

## IPENZ ENGINEERING UPDATE January 2010



Welcome to the first issue for 2010.

The team at Energy Library would like to wish you all a Happy New Year and hope you have enjoyed your holiday break over Christmas.

### Samplings from this Issue

- Managing for sustainability: findings from four company case studies in the UK precast concrete industry.
- Using NEC contracts to manage risk and avoid disputes.
- Strategic selection of suitable projects for hybrid solar-wind power generation systems.
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- A rule-based expert system framework for small water systems: proof-of-concept.
- Geothermal power plants: Principles, applications, case studies and environmental impact.
- Change management excellence
- **SPECIAL FOCUS...Desalination.**

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## Management/Leadership/Strategic Planning/Recruitment/Training and Development/Project Management/Corporate Responsibility

### √IPENZ 31/01 Is There Life at the Top? Or Just Work?

Flaum, S. Conference Board Review, Volume 46 Issue 7 (December 2009) Pages 2-6.

### √IPENZ 31/02 Breakthrough ideas for 2010.

Amabile, T. and others. Harvard Business Review, Volume 88 Issue 1 (January 2010) Pages 41-57. The article presents The HBR List of breakthrough ideas for 2010 which is compiled by this journal in collaboration with the World Economic Forum. The ten problems and the innovative solutions are discussed in each essay. The article titles are "What Really Motivates Workers," "The Technology That Can Revolutionize Health Care," "What the Financial Sector Should Borrow," "Getting the Drugs We Need," "A Market Solution for Achieving 'Green'," "A Faster Path from Lab to Market," "Hacking Work," "Spotting Bubbles on the Rise," "Creating More Hong Kongs," and "Independent Diplomacy."

### √IPENZ 31/03 Benchmarking the operating efficiency of global telecommunication firms.

Lu, W. and Hung, S. International Journal of Information Technology & Decision Making, Volume 7 Issue 4 (December 2008) Pages 737-750.

### √IPENZ 31/04 Managing for sustainability: findings from four company case studies in the UK precast concrete industry.

Holton, I., Glass, J. and Price, A. Journal of Cleaner Production, Volume 181 Issue 2 (January 2010) Pages 152-160.

Managing for sustainability is considered to be critical to the development of corporate sustainability, and is fundamentally about strategic organisational development and change. This paper presents the key findings from four case studies undertaken to investigate how the leaders in corporate sustainability in the UK precast concrete industry were managing for sustainability. It was found that by adopting a compliance approach, characterised by the development of management systems and continuous performance improvement cultures, the four companies studied were engaged in the activities and developing the capabilities necessary to manage for sustainability, and had progressed naturally to the 'efficiency' phase of corporate sustainability.

### √IPENZ 31/05 Middle East: Building towards a more sustainable approach.

Cullinane, B. and Roberts, N. Proceedings of the ICE – Civil Engineering, Volume 162 Special Issue 2 (November 2009) Pages 13-17.

### √IPENZ 31/06 A rule-based expert system framework for small water systems: proof-of-concept.

Jayanty S., Ziegler U. and Ernest A. Civil Engineering & Environmental Systems, Volume 25 Issue 2 (June 2008) Pages 81-97.

√IPENZ 31/07 **Using NEC contracts to manage risk and avoid disputes.**

Patterson, R. Proceedings of the ICE – Management, Procurement and Law, Volume 162 Issue MP4 (November 2009) Pages 157-168.

√IPENZ 31/08 **Strategic selection of suitable projects for hybrid solar-wind power generation systems.**

Chen, H., Kang, H. and Lee, A. Renewable and Sustainable Energy Reviews, Volume 14 Issue 1 (January 2010) Pages 413-421.

