

IPENZ ENGINEERING UPDATE April 2008



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

√IPENZ 13/01 The science of thinking smarter.

Coutu, D. Harvard Business Review, Volume 86 Issue 5 (May 2008) Pages 51-54.

Advances in neurobiology have demonstrated that the brain is so sensitive to external experiences that it can be rewired through exposure to cultural influences. Experiments have shown that in some people, parts of the brain light up only when they are presented with an image of Bill Clinton. In others, it's Jennifer Aniston. Or Halle Berry. What other stimuli could rewire the brain? Is there a Boeing brain? A Goldman Sachs brain? No one really knows yet. Still, neuroscientists are learning much that can be put to practical use. For instance, exercise is good for the brain, and long term stress is harmful, inevitably hurting productivity in the workplace. Stressed people don't do math very well, they don't process language very efficiently, and their ability to remember – in both the short and long terms – declines. In fact, the brain wasn't built to remember with anything like analytic precision and shouldn't be counted on to do so. Contrary to what many twentieth-century educators believed, the brain can keep learning at any age confirming we are life long learners.

√IPENZ 13/02 Successful change management.

Oakland, J and Tanner, S. Total Quality Management & Business Excellence, Volume 18 Issue 1/2 (January – March 2008) Pages 1-19.

Survey of organizations from a wide range of industries, including the public service, to identify various practices in change management. The key objective of the research was to establish the gap between “best practice” and the commonly used practices.

√IPENZ 13/03 Making talent a strategic priority.

Guthridge, M., Komm, A and Lawson, E. McKinsey Quarterly, Issue 1 (2008) Pages p48-59.

√IPENZ 13/04 The hidden traps in decision making.

Hammond, J., Keeney, R and Raiffa, H. Harvard Business Review, Volume 84 Issue 1 (January 2006) Pages 118-126.

Bad decisions can often be traced back to the way the decisions were made—the alternatives were not clearly defined, the right information was not collected, the costs and benefits were not accurately weighed. But sometimes the fault lies not in the decision-making process but rather in the mind of the decision maker. The way the human brain works can sabotage the choices we make. This article examines eight psychological traps that can affect the way we make business decisions.

√IPENZ 13/05 Culture affects technical writing in a second language.

Karel, D. MultiLingual, Volume 18 Issue 2 (March 2007) Pages 79-82.

Looks at technical writing in French and English and observes the differences.

√IPENZ 13/06 **Dos and don'ts of technical writing.**

Morgan, D. IEEE Potentials: The magazine for up-and-coming engineers, Volume 24 Issue3 (August/September 2005) Pages 22-25.

√IPENZ 13/07 **The capabilities of a consummate networker.**

Anand, N and Conger, J. Organizational Dynamics, Volume 36 Issue 1 (2007) Pages 13-27.

√IPENZ 13/08 **William Barclay Parsons Jr.**

Weingardt, R. Leadership & Management in Engineering, Volume 7 Issue (April 2007) Pages 84-88. William Barclay Parsons was an international known engineer and was the founder partner of PB. This article profiles his achievements, including the New York City subway system and the Cape Cod Canal in Massachusetts.

√IPENZ 13/09 **The economics of happiness: leading economists are joining researchers who seek new approaches to measuring – and influencing – well-being.**

Crabtree, S. Gallup Management Journal Online, (1 October 2008) Pages 1-4.

√IPENZ 13/10 **Quick activities to improve your team.**

Miller, B. Journal for Quality & Participation, Volume 30 Issue 3 (Fall 2007) Pages 28-32. Outlines short team building exercise and advice on how to avoid common pitfalls with such activities.

√IPENZ 13/11 **The eleventh element of great managing: why the compulsory performance evaluation is not enough.**

Wagner, R and Harter, J. Gallup Management Journal Online (13 March 2008) Pages 1-7.

√IPENZ 13/12 **How to add storytelling to your toolkit.**

Chief Learning Officer, Volume 7 Issue 5 (May 2008) Pages 24-29.

