

WELCOME TO THE FIRST ISSUE OF THE IPENZ ENGINEERING UPDATE

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The IPENZ Engineering Update is a “powerhouse of information”. It provides references on engineering, energy and management topics.



Hot Topics in the Inaugural Issue are:

- use of collaborative procurement in New Zealand: a thesis
- expectation of performance levels pertinent to consultant performance evaluation
- relationship between ISO 9000 and client loyalty
- top 25 women in project management
- how leaders create networks
- feature focus on tidal and ocean power

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Management/Leadership/Strategic Planning/Recruitment/Training and Development

✓ IPENZ 01/01 **Expectation of performance levels pertinent to consultant performance evaluation**
Chow, L.K., Ng, S.T. International Journal of Project Management, Volume 25, Issue 1(2007)
Pages 90-103.

More and more clients seek to measure the performance of Engineering Consultants (ECs) and amass a set of Consultant Performance Evaluation (CPE) records with an intention to monitor the quality of consultancy service and facilitate subsequent decisions.

IPENZ 01/02 **The satisfaction levels of UK construction clients based on the performance of consultants: Results of a case study**

Cheng, J., Proverbs, D.G., Oduoza, C.F. Engineering, Construction and Architectural Management, Volume 13 Issue 6 (2006) Pages 567-583.

A key determination of project success is client satisfaction. The research reviews key performance factors that impact on client satisfaction and reviews options for improvement. It is a result of a UK wide survey of performance of a large engineering and management consultancy.

IPENZ 01/03 **Relationship between the principles transmitted by consultants implementing the ISO 9000 standard and the loyalty of their clients**

Viadiu, F.M., Fransi, E.C. International Journal of Services, Technology and Management, Volume 7 Issue 4 (2006) Pages 320-331.

✓ IPENZ 01/04 **How leaders create and use networks**

Ibarra, H., Mark Hunter. Harvard Business Review, Volume 85 Issue 1, (January 2007) Pages 40-47. Most people acknowledge that networking, creating a fabric of personal contacts to provide support, feedback, insight, and resources is an essential activity for an ambitious manager. But even people who understand that networking is a legitimate and necessary part of their jobs can be discouraged by the payoff because they are doing it in too limited a fashion.

IPENZ 01/05 **Are you underutilizing your board?**

Thomas, C., Kidd, D., Fernández-Aráoz, C. MIT Sloan Management Review, Volume 48, Issue 2 Winter (2007), Pages 71-76.

A recent study has found that many organizations do not get best value from their boards. Problem areas include competencies, diversity, good use of skills, poor selection. Five practices are suggested to avoid these problems.

IPENZ 01/06 **The use of humour in the workplace**

Romero, E.J., Cruthirds, K.W. Academy of Management Perspectives, (May 2006) Pages 58-69. Humour is an important part of human interaction and can be used by managers to reduce stress, enhance leadership, group cohesiveness, communication, creativity and organizational culture.

IPENZ 01/07 Leading clever people

Goffee, R., Jones, G. Harvard Business Review, Volume 85 Issue 3 (March 2007) Pages 72-79.
Effectively leading creative people can be a challenge. They often view themselves as highly mobile and have different expectations from their managers. Their characteristics and expectations are discussed and examples of effective management are given.

IPENZ 01/08 Becoming the BOSS

Hill, L.A. Harvard Business Review, Volume 85 Issue 1 (2007) Pages 48-56.
Becoming a leader for the first time can be a challenge, even if they are star performers in the organization. New managers often have misconceptions about their freedom and authority to do what they think is best. They often find there are conflicting demands stemming from the wide range of relationships that the new role introduces.

IPENZ 01/09 Core competencies, expectations and career path for an estimating professional

Hollmann, J.K., Elliott, B.G. AACE International Transactions, (2006) Pages 1.1-1.7.

IPENZ 01/10 Strategies for preventing a knowledge-loss crisis

MIT Sloan Management Review, Volume 47, Issue 4 Summer (2006) Pages 31-38.
Employee turnover can represent a high cost to the employer, including the loss of knowledge of the departing person. This article discusses the problem of capturing this knowledge.