Because of the pressing need for maintaining a healthy environment with reasonable costs, China is moving toward the trend for generating electricity from renewable resources. Both solar energy and wind power have received a tremendous attention from private associations, political groups, and electric power companies to generate power on a large scale. A drawback is their unpredictable nature and dependence on weather. Fortunately, the problems can be partially tackled by using the strengths of one source to overcome the weakness of the other. Especially, a large fraction of the solar resource is available at times of peak electrical load. However, the complexity of using two different resources together makes the hybrid solar-wind generation systems more difficult to analyze. Accordingly, this paper first briefly introduces the solar-wind generation system and next develops its critical success criteria. Then, a fuzzy analytic hierarchy process associated with benefits, opportunities, costs and risks, is proposed to help select a suitable solar-wind power generation project.



√IPENZ 31/09 **The Five Traps of Performance Measurement.**

Likierman, A. Harvard Business Review, Volume. 87 Issue 10 (October 2009) Pages 96-101.

Evaluating a company's performance often entails wading through a thicket of numbers produced by a few simple metrics, writes the author, and senior executives leave measurement to those whose specialty is spreadsheets.

To take ownership of performance assessment, those executives should find qualitative, forward-looking measures that will help them avoid five common traps.

√IPENZ 31/10 **Accelerating corporate transformations (don't lose your nerve!).**

Miles, R. Harvard Business Review, Volume 88 Issue 1 (January 2010) Pages 68-75.

The article focuses on corporate transformations and six mistakes that can slow organizational change. The idea that successful transformations need to be bold and fast is mentioned. The solutions are given for overcoming the barriers to corporate reinvention which relate to business models that have a conservative management strategy, are not flexible enough for a transformation launch process, have an initiative gridlock that prevents innovation, have executives who do not commit to organizational change, have disengaged employees, and lose focus during the company's reinvention.

√**IPENZ 31/11 Don't take performance for granted.**

Stone, R. Industrial Management, Volume 51 Issue 6 (November 2009) Pages 15-19.

√**IPENZ 31/12 Make Better Decisions.**

Davenport, T. Source:Harvard Business Review, Volume 87 Issue 11 (November 2009) Pages 117-123.

Traditionally, decision making in organizations has rarely been the focus of systematic analysis. That may account for the astounding number of recent poor calls, such as decisions to invest in and securitize subprime mortgage loans or to hedge risk with credit default swaps. Business books are rich with insights about the decision process, but organizations have been slow to adopt their recommendations. It's time to focus on decision making, Davenport says, and he proposes four steps: (1) List and prioritize the decisions that must be made; (2) assess the factors that go into each, such as who plays what role, how often the decision must be made, and what information is available to support it; (3) design the roles, processes, systems, and behaviors your organization needs; and (4) institutionalize decision tools and assistance.

√**IPENZ 31/13 Completing the circle of professional development through leadership and mentoring.**

Russell, J. and Nelson, J. Leadership & Management in Engineering, Volume 9 Issue 1 (January 2009) Pages 40-42.

√**IPENZ 31/14 Working with the media.**

Hurns, D. and Tapp, L. Professional Safety, Volume 55 Issue 1 (January 2010) Pages 52-54.

√**IPENZ 31/15 The best-performing CEOs in the world.**

Hansen, M. and others. Harvard Business Review, Volume 88 Issue 1 (January 2010) Pages 104-113.

The article presents this journal's top 50 ranking of the best-performing chief executive officers (CEO) at large public companies over the long term or a three-year horizon. The discussion focuses on the education of the CEOs, the change in market capitalization during their tenure, and industry-adjusted company returns. The list includes Steve Jobs of Apple in the United States, Yun Jong-Yong of Samsung Electronics in Korea, Alexey B. Miller of Gazprom in Russia, John T. Chambers of Cisco Systems in the U.S., and Mukesh D. Ambani of Reliance Industries in India.



√**IPENZ 31/16 Revisiting the vexing question: Does superior corporate social performance lead to improved financial performance?**

Lee, D., Faff, R. and Langfield-Smith, K. Australian Journal of Management, Volume 34 Issue 1 (June 2009) Pages 21-49.

√IPENZ 31/17 **Employee participation in CSR and corporate identity: Insights from a disaster-response program in the Asia-Pacific.**

Chong, M. Corporate Reputation Review, Volume 12 Issue 2 (Summer 2009) Pages 106-119.

