

Energy Library update March 2006

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Featured Energy Library Journal

The IEE Power Engineer

Power Engineer is a bimonthly magazine that covers all aspects of electrical power generation, transmission and distribution as well as power electronics. The aim is to be the premier source for electrical power issues, interviews, applications and processes. Publication coverage includes energy issues, government policy, all types of generation from fossil fuel to renewable generation, cables and overhead lines, distributed generation, electrical machines and drives, systems operation and power semiconductors.

Circulation and table of contents services are available for this journal.

Books and reports

Renewable Energy: RD&D Priorities -- Insights from IEA Technology Programmes, IEA, 2006

This publication reviews the current status of the renewable energy technologies portfolio and provides guidance on their mid- and long-term development. The study explores the options for the RD&D to achieve breakthroughs that will lead to large-scale markets and identifies what activities should take

priority. It also looks at the benefits of increased RD&D funding in terms of technological advancement and cost improvement. It covers renewable energy technologies in the early research stage through to those that have reached a level of maturity. It also lists national renewable energy RD&D trends in IEA member countries. The [summary](#) can be found online.

(To borrow this book email library@energylibrary.org.nz)

Learning from the Blackouts -- Transmission System Security in Competitive Electricity Markets, IEA, 2005

Despite these fundamental changes, system operating rules and practices remain largely unchanged. The major blackouts of 2003 and 2004 raised searching questions about the appropriateness of these arrangements. Management of system security needs to be transformed to maintain reliable electricity services in this more dynamic operating environment. These challenges raise fundamental issues for policymakers.

This publication presents case studies drawn from recent large-scale blackouts in Europe, North America, and Australia. It concludes that a comprehensive, integrated policy response is required to avoid preventable large-scale blackouts in the future. The [summary](#) can be found online.

(To borrow this book email library@energylibrary.org.nz)

The Experience with Energy Efficiency Policies and Programmes in IEA Countries: Learning from the Critics, IEA, 2005

Industrialised countries including France, Germany, Italy, Japan, the United Kingdom and the United States have significantly reduced their primary energy use per unit of GDP over the last three decades. Major OECD countries taken together used a third less primary energy to generate a unit of GDP in 2000 compared to 1973 (IEA 2004).

The decline in energy intensity has been driven largely by improved energy efficiency in key end-uses such as vehicles, appliances, space heating and industrial processes. A recent study by the International Energy Agency (IEA) provides a detailed analysis of how much of the decline in energy intensity (changes in final energy consumption per unit of GDP) was due to energy efficiency improvements (the “intensity effect” in the graph) and how much was due to structural changes (the “energy service/GDP bars in the graph). The overall results for 11 countries are shown in Figure 1. Regarding the intensity effect, the figures are based on the measure of energy efficiency in various sub-sectors (for some 30 end-uses) for 11 OECD countries.

(To borrow this report email library@energylibrary.org.nz)

The Hydrogen Energy Economy: its long term role in greenhouse gas reduction, Tyndall Centre Project No. IT1.26, Final Report, 2006

The potential contribution and viability of the hydrogen energy economy towards reducing UK carbon dioxide emissions in the time horizon to 2050 has been assessed using a quantitative model of the UK energy system in the context of a set of diverse socio-economic scenarios. It is argued that different sets of prevailing circumstances are likely to result in very different opportunities for hydrogen and hence very different transition pathways and ultimate penetration levels. For example, within a global market-based economy with low emphasis on environmental issues, hydrogen is likely to appear only in niche markets (such as portable power supplies and custom-built vehicles), whereas, in an economy with high emphasis on environmental factors, hydrogen could well displace petroleum as the transport fuel of choice.

(To borrow this report email library@energylibrary.org.nz)

Cost Convergence of Wind Power and Conventional Generation in Australia

June, 2004, Report for the Australian Wind Energy Association, Karl Mallon PhD, Executive Director, Transition Institute P/L, Jamie Reardon MSc, Senior Researcher, Transition Institute P/L

A review of the latest national and international information on future fuel and technology costs for coal, gas and wind generated electricity. Provided that wind industry growth in Australia keeps up with international growth, Australia can expect the price of wind energy to overlap with gas prices between 2008 and 2016, and start to overlap with coal prices from 2016 onwards with prices for wind dropping further thereafter.