IPENZ 01/11 Exploring the role of formal bodies of knowledge in defining a profession - The case of project management

Morris, P.W.G., Crawford, L., Hodgson, D., Shepherd, M.M., Thomas, J. International Journal of Project Management, Volume 24 Issue 8 (2006) Pages 710-721

Risk Management/Project Management/Cost Management/Financing/

IPENZ 01/ 25 influential women in project management.

PM Network, Volume 20 Issue 10 (October 2006) Pages 1-24

IPENZ 01/13 Proactive risk management

Kaliprasad, M. Cost Engineering, Volume 48, Issue 12 Dec (2006) Pages 26-36.
Provides an overview of risk management and also its integration into project management.

IPENZ 01/14 Bad estimates just don't happen

Lukas, J.A. AACE International Transactions (2006) Pages 3.1-3.6.
Lack of information, incomplete information, absence of clear project scope, poor communication, unrealistic expectations of clients and engineers, can all lead to bad estimates. Some suggestions are given to help prepare better estimates.

✓ IPENZ 01/15 **Risk allocation in the private provision of public infrastructure**
Ng, A., Loosemore, M. International Journal of Project Management, Volume 25, Issue 1 (2007)
Pages 66-76.

IPENZ 01/16 **Ten critical principles for successful design-build projects**
Jergeas, G., Fahmy, S. Cost Engineering Volume 48, Issue 11 (2006) Pages 29-34.
Results of a survey of 410 respondents who are first time users of the design-build. Identifies
common issues and offers some suggestions for making the design-build project a successful
experience.

IPENZ 01/17 **BOT viability model for large-scale infrastructure projects**
Salman, A.F.M., Skibniewski, M.J., Basha, I. Journal of Construction Engineering and Management,
Volume 133, Issue 1 (2007) Pages 50-63.
A successful BOT infrastructure project requires in depth analysis of a wide variety of issues,
including economic, legal, social, environmental and financial aspects. A model to evaluate the
feasibility of BOT projects is outlined. Three case studies are used to illustrate this model.

IPENZ 01/18 **Modelling and assessment of critical risks in BOT road projects**
Thomas, A.V., Kalidindi, S.N., Ganesh, L.S. Construction Management and Economics, Volume 24,
Issue 4 (2006) Pages 407-424.
BOT projects which are private infrastructure participation (PSP) developments have a complex risk
profile and how the risks are managed can be a key to their success. These projects often have a
very long project lifecycle and have specific country and sector risks. For this reason, the
conventional risk assessment approaches may not be as effective. This paper proposes an
alternative risk assessment model.

IPENZ 01/19 **Matching the project manager's leadership style to project type.**
Müller, R., Turner, J.R. International Journal of Project Management, Volume 25, Issue 1 (January
2007) Pages 1-104.
We look into the interaction of the project manager's leadership style with project type, and
their combined impact on project success. We aim to show that different leadership styles are more
likely to lead to a successful outcome on different types of project.

Technical Aspects of Engineering

IPENZ 01/20 **21st century timber engineering - The age of enlightenment for timber design Part 1:
An introduction to timber**
Harris, R. Structural Engineer, Volume 82 Issue 23-24 (2004) Pages 52-57.

IPENZ 01/21 **21st century timber engineering - The age of enlightenment for timber design Part 2:
Environmental credentials**
Harris, R. Structural Engineer, Volume 83 Issue 2 (2005) Pages 23-28.

IPENZ 01/22 Fire engineering design and post fire assessment

Pang, P.T.C. Structural Engineer, Volume 84 Issue 20 (2006) Pages 23-29.

IPENZ 01/23 Strategic Challenges to Container Ports in a Changing Market Environment

Notteboom, T. Research in Transportation Economics, Volume 17 (2006) Pages 29-52.

IPENZ 01/24 Double-cycling strategies for container ships and their effect on ship loading and unloading operations

Goodchild, A.V., Daganzo, C.F. Transportation Science, Volume 40 Issue 4 (2006) Pages 473-483.

IPENZ 01/25 Optimization of handling equipment in the container terminal of the Port of Barcelona, Spain

Soriguera, F., Robuste, F., Juanola, R., Lopez-Pita, A. Transportation Research Record, Issue 1963 (2006) Pages 44-51.

