

Energy Update

March 2010

Welcome to the latest issue of the Energy Update, a monthly round-up of books, articles, standards, reports and other resources available from the Energy Library collection. This month we feature a [special section on Hydrokinetic energy](#) (wave, tidal etc).

Recently GridHeritage presented a set of historic DVDs to Energy Library. The DVDs have been an ongoing project by John Cook and now represent perhaps the largest single collection of their type in NZ.

The photo here is of GridHeritage's Tony Silke presenting the DVDs to Bhanu Patel (Information Advisor, Energy Library) with John Cook looking on.



The DVDs will be featured in the Update once they are available to borrow.

And finally, it's time for the annual Energy Library Easter Egg Hunt. See [Fuel for thought](#) for how to enter.

Members: To request any resource listed in this newsletter just [email](#) us its title or Ref code.

Non-members: You may be able to access items from your institutional or public library via inter-library loan.

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New items for loan

Strengths finder. Rath, Tom. New York: Gallup Press, 2007

The author of this book considers that developing your strengths is the most important aspect of personal development. He explains how to establish what sort of personality you have e.g. are you an Arranger or an Includer? Do you excel at intellection, or self assurance? You should build on these strengths as the best way to attain more satisfaction in life, and to help others. (To borrow this book email library@energylibrary.org.nz Ref: **0210-Loan1**)

Electric power transmission system engineering analysis and design. Gonen, Turan. 2nd ed. Boca Raton: CRC, 2009

This engineering textbook provides an explanation of such topics as distribution system planning and load characteristics. It provides numerous examples and problems in each chapter. It also provides comprehensive coverage of applications of distribution transformers and capacitors, harmonics on distribution systems, distribution system protection, voltage regulation, reliability, electric power quality, design of subtransmission lines, distribution substations, primary and secondary systems, voltage drop, and power loss characteristics. The author has taken extra care to familiarize readers with industry terms and symbols. He has provided a glossary and clearly defines a term when it is introduced.

(To borrow this book email library@energylibrary.org.nz Ref: **0210-Loan2**)

Special report: Carbon trading. This special section of *Energy Risk* March 2010 contains 4 articles:

- Piecing things together post-Copenhagen
- Where to now for the carbon markets?
- China's CDM market: Will Shanghai say goodbye to CERs?
- Indian CDM: does it have a future?

(To borrow this whole issue email library@energylibrary.org.nz Ref: **0310-Loan3**)

The roles of cleaner production in the sustainable development of modern societies.

This Jan 2010 special issue of *Journal of Cleaner Production* contains 11 articles, including:

- Informal knowledge processes: the underpinning for sustainability outcomes in EIA?
- Life-cycle inventory for hydroelectric generation: a Brazilian case study
- Integrated environmental assessment of biodiesel production from soybean in Brazil

(To borrow this whole issue email library@energylibrary.org.nz Ref: **0310-Loan4**)

IEC 62271-203: 2003. High-voltage switchgear and controlgear. Part 203 Gas-insulated metal-enclosed switchgear for rated voltages above 53kV

(To borrow this standard email library@energylibrary.org.nz Ref: **0210-Loan5**)

IEC/TR 62271-303: 2008. High-voltage switchgear and controlgear. Part 303: Use and handling of sulphurhexafluoride (SF6)

(To borrow this standard email library@energylibrary.org.nz Ref: **0210-Loan6**)

IEC 60480: 2004. Guidelines for the checking and treatment of sulfur hexafluoride (SF6) taken from electrical equipment and specification for its re-use. 2nd ed.

(To borrow this standard email library@energylibrary.org.nz Ref: **0210-Loan7**)

AS 1683.24: 2001 Methods of test for elastomers. Method 24: Determination of the resistance of vulcanized or thermoplastic rubbers to ozone cracking-static strain test

(To borrow this standard email library@energylibrary.org.nz Ref: **0210-Loan8**)

New management, marketing and HR articles

The effects of leadership styles on knowledge-based customer relationship management implementation. Li Yueh et al. *International Journal of Management & Marketing Research (IJMMR)*; 2010, Vol. 3 (1), p.1-18
(To request: email library@energylibrary.org.nz Ref: **0310-CRM**)

Transparency: How leaders can get results by laying it on the line. Gretchen R. Vogelgesang; Paul B. Lester. *Organizational Dynamics*; Vol. 39 (1), Jan-Mar 2010, p.252-260
(To request: email library@energylibrary.org.nz Ref: **0310-Leaders**)