√IPENZ 31/18 **Procurement of design-build services: Two-phase selection for highway projects.**

Migliaccio, G., Gibson, G. and O'Connor, J. Journal of Management in Engineering, Volume 25 Issue 1 (January 2009) Pages 29-39.

√IPENZ 31/19 **Using public-private partnerships to expand subways: Madrid-Barajas International Airport case study.**

Soliño, A. and Vassallo, J. Journal of Management in Engineering, Volume 25 Issue 1 (January 2009) Pages 21-28.

√IPENZ 31/20 **Safety audits: comparing three types of assessments.**

Esposito, P. Professional Safety, Volume 54 Issue 12 (December 2009) Pages 42-43.

## Technical Aspects of Engineering

√IPENZ 31/21 **Sound absorption characteristics of PTFE membrane Material and their application to a multi-purpose stadium.**

Kim, J., Jeong, J. and Sohn, J. Building Services Engineering Research & Technology, Volume 30 Issue 3 (August 2009) Pages 213-226.



√IPENZ 31/22 **Foundation design for the Pentominium Tower in Dubai, UAE.**

Ibrahim, K., Bunce, G. and Murrells, C. Proceedings of the ICE – Civil Engineering, Volume 162 Special Issue 2 (November 2009) Pages 25-33.

√IPENZ 31/23 **A new approach to aerostatic analysis of long-span bridges.**

Ma, H., Su, C. and Huang, Z. Proceedings of the ICE – Structures and Buildings, Volume 162 Issue SB2 (April 2009) Pages 129-136.

√IPENZ 31/24 **Delivering Wadi Dayqah, Oman's tallest Dam.**

Prisk, M., Richards, M. and Heatt, M. Proceedings of the ICE – Civil Engineering, Volume 162 Special Issue 2 (November 2009) Pages 42-50.

√IPENZ 31/25 **Site investigation for disaster reconstruction in Aceh, Sumatra.**

Younger, J. and others. Proceedings of the ICE – Geotechnical Engineering, Volume 162 Issue GE1 (February 2009) Pages 41-48.

√IPENZ 31/26 **Water shortages in Queensland: are businesses ready to meet the challenge?**

Hyland P. and Miles B. International Journal of Technology Management & Sustainable Development, Volume 7 Issue 2 (August 2008) Pages 149-168.

√IPENZ 31/27 **Riverbank filtration for sustainable water supply: application to a large-scale facility on the Nile River.**

Shamrukh, M. and Abdel-Wahab, A. Clean Technologies and Environmental Policy, Volume 10 Issue 4 (November 2008) Pages 351-358.

√IPENZ 31/28 **Alternative transportation fuels: Distribution infrastructure for hydrogen and ethanol in Iowa.**

Wakeley, H. and others. Journal of Infrastructure Systems, Volume 14 Issue 3 (September 2008) Pages 262-271.

√IPENZ 31/29 **Comparative analysis of battery electric, hydrogen fuel cell and hybrid vehicles in a future sustainable road transport system.**

Offer, G. and others. Energy Policy, Volume 38 Issue 1 (January 2010) Pages 24-29.

√IPENZ 31/30 **Coolly cleaning coal combustion.**

Giglio, R. and Wehrenberg, J. Pollution Engineering, Volume 41 Issue 8 (August 2009) Pages 21-24. The article focuses on the circulating fluidized bed (CFB), a steam generator technology developed by Foster Wheeler Power Group.

√IPENZ 31/31 **State of the art on high temperature thermal energy storage for power generation. Part 1–Concepts, materials and modellization.**

Gil, A. and others. Renewable and Sustainable Energy Reviews, Volume 14 Issue 1 (January 2010) Pages 31-55.

√IPENZ 31/32 **State of the art on high-temperature thermal energy storage for power generation. Part 2–Case studies.**

Medrano, M. and others. Renewable and Sustainable Energy Reviews, Volume 14 Issue 1 (January 2010) Pages 56-72.