IPENZ 01/26 Data Envelopment Analysis (DEA) and Improving Container Port Efficiency

Cullinane, K., Wang, T.F. Research in Transportation Economics, Volume 17(2006) Pages 517-566.

✓ **IPENZ 01/27 Outlook for advanced biofuels**

Hamelinck, C.N., Faaij, A. Energy Policy, Volume 34 Issue 17 (2006) Pages 3268-3283

Methanol, ethanol, hydrogen and synthetic diesel are reviewed. Key fuel production technologies; gasification, gas processing, synthesis, hydrolysis and fermentation are reviewed. Economics of production is outlined and then the likely fuel chains (including distribution to cars and end use) are compared on an economic basis.

IPENZ 01/28 Safe and secure.

Donnelly, C.R. Water Power and Dam Construction, Volume 55 Issue 12 (2006) Pages 28-33.

Discusses the risk based methods for evaluating the safety of dams.

IPENZ 01/29 Underwater inspections.

Clarke, R; Gillham, J. Water Power and Dam Construction, Volume 55 Issue 12 (2006) Pages 22-25.

Underwater structures require inspection and maintenance to ensure their performance. A dual axis sonar system to help make inspection easier is described

IPENZ 01/30 Proposed design guidelines for strengthening of steel bridges with FRP materials

Schnerch, D., Dawood, M., Rizkalla, S., Sumner, E. Construction and Building Materials, Volume 21 Issue 5 (2007), Pages 1001-1010

IPENZ 01/31 Influence of some factors on the aerodynamic behavior of long-span suspension bridges

Zhang, X. Journal of Wind Engineering and Industrial Aerodynamics, Volume 93 Issue 3 (2007) P

ages 149-164..

IPENZ 01/32 Structural health monitoring of a composite bridge using Bragg grating sensors. Part 1: Evaluation of adhesives and protection systems for the optical sensors

Kister, G and others. Engineering Structures, Volume 29 Issue 3 Pages 440-448

IPENZ 01/33 Validating a tsunami vulnerability assessment model (the PTVA Model) using field data from the 2004 indian ocean tsunami

Dominey-Howes, D., Papatoma, M. Natural Hazards, Volume 20 Issue 1 (2007) Pages 113-136.

IPENZ 01/34 Tsunami local alarm system

Johansson, L., Melin, S. Hydro International, Volume 10 Issue 10 (2006) Pages 25-27.

Discusses a warning system currently at conceptual stage.

IPENZ 01/35 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 01/36 Effect of water/cement ratio on the fresh and hardened properties of self-compacting concrete

Felekoglu, B. and others.. Building and Environment, Volume 42 Issue 4 (2007) Pages 1795-1802.

IPENZ 01/37 A review of the hardened mechanical properties of self-compacting concrete

Domone, P.L. Cement and Concrete Composites, Volume 29 Issue 1 (2007) Pages 1-12.

IPENZ 01/38 High-strength self-compacting concrete exposed to fire test

Noumowe, A., Carre, H., Daoud, A., Toutanji, H. Journal of Materials in Civil Engineering, Volume 18 Issue 6 (2006) Pages 754-758.

IPENZ 01/39 Cost forecast model for sewer infrastructure

El-Assaly, A. and others. Proceedings of the Institution of Civil Engineers: Municipal Engineer, Volume 159, Issue 3 (2006) Pages 155-160

IPENZ 01/40 Fluoride in drinking water : a review on the status and stress effects.

Avoob, S., Gupta, A.K. Critical Reviews in Environmental Science and Technology, Volume 36, Issue 6 (2006) Pages 433-488.

IPENZ 01/41 Competition and efficiency of private toll roads

Xiao, F., Yang, H., Han, D. Transportation Research Part B: Methodological, Volume 41, Issue 3 (2007) Pages 292-308.