√IPENZ 13/13 **Mainstreaming corporate social responsibility: developing markets for virtue.**

Berger, I., Cunningham, P and Drumwright, M. California Management Review, Volume 49 Issue 4 (Summer 2007) Pages p132-157.

How does corporate social responsibility become part of a company's everyday business? The traditional bottom line in business is finance - but a new corporate social responsibility outlook now includes social and environmental considerations.

√IPENZ 13/14 **Sustainability auditing: evaluating organizations' progress toward sustainable development.**

Coyne, Karen L. Environmental Quality Management, Volume 16 Issue 2 (Winter 2006) Pages 25-41.

√IPENZ 13/15 **Integrating sustainable development into existing management systems.**

Rocha, M. et al. Total Quality Management & Business Excellence, Volume 18 Issue 1/2 (January/March 2007) Pages 83-92.

√IPENZ 13/16 **A methodology for measuring engineering knowledge worker productivity.**

Jones, E and Chung, C. Engineering Management Journal, Volume 18 Issue 1 (March 2006) Pages 32-38.

Physical absence can be easily measured in relation to productivity. However for knowledge workers like engineers productivity is more difficult to measure. Cognitive turnover (CT) is a term used to describe mental absenteeism from the job. This article describes how to measure CT, analyses its causes and suggests solutions.

√IPENZ 13/17 **Environmental factors and work performance of project managers in the construction industry.**

Pheng, L and Chuan, Q. International Journal of Project Management, Volume 24 Issue 1 (January 2006) Pages 24-37.

A project manager is vital and indispensable in any project. While project management is only one of the many criteria upon which project performance is contingent, it is also arguably the most significant as it is people formulating the processes and systems who deliver the projects. This research aims to study the area of improving a project manager's performance by identifying the working environment variables which affect his performance. The objectives of this research study are to identify and ascertain which factors affect a project manager's performance in the private and public sector. With knowledge of these critical factors, the industry will be able to enhance the performance of the project managers by minimizing these factors in their working environment.

√IPENZ 13/18 **Pricing cumulative impacts of differing site conditions and design changes in construction.**

Bonhomme, D. Cost Engineering, Volume 50 Issue 3 (March 2008) Pages 12-16.

Many projects are often priced with very small margins. This article outlines the considerations and various risks that a contractor must evaluate prior to placing the bid.

√IPENZ 13/19 **Twinning motivation, productivity and management strategy in construction projects.**

Doloi, H. Engineering Management Journal, Volume 19 Issue 3 (September 2007) Pages 30-40.

Based on result of a survey of the Australian construction industry that looks at factors which influence motivation and productivity.

√IPENZ 13/20 **Transformation into a high performance process plant: what is the roadmap?**

Tagore, P. Total Quality Management & Business Excellence, Volume 18 Issue 1/2 (January/March 2007) Pages 93-98.

"World class" and "lean management" are terms used to describe high performance plants. This article outlines how to transform a process plant from a technical and managerial perspective.

√IPENZ 13/21 **Training for the world class boiler operator : education crucial to workforce replacement strategies.**

Clarke, B. Heating/Piping/Air Conditioning Engineering: HPAC, Volume 80 Issue 1 BSE (January 2008) Pages BSE12-BSE15.

√IPENZ 13/22 **Assessing the awareness of risk concepts by new engineering students.**

Schlever, G et al. International Journal of Mechanical Engineering Education, Volume 35 Issue 3 (July 2007) Pages 184-197.

√IPENZ 13/23 **The business of open source.**

Watson, R et al. Communications of the ACM, Volume 51 Issue 4 (April 2008) Pages 41-46.

This article looks at open source software (OSS), which is proving popular because of its zero licensing. It suggests that second generation OSS (OSSg2) is good value and should have a promising future.

√IPENZ 13/24 **Are accurate estimates achievable during the planning of transportation projects?**

Harbuck, R. AACE International Transactions, (2007) Pages EST16.1-EST16.6.

√IPENZ 13/25 **Capital cost estimate for nickel PAL plants.**

Jacome, G et al. AACE International Transactions, (2007) Pages EST17.1-ESR 17.7.