√IPENZ 31/33 **A case study on raw material blending for the recycling of ferrous wastes in a blast furnace.**

Frohling, M. and Rentz, O. Journal of Cleaner Production, Volume 18 Issue 2 (January 2010) Pages 161-173.

√IPENZ 31/34 **Studies on pumping power in terms of pressure drop and heat transfer characteristics of compact plate-fin heat exchangers–A review.** Renewable and Sustainable Energy Reviews, Volume 14 Issue 1 (January 2010) Pages 478-485.

√IPENZ 31/35 **A contribution to global sustainable development: inclusion of microalgae and their biomass in production and bio cycles.**

Avagyan, A. Clean Technologies and Environmental Policy, Volume 10 Issue 4 (November 2008) Pages 313-317.

√IPENZ 31/36 **VAV systems and green design - Part 1.**

Lentz, M. Engineered Systems, Volume 25 Issue 1 (January 2008) Pages 81-82,84,86,88,90,92,94.

√IPENZ 31/37 **Gone...but not away—addressing the problem of long-term impacts from landfills in LCA.**

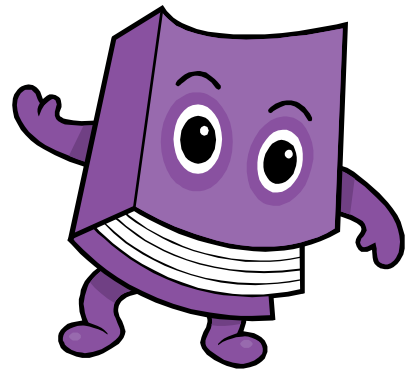
Hauschild, M. and others. The International Journal of Life Cycle Assessment, Volume 13 Issue 7 (November 2008) Pages 547-554.

√IPENZ 31/38 **Streamlining wastewater treatment in food processing.**

McMahon, J. Pollution Engineering, Volume 41 Issue 10 (October 2009) Pages 24-30.

## BOOKS AND STANDARDS in Energy Library

These can be borrowed directly by Energy Library members or via interlibrary loan by non members



√IPENZ 31/39 **Geothermal power plants: Principles, applications, case studies and environmental impact.** R. DiPippo. 2nd ed. Amsterdam: Elsevier, 2008 This book covers all aspects of the utilization of geothermal energy for power generation. It is divided into 3 sections: Part 1: Resource identification and development, where chapters cover such areas as Geology of geothermal regions, and Geothermal well drilling. Part 2 covers Geothermal power generating systems; 6 chapters cover different types of plants. Part 3 covers Geothermal power plant case studies.

√IPENZ 31/40 **Security risk management body of knowledge (SRMBOK).** Talbot, Julian; Jakesman, Miles. (2nd. Ed) Hoboken, N.J: Wiley, 2009.

This book provides a framework for formalizing risk management and guidelines for agreed better practice in security risk management. It has been developed to align with International Standards for Risk Management such as ISO 31000.

√IPENZ 31/41 **Driving results through social networks: How top organizations leverage networks for performance and growth.** R. Cross and R. Thomas. San Francisco: Jossey-Bass, 2009.

The authors show how strategically managing and leveraging social networks can make a big difference to business performance and growth.

√IPENZ 31/42 **Change management excellence.** S. Cook and others. London: Kogan Page, 2004.

Practical chapter-by-chapter checklists for those undergoing change and looking for successful international case studies.

√IPENZ 31/43 **Tracking industrial energy efficiency and CO2 emissions in support of the G8 Plan of Action.** Paris: IEA/OECD, 2007

Energy efficiency in the industrial sector has improved in the past 25 years, but more remains to be done.

√IPENZ 31/44 **AS/NZS 1891.4: 2009. Industrial fall arrest systems devices. Part 4. Selection, use and maintenance.**

2nd ed. Previous ed.: AS/NZS 1891.4 2000

√IPENZ 31/45 **AS/NZS 1891.1: 2007. Industrial fall-arrest systems and devices: Part 1: Harnesses and ancillary equipment.**

2nd ed. Includes amendments 1 and 2.

