

IPENZ ENGINEERING UPDATE April 2011



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➤ Special Focus : Disaster Recovery

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√IPENZ 45/01 10 UK companies that are changing the world.

Professional Engineering, Volume 23, Issue 18 (11/01/2010)
Pages 25-30.

The article features the 10 engineering companies in Great Britain which changed the country through innovation.

√IPENZ 45/02 Staying level-headed in stressful times.

Lafair, S. Leader to Leader, Volume 2009, Issue 54 (Fall 2009)
Pages 7-12.

√IPENZ 45/03 Seeing your way: Why leaders must communicate their visions.

Cartwright, T. and Baldwin, D. Leadership in Action, Volume 27, Issue 3 (July/August 2007) Pages 15-24.

√IPENZ 45/04 Developing your global know-how.

Russwurm, S. et al. Harvard Business Review, Volume 89, Issue 3 (March 2011) Pages 70-75.

For up-and-coming executives, an overseas posting has long been a rite of passage, providing opportunities not available in their native countries and experience that can be invaluable to their companies both during the assignment and after their return home. How has the Great Recession affected this formula? HBR spoke with the top human resources executives at four multinationals about how their companies are adapting global assignments to meet the demands of a changing world. Siegfried Russwurm, of Siemens, talks about the need to recruit workers who will really engage with their new culture—workers with the capacity for truly "international thinking." CEMEX's Luis Hernández discusses personal and professional factors that can make or break an overseas assignment. In the same vein, Keumyong Chung describes measures that Samsung has taken to reduce failures, including preassignment training of various kinds. Today's economy is prompting cutbacks in some global programs, but the news is not all bad: For example, at Walmart, as Susan Chambers relates, a new emphasis on creative, shorter-term assignments is allowing more people (including more women) to obtain global experience without the major uprooting of a conventional expat assignment. It is also helping them get that experience earlier in their careers—when it can be of maximum benefit to the employee and the company alike.

√IPENZ 45/05 Rebuilding a team after restructuring.

James, B. Training Journal (September 2010) Pages 37-41.

√IPENZ 45/06 Discovering the source of failures.

Calderón-Ruiz, G. and Sepúlveda, M. Industrial Engineer: IE, Volume 43, Issue 3 (March 2011) Pages 46-50.



√IPENZ 45/07 **Strategies for learning from failure.**

Edmondson, A. C. Harvard Business Review, Volume 89, Issue 4 (April 2011) Pages 48-55.

The article discusses strategies for learning from failure from a business and organizational perspective. The mistaken belief that failure is always bad is mentioned. Reasons for failure such as deviance in practice, inattention, lack of ability, process inadequacy, task difficulty, process complexity, uncertainty, and hypothesis and exploratory testing are discussed. Advice is given for building a learning culture and psychologically safe environment that counteracts an organization's focus on blame. Analyzing failure and promoting experimentation are also discussed.

√IPENZ 45/08 **Civil, environmental, transportation, and structural engineering among best jobs in the nation, Money says.**

Shuster, L. A. Civil Engineering, Volume 81, Issue 1 (January 2011) Pages 32-33.

The article focuses on the article published by "Money" which shows the top 100 jobs in the U.S. were civil, environmental, transportation and structural engineering.

√IPENZ 45/09 **An education-industry partnership to create the workforce of tomorrow.**

Zwers, J. Power Engineering, Volume 114, Issue 11 (November 2010) Pages 162-168.

Interviews with Richard Holman, manager of energy workforce initiatives at Idaho National Laboratory (INL) and Brad Kamph, president of Interalliance Consulting Inc., a workforce strategy and knowledge management consultancy are presented. When asked about the role of education in rejuvenating the American industrial powerhouse, Holman explains the role of education in providing a sufficient flow of engineering and technical talent. Kamph explains that the challenge is to reduce the gap between complete competence and what colleges can provide.

√IPENZ 45/10 **Re-engineering graduate skills - a case study.**

Nair, C. S. et al. European Journal of Engineering Education, Volume 34 Issue 2 (May 2009), Pages 131-139.

