

IPENZ ENGINEERING UPDATE January 2008



Samplings from this Issue

- Non financial metrics and boards.
- Fueling U.S transportation : the hydrogen economy and its alternatives.
- Differences in thinking styles of artists and engineers.
- Strategic analysis of large local construction firms in China.
- A leader's framework for decision marking.
- Industrial strength lighting.
- Consumer experiences with VOIP.
- Breeding better buildings : civil engineers may be able to design more innovative and improved structures by borrowing from genetics.
- Sustainable construction: the development and evaluation of an environmental profiling system for construction products.

► Special Focus on Disaster and Emergency Planning and Management.

Welcome to the first 2008 issue of the IPENZ Engineering Update which is published by the Energy Library on behalf of IPENZ on a monthly basis.

If you wish to be placed on the mailing list to receive a copy directly, please contact Energy Library. (library@energylibrary.org.nz) and type "Subscribe IPENZ Update" in the subject line.

If you are interested in any of the publications listed they are all available through the Energy Library. Energy Library members can request by quoting the IPENZ code number. Non-members can request by supplying the reference to their organisational or public library.

Articles marked with a "√". are held in the Energy Library collection.

Energy Library requests should be emailed to: library@energylibrary.org.nz

If you are interested in Energy Library membership please contact library@energylibrary.org.nz

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

√IPENZ 10/01 **Preparing the civil engineers of tomorrow by “raising the bar”.**

Civil Engineering (ASCE), Volume 77 Issue 9 (2007) Pages 64-71.

The body of knowledge required for entry into civil engineering practice will expand beyond an engineering degree. ASCE Policy 465 proposes a new model for civil engineering education.

√IPENZ 10/02 **London calling for power engineers.**

Forley, M. Power Engineering International, Volume 15 Issue 6 (2007) Pages 78-80.

A survey of energy sector skills shortage in the United Kingdom is discussed.

√IPENZ 10/03 **Differences in thinking styles of artists and engineers.**

Gridley, M. Career Development Quarterly, Volume 56 Issue 2 (December 2007) Pages 177-182.

Results of a survey of professional fine artists and engineers.

√IPENZ 10/04 **Make your corporate grass the greenest: 16 cost-effective ways to a culture that keeps your keepers.**

Sujansky, J. Journal for Quality & Participation, Volume 30 Issue 3 (Fall 2007) Pages 9-12.

Discusses cost effective ways to improve corporate culture in order to attract and retain good employees.

√IPENZ 10/05 **Putting leadership back into strategy.**

Montgomery, C. Harvard Business Review, Volume 86 Issue 1 (January 2008) Pages 54-60.

In recent decades an infusion of economics has lent the study of strategy much needed theory and empirical evidence. This article suggests the benefits of this rigorous approach have attendant costs: Strategy has become a competitive game plan, separate from the company's larger sense of purpose. The CEO's unique role as arbiter and steward of strategy has been eclipsed. And an overemphasis on sustainable competitive advantage has obscured the importance of making strategy a dynamic tool for guiding the company's development over time. For any company, intelligent guidance requires a clear sense of purpose, of what makes the organization truly distinctive. Purpose, Montgomery says, serves as both a constraint on activity and a guide to behavior. Creativity and insight are key to forging a compelling organizational purpose; analysis alone will never suffice. As the CEO – properly a company's chief strategist – translates purpose into practice, he or she must remain open to the possibility that the purpose itself may need to change. Lou Gerstner did this in the 1990s, when he decided that IBM would evolve to focus on applying technology rather than on inventing it. So did Steve Jobs, when he rescued Apple from a poorly performing strategy and expanded the company into attractive new businesses. Watching over strategy day in and day out is the CEO's greatest opportunity to shape the firm as well as outwit the competition.

√IPENZ 10/06 **Making the most of performance review: with smarter goals and best feedback.**
McLoughney, S. Accountancy Ireland, Volume 39 Issue 6, (December 2007) Pages 56-58.

√IPENZ 10/07 **Strategic analysis of large local construction firms in China.**
Cheah, C. et al. Construction Management & Economics, Volume 25 Issue 1 (January 2007) Pages 25-38.

√IPENZ 10/08 **The era of the inclusive leader.**
Lucier, C., Wheeler, S and Habbel, R. Corporate Board, Volume 28 Issue 166 (September 2007) Pages 1-5.
Reaching out and partnering with investors, regulators and corporate boards helps today's CEOs survive in the corporate arena.