√IPENZ 31/46 **AS/NZS ISO 31000: 2009 Risk management - Principles and guidelines.**

Originated as AS/NZS 4360:1995. Third edition 2004. Revised and redesignated as AS/NZS ISO 31000: 2009

√IPENZ 31/47 **IEC 61243-1: 2009. Live working: Voltage detectors. Part 1. Capacitive type to be used for voltages exceeding 1 kV a.c.**

2nd ed. Includes amendment 1, 2009

√IPENZ 31/48 **IEEE 762: 2006. IEEE standard definitions for use in reporting electric generating unit reliability, availability and productivity.**

Revision of IEEE 762:1987



## Focus on...DESALINATION

√IPENZ 31/49 **Application of a multi-criteria analysis for the selection of the most suitable energy source and water desalination system in Mauritania.**

Rújula, A. and Dia, N. *Energy Policy*, Volume 38 Issue 1 (January 2010) Pages 99-115.

√IPENZ 31/50 **GIS-based assessment of combined CSP electric power and seawater desalination plant for Duqum—Oman.**

Gastli, A., Charabi, Y. and Zekri, S. *Renewable and Sustainable Energy Reviews*, Volume 14 Issue 2 (February 2010) Pages 821-827.

√IPENZ 31/51 **A review of renewable energy technologies integrated with desalination systems.**

Eltawil, M., Zhengming, Z. and Yuan, L. *Renewable and Sustainable Energy Reviews*, Volume 13 Issue 9 (December 2009) Pages 2245-2262.

√IPENZ 31/52 **A hybrid ion exchange-nanofiltration (HIX-NF) process for energy efficient desalination of brackish/seawater.**

Sarkar, S. and SenGupta, A. *Water Science & Technology: Water Supply*, Volume 9 Issue 4 (2009) Pages 369-377.

√IPENZ 31/53 **Life cycle assessment of three water supply systems: importation, reclamation and desalination.**

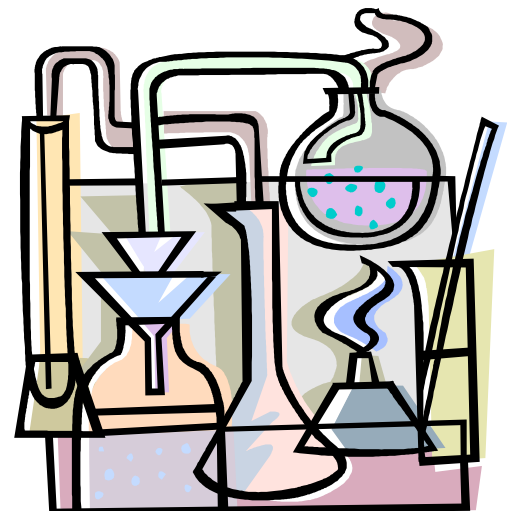
Lyons, E. and others. *Water Science & Technology: Water Supply*, Volume 9 Issue 4 (2009) Pages 439-448.

√IPENZ 31/54 **Optimum design of a photovoltaic reverse-osmosis system for Persian Gulf water solar desalination.**

Ataei, A. and others. *Research Journal of Environmental Sciences*, Volume 3 Issue 4 (2009) Pages 414-426.

√IPENZ 31/55 **Desalination using low-grade heat sources.**

Gude, V. and Nirmalakhandan, N. *Journal of Energy Engineering*, Volume 134 Issue 3 (September 2008) Pages 95-101.



√IPENZ 31/56 **Debunking desalination.**

Brannan, P. E - The Environmental Magazine, Volume 19 Issue 2 (March/April 2008) Pages 16-18.