People problems. Hutcheson, Paul. *Employment Today*; May 2009 (137), p.18-20
An article about dealing with interpersonal conflict in the workplace.
(To request: email library@energylibrary.org.nz Ref: **0310-Conflict**)

ASCE white paper on ethics in professional engineering and ASCE. *Leadership & Management in Engineering*; Jul 2008, Vol. 8 (3), p.97-99
The article evaluates selected issues concerning professional engineers in the United States, as of July 2008. It refers to the American Society of Civil Engineers Strategic Plan for 2008 which resulted in the identification of a lack of young people entering engineering and a loss of stature of the engineering profession in the eyes of the public. Among the issues cited in the section includes: the growing capability of software/technicians, and the multiplying outsourcing options.
(To request: email library@energylibrary.org.nz Ref: **0310-Ethics**)

What the 'green' consumer wants. Hopkins, Michael S. *MIT Sloan Management Review*; Summer 2009, Vol. 50 (4), p.87-89
(To request: email library@energylibrary.org.nz Ref: **0310-Consumer**)

Managing strategic alliances: What do we know now, and where do we go from here? Kale, Prashant; Singh, Harbir. *Academy of Management Perspectives*; Aug 2009, Vol. 23 (3), p.45-62
(To request: email library@energylibrary.org.nz Ref: **0310-Alliances**)

Teach a man to fish. Tinham, Brian. *Plant Engineer*; Mar/Apr 2008, p.8-11
This article is about developments in the education and training of engineers, and the ramifications of these changes for plant engineers.
(To request: email library@energylibrary.org.nz Ref: **0310-Train**)

Great expectations. Johnson, Jo. *Occupational Safety and Health (RoSPA)*; Aug 2009 Vol. 39 (8), p.13-17
Explains how to manage safety issues for pregnant women in the workplace.
(To request: email library@energylibrary.org.nz Ref: **0310-Pregnant**)

New energy articles and environment articles

Global energy after the crisis. Rühl, C. *Foreign Affairs*; Mar/Apr 2010, Vol. 89 (2), p.63-75
(To request: email library@energylibrary.org.nz Ref: **0310-Crisis**)

Electrical (Safety) Regulations 2010. Cuthbert, Alan. *Electrical Technology*; Mar/Apr 2010, p.27-28

Citation of the new regulations is expected in April 2010. Here, the author outlines the main changes likely to affect all electrical workers.

(To request: email library@energylibrary.org.nz Ref: **0310-Safety**)

Switched on cars. Whitley, Bill. *Consumer*; Feb 2010 (499), p.20-21

A century ago, petrol won out over steam and electricity as the fuel of choice for motor vehicles. Now electricity's making a comeback. We look at vehicles that are using these new electric technologies.

(To request: email library@energylibrary.org.nz Ref: **0310-EV**)



Limiting participation on plans and plan changes: Legitimate restriction or restricting legitimate participation? Fuller, P; Wilson, K. *Planning Quarterly*; Dec 2009 (175), p.20-25

The authors discuss the new provisions in the RMA which restrict the ability of trade competitors to participate in RMA processes.

(To request: email library@energylibrary.org.nz Ref: **0310-RMA**)

Energy consumption and economic growth in New Zealand: Results of trivariate and multivariate models. Matthew Bartleet; Rukmani Gounder. *Energy Policy*; Article in press (2010).

(To request: email library@energylibrary.org.nz Ref: **0310-GDP**)

TEN TOP Technologies for 2010 - this Jan 2010 *Pollution Engineering* article is [online](#).

Is energy and maintenance free natural ventilation and comfort cooling the way of the future in New Zealand schools? Brodie, John. *IRHACE Journal: Refrigeration, Heating and Air Conditioning*; Jan/Feb 2010 Vol. 22 (1), p.8-10

(To request: email library@energylibrary.org.nz Ref: **0310-Air**)

Energy audits in large commercial office buildings. Shapiro, Ian. *ASHRAE Journal*; Jan 2009, Vol. 51 (1), p.18-27

(To request: email library@energylibrary.org.nz Ref: **0310-Audit**)

Demand-responsive lighting: A field study. Guy Newsham, Benjamin Birt. *Leukos*; Jan 2010, Vol. 6, (3) p.203-226

