Meeting being sponsored this week by the U.S. Department of Energy/National Energy Technology Laboratory in Pittsburgh. Codexis, supported by a grant from the DoE's ARPA-E Recovery Act program, is using its patented CodeEvolver™ directed evolution technology to develop processes to reduce carbon dioxide emissions from coal-fired power plants. The research program is based on development of customized carbonic anhydrase (CA) enzymes that could catalyze carbon capture under industrial conditions. Data showed CA performance has been improved by about two million fold over natural forms of the enzyme. Evolved CA enzymes are functional and stable in relatively inexpensive, energy efficient solvents for 24 hours at temperatures greater than 90 degrees C. Use of carbon capture solvents with fully developed enzymes is expected to substantially reduce the costs and energy requirements to capture CO₂ produced by coal-fired power plants. The data was presented by James Lalonde, Ph.D., Codexis' Vice President of Biochemistry and Engineering Research and Development. Codexis is jointly developing the technology with CO₂ Solution, Inc., Quebec, Canada.

<http://www.prnewswire.com/news-releases/codexis-presents-carbon-capture-update-at-doenetl-conference-128306748.html>

And Now, the Lighter Side of Coal!

The History of Coal Carving in China



The history of the coal carving can be traced back 6,000-7,000 years. The jet adornments that were unearthed in the cultural stratum at the Xinle ruins in Shenyang, capital city of Northern China's Liaoning Province, comprise the embryo of coal carving. The jet-carved circlet and lumps sculpted in coal, which were unearthed in a Western Zhou Dynasty (1100-771 BC) grave in Northern China's Shanxi Province, confirm the long history of coal carving.

Records of coal carving are rare. In the Book of Diverse Crafts, the oldest known work on the arts and crafts, coal carving was regarded as the integration of timeliness, materials and technology. However, nobody knows the concrete origin of coal carving. Historical records say that no delicate coal-carved handiworks have been unearthed.

Fortunately, Zhao Kunsheng, a wood carving handicraftsman, reopened the door to coal carving. When burning coal one cold winter, he discovered a kind of jet black and solid coal fit for sculpting. Zhao then sculpted a pair of balls with a woodcarving tool, and, hence, the first contemporary jet-carved handiwork was born.

In 1970s, an old man from Datong in Shanxi Province sculpted the face of Chairman Mao Zedong in coal as a token of respect. But this was a folk art associated with a particular feeling that did not spread far and wide.

In the 1980s, three workers at the Yungang Grottoes -- a collection of early Chinese Buddhist cave art -- wanted to make coal carving handiworks imitating the grottoes with coal gangue in Datong to promote tourism in Yungang.

The works were then launched on the market. With the accelerated development of the tour in Yungang, coal-carved handiworks became a hit with both Chinese and foreign tourists. However, the technology at that time was fairly primitive compared to modern technology.

Shi Yuping, who lives in Yungang, believes that making coal-carved handiworks requires delicate care. With his high achievements in sculpting figures, Shi began to make coal carvings using high carving technology. He only used high-quality materials and went to distant places to seek for good coal gangues. Shi even made breakthroughs in tools as well as in expressionism, paying more attention to the contrast between light and dark to make the carvings more vivid.

In the First Yungang Tour Festival, the Datong government promoted coal carving in a grand fashion and introduced it in various exhibitions. Consequently, coal carving, which has existed for thousands of years but was only known by a few, had made a comeback. When various images emerge from coal, the vitality of this art form shows its true colours, attracting many enthusiasts.

Nowadays, coal carving has been introduced to the international market and is collected by tourists from many different countries. Apart from the large coal-carved handiworks at the exhibition, small coal-carved handiworks are also well known in Fushun and Datong of China, Vietnam and some other countries.

<http://traditions.cultural-china.com/en/16T4948T11005.html>

The World Coal Carrying Championship



Easter Monday, 12 noon, Royal Oak, Owl Lane, Gawthorpe, Yorkshire

At the century-old Beehive Inn situated in Gawthorpe the following incident took place one day in 1963. Reggie Sedgewick and one Amos Clapham, a local coal merchant and current president of the Maypole Committee were enjoying some well-earned liquid refreshment whilst stood at the bar lost in their own thoughts. When in bursts one Lewis Hartley in a somewhat exuberant mood. On seeing the other two he said to Reggie, " Ba gum lad tha' looks buggeded!" slapping Reggie heartily on the back. Whether because of the force of the blow or because of the words that accompanied it, Reggie was just a little put out." Ah'm as fit as thee" he told Lewis, "an' if tha' dun't believe me gerra a bagga coil on thi back an 'ah'll get one on mine an 'ah'll race thee to t' top o' t' wood !" (Coil, let me explain is Yorkshire speak for coal). While Lewis digested the implications of this challenge a Mr. Fred Hirst, Secretary of the Gawthorpe Maypole Committee (and not a man to let a good idea go to waste) raised a cautioning hand. " 'Owd on a minute," said Fred and there was something in his voice that made them all listen. 'Aven't we been looking fer some'at to do on Easter Monday? If we're gonna 'ave a race let's 'ave it then. Let's 'ave a coil race from Barracks t' Maypole.'"(The Barracks being the more common name given by the locals to The Royal Oak Public House)

Thus was born The World Coal Carrying Contest which every Easter Monday lifts the village of Gawthorpe out of obscurity and into the headlines. No event in the Olympic Games could stimulate more enthusiasm than this annual contest of stamina and muscle.