√IPENZ 31/57 **Developing a protocol to evaluate new-generation membranes for desalinating brackish groundwater.**

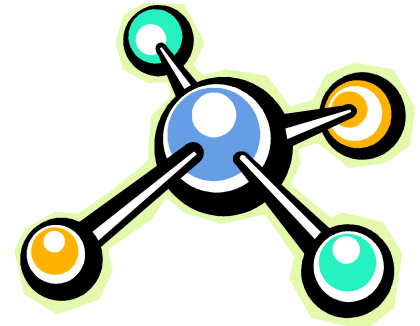
Kumar, M., Adham, S. and Pearce, W. American Water Works Association Journal, Volume 98 Issue 4 (April 2006) Pages 122-132.

√IPENZ 31/58 **Diffusion-driven desalination using waste heat in air streams.**

Knight, J. and others. International Journal of Energy Research, Volume 32 Issue 9 (July 2008) Pages 837-846.

√IPENZ 31/59 **Impact of solar energy cost on water production cost of seawater desalination plants in Egypt.**

Lamei, A., van der Zaag, P. and von Munch, E. Energy Policy, Volume 36 Issue 5 (May 2008) Pages 1748-1756.



√IPENZ 31/60 **Improved discharge configurations for brine effluents from desalination plants.**

Jirka, G. Journal of Hydraulic Engineering, Volume 134 Issue 1 (January 2008) Pages 116-120.

√IPENZ 31/61 **Innovative large-diameter RO system for water reclamation and seawater desalination.**

Ng, H. and others. Water Science & Technology: Water Supply, Volume 8 Issue 1 (2008) Pages 93-99.

√IPENZ 31/62 **Integration of desalinated seawater into a distribution system: A corrosion pilot study.**

Blute, N. and others. American Water Works Association Journal, Volume 100 Issue 9 (September 2008) Pages 117-131.

√IPENZ 31/63 **Victoria's proposed desalination plant: An energy-guzzling, climate-changing water factory.**

Heislors, C. Chain Reaction, Issue 102 (April 2008) Pages 35-36.

√IPENZ 31/64 **Characterization of water discharges from two thermal power/desalination plants in Oman.**

Abdul-Wahab, Sabah A. Environmental Engineering Science, Volume 24 Issue 3, (April 2007) Pages 321-337

√IPENZ 31/65 **Impact of desalination plants brine injection wells on coastal aquifers.**

Nassar, M., El-Damak, R. and Ghanem, A. Environmental Geology, Volume 54 Issue 3 (December 2007) Pages 445-454.

√IPENZ 31/66 **Reducing energy consumption for seawater desalination.**

Veerapaneni, S. and others. American Water Works Association Journal, Volume 99 Issue 6 (June 2007) Pages 95-106.

IPENZ 31/67 **Renewable energy driven desalination systems modelling.**

Koroneos, C., Dompros, A. and Roubas, G. Journal of Cleaner Production, Volume 15 Issue 5 (2007) Pages 449-464.

√IPENZ 31/68 **The state of full-scale RO/NF desalination-results from a worldwide survey.**

Burbano, A., Adham, S. and Pearce, W. American Water Works Association Journal, Volume 99 Issue 4 (April 2007) Pages 116-127.

√IPENZ 31/69 **A wind-powered system for water desalination.**

Hrayshat, E. International Journal of Green Energy, Volume 4 Issue 5 (2007) Pages 471-481.

√IPENZ 31/70 **Developing a protocol to evaluate new-generation membranes for desalinating brackish groundwater.**

Kumar, M., Adham, S. Pearce, W. American Water Works Association Journal, Volume 98 Issue 4 (April 2006) Pages 122-132.

√IPENZ 31/71 **The US freshwater supply shortage: Experiences with desalination as part of the solution.**

Yuhas, E. and Daniels, T. Journal of Environmental Planning & Management, Volume 49 Issue 4 (July 2006) Pages 571-585.

√IPENZ 31/72 **Solar thermal driven desalination plants based on membrane distillation.**

Koschikowski, J., Wieghaus, M. and Rommel, M. Water Science & Technology: Water Supply, Volume 3 Issue 5/6 (2003) Pages 49-55.



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