(To request: email library@energylibrary.org.nz Ref: **0310-Light**)

Inducing green behavior in a manufacturer. Manikas, Andrew; Godfrey, Michael. *Global Journal of Business Research (GJBR)*; 2010, Vol. 4 (2), p.27-38
(To request: email library@energylibrary.org.nz Ref: **0310-Green**)

Simultaneous energy and water minimization-approach for systems with optimum regeneration of wastewater. Ataei, A. et al. *Research Journal of Environmental Sciences*; 2009, Vol. 3 (6), p.604-618
(To request: email library@energylibrary.org.nz Ref: **0310-Water**)

Cost efficiency analysis and emission reduction by implementation of energy efficiency standards for electric motors. Teuku Meurah Indra Mahlia; Padli Abdul Azis Yanti. *Journal of Cleaner Production*; Vol. 18 (4), Mar 2010, p.365-374
(To request: email library@energylibrary.org.nz Ref: **0310-Motors**)

What's driving energy efficient appliance label awareness and purchase propensity? Bradford Mills; Joachim Schleich. *Energy Policy*; Vol. 38 (2), Feb 2010, p.814-825
(To request: email library@energylibrary.org.nz Ref: **0310-Label**)

A history of conditionality: Lessons for international cooperation on climate policy. Sippel, Maike; Neuhoff, Karsten. *Climate Policy (Earthscan)*; 2009, Vol. 9 (5), p.481-494
(To request: email library@energylibrary.org.nz Ref: **0310-Climate**)

Geoengineering the climate: The social and ethical implications. Corner, Adam; Pidgeon, Nick. *Environment*, Jan/Feb 2010, Vol. 52 (1), p.24-37
(To request: email library@energylibrary.org.nz Ref: **0310-Geo**)

Social science perspectives on energy transitions. Maassen, A. *Institution of Civil Engineers. Proceedings - Energy*; Nov 2009 Vol. 162 (4), p.161-167
(To request: email library@energylibrary.org.nz Ref: **0310-Social**)

Electricity sector in Mexico: Current status. Contribution of renewable energy sources. Yoreley Cancino-Solórzano et al. *Renewable and Sustainable Energy Reviews*; Vol. (1), Jan 2010, p.454-461

The challenge facing the world electricity sector is the cost incurred in maintaining the system and seeing to the environmental effects it causes. In Mexico the grid is supplied by thermal plants fed by oil products. Its great potential of renewable energies clearly shown in studies by national and international scholars has led the government to become more committed to take advantage of these energies. The goal is to reduce dependence on fossil fuels to generate electricity and to reduce the emission of greenhouse gases. In this article we analyse the current state of renewable energies, the conditions needed to foster them and the legislative changes already introduced to promote their greater part in the national electricity grid.

(To request: email library@energylibrary.org.nz Ref: **0310-Mexico**)

Barriers to large-scale renewable energy generation. Leyland, Bryan. *Energy & Environment*; 2010, Vol. 20/21 (8/1), p.1243-1247

The article discusses the barriers in the large-scale, reliable, and low-cost generation of renewable energy sources. The barriers include the absence of large-scale energy storage system, excessive fluctuations of wind, solar, and marine power sources, and costly operation. The author concludes that large-scale renewable energy generation cannot be acquired unless appropriate storage technology is developed. An overview of power systems and renewable energy is also mentioned.

(To request: email library@energylibrary.org.nz Ref: **0310-Barriers**)

Three-dimensional modelling of magnetotelluric data from the Rotokawa geothermal field, Taupo volcanic zone, New Zealand. Heise, W. et al. *Geophysical Journal International*; May 2008, Vol. 173 (2), p.740-750

(To request: email library@energylibrary.org.nz Ref: **0310-Taupo**)

Nevada mine plans to convert geothermal heat to high voltage. Carter, Russell A. *E&MJ: Engineering & Mining Journal*; Oct 2009, Vol. 210 (8), p.78-81

(To request: email library@energylibrary.org.nz Ref: **0310-Heat**)

Thermal sustainability of groundwater-source cooling in Winnipeg, Manitoba. Ferguson, Grant; Woodbury, Allan D. *Canadian Geotechnical Journal*; Oct 2005, Vol. 42 (5), p.1290-1301

(To request: email library@energylibrary.org.nz Ref: **0310-Thermal**)

Solar power economics in California. Tasser, Christian. *Sun & Wind Energy*; (9), 2009, p.168-170,172,174-175