IPENZ 01/42 Influencing factors and a proposed evaluation methodology for predicting groundwater contamination potential from stormwater infiltration activities

Clark S.E., Pitt, R. Water Environment Research, Volume 79, Issue 1 (2007) Pages 29-

IPENZ 01/43 Effects of wastewater disinfection on waterborne bacteria and viruses

Blatchley III, E.R, Gong, W-L., Alleman, J.E., Rose, J.B., et al. Water Environment Research. Volume 79, Issue 1 (2007) Pages 81-

IPENZ 01/44 Residual strength of corrosion-damaged reinforced concrete beams

Azad, A.K., Ahmad, S., Azher, S.A. ACI Materials Journal, Volume 104, Issue 1 (2007) Pages 40-

IPENZ 01/45 Effectiveness of fiber-reinforced polymer in reducing corrosion in marine environment

Suh, K., Mullins, G., Sen, R., Winters, D. ACI Structural Journal, Volume 104, Issue 1 (2007) Pages 76-

IPENZ 01/46 Evaluation of fly ash from co-combustion of coal and petroleum coke for use in concrete

Scott, A.N., Thomas, M.D.A. ACI Materials Journal, Volume 104, Issue 1 (2007) Pages 62-

IPENZ 01/47 Permeability of stressed concrete and role of fiber reinforcement

Banthia, N., Bhargava, A. ACI Materials Journal, Volume 104, Issue 1 (2007) Pages 70-

IPENZ 01/48 Earthquake-induced liquefaction around marine structures

Sumer, B.M. Journal of Waterway, Port, Coastal and Ocean Engineering, Volume 133 Issue 1 (2007) Pages 55-82.

IPENZ 01/49 Serviceability of bridge deck slabs with arching action

Taylor, S.E., Rankin, B., Cleland, D.J., Kirkpatrick, J. ACI Structural Journal, Volume 104, Issue 1 (2007) Pages 39-

IPENZ 01/50 Optimal maintenance time for repairable systems

Gilardoni, G.L., Colosimo, E.A. Journal of Quality Technology, Volume 39, Issue 1 Jan (2007) Pages 48-

IPENZ 01/51 A literature survey of water-side fouling applicable to cooling tower condensers

Zdaniuk, G.J., Chamra, L.M., Mago, P.J. Proceedings of the Institution of Mechanical Engineers, Volume 220, Issue A7 (November 2006) Pages 815-

IPENZ 01/52 Energy and carbon audit of a rooftop wind turbine

Rankine, R.K., Chick, J.P., Harrison, G.P. Proceedings of the Institution of Mechanical Engineers, Volume 220, Issue A7 (2006) Pages 643-

IPENZ 01/53 The power of process orientation

Sever, K. Quality Progress, Volume 40, Issue 1 (2007) Pages 46-

IPENZ 01/54 Switching from improvement to innovation on the fly

Harvey, J. Quality Progress, Volume 40, Issue 1 Jan (2007) Pages 53-

IPENZ 01/55 The economic benefits of green buildings: A comprehensive case study

Ries,R.and others. Engineering Economist, Volume 51, Issue 32006 (2006) Pages 259-295

IPENZ 01/56 Investment in water infrastructure: Findings from an economic analysis of a national programme

Lawlor, J., McCarthy, C., Scott, S. Journal of Environmental Planning and Management, Volume 50 Issue 1 (2007) Pages 41-63.

IPENZ 01/57 Recent findings on sinks for sulfide in gravity sewer networks

Nielsen, A.H and others. Water Science and Technology, Volume 54 Issue 6-7 (2006) Pages 127-134.

IPENZ 01/58 Quantification of sewer leakage: A review

Rutsch, M., and others. Water Science and Technology, Volume 54 Issue 6-7 (2006) Pages 135-

Books from the Energy Library Collection

IPENZ 01/59 The analysis of the use of collaborative procurement systems in New Zealand construction. Partnering, alliancing, joint ventures.

Shestakova, Y. (2005)

This thesis discusses the principles of partnering, alliances and joint ventures. It also looks at the implementation of them in the New Zealand construction industry.

IPENZ 01/60 Towards carbon-neutral and climate-adapted domestic buildings : background document / Jaques, R., Sheridan, A. BRANZ (2006) 44 p.

IPENZ 01/61 The Tao of Coaching: Boost Your Effectiveness at Work by Inspiring and Developing Those Around You

Landsberg, M. (2003)

This is a chatty little book about how to coach- it's easily read, and uses examples to describe different methods and styles of coaching.

The Harvard Business Review Paperback Classics Set.

Each book contains reprints of popular articles from the Harvard Business Review magazine on a particular topic.

