IPENZ ENGINEERING UPDATE September 2007

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

√IPENZ 07/01 Manage your energy not your time.
Schwartz, T. Harvard Business Review, Volume 85 Issue 10 (October 2007) Pages 63-73.
As the demands of the workplace keep rising, many people respond by putting in ever longer hours, which inevitably leads to burnout that costs both the organization and the employee. Meanwhile, people take for granted what fuels their capacity to work -- their energy. Increasing that capacity is the best way to get more done faster and better. Time is a finite resource, but energy is different. It has four wellsprings -- the body, emotions, mind, and spirit -- and in each, it can be systematically expanded and renewed. In this article, Schwartz, founder of the Energy Project, describes how to establish rituals that will build energy in the four key dimensions.

√IPENZ 07/02 What work habits do you have to break to become successful?
Goldsmith, M. Journal for Quality and Participation (Summer 2007) Pages 4-8.
High levels of achievement are obtained not only by learning or honing new behaviours or skills, but by also putting a stop to one or more of 21 annoying work habits.

√IPENZ 07/03 Enhancing creativity through "mindless" work : A framework of workday design.
Elsbach, K. and Hargadon, A. Organization Science, Volume 17 Issue 4 (2006) Pages 470-483.
Work pressure is often an obstacle to creativity and often creative output from professionals with a high workload is disappointing. It is suggested that the framework of work design be altered to focus entire workday rather than specific tasks. It is also suggest that enhanced creativity will result if the workday also includes “mindless” work (work that is low in both cognitive difficulty and performance pressures).

√IPENZ 07/04 The business benefits of positive leadership.
Robison, J. Gallup Management Journal Online (5/10/2007) Pages 1-5.
Do managers who use positive leadership practices have high performing teams and higher team engagement? This article discusses the results of a study “ Optimistic Managers and Their Influence on Productivity and Employee Engagement in a Technology Organization”

√IPENZ 07/05 Building relationships that enable next-generation leaders.
Carucci, R. Leader to Leader (Fall2006), Pages 47-53.
Discusses the relationship patterns required by future leaders to enable organizational effectiveness. Some of these include mentoring, being grateful, sharing dialogue, allowing your team members to have their say and being able to lead people regardless of their position in the company hierarchy.

√IPENZ 07/06 The 7 deadly sins of performance measurement and how to avoid them.
Hammer, M. MIT Sloan Management Review, Volume 48 Issue 3 (Spring 2007) Pages 19-28.
Operational performance metrics are discussed and suggestions are made for improvement.

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√IPENZ 07/07 Leadership and breakthrough.
Shiba, Shoji. Journal of Innovative Management, Volume 12 Issue 2 (Winter 2006/2007) Pages 6-24.
The author of this paper, originally published in 1998, was awarded the 2002 Deming prize for individuals, and was the co-founder of the Centre for Quality Management (CQM).

√IPENZ 07/08 Making judgment calls.
Tichy, N and Bennis, W. Harvard Business Review, Volume 85 Issue 10 (October 2007) Pages 94-102,
According to the traditional view, judgment is an event: You make a decision and then move on. Yet Tichy, of the University of Michigan's Ross School of Business, and Bennis, of the University of Southern California's Marshall School of Business, found that good leadership judgment occurs not in a single moment but throughout a process. From their research into the complex phenomenon of leadership judgment, the authors also found that most important judgment calls reside in one of three domains: people, strategy, and crisis. Understanding the essence of leadership judgment is crucial. A leader's calls determine an organization's success or failure and deliver the verdict on his or her career.

√IPENZ 07/09 Improving the performance of top management teams.
Ward, A et al. MIT Sloan Management Review, Volume 48 Issue 3 (Spring 2007) Pages 85-90.
The performance of the top management team can be impaired by disagreements and different organizational values within the team. Perceived differences often have more impact than actual differences. This article reports on the results of a survey of CEOs of 31 companies, and 133 members of their top management teams.

√IPENZ 07/10 How do you keep the right people on the bus? Try stories.
Silverman, L. Journal for Quality and Participation (Winter 2006) Pages 11-15.
An essential element for maintaining a high performing workforce is keeping employees engaged. Communication via storytelling helps build relationships, encourages the sharing of ideas and helps to connect people in the team.

√IPENZ 07/11 Strategic roadmapping: a workshop based approach for identifying and exploring strategic issues and opportunities.
Phaal, R., Farrukh, C and Probert, D. Engineering Management Journal, Volume 19 Issue 1 (March 2007) Pages 3-12.
Roadmapping has become a popular approach for strategic planning. This article suggests a workshop method which enables a fast track approach to the process. This method has been tested in a wide range of applications and organizational environments.