Gawthorpe is a tough little place, lying between Dewsbury and Wakefield where the Yorkshire coalfield merges into the Heavy Woollen District. The nearest pit is closed now, but hard work is still so much of a tradition here that the residents can scarcely have enough of it! Hence, the yearly battle to be King of the Coil Humpers – or Queen, for the ladies in these liberated times have joined in the game.

<http://www.gawthorpe.ndo.co.uk/coal.htm>

1986: Coal mine canaries made redundant



30th December 1986

More than 200 canary birds are being phased out of Britain's mining pits, according to new plans by the government. Modern technology is being favoured over the long-serving yellow feathered friend of the miner in detecting harmful gases which may be present underground. New electronic detectors will replace the bird because they are said to be cheaper in the long run and more effective in indicating the presence of pollutants in the air otherwise unnoticed by miners. The gas detectors will be hand-held and carry a digital reading which appears on a screen alerting miners to the extent of the gases. The birds' replacement will be introduced gradually next year. Miners are said to be saddened by the latest set of redundancies in their industry but do not intend to dispute the decision. The removal of the canaries will end a mining tradition in Britain dating back to 1911, since when two canaries have been employed by each pit.

They are so ingrained in the culture miners report whistling to the birds and coaxing them as they worked, treating them as pets. The canary is particularly sensitive to toxic gases such as carbon monoxide which is colourless, odourless and tasteless. This gas could easily form underground during a mine fire or after an explosion. Following a mine fire or explosion, mine rescuers would descend into the mine, carrying a canary in a small wooden or metal cage. Any sign of distress from the canary was a clear signal the conditions underground were unsafe and miners should be evacuated from the pit and the mineshafts made safer.

http://news.bbc.co.uk/onthisday/hi/dates/stories/december/30/newsid_2547000/2547587.stm

Culture and Coal. The Zeche Zollverein



The **Zollverein Coal Mine Industrial Complex** (German **Zeche Zollverein**) is a large former industrial site in the city of Essen, North Rhine-Westphalia, Germany. It has been inscribed into the UNESCO list of World Heritage Sites since December 14, 2001 and is one of the anchor points of the European Route of Industrial Heritage. In the twentieth century the Zeche Zollverein in Essen was regarded as the “most beautiful colliery in the world”. Today the industrial monument is part of the UNESCO world heritage. Where once around 5,000 Ruhr Valley miners sweated away, today millions of art and culture lovers from around the world walk through the mine halls.

Those who wish to go from the train station in the Katernberg district of Essen to mine shaft 1/2/8 of the Zeche Zollverein can let themselves be led there by yellow canaries. Since 2010, eight of the two metres high and 100 kilos heavy plastic sculptures direct visitors to the “Zollverein Design Avenue”.

They are relics of the large project RUHR.2010, whose purpose was to present the Ruhr area as the “European Cultural Capital”. And in this enterprise the Zeche Zollverein was the central stop. “We were looking for popular media that have a relation to mining”, recalls the architect Axel Hummert from Dortmund, whose idea of a voiceless guidance system won the tender of the City of Essen and the Competence Centre Zollverein Business Services. “Then we hit upon canaries: they’re cute, likeable and used to save lives.”

Miners used to take the songbirds with them into the tunnels as an early warning system: if the animals died of poisonous mine gas, there still remained a short time for the miners to flee to the surface.

<http://www.goethe.de/kue/arc/aug/en6717314.htm>

CALENDAR OF COAL RESEARCH MEETINGS AND EVENTS

Date	Title	Location	Contact
12 th to 15 th September 2011	2011 Pittsburgh Coal Conference	Pittsburgh, PA, USA	http://webster.engr.pitt.edu/pcc/index.html
22 nd September 2011	The European Industrial Emissions Directive (IED) Coal Research Forum (Environment Division) joint with the Combustion Engineering Association and the Royal Society of Chemistry Energy Sector and Environmental Chemistry Group	Department of Chemical Engineering, Imperial College, London,	Dr Trevor Drage E-mail: trevor.drage@nottingham.ac.uk Tel: 0115 951 4099
9th to 13th October 2011	International Conference on Coal Science & Technology	Oviedo, Spain	Contact Information: Angeles G. Borrego, INCAR-CSIC Tel: +34985118979 Email: infoICCST@incar.csic.es http://www.iccst.info/live/index.php?ie=UTF-8&rlz=1T4ADRA_enGB373GB377&q=coal+conferences+2011
13th October 2011	UK Minerals Engineering Innovation for a Sustainable Future	Yew Lodge Hotel, Kegworth, Leicestershire	Minerals Engineering Society seminar (Co Sponsored by CRF & SMMM) Mr Colin Scargill Email : mes.north@btinternet.com
18th or 25th April 2012	Oxyfuel Combustion Coal Research Forum Annual Meeting and CRF Combustion Divisional seminar	Drax Power Station, Selby, North Yorkshire	Dr. David J.A.McCaffrey Tel : 01242 236973 E mail : mail@coalresearchforum.org
Monday 10th to Wednesday 12th September 2012	9th European Conference on Coal Research and its Applications, (9th ECCRIA)	University of Nottingham, Nottinghamshire	Mr. Patrick Cook Tel : 02476 192743 E mail : patrick.cook@eon.com