(To borrow this report email library@energylibrary.org.nz)

Emission critical - Connecting carbon and value strategies in utilities, PricewaterhouseCoopers, 2005

Utility companies will be at the forefront of the EU's principal policy response to the challenge of global warming. The creation of the world's largest emission trading regime will present new and unique challenges for utility company leaders.

(To borrow this report email library@energylibrary.org.nz)

Estimate of the Energy Potential for Fuel Ethanol from Putrescible Waste in New Zealand:

Technical Report prepared for the Energy Efficiency and Conservation Authority, Waste Solutions Ltd, June, 2005

A major aim of this study was to present approximate estimates for the energy potential and associated approximate bioethanol production costs from putrescible waste in New Zealand. The techno-economic analysis in this report has demonstrated that the current putrescible waste generation in New Zealand could make a significant contribution to the production of fuel ethanol. The maximum technical potential for fuel alcohol production from putrescible waste in NZ is in the order of 5 PJ/annum.

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Journal articles

Benchmarking of electricity networks: Practical problems with its use for regulation, Shuttleworth, G. (2005) Utilities Policy, 13 (4), Pages 310-317.

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The economics of large-scale wind power in a carbon constrained world DeCarolis, J.F., Keith, D.W.(2006) Energy Policy, 34 (4), Pages 395-410.

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Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate? Daniel M. Kammen, Kamal Kapadia, and Matthias Fripp (2004) RAEL Report, University of California, Berkeley.

(To receive a copy of this article email library@energylibrary.org.nz)

Rethinking the grid, Fox-Penner, P., (2004) Energy (Norwalk, Connecticut), 29(2), Pages 4-8.

(To receive a copy of this article email library@energylibrary.org.nz)

Oldies and goodies from the Energy Library collection

Power Play: Preventing National Gridlock. Newman, Keith, e.nz magazine, Jan-Feb 2005
Looks at the controversy over the electricity network. Includes Brian Leyland's suggestions for improvements.

(To receive a copy of this article email library@energylibrary.org.nz)

What power consumers want, Richard Hunter, Ronen Melnik, and Leonardo Senni, McKinsey Quarterly, 2003 Number 3.

Most customers are satisfied with the reliability of their electric service. So why are power distributors still making huge infrastructure investments?

(To receive a copy of this article email library@energylibrary.org.nz)

Whole-House Measurements of Standby Power Consumption, J.P. Ross and Alan Meier, Proceedings of The Second International Conference on Energy Efficiency in Household Appliances, Naples (Italy), September 2000.

Investigates the variation in standby power consumption in ten California homes. Total standby power in the homes ranged from 14–169 W, with an average of 67 W. This corresponded to 5%–26% of the homes' annual electricity use. The appliances with the largest standby losses were televisions, set-top boxes and printers. The large variation in the standby power of appliances providing the same service demonstrates that manufacturers are able to reduce standby losses without degrading performance. Replacing existing units with appliances with 1 W or less of standby power would reduce standby losses by 68%.

(To receive a copy of this article email library@energylibrary.org.nz)

What creates energy in organisations? Cross, Rob, Parker, Andrew, *MIT Sloan Management Review*, 15329194, Summer 2003, Vol. 44, Issue 4

A couple of years old, but one of the most popular articles published in this magazine.

Spend some time in most organisations and you are sure to hear people talk about the level of energy associated with different people or projects. In some instances, an initiative may be characterized in terms of the energy "around" it. In others, a team in which ideas flow freely and its members build effortlessly on one another's work will be described as "high energy." In still others, a particularly influential person may be known as an "energizer" -- someone who can spark progress on projects or within groups. Managers can translate such talk into action that creates more energy, improves performance and fosters learning.

(To receive a copy of this article email library@energylibrary.org.nz)

Managing project risks: A case study from the utilities sector Elkington, P., Smallman, C. (2002) *International Journal of Project Management*, 20 (1), Pages 49-57.

Abstract

We examine the project risk management practices in a British utility, which manages its information systems and business change projects using the Prince2™ method. This method has greatly increased the success rate of projects run within the company, but has little in the way of directing Project Managers in handling project risk. We review current project risk management literature. We then explore the current usage of risk management in the utility's projects, and determine the effect of risk management on project success. We conclude by outlining recommendations for improving projects run in the utility and elsewhere.