√IPENZ 07/12 A critical review of performance appraisals : an organization's friend or foe.
Schraeder, J., Becton, J and Portis, R. Journal for Quality and Participation, (Summer 2007) Pages 20-25.
What does research say about appraisals? What suggestions have been made for improving the process?

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Risk Management/Project Management/Cost Management/Financing

√IPENZ 07/13 Factored estimating for process industries.
Uppal, K. AACE International Transactions (2007) Pages 03.01-03.10.

√IPENZ 07/14 Parametric factors as applied to pipeline cost estimating.
Polla, D. Cost Engineering, Volume 49 Issue 7 (July 2007) Pages 12-17.
Discusses the steps required to arrive at a good estimate for water and wastewater pipelines.

√IPENZ 07/15 'Cultural' differences in project risk perception: An empirical comparison of China and Canada.
de Camprieu, R., Desbiens, J. and Feixue, Y. International Journal of Project Management, Volume 25 Issue 7(2007) Pages 683-693.
Evaluating the opportunities and risks of a new project proposal is a complex process that brings into play objective as well as subjective factors, not only in the process itself but also in the selection of the data used to support or justify the evaluation. There is much evidence in the social sciences that people differ in their perception and evaluation processes. It is therefore important for the proponents of a new project to understand, before they commission lengthy and expensive feasibility studies, how the individuals that will be involved in the approval process develop their perception of the level of risk of the proposed project. This paper presents the results of an empirical study that was conducted to investigate whether and how project managers from different cultural horizons differ in the way they assess the risk of a large project.

√IPENZ 07/16 Soft skills quantification (SSQ) for project manager competencies.
Muzio, E et al. Project Management Journal, Volume 38 Issue 2 (June 2007) Pages 30-38.
It is recognised that soft skills are essential to successful project management but methods of measuring these skills need further development.

√IPENZ 07/17 Strategic management tools in projects case construction project.
Naaranoja, M., Haapalainen, P and Lonka, H. International Journal of Project Management, Volume 25 Issue 7 (2007) Pages 659-665.
The important role of using mission, vision and strategy has been acknowledged in most organizations today. Mission is the reason why the organization exists. Vision is the ideal state of the organization in the future. Strategy defines the way of how to get towards the ideal state introduced in the vision. These tools are considered to be very useful in guiding the whole organization into the same direction. Different ways of producing mission, vision and strategy have been developed. In projects, using these tools are still quite rare even though it is acknowledged that projects in an organization should support the overall strategy of the organization. In addition, every project should have a clear direction where to go and this direction should be stated to every stakeholder of the project. In this paper we will discuss the possibilities of using strategic management tools in project environment. A case study is used to illustrate the use of strategic management tools in a construction project.

Technical Aspects of Engineering –Abstracts available upon request.

√IPENZ 07/18 Managing congestion through innovative pricing and financing.
Kirby, R. ITE Journal (Institute of Transportation Engineers), Volume 77 Issue 7 (2007) Pages 23-29.
Report from the 2007 ITE conference. The worsening congestion problem and possible solutions, including innovative pricing and financing, was the focus of many presentations.

√IPENZ 07/19 High-performance highways.
DeCorla-Souza, P. Public Roads, Volume 70 Issue 6 (2007) Pages 2-9.
Highway congestion is a big problem and a possible solution is congestion pricing. A scheme which charges motorists to use highways during peak hours is being considered by the FHWA. The scheme also involves promoting other options.

IPENZ 07/20 Strategic investment and pricing decisions in a congested transport corridor.
De Borger, B. , Dunkerley, F and Proost, S (2007) Journal of Urban Economics, Volume 62 Issue 2 (2007) Pages 294-316.

IPENZ 07/21 The costs of setting up and operating electronic road pricing in cities.
Button, K., Vega, H. Traffic Engineering and Control, Volume 48 Issue 6 (2007) Pages 280-284.
Eight road pricing schemes are compared using published and survey data.

√IPENZ 07 /22 Does design matter? The ecological footprint as a planning tool at the local level.
Moos, M. et al. Journal of Urban Design, Volume 11 Issue 2 (2006) Pages 195-224.

√IPENZ 07 /23 Crowd circulation and stadium design: low flow rate systems.
Brocklehurst, D. et al. Proceedings of the Institution of Civil Engineers : Structures and Buildings, Volume 158 Issue SB5 (October 2005) Pages 281-289.