- IPENZ 01/62 Harvard Business Review on Brand Management
- IPENZ 01/63 Harvard Business Review on Change
- IPENZ 01/64 Harvard Business Review on Leading through Change
- IPENZ 01/65 Harvard Business Review on Leadership
- IPENZ 01/66 Harvard Business Review on Corporate Responsibility
- IPENZ 01/67 Harvard Business Review on Effective Communication
- IPENZ 01/68 Harvard Business Review on Knowledge Management
- IPENZ 01/69 Harvard Business Review on Negotiation & Conflict Resolution

IPENZ 01/70 NZS 4214: 2006 Methods of Determining the Total Thermal Resistance of Parts of Buildings

Provides methods of determining the thermal resistance of building components and elements consisting of thermally homogeneous layers, in steady-state environmental conditions.

IPENZ 01/71 Maximizing Your Memory: techniques and exercises for remembering just about anything. Hancock, J. (2003)

Teach yourself techniques for remembering anything, so that you never again need say "I can't rely on my memory." This book is well laid out, and very easy to read.

SPECIAL FOCUS ON...Tidal and Ocean Power

IPENZ 01/72 Time for a sea change (cover story)

MacKenzie, A. ENZ :Magazine of the Institution of Professional Engineers New Zealand, (Nov/Dec 2006) Pages 3-11

Discusses developments in marine power overseas and in New Zealand.

IPENZ 01/73 Development of a hydraulic control mechanism for cyclic pitch marine current turbines

Schonborn, A., Chantzidakis, M. Renewable Energy, Volume 32, Issue 4 (2007) Pages 662-679
Tidal power generation by means of marine current farms is potentially a large renewable energy resource which could be harnessed in many coastal waters. A series of devices have so far been proposed and developed for the extraction and conversion of kinetic energy present in tidal flows into useful electrical power. Up to date no technology has firmly established itself. This paper describes a novel hydraulic control mechanism designed for vertical-axis marine current turbines of the straight-bladed Darrieus type.

IPENZ 01/74 Crest Energy Limited plans a 200-Megawatt Tidal Power Plant in New Zealand

An application has been received by the Northland Regional Council from Crest Energy Limited to build a 200 megawatt tidal power plant in the Kaipara Harbour. The planned plant will be the largest

installation in the world and the expected cost is \$400 million. Go to the Crest Energy website (<http://www.crest-energy.com/index.htm>) for more details.

IPENZ 01/75 Seoul leads tidal power breakthrough

Ford, N. International Water Power and Dam Construction, Volume 58 Issue 10 (October 2006)
Pages 10-12

Costs of tidal power for electricity generation are still high, but a 244MW tidal scheme is being developed in South Korea. Article describes the planned plant and also lists the pros and cons of tidal energy.

IPENZ 01/76 Renewable energy: turning the tides

Excell, J. Engineer, Volume 293 Issue 7702 (2006) Pages 20-23

Describes the proposed multi billion pound Severn Tidal Power Group project. It is suggested that the tidal energy generated could double the output of a nuclear power station.

IPENZ 01/77 The marine energy resource, constraints and opportunities

Bryden, I.G. Proceedings of the Institution of Civil Engineers: Maritime Engineering, Volume 159 (2) 2006, Pages 55-65

The British Isles have highly energetic coastal waters, which offer opportunities for the exploitation of waves and tides for the generation of electricity. This paper looks at prospects for, and constraints upon, their long-term economic development.

IPENZ 01/78 Hydro, tidal and wave energy in Australia

Harries, D., Mchenry, M., Jennings, P., Thomas, C. International Journal of Environmental Studies, Volume , 63 Issue 6 (2006), Pages 803-814.

IPENZ 01/79 Harvesting the waves

Von Jouanne, A. Mechanical Engineering, Volume 128 Issue 12 (2006) Pages 24-27.

Describes ocean wave energy potential and some of the research undertaken so far to harness it.

IPENZ 01/80 Parameter variation and part-load efficiencies of wave energy conversion

Beyene, A., Wilson, J.H. Journal of Energy Engineering, Volume 132 Issue 1 (2006) Pages 15-26.

There are many challenges to address in ocean wave technology before it gains full engineering and market confidence. This paper discusses one of the main technical hurdles.