Technical Aspects of Engineering – Abstracts for most available upon request



√IPENZ 13/26 **Fiber-reinforced concrete withstands strong earthquakes.**

Civil Engineering (ASCE), Volume 77 Issue 11 (November 2007) Pages 30-31.

√IPENZ 13/27 **Residual seismic performance of reinforced concrete bridge piers after moderate earthquake.**

Chung, Y., Park, C and Meyer, C. ACI Structural Journal, Volume 104 Issue 1 (January/February 2008) Pages 87-95.

√IPENZ 13/28 **An experimental study on cyclic behaviour of reinforced concrete connections.**

Canadian Journal of Civil Engineering. Volume 34 Issue 4 (April 2007) Pages 656-575.

√IPENZ 13/29 **Performance-based seismic retrofit strategy for existing reinforced concrete frame systems using fiber-reinforced polymer composites.**

Pampanin, S., Bolognini, D and Pavese, A. Journal of Composites for Construction, Volume 11 Issue 2 (March 2007) Pages 211-226.

√IPENZ 13/30 **System risk curves: probabilistic performance scenarios for highway networks subject to earthquake damage.**

Shiraki, N et al. Journal of Infrastructure Systems, Volume 13 Issue 1 (March 2007) Pages 43-54.

√IPENZ 13/31 **Numerical modelling of the environmental impact of landfill leachate on groundwater quality: a field application.**

Papadopoulou, M., Karatzas, G and Bougioukou, G. Environmental Modelling & Assessment, Volume 12 Issue 1 (February 2007) Pages 43-52.

√IPENZ 13/32 **Methane balance of a bioreactor landfill in South America.**

Sanderson, J et al. Journal of the Air & Waste Management Association, Volume 58 Issue 5 (May 2008) Pages 620-612.

√IPENZ 13/33 **Treatment of landfill leachate by electrochemical oxidation and anaerobic process.**

Water Environment Research, Volume 79 Issue 5 (May 3007) Pages 514-520.

√IPENZ 13/34 **Uncertainties in predicting the impact of climate change on thermal performance of domestic buildings in the UK.**

De Wilde, P., Rafiq, Y and Beck, M. Building Services Engineering Research & Technology, Volume 29 Issue 1 (February 2008) Pages 7-26.

√IPENZ 13/35 **Models for the estimation of building integrated photovoltaic systems in urban environments.**

Clarke, P et al. Proceedings of the Institution of Mechanical Engineers, Volume 222 Issue A1 (February 2008) Pages 61-76.

√IPENZ 13/36 **Insulation, the forgotten technology for energy conservation: in the commercial, industrial & mechanical segments of the construction industry.**

King, R. Energy Engineering, Volume 105 Issue (2008) Pages 49-65.

√IPENZ 13/37 **The role of HVAC insulations in health care.**

Babineau, F. Heating/Piping/Air Conditioning Engineering: HPAC, Volume 80 Issue 4 (April 2008) Pages 26-29.

√IPENZ 13/38 **Kinetics of corrosion layer formation: Part 1 - iron carbonate layers in carbon dioxide corrosion.**

Sun, W and Nestic, S. Corrosion, Volume 64 Issue (April 2008) Pages 334-346.

√IPENZ 13/39 **In situ corrosion protection of oil risers and offshore piles.**

Aghajan, A. Materials Performance, Volume 47 Issue 4 (April 2008) Pages 38-42.

√IPENZ 13/40 **Portable pressure wave-maker for leak detection and pipe system characterization.**

Brunone, B., Ferrante, M and Meniconi, S. American Water Works Association. Journal, Volume 100 Issue 4 (April 2008) Pages 108-116.

√IPENZ 13/41 **Electrochromic glazing and facade photovoltaic panels: a strategic assessment of the potential energy benefits.**

Mardaljevic, J and Nabil, A. Lighting Research and Technology, Volume 40 Issue 1 (March 2008) Pages 55-76.

√IPENZ 13/42 **Embankment on sludge: predicted and observed performances.**

Wu, T., Zhou, S and Gale, S. Canadian Geotechnical Journal, Volume 44 Issue 5 (May 2007) Pages 545-562.