√IPENZ 10/09 **The five competitive forces that shape strategy.**
Porter, M. Harvard Business Review, Volume 86 Issue 1 (January 2008) Pages 78-93.
The five forces reveal why industry profitability is what it is. Only by understanding them can a company incorporate industry conditions into strategy.

√IPENZ 10/10 **Non-financial metrics and boards.**
Parrett, William G. Corporate Board, Volume 28 Issue 167 (November 2007) Pages 1-7.
The importance and value of non-financial information relating to quality and performance is discussed. Non-financial metrics often provide insights which help to evaluate future directions.

√IPENZ 10/11 **What every leader needs to know about followers.**
Kellerman, B. Harvard Business Review, Volume 85 Issue 12 (December 2007) Pages 84-91.
Countless studies, workshops, and books have focused on leaders. Virtually no literature exists about followers, however, and the little that can be found tends to depict subordinates as an amorphous group or explain their behavior in the context of leaders' development. In this article, Kellerman explores the evolving dynamic between leaders and subordinates and offers a typology that managers can use to determine and appreciate how their followers are different from one another. Using the level of engagement with a leader or group as a defining factor, the author segments followers into five types.

√IPENZ 10/12 **A leader's framework for decision making.**
Snowden, D. and Boone, M. Harvard Business Review, Volume 85 Issue 11 (November 2007) Pages 68-76.
Many executives are surprised when previously successful leadership approaches fail in new situations, but different contexts call for different kinds of responses. Before addressing a situation, leaders need to recognize which context governs it – and tailor their actions accordingly. Snowden and Boone have formed a new perspective on leadership and decision making that's based on complexity science. The result is the Cynefin framework, which helps executives sort issues into five contexts.

√IPENZ 10/13 **A critical analysis of asbestos removal project cost implications.**

Kupakuwana, Paul. Cost Engineering, Volume 49 Issue 11 (November 2007) Pages 30-35.

√IPENZ 10/14 **Simplicity-minded management.**

Ashkenas, R. Harvard Business Review, Volume 85 Issue 12 (December 2007) Pages 101-109.

Large organizations are by nature complex, but over the years new business challenges – globalization, innovative technologies, and regulations, to name a few – have conspired to add layer upon layer of complexity to corporate structure and management. Organizations have become increasingly ungovernable and unwieldy: Performance is declining, accountability is unclear, decision rights are muddy, and data are crunched repeatedly, often with no clear purpose in mind. To avoid frustration and inefficiency, executives need to systematically attack the causes of complexity in their companies. Ashkenas and his partners at Robert H. Schaffer & Associates have worked with dozens of firms to help them develop strategies for simplifying. In this article, the author details the elements of a simplicity-minded strategy: Streamline the structure; prune products, services, and features; build disciplined processes; and improve managerial habits

√IPENZ 10/15 **Total cost management: a case study in missed opportunity.**

Spencer, L and Rock, G. AACE International Transactions; 2007, p03.1-03.6.

A case study of Northwest Pipeline.

√IPENZ 10/16 **Technology Safety Data Sheets: moving critical safety information upstream to design engineers and downstream to workers.**

Akladios, M and Winn, G. Professional Safety, Volume 52 Issue 8 (August 2007) Pages 39-46.

Discusses the U.S. technology safety data sheets and their role in industrial health and safety.

√IPENZ 10/17 **The changing role of the plant engineer.**

Vavra, B. Plant Engineering, Volume 61 Issue 11 (November 2007) Pages 69-78.

√IPENZ 10/18 **In search of opportunity management: Is the risk management process enough?**

Olsson, R. International Journal of Project Management, Volume 25 Issue 8 (November 2007) Pages 745-752.

√IPENZ 10/19 **Sustainable construction : the development and evaluation of an environmental profiling system for construction products.**

Shiers, D et al. Construction Management & Economics, Volume 24 Issue 11 (November 2006) Pages 1177-1184.

IPENZ 10/20 **Breeding better buildings: civil engineers may be able to design more innovative and improved structures by borrowing from genetics.**

Kicinger, R and Arciszewski, T. American Scientist, Volume 95 Issue 6 (November/December 2007) Pages 502-507.

Technical Aspects of Engineering –Abstracts for most available upon request.



√IPENZ 10/21 **Fueling U.S. transportation: the hydrogen economy and its alternatives.**

Heiman, M and Solomon, B. Environment Washington, Volume 49 Issue 8 (October 2007) Pages 10-25.

√IPENZ 10/22 **Household ecological footprints – demographics and sustainability.**

Caird, S. and Roy, R. Journal of Environmental Assessment Policy & Management Policy, Volume 8 Issue 4 (December 2006) Pages 407-429.