(To request: email library@energylibrary.org.nz Ref: **0310-Solar**)



Environmental review: The cost and benefits of biofuels: a review of recent peer-reviewed research and a sociological look ahead. M. S. Carolan. *Environmental Practice*; Mar 2009. Vol. 11 (1), p.17-24

(To request: email library@energylibrary.org.nz Ref: **0310-Biofuels**)

Effect of ethanol-gasoline blends on small engine generator energy efficiency and exhaust emission. Wen-Yinn Lin et al. *Journal of the Air & Waste Management Association*; Feb 2010. Vol. 60 (2), p.142-148

(To request: email library@energylibrary.org.nz Ref: **0310-Engine**)

Present and future transportation fuels. Demirbas, A. *Energy Sources Part A: Recovery, Utilization & Environmental Effects*; Oct 2008, Vol. 30 (16), p.1473-1483

(To request: email library@energylibrary.org.nz Ref: **0310-Fuels**)

Powerhouse wind: Harnessing the zeitgeist. Mackenzie, Alistair. *E.NZ magazine (IPENZ)*; Mar/Apr 2010, Vol. 11 (2), p.26-29

If the household wind turbine is to ever be truly successful, it will have to run quietly and look good. It will have to perform well in gusts, provide all or most of a household's electricity demand, and be economic to manufacture.

(To request: email library@energylibrary.org.nz Ref: **0310-Wind**)

Monte Carlo simulations of wind speed data. Gallagher, Ron; Elmore, Andrew Curtis. *Wind Engineering*; Nov 2009, Vol. 33 (6), p.661-673

(To request: email library@energylibrary.org.nz Ref: **0310-Speed**)

Environmental implications of renewable distributed generation technologies in rural electrification. Karki, S. et al. *Energy Sources Part B: Economics, Planning & Policy*; Apr 2008, Vol. 3 (2), p.186-195

(To request: email library@energylibrary.org.nz Ref: **0310-Rural**)

Agricultural-to-hydropower water transfers: Sharing water and benefits in hydropower-irrigation systems. Tilmant, A. et al. *Hydrology & Earth System Sciences*; 2009, Vol. 13 (7), p.1091-1101

(To request: email library@energylibrary.org.nz Ref: **0310-Irrigation**)

[Small hydro] Practical development: The Story of 940-kW Onekaka - this Sep 2009
HRW: Hydro Review Worldwide article is available [online](#).

Quality assurance of hydro equipment. Gummer, J. H. *International Journal on Hydropower & Dams*; Vol. 16 (5) 2009, p.83-88

(To request: email library@energylibrary.org.nz Ref: **0310-Hydro**)

Effective utilization of low-grade steam in an ammonia-water cycle. Murugan, R. Senthil; Subbarao, P. M. V. *Proceedings of the Institution of Mechanical Engineers - Part A - Power & Energy*; Mar 2008, Vol. 222 (2), p161-166

Effective utilization of low-grade steam in a Rankine cycle power plant is one of the challenging tasks for researchers. In a condensing turbine, last few stages of the turbine operate in two phase region leading to losses due to flow of wet steam, which results loss of work in low pressure turbine. Either wet or saturated steam normally called low grade is difficult to handle in a steam turbine due to its higher specific volume. Major portion of the heat in the cycle is rejected to cooling water, which results in thermal pollution of the environment and higher energy loss. Ammonia-water cycle or Kalina cycle is more efficient for the utilization of various low grade heat sources such as gas turbine exhaust gas, geothermal hot water, exhaust from steel plant etc. In this work, a new methodology was proposed for the utilization of low-grade steam in ammonia-water cycle to obtain a better power output and higher plant efficiency. The suggested ammonia-water cycle that utilizes low-grade steam produces higher-power output and it is more efficient than the Rankine steam cycle utilizing the low-grade steam and operates on a condensing mode.