Research on student-learning outcomes indicates that university graduates do not possess important skills required by employers, such as communication, decision-making, problem-solving, leadership, emotional intelligence, social ethics skills as well as the ability to work with people of different backgrounds. Today, engineering graduates are required to work within multicultural and multinational workplace environments, and thus need to possess adequate professional attributes and competencies. This paper elaborates on the missing links between engineering graduate attributes and employers' expectations. It further investigates whether the attributes gained by engineering graduates from Monash University, Australia, meet the expected needs of the industry. The paper also proposes a 3-D Competency Model to address the potential shortfalls of employers' expectations in that regard.

√IPENZ 45/11 **Clarifying the role of the lead process engineer.**

Lagace, J. Chemical Engineering, Volume 118, Issue 3 (March 2011) Pages 44-50.

√IPENZ 45/12 **Enhancing performance: a case study of the effects of employee coaching in construction practice.**

McGuffin, A. A. and Obonyo, E. Construction Management & Economics, Volume 28, Issue 2 (February 2010) Pages 141-149.

√IPENZ 45/13 **Combining a safety management process with a safety framework.**

Black, D., Hull, E. and Jackson, K. Intelligent Information Management, Volume 2, Issue 4 (April 2010) Pages 233-242.

√IPENZ 45/14 **Time to think outside the box? Technical entrepreneurship and engineering management education.**

Waters, R. Engineering Management Journal, Volume 22, Issue 4 (December 2010) Pages 54-57. In this article, the author discusses the technical entrepreneurship and engineering management education in the U.S. The author cites the reasons for the failure of entrepreneurship to penetrate into more engineering management programs including dominance of business schools in the field, unappealing engineering schools, and scarcity of funds and difficulty of positions to justify. He mentions the Stanford Technology Ventures Program which he believes a good starting point in entrepreneurship.

√IPENZ 45/15 **Owners and contractors: Key metrics improve performance.**

Cannalire, C. Chemical Engineering, Volume 118, Issue 2 (February 2011) Pages 46-49. The article focuses on the essentiality of selecting and using the right key performance indicators (KPIs) to assure the improvement of performance objectives throughout the chemical process industries (CPI) in the U.S. It addresses the rules in establishing the types of contractual incentives that must be used in each stage of a project. It describes the front-end loading stage of any capital-intensive project as a period that is speculative where the funding of the project is minimal.

√IPENZ 45/16 **Project contracting strategies: evaluating costs, risks and staffing requirements.**

Gloria, J. T., Siegfriedt, W. E. and Carstens, A. Power Engineering, Volume 115, Issue 3 (March 2011) Pages 50-57.

The article discusses the strategies which can be used by facility owners for the contracting of a major capital project. An analysis was made by Sargent & Lundy to the alternate contracting approach particularly the turnkey EPC where most of the utilities have contracted their large projects.

√IPENZ 45/17 **Career journeys and turning points of senior female managers in small construction firms.**

Shu-Ling Lu and Sexton, M. Construction Management & Economics, Volume 28, Issue 2 (February 2010) Pages 125-139.

For similar articles” see Special Topic “Women in Engineering and Business” in the March 2011 Energy Update. Follow link below:

<http://www.energylibrary.org.nz/documents/EnergyLibraryUpdateMar2011.pdf>

TECHNICAL ASPECTS OF ENGINEERING.

Abstracts for most are available on request.



√IPENZ 45/18 Gravity load redistribution and progressive collapse resistance of 20-story reinforced concrete structure following loss of interior column.

Sasani, M. and Sagioglu, S. ACI Structural Journal, Volume 107, Issue 6 (November/December 2010) Pages 636-644.

√IPENZ 45/19 Lateral force distributions for the linear static analysis of base-isolated buildings.

Cardone, D., Dolce, M. and Gesualdi, G. Bulletin of Earthquake Engineering, Volume 7, Issue 3 (August 2009) Pages 801-834.

√IPENZ 45/20 A framework for the asset integrity management of large deteriorating concrete structures.