Results of a two year study of over 1000 UK households. The biggest contributors were transport and energy.

√IPENZ 10/23 **Assessment of transport policies toward future emission targets: a backcasting approach for Stockholm 2030.**

Robert, M and Jonsson, R. Journal of Environmental Assessment Policy & Management, Volume 8 Issue 4 (December 2006) Pages 451-478.

√IPENZ 10/24 **Individual trip destination estimation in a transit smart card automated fare collection system.**

Trépanier, M., Tranchant, N and Chapleau, R. Journal of Intelligent Transportation Systems, Volume 11 Issue 1 (January - March 2007) Pages 1-14.

√IPENZ 10/25 **From floor heating to hybrid HVAC panel - A trail of exergy-efficient innovations.**

Kilkis, B. ASHRAE Transactions, Volume 112 Part 1 (2006) Pages 343-349.

√IPENZ 10/26 **Industrial strength lighting.**

Watkins, M. Consulting Specifying Engineer, Volume 42 Issue 5 (November 2007) Pages 35-36,38. Carefully evaluating different lighting schemes for an aerospace acoustical chamber leads to an optimum design solution.

√IPENZ 10/27 **Applications of customized absorption heat pumps with heating capacities above 500kw.**

Wren, C. et al. ASHRAE Transactions, Volume 113 (2007) Pages 65-79.

Three heat pump applications are discussed: a municipal composting plant, a spa with various swimming pools and a housing development with 100 units.

√IPENZ 10/28 **Emerging technologies; CO2 heat pump water heaters.**

ASHRAE Journal, Volume 49 Issue 11 (November 2007) Pages 52-54.

√IPENZ 10/29 **Model of real absorption heat pump cycle with a generalized heat transfer law and its performance.**

Chen, X., Sun, F and He, L. Proceedings of the Institution of Mechanical Engineers : Part A Power and Energy, Volume 221 (2007) Pages 907-916.

√IPENZ 10/30 **Imaging technique facilitates condition assessments of concrete columns.**

Civil Engineering (ASCE) Volume 77 Issue 7 (2007) Pages 32-33.

√IPENZ 10/31 **Behavior of concrete bridge decks reinforced with high performance steel.**

Seliem, H et al. ACI Structural Journal, Volume 105 Issue 1 (January/February 2008) Pages 78-86.

√IPENZ 10/32 **Rethinking bridge design: a new configuration.**

Civil Engineering (ASCE) Volume 77 Issue 7 (2007) Pages 38-45.

New concept of a bridge girder that is partially supported by cables.

√IPENZ 10/ 33 **Residual seismic performance of reinforced concrete bridge piers after moderate earthquakes.**

ACI Structural Journal, Volume 105 Issue 1 (January/February 2008) Pages 87-95.

√IPENZ 10/34 **Performance investigation of membrane bioreactor systems during municipal wastewater reclamation.**

DeCarolis, J and Adham, S. Water Environment Research, Volume 79 Issue 13 (December 2007) Pages 2536-2550.

√IPENZ 10/35 **Economic and design considerations for membrane filtration at a lime softening plant.**

Bernard, M and Harrison, S. American Water Works Association Journal, Volume 99 Issue 12 (December 2007) Pages 30-36.

√IPENZ 10/36 **Impact on water distribution system biofilm densities from reverse osmosis membrane treatment of supply water.**

Meckes, M et al. Journal of Environmental Engineering and Science, Volume 6 Issue 4 (July 2007) Pages 449-454.

IPENZ 10/37 **Performance of beam-to-column joints in fire: A review.**

Al-Jabri, K., Davison, J and Burgess, I. Fire Safety Journal, Volume 43 Issue 1 (2008) Pages 50-62.

√IPENZ 10/38 **Theoretical model of a major fire spread in a tunnel.**

Beard, A. Fire Technology, Volume 42 (2006) Pages 303-328.

√IPENZ 10/39 **Emergency power for today's healthcare.**

Ferris, J. Consulting Specifying Engineer, Volume 42 Issue 5 (November 2007) Pages 18-24.

√IPENZ 10/40 **The underwater way (pipeline of high-density polyethylene).**

Bentwood, R et al. Civil Engineering, Volume 77 Issue 6 (June 2007) Pages 48-53.

Innovative solution used in a Los Angeles reservoir.

√IPENZ 10/41 **Lin Au culvert, Hong Kong : taming the torrent.**

Corney, B., Meigh, D and Hieatt, M. Proceedings of the Institution of Civil Engineers: Civil Engineering, Volume 160 Issue 2 (May 2007) Pages 73-81.