(To request: email library@energylibrary.org.nz Ref: **0310-Steam**)

Early warning detection to prevent combustor failures. Stambler, Irwin. *Gas Turbine World*; July - August 2009 Vol. 39 (4), p.20-22,25
(To request: email library@energylibrary.org.nz Ref: **0310-Combustor**)

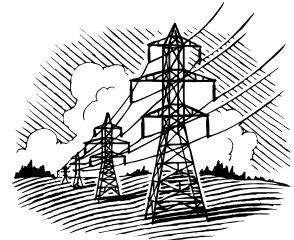
Predictive maintenance. Ashok Koul et al. *Turbomachinery International*; Mar/Apr 2009, Vol. 50 (2), p.40-41
A new approach uses physics-based prognostics to cut maintenance costs and perform life estimates in real time.
(To request: email library@energylibrary.org.nz Ref: **0310-Turbo**)

Heat transfer in power transformer windings with oil-forced cooling. Taghikhani, M. A.; Gholami, A. *IET Electric Power Applications*; Jan 2009, Vol. 3 (1), p.59-66
Power transformer outages have a considerable economic impact on the operation of an electrical network. One of the most important parameters governing a transformer's life expectancy is the hot-spot temperature (HST) value. The classical approach has been to consider the HST as the sum of the ambient temperature, the top-oil temperature rise and the hot-spot-to-top-oil temperature gradient. Temperature distribution is solved using the heat conduction equation. Finite element method is used in the numerical solution. The transformer selected for simulation is 32 MVA transformer with non-directed oil-forced cooling and directed oil-forced cooling. Comparing the results with those obtained from finite integral transform and experimental test checks the validity and accuracy of the proposed method.
(To request: email library@energylibrary.org.nz Ref: **0310-Transformer**)

Efficiency evaluation of lightning fault inspection in 66-kV transmission line. Narita, Tomomi; Yamaguchi, Setsuo. *Electrical Engineering in Japan*; Jan 2009, Vol. 166 (2), p.15-22
(To request: email library@energylibrary.org.nz Ref: **0310-Lightning**)

Voltage sag indices monitoring in power systems. Beiza, J. et al. *International Review of Electrical Engineering*; Jul/Aug 2009, Vol. 4 (4), p.610-621
(To request: email library@energylibrary.org.nz Ref: **0310-Sag**)

A new digital relaying scheme for parallel transmission line. Bhalja, Bhavesh et al. *International Journal of Emerging Electric Power Systems*; 2009, Vol. 10 (3), p.1-24
(To request: email library@energylibrary.org.nz Ref: **0310-Relay**)



The path of the smart grid. Farhangi, H. *IEEE Power & Energy Magazine*; Jan/Feb 2010 Vol. 8 (1), p.18-28
Smart grid that allows pervasive control and monitoring is emerging as a convergence of information and communication technology with power system engineering. A smart grid accommodates a wide variety of generation options such as central, distributed, and mobile empowering consumers to interact with the energy management system to adjust energy use and reduce energy costs. A smart grid is a self-healing system that predicts looming failures and takes corrective action to avoid problems. A smart grid uses IT to continually optimize the use of its capital assets while minimizing operational costs. A smart microgrid network can

operate in both grid-tied as well as islanded modes integrating the components including that it incorporates power plants capable of meeting local demand as well as feeding the unused energy back to the electricity grid and makes use of local and distributed power-storage capability. The advent of these smart microgrids and the degree of their interplay and integration will play vital role in rapidly escalating smart grid capabilities and requirements. © 2010 IEEE. Reprinted with permission of the IEEE.

(To request: email library@energylibrary.org.nz Ref: **0310-Smart**)

Meters for the smart grid. Naone, Erica. *Technology Review*; Sep/Oct 2009, Vol. 112 (5), p.110-111

An article about the methods hackers can use to attack smart meters.

(To request: email library@energylibrary.org.nz Ref: **0310-Hackers**)

Smart leadership. Bryant, Peter. *Energy Source & Distribution*; Nov/Dec 2009. p.29 (1 p.)

This article is the transcript of an interview with Peter Bryant, who is the smart meter services division general manager at Citipower/Powercor (Victoria, Australia). He answers questions about the roll out of smart meter technology.