Straub, D., Malioka, V. and Faber, M. H. Structure & Infrastructure Engineering: Maintenance, Life-Cycle Design & Performance, Volume 5, Issue 3 (June 2009) Pages 199-213.

√IPENZ 45/21 Developing effective vegetation bioshield for tsunami protection.

Tanaka, N. et al. Civil Engineering & Environmental Systems, Volume 26, Issue 2 (June 2009) Pages 163-180.

√IPENZ 45/22 Planning and modelling for mitigation of tsunami impacts.

Ruwanpura, J. et al. Civil Engineering & Environmental Systems, Volume 26, Issue 2 (June 2009) Pages 195-209.

√IPENZ 45/23 Tsunami loading of near-shoreline structures: a primer.

Palermo, D. et al. Canadian Journal of Civil Engineering, Volume 36, Issue 11 (November 2009) Pages 1804-1815.

√IPENZ 45/24 Propagating uncertainties for loss estimation in performance-based earthquake engineering using moment matching.

Ching, J., Porter, K. A. and Beck, J. L. Structure & Infrastructure Engineering: Maintenance, Life-Cycle Design & Performance, Volume 5, Issue 3 (June 2009) Pages 245-262.

√IPENZ 45/25 The seismic future of cities.

Bilham, R. Bulletin of Earthquake Engineering, Volume 7, Issue 4 (November 2009) Pages 839-887.

√IPENZ 45/26 **The absorbent city: urban form and flood risk management**
Urban Design and Planning,, Volume 161 Issue 4 (December 2008) Pages 151-161.

√IPENZ 45/27 **The seismic vulnerability of architectural heritage.**
A. Bernardini and S. Lagomarsino. Proceedings of the ICE - Structures and Buildings, Volume 161, Issue 4 (August 2008) Pages 171-181

√IPENZ 45/28 **Risk-based design of sewer system rehabilitation.**
Korving, H. et al. Structure & Infrastructure Engineering: Maintenance, Life-Cycle Design & Performance, Volume 5, Issue 3 (June 2009) Pages 215-227.

√IPENZ 45/29 **Earthquake-Induced Liquefaction around Marine Structures.**
Sumer, B. et al. Journal of Waterway, Port, Coastal & Ocean Engineering, Volume 133 Issue 1 (January 2007) Pages 55-82

√IPENZ 45/30 **Lead-contaminated water from brass plumbing devices in new buildings.**
Elfland, C., Scardina, P. and Edwards, M. American Water Works Association, Volume 102, Issue 11 (November 2010) Pages 66-76.

√IPENZ 45/31 **Sizing calculation spreadsheet: Vertical geothermal borefields.**
Philippe, M., Bernier, M. and Marchio, D. ASHRAE Journal, Volume 52, Issue 7 (July 2010) Pages 20-22,24,26-28.

√IPENZ 45/32 **Comparative study of energy saving light sources.**
Khan, N. and Abas, N. Renewable and Sustainable Energy Reviews, Volume 15, Issue 1 (January 2011) Pages 296-309.

√IPENZ 45/33 **Life-cycle studies of biodiesel in Europe: A review addressing the variability of results and modeling issues.**
Malca, J. and Freire, F. Renewable and Sustainable Energy Reviews, Volume 15, Issue 1 (January 2011) Pages 338-351.



√IPENZ 45/34 **Reduce energy use and greenhouse gas emissions from global dairy processing facilities.**

Xu, T. and Flapper, J. Energy Policy, Volume 39, Issue 1 (January 2011) Pages 234-247.

√IPENZ 45/35 **Biomass gasification: Still promising? A 30-year global overview.**

Kirkels, A. F. and Verbong, G. P. J. Renewable and Sustainable Energy Reviews, Volume 15, Issue 1 (January 2011) Pages 471-481.

√IPENZ 45/36 **Hybrid ventilation control design and management.**

El Mankibi, M. and Michel, P. ASHRAE Transactions, Volume 115, Issue 1 (2009) Pages 3-9.