√IPENZ 07 /24 Predicting footfall induced vibration : Parts 1 and 2.
Proceedings of the Institution of Civil Engineers : Structures and Buiildings, Volume 160 Issue SB2 (April 2007) Pages 65-79.

√IPENZ 07/25 Analysis of vertical ground loop heat exchangers applied to buildings in the UK.
Underwood, C. and Spitler, J. Building Services Engineering Research & Technology, Volume 28 Issue 2 (May 2007) Pages 133-159.

√IPENZ 07/26 Penetrating sealants for concrete bridge decks—selection procedure.
Attanayake, U et al. Journal of Bridge Engineering, Volume.11 Issue 5 (September 2006) Pages 533-540.

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√IPENZ 07/27 **Vibration serviceability for pedestrian bridges.**
Kasperski, M. Proceedings of the Institution of Civil Engineers : Structures and Buildings, Volume 159 Issue SB5 (October 2006) Pages 273-282.

√IPENZ 07/28 **Probability-based bridge network performance evaluation.**
Liu, M and Frangopol, D. Journal of Bridge Engineering, Volume 11 Issue 5 (September 2006) Pages 633-641.

√IPENZ 07/29 **Reliability based evaluation of steel girder bridges.**
Czarnecki, A and Nowak, A. Proceedings of the Institution of Civil Engineers : Bridge Engineering, Volume 160 Issue BE1 (March 2007) Pages 9-15.

√IPENZ 07/30 **Tuberculation corrosion in industrial effluents : case study.**
Babakr, A. Materials Performance, Volume 46 Issue 9 (September 2007) Pages 54-58.

√IPENZ 07/31 **Characteristics of electrolysis, ozonation and their combination process on treatment of municipal wastewater.**
Kiahimoto, N. Water Environment Research, Volume 79 Issue 9 (September 2007) Pages 1033-1042.

√IPENZ 07/32 **Investigation of pathogenic escherichia coli and microbial pathogens in pulp and paper mill biosolids.**
Croteau, M. Water Environment Research, Volume 79 Issue 9 (September 2007) Pages 1050-1056.

√IPENZ 07/33 **Comparison of sewage sludge and yard waste compost as biofilter material for ammonia removal.**
Poulsen, T. and Moldrup, P. Compost Science and Utilization, Volume 15 Issue 3 (Summer 2007) Pages 151-158.

√IPENZ 07/34 **Condition assessment of water distribution pipes.**
Grigg, Neil S. Journal of Infrastructure Systems, Volume 12 Issue 3 (September 2006) Pages 147-153.

√IPENZ 07/35 **Optimal scheduling of replacement and rehabilitation of water distribution systems.**
Hong, H., , Allouche, E and Trivedi, M. Journal of Infrastructure Systems, Volume 12 Issue 3 (September 2006) Pages 184-191.

√IPENZ 07/36 **Direct electric energy conversion system for energy conversion from marine currents.**
Leijon, L. and Nilsson, K. Proceedings of the Institution of Mechanical Engineers, Volume 221 Issue A2 (March 2007) Pages 201-205.

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√IPENZ 07/37 Investigation into wave-current interactions in marine current turbines.
Barltrop, N. et al. Proceedings of the Institution of Mechanical Engineers, Volume 221 Issue A2 (March 2007) Pages 233-242.

√IPENZ 07/38 Recent progress in the modeling of corrosion of structural steel immersed in seawaters.
Melchers,, R. Journal of Infrastructure Systems, Volume 12 Issue 3 (September 2006) Pages 154-162,

√IPENZ 07/39 Learning seismic design from the earthquake itself.
Atimtay, E and Kanit, R. Practice Periodical on Structural Design & Construction, Volume 11 Issue 3 (August 2006) Pages 149-160.

√IPENZ 07/40 Thermal movements in parking structures.
Iqbal, M. ACI Structural Journal, Volume 104 Issue 5 (September/October 2007) Pages 542-548.

√IPENZ 07/41 Utilization of trenchless construction methods in mainland China to sustain urban infrastructure.
Practice Periodical on Structural Design & Construction, Volume 11 Issue 3 (August 2006) Pages 134-141.

√IPENZ 07/42 Civionics for structural health monitoring.
Rivera, E., Mufti, A and Thomson, S. Canadian Journal of Civil Engineering, Volume 34 Issue 3 (March 2007) Pages 430-437.
The discipline of civionics involves the application of electronics to civil structures.