√IPENZ 13/43 **Reducing differential settlements of approach embankments.**

Shen, S., Hong, Z and Xu, Y. Proceedings of the Institution of Civil Engineers: Geotechnical Engineering, Volume 160 Issue GE4 (October 2007) Pages 215-226.

√IPENZ 13/44 **Morphological modelling: a tool for optimisation of coastal structures.**

Brøker, I et al. Journal of Coastal Research, Volume 23 Issue 5 (September 2007) Pages 1148-1158.

√IPENZ 13/45 **Geochemical and geostatistical investigations of chromium pollution in groundwater.**

Siddique, A et al. Water Environment Research, Volume 80 Issue 2 (February 2008) Pages 149-153.

√IPENZ 13/46 **The history of alternative fuels in transportation: the case of electric and hybrid cars.**

Hayer, K. Utilities Policy, Volume 16 Issue 2 (June 2008) Pages 63-71.

√IPENZ 13/47 **Technologies for electric, hybrid and hydrogen vehicles: electricity from renewable energy sources in transport**

Jorgensen, K. Utilities Policy, Volume 16 Issue 2 (June 2008) Pages 72-79.

√IPENZ 13/48 **Life cycle cost analysis of a car, a city bus and an intercity bus powertrain for year 2005 and 2020.**

Hellgren, J. Energy Policy, Volume 35 Issue 1 (January 2007) Pages 39-49.

√IPENZ 13/49 **Water footprint of the Palestinians in the West Bank.**

Nazer, D et al. Journal of the American Water Resources Association, Volume 4 Issue 2 (April 2008) Pages 449-458.

√IPENZ 13/50 **Water gets it due.**

Higgins, K. Food Engineering, Volume 80 Issue (2008) Pages 123-134.

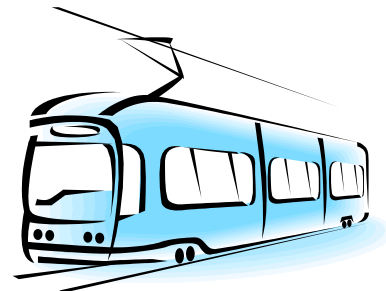
The sustainability bandwagon is groaning under the weight of corporations jumping on board. The time for water resource management has never been better.

√IPENZ 13/51 **Integrated nanofiltration and upflow anaerobic sludge blanket treatment of textile wastewater for in-plant reuse.**

Gomes, A. Water Environment Research, Alexandria: May 2007, Volume 79 Issue 5 (May 2007) Pages 498-506.

Feature Focus

Rail transportation



√IPENZ 13/52 **International railway comparisons.**

Hatano, L., Smith, R and Hillmansen, S. Proceedings of the Institution of Mechanical Engineers, Volume 221 Issue F1 (March 2007) Pages 117-123.

√IPENZ 13/53 **Intercity passenger rail: highlights of GAO report on need for national policy and strategies to maximize public benefits from federal expenditures: GAO-07-382R.**

Hecker, J. GAO Reports (19 January 2007) Pages p1-31.

Amtrak (U.S. National Railroad Passenger Corporation) receives a high amount of federal subsidies and it continues to have high operating losses. Options for the future are reviewed.

√IPENZ 13/54 **The railway as a socio-technical system : human factors at the heart of successful rail engineering.**

Wilson, J et al. Proceedings of the Institution of Mechanical Engineers, Volume 221 Issue F1 (March 2007) Pages 101-115.

IPENZ 13/55 **'Taken for a ride': The privatization of the UK railway rolling stock industry**
McCartney, S and Stittle, J. Public Money and Management, Volume 28 Issue 2 (2008) 93-100.
The author reviews the privatization of the UK rolling stock companies over 25 years ago and suggests there were flaws.

√**IPENZ 13/56** **Modeling rail-rail exchange operations : an analysis of conventional and new - generation terminals.**
Wiegmans, B et al. Transportation Journal, Volume 46 Issue 4 (Fall 2007) Pages 5-20.