√IPENZ 45/37 **Performance of ductless personalized ventilation in conjunction with displacement ventilation: Impact of workstations layout and partitions.**

Halvonová, B. and Melikov, A. K. HVAC&R Research, Volume 16, Issue 1 (January 2010) Pages 75-94.

√IPENZ 45/38 **Personal ventilation.**

Dieckmann, J., Cooperman, A. and Brodrick, J. ASHRAE Journal, Volume 52, Issue 10 (October 2010) Pages 70-75.

√IPENZ 45/39 **Solar ventilation: Analysis and developments.**

Melikyan, Z. and Egnatosyan, S. Energy Engineering, Volume 108, Issue 1 (2011) Pages 6-25.

√IPENZ 45/40 **Recent advances in flat plate photovoltaic/thermal (PV/T) solar collectors**

Ibrahim, A. et al. Renewable and Sustainable Energy Reviews, Volume 15, Issue 1 (January 2011) Pages 352-365.

√IPENZ 45/41 **The analysis on photovoltaic electricity generation status, potential and policies of the leading countries in solar energy.**

Dincer, F. Renewable and Sustainable Energy Reviews, Volume 15, Issue 1 (January 2011) Pages 713-720.

√IPENZ 45/42 **Comparison of environmental impact and external cost assessment methods.**

Mizsey, P., Delgado, L. and Benko, T. The International Journal of Life Cycle Assessment, Volume 14, Issue 7 (November 2009) Pages 665-675.

√IPENZ 45/43 **Agricultural crop-based biofuels - resource efficiency and environmental performance including direct land use changes.**

Borjesson, P. and Tufvesson, L. M. Journal of Cleaner Production, Volume 19, Issues 2/3 (January/February 2011) Pages 108-120.

√IPENZ 45/44 **Remote rehabilitation.**

Stoessel, J. C. Civil Engineering, Volume 81, Issue 2 (February 2011) Pages 60-65.

The article reports the rehabilitation of the Rush Meadows Dam, located in the eastern Sierra Nevada in California.

√IPENZ 45/45 **Small-scale hydro gets BIG.**

Morris, L. Power Engineering, Volume 114 Issue 11 (November 2010) Pages 116-172.

√IPENZ 45/46 **Evaluating the economic cost of natural gas strategic storage restrictions.**

Ejarque, J. M. Energy Economics, Volume 33, Issue 1 (January 2011) Pages 44-55.

√IPENZ 45/47 **A comparison of the energy and carbon implications of new systems of energy provision in new build housing in the UK.**

Monahan, J. and Powell, J. C. Energy Policy, Volume 39, Issue 1 (January 2011) Pages 290-298.

√IPENZ 45/48 **The carbon footprint measurement toolkit for the EU Ecolabel.**

Baldo, G. L. et al. The International Journal of Life Cycle Assessment, Volume 14, Issue 7 (November 2009) Pages 591-596

√IPENZ 45/49 **Assessing the carbon footprint of water supply and distribution systems.**

Boulos, P. F. and Bros, C. M. American Water Works Association, Volume 102, Issue 11 (November 2010) Pages 47-54,12

√IPENZ 45/50 **Uncertainty of global warming potential for milk production on a New Zealand farm and implications for decision making.**

Basset-Mens, C. et al. The International Journal of Life Cycle Assessment, Volume 14, Issue 7 (November 2009) Pages 630-638.

√IPENZ 45/51 **Post-earthquake behaviour of footings employing densification to mitigate**

liquefaction. P. A. L. F. Coelho et al. Proceedings of the ICE - Ground Improvement, Volume 11, Issue 1, pages 45 -53 January 2007

√IPENZ 45/52 **High-value energy storage for the grid: A multi-dimensional look.**

Culver, W. J. The Electricity Journal, Volume 23, Issue 10 (December 2010) Pages 59-71.

√IPENZ 45/53 **Life Cycle Analysis to estimate the environmental impact of residential photovoltaic systems in regions with a low solar irradiation.**

Laleman, R., Albrecht, J. and Dewulf, J. Renewable and Sustainable Energy Reviews, Volume 15, Issue 1 (January 2011) Pages 267-281

SPECIAL FOCUS – DISASTER RECOVERY

√IPENZ 45/54 **Surviving 'the big one.'**

Pia, R. L. NZ Business, Volume 24, Issue 10 (November 2010) Pages 24-30.
This article is about business continuity after a major disaster. The recent 7.1 magnitude earthquake in Canterbury provides illustrative examples for the issues discussed.