(To request: email library@energylibrary.org.nz Ref: **0310-Meter**)

Valuing generation assets using Monte Carlo simulation. Clewlow, Les et al. *Energy Risk*; Sep 2009 Vol. 6 (11), p.56-61

(To request: email library@energylibrary.org.nz Ref: **0310-Assets**)

Evaluating the efficiency of divestiture policy in promoting competitiveness using an analytical method and agent-based computational economics. Morteza Rahimiyan; Habib Rajabi Mashhadi. *Energy Policy*; Vol. 38 (3), Mar 2010, p.1588-1595

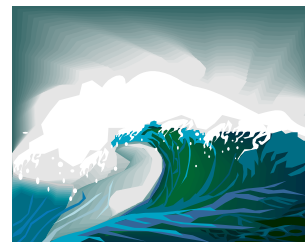
Choosing a desired policy for divestiture of dominant firms' generation assets has been a challenging task and open question for regulatory authority. To deal with this problem, in this paper, an analytical method and agent-based computational economics (ACE) approach are used for ex-ante analysis of divestiture policy in reducing market power. The analytical method is applied to solve a designed concentration boundary problem, even for situations where the cost data of generators are unknown. The concentration boundary problem is the problem of minimizing or maximizing market concentration subject to operation constraints of the electricity market. It is proved here that the market concentration corresponding to operation condition is certainly viable in an interval calculated by the analytical method. For situations where the cost function of generators is available, the ACE is used to model the electricity market. In ACE, each power producer's profit-maximization problem is solved by the computational approach of Q-learning. The power producer using the Q-learning method learns from past experiences to implicitly identify the market power, and find desired response in competing with the rivals. Both methods are applied in a multi-area power system and effects of different divestiture policies on market behavior are analyzed.

(To request: email library@energylibrary.org.nz Ref: **0310-Divestiture**)

Want to see more articles? New articles are added to our members' online catalogue every week. Please [contact us](#) if you have forgotten your login details.

Special topic: Hydrokinetic energy (wave, tidal etc).

Wave power: Sustainable energy or environmentally costly? A review with special emphasis on linear wave energy converters. Olivia Langhamer et al. *Renewable and Sustainable Energy Reviews*; Vol. 14 (4), May 2010, p.1329-1335
(To request: email library@energylibrary.org.nz Ref: **0310-Topic1**)



Wave energy utilization: A review of the technologies. Antonio F. de O. Falcao. *Renewable and Sustainable Energy Reviews*; Vol. 14 (3), Apr 2010, p.899-918
Sea wave energy is being increasingly regarded in many countries as a major and promising resource. The paper deals with the development of wave energy utilization since the 1970s. Several topics are addressed: the characterization of the wave energy resource; theoretical background, with especial relevance to hydrodynamics of wave energy absorption and control; how a large range of devices kept being proposed and studied, and how such devices can be organized into classes; the conception, design, model-testing, construction and deployment into real sea of prototypes; and the development of specific equipment (air and water turbines, high-pressure hydraulics, linear electrical generators) and mooring systems.
(To request: email library@energylibrary.org.nz Ref: **0310-Topic2**)

Wave energy generation: High expectations and current reality in the UK. Brown, Anthony. *Energy & Environment*; 2010, Vol. 20/21 (8/1), p.1271-1288
The article discusses the wave energy generation and technology in Great Britain. It states that the wave power attributes 10% electricity of the nation if there is a full exploitation. It cites that the west coast of the state has more capability of generating wave power compared to the east coast. It notes that there is wave energy converter (WEC) installed in the Islay island in Scotland that generate 75 kilowatts of electricity while a wave hub was also located in Cornwall, England.
(To request: email library@energylibrary.org.nz Ref: **0310-Topic4**)

Special journal issue on wave and tidal energy. This Dec 2009 issue of *Proceedings of the ICE - Maritime Engineering* contains 6 articles, including,

- Design of tidal barrage power schemes
- Demonstrating survivability of marine energy converters
- Turning marine energy into reality: the Scottish experience

(To request: email library@energylibrary.org.nz Ref: **0310-Loan9**)

Design of an experimental set up for hydro-kinetic energy conversion. Grabbe, M. et al. *International Journal on Hydropower & Dams*; Vol. 16 (5) 2009, p.112-117
Describes a prototype in-stream turbine and generator set-up in the Dal river, Sweden.
(To request: email library@energylibrary.org.nz Ref: **0310-Topic5**)

In-stream tidal energy potential of Puget Sound, Washington. B Polagye et al. *Proceedings of the Institution of Mechanical Engineers: Part A: Journal of Power and Energy*; Vol. 223 (5), Aug 2009, p.571-587
(To request: email library@energylibrary.org.nz Ref: **0310-Topic6**)

The economics of tidal energy. Eleanor Denny. *Energy Policy*; Vol. 37 (5), May 2009, p.1914-1924