√IPENZ 07/43 Stress analysis of concrete structures subjected to alkali-aggregate reactions.
Saouma, V., Perotti, L and Shimpo, T. ACI Structural Journal, Volume 104 Issue 5 (September/October 2007) Pages 532-541.

√IPENZ 07/44 Evaluation of perception of wind-induced vibration in buildings.
Tamura, Y et al. Proceedings of the Institution of Civil Engineers : Structures and Buildings, Volume 159 Issue SB5 (October 2006) Pages 283-293.

IPENZ 07/45 Cross-wind vibrations of steel chimneys : A new case history.
Kawecki, J. and Zuranśki, J.Journal of Wind Engineering and Industrial Aerodynamics, Volume 95 Issues 9-11 (2007) Pages 1166-1175.

√IPENZ 07/46 Do it yourself wireless design; Engineering essentials feature.
Frenzel, L. Electronic Design, Volume 5 Issue 20 (13 September 2007) Pages 57-64.

√IPENZ 07/47 Going wireless.
Ruiz, J. ASHRAE Journal, Volume 49 Issue 6 (2007) Pages 34-42.
Cell phones, pagers, PDA, laptops and other such devices have now become an integral part of a professional and personal life. Since building systems have begun to converge, the same needs for reliability, flexibility, and mobility make wireless connectivity twice as critical.

√IPENZ 07/48 Wireless sensors enhance system safety, efficiency.
Suheil, S., Nasr, H. and Garelli, R. Oil and Gas Journal, Volume 105 Issue 31 (2007) Pages 66-68+70.
Pemex Gas y Petroquimica, a division of the Mexican national oil and gas company, has installed a new pipeline wireless sensor network system to improve operational efficiency and safety and help reduce theft and sabotage.

√IPENZ 07/49 Quantifying the flood resilience properties of walls in typical UK dwellings.
Escarameia, M., Karanxha, A., and Tagg, A. Building Services Engineering Research and Technology, Volume 28 Issue 3 (2007) Pages 249-263.

√IPENZ 07/50 Challenges of underpinning two landmark buildings.
Ciancia, A., Biesiadecki, G and Ladd, B. Practice Periodical on Structural Design & Construction, Volume 11 Issue 3, (August 2006) Pages 142-148.

√IPENZ 07/51 Two articles on seismic retrofits in hospitals: 1. California hospitals brace for the cost of seismic retrofits. 2. A seismic shift (construction of a hospital in California which conforms with a stricter safety code)
Health Facilities Management, Volume 20 Issue 2 (February 2007) Pages 5-6, 14-20.

√IPENZ 07/52 Noise levels and noise sources in acute care hospital wards.
MacKenzie, D. and Galbrun, L. Building Services Engineering Research and Technology, Volume 28 Issue 2 (2007) Pages 117-131.
The recovery of a patient is influenced by noise levels in hospital wards. A case study measuring levels in two Edinburgh hospitals provides some useful information for building services engineers.

√IPENZ 07/53 Becoming a zero emissions brewery.
Tucker, M. Biocycle, Volume 48 Issue 2 (February 2007) Pages 29-32.

IPENZ 07/54 Zero emissions of oil in water from offshore oil and gas installations: economic and environmental implications.
Ekins, P., Vanner, R and Firebrace, J. Journal of Cleaner Production, Volume 15 Issue 13-14 (2007) Pages 1302-1315.
Looks at the environmental issues relating to produced water (seawater mixed with hydrocarbons).

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IPENZ 07/55 Less bad is not good enough: approaching zero emissions techniques and systems.
Schnitzer, H and Ulgiati, S. Journal of Cleaner Production, Volume 15 Issue 13-14 (2007) Pages 1185-1189.

IPENZ 07/56 Connection requirements for wind farms: A survey on technical requirements and regulation.
de Alegriá, I. et al Renewable and Sustainable Energy Reviews, Volume 11 Issue 8 (2007) Pages 1858-1872.
Reviews the issues relating to connecting wind farms to the grid. European focus.

IPENZ 07/57 Fundamental time-domain wind turbine models for wind power studies.
Santoso, S and Le, H. Renewable Energy, Volume 32 Issue 14 (2007) Pages 2436-2452.
Modelling of wind turbines is a key task in wind power connection to the grid. This paper discusses a basic model which can be developed. Four case studies are then outlined.

IPENZ 07/58 Cost structure of a postcombustion CO2 capture system using CaO.
Abanades, J et al. Environmental Science and Technology, Volume 41 Issue 15 (2007) Pages 5523-5527.

IPENZ 07/59 Combined cycles for CO2-capture with high efficiency.
Leithner, R. International Journal of Energy Technology and Policy, Volume 5 Issue 3 (2007) Pages 340-354.