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Performance of Water-in-Glass Evacuated Tube Solar Water Heaters, I.Budihardjo and G.L.Morrison, Australia New Zealand Solar Energy Society Annual Conference, Dunedin, 2005

Abstract

The performance of water-in-glass evacuated tube solar water heaters is evaluated using experimental measurements of optical and heat loss characteristics and a simulation model of the thermosiphon circulation in single-ended tubes. The performance of water-in-glass evacuated tube solar collector systems are compared with flat plate solar collectors in a range of locations. The performance of a typical 30 tube evacuated tube array was found to be lower than a typical 2 panel flat plate array for domestic water heating in Sydney.

(To receive a copy of this article email library@energylibrary.org.nz)

Standards Watch

Several standards organisations now offer a free update service on their standards so you know when the standards you use most often become outdated. [Standards Australia](#) offer updates for Australian, IEC, ISO, ANSI, DIN, ETSI and Japanese Standards, and [Standards New Zealand](#) send updates on NZ standards.

Web resources

New Zealand

What has our new minister been saying? Hon David Parker, [Address to the Energy Federation of New Zealand](#), 9/02/2006 and [New Zealand's primary fuel options](#) 6/03/2006 and [Speech to the New Zealand Power Conference](#) 1/03/2006

The **Ministry for Economic Development** have redesigned their website, and it remains a valuable source of information, including [Seasonal Inflow Distributions for New Zealand Hydroelectric Power Stations](#), [Electricity Security of Supply: Policy Settings: Regulatory Impact Statement/Business Compliance Cost Statement](#) and [Electricity Security of Supply: Policy Settings](#) all conveniently located on the [recent updates](#) page.

National Power New Zealand Conference presentations

- [The National Grid – Critical Infrastructure Supporting New Zealand's Economic Future - 02 March 2006](#) Dr Ralph Craven, Transpower's CEO
- [The Crisis That Isn't – Myths and Truths about New Zealand's Electricity System](#), Roy Hemmingway, Chair, Electricity Commission
- [Address To National Power Conference](#) Keith Turner, Meridian Energy
- [Ensuring timely and efficient investment in generation](#) Brent Layton (NZIER) presentation.

NZIER [Consensus Forecasts](#) present short term forecasts of the New Zealand economy by averaging forecasts produced by a variety of organisations, including NZIER. Because forecasts are averaged across contributors, they provide a useful benchmark. Variables covered include economic growth, prices and interest rates. This report is issued four times a year.

[Electricity contracts: composition and risk allocation in the New Zealand electricity market](#)
NZIER working paper 2006/01 in association with Strata Energy Consulting Ltd

International

[Case studies of public subsidies](#), NERA Consulting, UK, January 2006.

The Office of Fair Trading commissioned NERA Economic Consulting (NERA) to undertake research and analysis of the impact of state subsidies on competition in markets. NERA analysed six case studies to assess whether subsidies have impacted on competition in practice. The present paper is a summary of the results obtained from the six case studies.

This work focused on the effects of subsidies on competition and did not investigate the overall benefits or effectiveness of the subsidies considered. The assessment of competition effects is only one element of a full assessment of a subsidy. Therefore conclusions reached in this report relate only to competition effects and should not be interpreted as evaluating all aspects of a subsidy.

European Commission Inquiry into Competition in Gas and Electricity Markets

The European Commission launched an inquiry into competition in gas and electricity markets on 13 June 2005, pursuant to Article 17 of Regulation 1/2003 EC. The energy inquiry responds to concerns voiced by consumers and new entrants about the development of wholesale gas and electricity markets and limited choice for consumers.

To carry out the inquiry, the Commission can require companies, trade associations and government agencies to supply information, documents or statements. During the inquiry, the Commission intends to maintain an open dialogue with all stake-holders, and will keep the sector informed about progress.

The main objective of the energy inquiry is to gather information to identify possible distortions of competition and its main results will be published in 2006. This [webpage](#) provides information relating to the inquiry.