Design and construction challenges of an 8 metre wide concrete arch culvert.

√IPENZ 10/42 **When less is more.**

Seithi, S., Xu, P., and Drewes, J. Civil Engineering (ASCE) Volume 77 Issue 9 (2007) Pages 72-75.

Improved techniques for desalination of brackish water.

IPENZ 10/43 **Rock stars.**

Findley, D. Civil Engineering (ASCE) Volume 77 Issue 7 (2007) Pages 46-51.

A highway remediation project is completed quickly aided by the use of innovative digital imaging and mapping techniques.

√IPENZ 10/44 **Custom technology makes shale resources profitable.**

Wylie, G. Oil and Gas Journal, Volume 105 Issue 48 (24 December 2007) Pages 41-49.

√IPENZ 10/45 **Batch test assessment of waste to energy combustion residues impacts on precipitate formation in landfill leachate collection systems.**

Cardoso, A., Levine, A and Rhea, L. Journal of the Air & Wastes Management Association, Volume 58 Issue 1 (January 2008) Pages 19-26.

√IPENZ 10/46 **Toward reliability and quality for IP telephony applications in converged networks.**

Siliquini, J. Telecommunications Journal of Australia Melbourne, Volume 57 Issue 1 (Autumn 2007) Pages 23-32.

√IPENZ 10/47 **A simulation study of the effects of VOIP services on selected data traffic under wireline versus wireless expansion scenarios.**

Sajjad Z and Al Mahmud, Z. The Journal of Computer Information Systems, Stillwater:, Volume 48 Issue 1 (Fall 2007) Pages 124 -133.

√IPENZ 10/48 **Consumer experiences with VoIP.**

Sengara, Ryan. Telecommunications Journal of Australia, Melbourne: Volume 57 Issue 1 (Autumn 2007) Pages 17-23.

IPENZ 10/49 Minimizing construction-related security risks during airport expansion projects.
Khalafallah, A., and El-Rayes, K. Journal of Construction Engineering and Management, Volume 134 Issue 1 (2008) Pages 40-48.

√IPENZ 10/50 Glancing blow impact forces by a barge train on a lock approach wall.
Arroyo-Caraballo, J and Ebeling, R. Journal of Infrastructure Systems, Volume 12 Issue 2 (2006) pages 135-143.

IPENZ 10/51 Chemical and biological technologies for hydrogen sulfide emission control in sewer systems : a review.
Zhang, L. et al. Water Research, Volume 42 Issues 1-2 (January 2008) Pages 1-12

IPENZ 10/52 Co-treatment of hydrogen sulfide and methanol in a single stage biotrickling filter under acidic conditions.
Jin, Y., Veiga, M and Kennes, C. Chemosphere, Volume 48 Issue 7 (June 2007) Pages 1186-1193.

IPENZ 10/53 Life cycle assessment as a decision support tool for landfill gas-to-energy projects.
Journal of Cleaner Production, Volume 15 Issue 18 (December 2007) Pages 1819-1826.

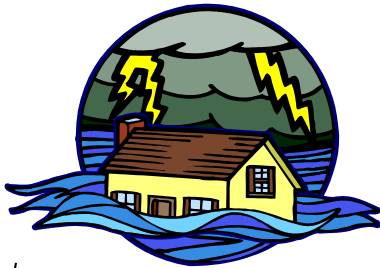
IPENZ 10/54 Fourier analysis of short-period water level variations in the Rotorua geothermal field, New Zealand.
Leaver, J and Unsworth, C. Geothermics, Volume 36 Issue 6 (December 2007) Pages 539-557.

IPENZ 10/55 The impact of injection on seismicity at The Geysers, California Geothermal Field.
Majer, E and Peterson, J. International Journal of Rock Mechanics and Mining Sciences, Volume 44, Issue 8 (December 2007) Pages 1079-1090..

IPENZ 10/56 Ground heat exchangers—A review of systems, models and applications.
Florides, G and Kalogirou, S. Renewable Energy, Volume 32, Issue 15 (December 2007) Pages 2461-2478

IPENZ 10/57 Energy storage devices for future hybrid electric vehicles.
Karden, E et al. Journal of Power Sources, Volume 168, Issue 1, 25 May 2007, Pages 2-11.

IPENZ 10/58 Hybrid and plug-in hybrid electric vehicle performance testing by the US Department of Energy Advanced Vehicle Testing Activity.
Karner, D and Francfort. J. Journal of Power Sources, Volume 174, Issue 1, (22 November 2007) Pages 69-75.