IPENZ 07/60 CO2 capture study in advanced integrated gasification combined cycle.
Kanniche, M and , Bouallou, C. Applied Thermal Engineering, Volume 27 Issue 16 SPEC. ISS. (2007) Pages 2693-2702.

√IPENZ 07/61 Office building characteristics and the links with carbon emissions.
Wilkinson, S and Reed, R. Structural Survey, Volume 24 Issue 3 (2006) Pages 240-251.

√IPENZ 07 /62 A 21st century approach to the condition surveying of building services systems.
Journal of Building Appraisal, Volume 2 Issue 2 (June 2006) Pages 161-170

SPECIAL FOCUS ON.....GEOTHERMAL ENERGY

√IPENZ 07 /63 Geothermal technology : a smart way to lower energy bills.
Calahan, S. Tech Directions,, Volume 66 Issue 7 (February 2007) Pages 12-17.

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IPENZ 07/64 Geothermal power generation: Global perspectives; U.S.A. and iceland; technology, direct uses, plants, and drilling.
Hammons, T. International Journal of Power and Energy Systems, Volume 27 Issue 2 (2007) Pages 157-172.
Reviews the use of geothermal power for medium and large scale electricity generation and space heating worldwide. Long and short term view of developments in both developed and developing countries. Summary of installed geothermal capacities for the generation of electricity, and review of direct use of geothermal energy. Also reviews drilling R&D and potential for costs reduction.

√IPENZ 07/65 Characteristics, development and utilization of geothermal resources.
Lund, John W. GHC Bulletin, (June 2007) Pages 1-9.
A summary of the various geothermal types, their uses and affects of their use on the environment.

IPENZ 07/66 Maximising the working fluid flow as a way of increasing power output of geothermal power plant.
Borsukiewicz-Gozdur, A., and Nowak, W.. Applied Thermal Engineering, Volume 27 Issue 11-12 (2007) Pages 2074-2078.

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Phetteplace, G. Journal of Energy Engineering, Volume 133 issue 1 2007 Pages 32-38.
An overview of heat pump technology. Geothermal heat pumps are explained and their relative merits are outlined.

√IPENZ 07/68 Geothermal central system.
Durkin, T and Cecil, K. ASHRAE Journal, Volume 49 Issue 8 (2007) Pages 42-48.
Three technologies are involved with the next generation of geothermal systems for school buildings—geothermal (earth couple) heating and cooling; dedicated heat recovery chillers, and the modern two pipe HVAC system.

√IPENZ 07/69 Design-build failures involving geothermal systems.
Lotz, W.A. HPAC Heating, Piping, AirConditioning Engineering, Volume 78 Issue 9 (2006) Pages. 56-60.

√IPENZ 07/70 Hybrid geothermal heat pumps for Beachfront Hotel
Barfield, A. ASHRAE Journal, Volume 48 Issue 9 (2006) Pages 48-52,55

IPENZ 07/71 Coupling of geothermal heat pumps with thermal solar collectors
Trillat-Berdal, V., Souyri, B. and Achard, G. Applied Thermal Engineering, Volume 27 issue 10 (2007) Pages 1750-1755.

IPENZ 07/72 Factors affecting the costs of geothermal power development.
Hance, Cedric Nathanael. Washington, D.C., Geothermal Energy Association, 2005.

IPENZ 07/73 Economic factors to consider when assessing direct-use geothermal development viability.
Gordon Bloomquist, R. Transactions - Geothermal Resources Council, Volume 30 Issue I, (2006) Pages 179-183.

√IPENZ 07/74 Assessment of geothermal direct heat use in New Zealand.
White, Brian. New Zealand Geothermal Association, 2006.

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IPENZ 07/76 Identifiying new opportunities for direct-use geothermal development.
California Energy Commission, 2005.

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Akpinar, E and Hepbasli, A. Building and Environment, Volume 42 Issue 5 (2007) Pages 2004-2013.
The performance of two types of ground source heat pumps are compared based on actual operational data. The first GSHP investigates geothermal resources with low temperatures, while the other is a GSHP with a vertical ground exchanger.

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Harries, D. et al.International Journal of Environmental Studies, Volume 63 Issue 46 (2006) Pages 815-821.

IPENZ 07/79 Financial risk management instruments for geothermal energy development projects.
Combs, J. Reno, Prepared for the United Nations Environment Program. Division of Technology, Industry and Economics Nevada: Geo Hills Associates, 2005.

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