IPENZ 13/57 **Efficiency and effectiveness in railway performance using a multi-activity network DEA model.**
Yu, M and Lin, E. Omega, Volume 36 Issue 6 (2008) Pages 1005-1017.
Model to estimate passenger and freight technical efficiency, service effectiveness and technical effectiveness for 20 selected railways for the year 2002.

√**IPENZ 13/58** **Modelling the costs of railway asset renewal projects using pairwise comparisons.**
Ling, D et al. Proceedings of the Institution of Mechanical Engineers, Volume 220 Issue F4 (December 2006) Pages 331- 346.

√**IPENZ 13/59** **Mixed-use rail.**
Robl, E. Mass Transit, Volume 34 Issue 3 (April/May 2008) Pages 40-46.

√**IPENZ 13/60** **Benchmarking European rail freight transport companies.**
Wiegmans, B and Donders, A. Transportation Journal, Volume 46 Issue 2 (Spring 2007) Pages 19-36.

√**IPENZ 13/61** **Nature or nurture : why do railroads carry greater freight share in the United States than in Europe?**
Transportation, Volume 34 (2007) Pages 177-193.

√**IPENZ 13/62** **Rail freight in Europe : different perspectives on achieving higher service levels.**
Ghijssen, P., Semeljn, J and van der Linden, H. Transportation Journal, Volume 46 Issue 4 (Fall 2007) Pages 42-58.

IPENZ 13/63 **Diffuse release of environmental hazards by railways.**
Burkhardt, M., Rossi, L. and Boller, M. Desalination, Volume 226 Issue 1-3 (2008) Pages 106-113.
A new study which investigates environmental hazards and pollution from rail transportation activities.

IPENZ 13/64 **In situ measurements of the environmental footprint of freight vehicles in Switzerland.**
Poulikakos, L et al. Transportation Research Part D, . Article in Press.
A European cooperative project which aims to monitor road and rail footprints.

√IPENZ 13/65 **Energy storage devices in hybrid railway vehicles : a kinematic analysis.**
Hillmansen, S and Roberts, C. Proceedings of the Institution of Mechanical Engineers, Volume 221 Issue F1 (March 2007) Pages 135-143.
Energy costs and competitiveness may mean that electrification is not economic for all lines. This paper considers the potential of hybrid rail vehicles.

√IPENZ 13/66 **International tunnel fire safety design practices.**
Miclea, P et al. ASHRAE Journal (August 2007) Pages 50-60.
Reviews fire safety in rail and road tunnels.

√IPENZ 13/67 **Predicting the life of steel rails.**
Garnham, J et al Proceedings of the Institution of Mechanical Engineers, Volume 221 Issue F1 (March 2007) Pages 45-58.

√IPENZ 13/68 **Stain monitoring of railway bridges using optic fiber sensors.**
Zhan-Feng, G et al. Journal of Quality in Maintenance Engineering, Volume 13 Issue 2 (2007) Pages 186-197.

IPENZ 13/69 **Probabilistic fatigue evaluation of riveted railway bridges.**
Iman, B., Righiniotis, T and Chryssanthopoulos, M. Journal of Bridge Engineering, Volume 13 Issue 3 (May/June 2008) Pages 237-244.

√IPENZ 13/70 **A comparison of railway track foundation design methods.**
Burrow, M., Bowness, D and Ghataora, G. Proceedings of the Institution of Mechanical Engineers, Volume 221 Issue F1 (March 2007) Pages 1-12.

√IPENZ 13/71 **Evaluation of passenger railroad car roll over crashworthiness.**
Cuartero, J. et al. International Journal of Crashworthiness, Volume 11 Issue 5 (2006) Pages 419-424.

√IPENZ 13/72 **Right on track.**
Hutchinson, H. Mechanical Engineering, Volume 129 Issue 6 (June 2007) Pages 26-30.
Safety issues.

√IPENZ 13/73 **Global rail safety : equipment and technologies.**
Messina, P. Mass Transit, Volume 33 Issue 3 (May 2007) Pages 46-55.