√IPENZ 45/55 **Urban disaster recovery: a measurement framework and its application to the 1995 Kobe earthquake.**

Chang, S. E. Disasters, Volume 34, Issue 2 (April 2010) Pages 303-327.

√IPENZ 45/56 **Funding for disaster recovery: Increased taxes or charitable donations to nonprofits?**

Kim, J., Oh, S. S. and Jung, T. International Journal of Public Administration, Volume 33, Issue 3 (February 2010) Pages 151-159.

√IPENZ 45/57 **The dynamics of disaster recovery: Resilience and entropy in hurricane response systems 2005–2008.**

Comfort, L., Oh, N. and Ertan, G. Public Organization Review, Volume 9, Issue 4 (December 2009) Pages 309-323.

√IPENZ 45/58 **Earthquake recovery of historic buildings: exploring cost and time needs.**

Al-Nammari, F. M. and Lindell, M. K. Disasters, Volume 33, Issue 3 (July 2009) Pages 457-481.

√IPENZ 45/59 **Flagship regeneration project as a tool for post-disaster recovery planning: the Zeytinburnu case.**

Ozcevik, O. et al. Disasters, Volume 33, Issue 2 (April 2009) Pages 180-202.
Pilot project in Istanbul.

√IPENZ 45/60 **Learning from recovery after Hurricane Mitch.**

Christoplos, I. et al. Disasters Supplement 2, Volume 34 (April 2010) Pages S202-S219.

√IPENZ 45/61 **The Northridge Earthquake: Community-based Approaches to Unmet Recovery Needs.**

Bolin, Robert and Stanford, Lois. Disasters; Mar1998, Vol. 22 Issue 1, p21, 18p

√IPENZ 45/62 **Post-disaster community tourism recovery: the tsunami and Arugam Bay, Sri Lanka.**

Robinson, L. and Jarvie, J. K. Disasters, Volume 32, Issue 4 (December 2008) Pages 631-645.

√IPENZ 45/63 Understanding disaster recovery planning through a theatre metaphor: Rehearsing for a show that might never open.

Kendall, K. E., Kendall, J. E. and Lee, K. C. Communications of AIS, Volume 2005, Issue 16 (2005) Pages 1001-1012.

√IPENZ 45/64 Tulsa turnaround: from disaster to sustainability. Meo, Mark et al. Natural Hazards Review; Feb 2004, Vol. 5 (1), p.1-9.

The following may also be of interest.:-

Special Topic “**Energy Library Earthquake Resources**” in the February 2011 Energy Update. Follow the link below

<http://www.energylibrary.org.nz/documents/EnergyUpdateFeb2011.pdf>

SPECIAL TOPICS IN PREVIOUS IPENZ ENGINEERING UPDATES

<ul style="list-style-type: none"> ➤ Snow loads ➤ Liquefaction ➤ Geo-engineering ➤ Corrosion in the marine environment ➤ Compressed air: Pt 2 Energy storage ➤ River management ➤ Solar energy ➤ Infrastructure development/investment ➤ Drinking water ➤ Energy from wastes –gasification of municipal solid wastes ➤ Infrastructure condition monitoring ➤ Bridges ➤ Wind energy ➤ Life cycle costing ➤ Women in engineering 	<ul style="list-style-type: none"> ➤ Perspectives on work life balance and job stress ➤ Dairy wastes ➤ Smart cities/smart growth ➤ Tunnels and tunnelling ➤ Noise-pollution measurement and control ➤ Risk management ➤ Electric vehicles ➤ Environmental management systems ➤ Biofuels ➤ Peak oil ➤ Rail transportation ➤ Planning aspects of wind farms ➤ Water reuse/greywater/graywater ➤ Disaster and emergency planning and management
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