[Avoiding Dangerous Climate Change](#), DEFRA, United Kingdom, 2006

This book gives an account of the most recent developments on critical thresholds and key vulnerabilities of the climate system, impacts on human and natural systems, emission pathways and technological options of meeting different stabilisation levels of greenhouse gases in the atmosphere.

The book focuses on three crucial questions:

1. For different levels of climate change what are the key impacts, for different regions and sectors, and for the world as a whole?
2. What would such levels of climate change imply in terms of greenhouse gas stabilisation concentrations and emission pathways required to achieve such levels?
3. What technological options are there for achieving stabilisation of greenhouse gases at different stabilisation concentrations in the atmosphere, taking into account costs and uncertainties?

[Energy Efficiency: The Role of Utilities](#), World Business Council for Sustainable Development, December 2005

Minutes and presentations from this event are available on the WBCSD site. Topics include

- The WBCSD Sector Project on Electricity Utilities
- Energy Efficiency in Context
- Energy Efficiency in South Africa
- Energy Efficiency in France
- Reducing Global Warming & Customers' Bills Through Utility Energy Efficiency
- The Role of Efficiency Standards and Labels
- California's Energy Efficiency Programs

[Economics and Markets for Hydrogen Applications and Infrastructure](#) This was the fifth seminar in the ESRC Hydrogen Seminar Series, 'Analysing Social Dimensions of Emerging Hydrogen Economies'. This seminar titled, 'Future Economics and Markets for Hydrogen Applications & Infrastructure', held 10th February 2006 in London, was jointly coordinated and sponsored by the Economic and Social Research Council and UK Energy Research Centre.

The aims of the seminar series are:

- To facilitate dialogue and discussion between social science researchers, and other 'relevant' stakeholders, exploring the development of a hydrogen economy and technological transitions more generally.
- To focus on a variety of themes and issues relating to social science understandings of emerging hydrogen economies in international, UK and local contexts
- To identify what lessons can be learned from this process of bringing together various social scientists and stakeholder groups as a means of stimulating future research agendas.

[California Energy Commission Geothermal Program](#) documents

Includes 'Proceedings of the 2005 California Geothermal Summit' and 'Identifying New Opportunities for Direct-Use Geothermal Development',

The Conference Board recently released a new report on strategic energy management entitled **A Roadmap for Strategic Energy Planning and Management**. The report offers companies a systematic appraisal and decision-making process for corporate energy management, drawing upon the experience of senior corporate energy managers who serve on The Conference Board's Strategic Energy Management Advisory Group.

The Roadmap is a valuable resource for energy managers already familiar with the EnergyStar Guidelines for Energy Management. It may be used as a complimentary source of detailed information on development of a corporate energy management program tailored to a company's needs.

This report is available [free](#) for a limited time from the EnergyStar website – this report usually costs US \$395.

Food for thought

THE [Fiji Electricity Authority](#) wants to be powered 100 per cent by renewable energy by 2011. Initially, a green power project in Fiji will be developed through a grant of US\$650,000 from the Asian Development Bank. The ADB [report](#) 'Preparing the Renewable Power Sector Development Project' is available online.

A group of influential US evangelicals has launched a [campaign](#) to persuade Americans that being a good Christian also means tackling climate change. This follows "What would Jesus Drive?" campaign of recent times, which has created debate (and [jokes](#)) within the church.

[Skippy to the rescue?](#)

Kangaroos don't produce methane, and Australian researchers think 10 percent of Australia's greenhouse gas emissions could be permanently eliminated if scientists can introduce microbes found in the stomach of kangaroos into livestock feed.

[A metal plate that will cut domestic fuel bills](#)

Peter Bance, chief executive of fuel cell manufacturer Ceres, believes he could halve the country's energy bills at a stroke, settle the debate on the nuclear issue, and help Britain meet its Kyoto obligations - all with the help of a thin plate of metal and carbon derivatives. Once the plates are stacked and connected to a power supply - typically a domestic gas boiler - it becomes what the energy boffins call a 'micro-CHP' - a small combined heat and power appliance.

[The new age of sail](#), Mick Hamer, 26 February 2005, New Scientist,
High-tech sails are being developed as they become viable due to rising costs. The small crew needed on a modern ship, combined with the low wages they are paid, means that the cost of fuel as a proportion of total running costs rose from 10 per cent in 1900 to between 25 and 60 per cent by 2000.