Concern over global climate change has led policy makers to accept the importance of reducing greenhouse gas emissions. This in turn has led to a large growth in clean renewable generation for electricity production. Much emphasis has been on wind generation as it is among the most advanced forms of renewable generation, however, its variable and relatively unpredictable nature result in increased challenges for electricity system operators. Tidal generation on the other hand is almost perfectly forecastable and as such may be a viable alternative to wind generation. This paper calculates the break-even capital cost for tidal generation on a real electricity system. An electricity market model is used to determine the impact of tidal generation on the operating schedules of the conventional units on the system and on the resulting cycling costs, emissions and fuel savings. It is found that for tidal generation to produce positive net benefits for the case study, the capital costs would have to be less than [euro]510,000 per MW installed which is currently an unrealistically low capital cost. Thus, it is concluded that tidal generation is not a viable option for the case system at the present time.

(To request: email library@energylibrary.org.nz Ref: **0310-Topic6**)

Severn Barrage tidal power project: Implications for carbon emissions. Woolcombe-Adams, Charlie et al. *Water & Environment Journal*; Mar 2009, Vol. 23 (1), p.63-68

(To request: email library@energylibrary.org.nz Ref: **0310-Topic8**)

Catch the wave to electricity: Conversion of wave motions to electricity using a grid-oriented approach. Leijon, M. et al. *IEEE Power & Energy*; Jan/Feb 2009 Vol. 7 (1), p.50-54

The oceans are largely an untapped source of energy. However, compared to other energies, power fluctuations for ocean waves are small over longer periods of time. This paper presents a grid-oriented approach to electricity production from ocean waves, utilizing a minimal amount of mechanical components. © 2009 IEEE. Abstract reprinted with permission of the IEEE

(To request: email library@energylibrary.org.nz Ref: **0310-Topic9**)

Marine Renewable Energy: State of the industry report – Oct 2009 Entec [report](#).

Featured energy events

The true consequences of bioenergy for greenhouse gas emissions.

Speaker: Dr. Timothy Searchinger, Princeton University. Fri 9 April 2010 12:15pm-1:15pm. Victoria University of Wellington. For more information see [here](#).

Fundamentals of the NZ electricity industry.

5 - 6 May, Auckland / 31 May - 1 June, Wellington

For more info on this training seminar visit the Conferenz [website](#).

Gas market fundamentals for non-technical managers.

7 May, Auckland / 2 June, Wellington

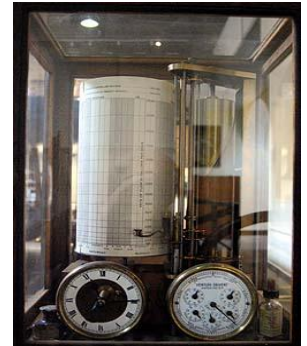
For more info on this training seminar visit the Conferenz [website](#).

Can you help GridHeritage identify this flowmeter?

GridHeritage recently restored a beautiful venturi water flowmeter that was from the water-damaged ex ECNZ collection. They now find to their embarrassment that it is not ex-Waitaki as the original Waitaki one is still in place. So now GridHeritage has a beautifully restored flowmeter and no idea of its history.

The instrument is probably dated from the early 1930s and GridHeritage has a Geo Kent catalogue showing a similar instrument. The catalogue came from Palmerston North which suggests that the flowmeter could have come from Mangahao.

If you know anything about this flowmeter please contact GridHeritage or Energy Library.



Energy on the Web

New Zealand

The National Infrastructure Plan – Government [report](#).

Stocktake of Schedule 4 of the Crown Minerals Act – MED / Department of Conservation discussion [document](#).

Background geologist's [reports](#): These are referenced in the Schedule 4 stocktake discussion paper.

Electricity Authority Establishment Board appointed – March 18 Beehive [media release](#).

How to enhance the value of New Zealand's investment in Crown Research Institutes - [report](#) of the Crown Research Institute Taskforce.

Improving electricity market performance - Presentation [slides](#) from Energy Federation seminar held on 25 March (Brent Layton, Chair, Electricity Authority Establishment Board).

switchme.co.nz - New Zealand energy prices comparison and signup [website](#).

Advanced metering infrastructure in New Zealand: Roll-out and requirements - Electricity Commission [report](#).

Macquarie Research equity analyst valuation reports on SOEs - Links to the Oct 2009 Genesis Energy, Meridian Energy and Mighty River Power reports can be found at bottom of this Crown Ownership Monitoring Unit [webpage](#).

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