Special Focus on..... Disaster and Emergency Planning and Management

- √IPENZ 10/59 **The importance of governance in risk reduction and disaster management.**
Joachim, A and Rudolph, P. Journal of Contingencies & Crisis Management, Volume 14 Issue 4 (December 2006) Pages 207-220.
- √IPENZ 10/60 **Case study on implementing NFPA 1600: Goodyear Global Business Continuity Program.**
Janko, M. NFPA Journal. Quincy, Volume 102 Issue 1 (January/February 2008) Pages 44-48.
- √IPENZ 10/61 **How Prepared Is Your Safety Diving Team for a Bridge Collapse?**
Hendrick, W and Zaferes, A. Fire Engineering, Volume 160 Issue 12 (December 2007) Pages 75-84.
- √IPENZ 10/62 **Facilitation of risk communication during the anthrax attacks of 2001: The organizational backstory.**
Chess, C and Clarke, L. American Journal of Public Health, Washington, Volume 97 Issue 9 (September 2007) Pages 1578-1583.
- √IPENZ 10/63 **Tsunamis: Some pre-emptive disaster planning and management issues for consideration by the construction industry.**
Pheng, L.S., Raphael, B., Kit, W.K. Structural Survey, Volume 24 Issue 5 (2006) Pages 378-396. Focus on Singapore construction industry.
- IPENZ 10/64 **Learning from Katrina: environmental health observations from the SWCPHP response team in Houston.**
Elledge, B.L., Boatright, D.T. and Woodson, P. et al. Journal of Environmental Health, Volume 70, Issue 2 (September 2007) Pages 22-27.
- IPENZ 10/65 **Developing local emergency management by co-ordination between municipalities in policy networks: experiences from Sweden.**
Palm, J. and Ramsell, E. Journal of Contingencies & Crisis Management, Volume 15, Issue 4 (December 2007) Pages 173-182.
- √ IPENZ 10/66 **Battle-Proven Military Principles for Disaster Leadership.**
Martin, R. Fire Engineering, Volume 160, Issue 8 (August 2007) Pages 69-82.

√IPENZ 10/67 **Planning for a climate-changed world**

Talbot, D. Technology Review, Volume 110, Issue 3 (June 2007) Pages 62-.

√IPENZ 10/68 **Organisational Issues in implementing an information sharing framework: lessons from the Matata flooding events in New Zealand.**

Dantas, A. and Seville, E. Journal of Contingencies & Crisis Management, Volume 14, Issue 1 (March 2007) Pages 38-52.

IPENZ 10/69 **Post-earthquake emergency assessment of building damage, safety and usability-Part 1: Technical issues.**

Anagnostopoulos, S. and Moretti, M. Soil Dynamics and Earthquake Engineering, Volume 28, Issue 3 (2008) Pages 223-232.

IPENZ 10/70 **Post-earthquake emergency assessment of building damage, safety and usability-Part 2: Organisation issues.**

Anagnostopoulos, S. and Moretti, M. Soil Dynamics and Earthquake Engineering, Volume 28, Issue 3 (2008) Pages 233-244. \

√IPENZ 10/71 **Balanced scorecard for natural disaster management projects.**

Moe, T.L., Gehbauer, F. and Senitz, S. et al. Disaster Prevention and Management, Volume 16, Issue 5 (2007) Pages 785-806.

IPENZ 10/72 **A framework for evaluation of flood management strategies.**

Hansson, K., Danielson, M. and Ekenberg, L. Journal of Environmental Management, Volume 86, Issue 3 (2008) Pages 465-480.

IPENZ 10/73 **Risk communication in emergency response to a simulated extreme flood.**

McCarthy, S., Tunstall, S. and Parker, D. et al. Environmental Hazards, Volume 7, Issue 3 (2007) Pages 179-192.

IPENZ 10/74 **Public responses to agricultural disasters: Rethinking the role of government.**

Goodwin, B.K. and Vado, L.A. Canadian Journal of Agricultural Economics, Volume 55, Issue 4 (2007) Pages 399-417.

√IPENZ 10/75 **Delay between sensing and response in water contamination events.**

Bristown, E and Brumbelow, K. Journal of Infrastructure Systems, Volume 12 Issue 2 (2006) Pages 87-95.

√IPENZ 10/76 **Natural and imposed injustices: the challenges in implementing 'fair' flood risk management policy in England.**

Johnson, C., Penning-Rowse, E and Parker, D. The Geographical Journal. London, Volume 173 (December 2007) Pages 374-