

IPENZ ENGINEERING UPDATE July 2011



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Samplings from this Issue

- The selection of risk management techniques using case-based reasoning.
- How to build risk into your business model.
- Strengthen decision making by asking the right questions.
- Resourcing challenges for post-disaster housing reconstruction: a comparative analysis.
- Analysis of cut-and-cover tunnels against large tectonic deformation.
- Ruskin Dam Spillway shotcrete assessed.

➤ Special Focus : Life Cycle Assessment (LCA)

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

√IPENZ 48/01 Flexible work schedules and employee well-being.

Hayman, J. New Zealand Journal of Employment Relations, Volume 35, Issue 2 (01/06/2010) Pages 76-87.

To improve understanding of how flexible work schedules are related to employee well-being is the aim of this article. Over 300 employees operating on flexitime and telecommuting were sampled. Evidence was found of flexible work practices positively impacting job satisfaction and work/life balance. Flexitime schedules can also decrease the impact of role overload and job-induced stress. Telecommuting, however, does not always favourably affect role overload and work/life balance. Those operating on flexitime showed much higher levels of work/life balance than telecommuters. Implications for employers and employees are discussed.

√IPENZ 48/02 Managing a blended workforce: Telecommuters and non-telecommuters.

Lautsch, B. A. and Kossek, E. E. Organizational Dynamics, Volume 40, Issue 1 (January-March 2011) Pages 10-17.

√IPENZ 48/03 The case for executive assistants.

Duncan, M. J. Harvard Business Review, Volume 89, Issue 5 (May 2011) Pages 88-91.

As technology has transformed the workplace and organizations have downsized, companies have sharply reduced the ranks of administrative assistants. But many firms have gone too far. In their zeal for cutting administrative expenses, numerous organizations now count on highly paid middle and upper managers to arrange their own travel, file expense reports, and schedule meetings. Some companies may see a type of egalitarianism in this assistantless structure-believing that when workers see the boss loading paper into the copy machine, it creates a "we're all in this together" spirit. But as a management practice, that approach rarely makes economic sense. Generally speaking, work should be delegated to the lowest-cost employee who can do it well. Yet while companies seem to have embraced that logic by outsourcing work to vendors or to operations abroad, they ignore it back at headquarters. In this article, Duncan, a longtime recruiter of C-suite executive assistants, argues that a good assistant is a crucial productivity booster for a busy executive-one that offers a solid ROI if he or she is deployed correctly.

√IPENZ 48/04 Leadership styles: a powerful model.

Casse, P. and Claudel, P. Training Journal (January 2011) Pages 46-51.

The article presents a way of adjusting leadership to suit the circumstances and people involved. It provides a description of the leadership model including the two underlying leadership capabilities and four different leadership styles. It also cites the three criteria for choosing the appropriate leadership style which include the business situation, the people or team members and the corporate culture.

√IPENZ 48/05 The selection of risk management techniques using case-based reasoning.

Forbes, D. R. et al. Civil Engineering & Environmental Systems, Volume 27, Issue 2 (June 2010) Pages 107-121.

√IPENZ 48/06 How to build risk into your business model.

Girotra, K. and Netessine, S. Harvard Business Review, Volume 89, Issue 5 (May 2011) Pages 100-105.

To create value, companies typically focus on revenue, cost structure, and resource velocity. Improving those factors is the main focus of management literature. But all of them are vulnerable to sharp changes in demand and supply. Companies can innovate their business models to reduce the impact of such swings. But they can also create value by adding some risk. For instance, more than 30 years ago Rolls-Royce identified a major pain point in the aircraft industry: maintenance of airplane engines. An engine breakdown grounds the plane while the airline pays for repair time and materials. So Rolls-Royce offered a service contract whereby the airline would pay for an engine's flight hours rather than for time and materials. The new contract triggered a completely new value creation dynamic, because Rolls-Royce was motivated to improve its own products and maintenance processes. Business model innovations are much cheaper than product and technology innovations, and they can be approached in a systematic way. Furthermore, nearly all the big ones have already been done-so you can simply adapt them to suit your own situation.

√IPENZ 48/07 Developing an integrated approach to system safety engineering.

Philbin, S. P. Engineering Management Journal, Volume 22, Issue 2 (June 2010) Pages 56-68.

√IPENZ 48/08 Inherently safer design.

Hendershot, D. C. Professional Safety, Volume 56, Issue 2 (February 2011) Pages 48-55.

Inherently safer design (ISD) for hazardous chemical facilities is discussed in this paper. Key ISD elements are examined and the process's life-cycle as a context of ISD is considered.

**√IPENZ 48/09 Inherent risk assessment–A new concept to evaluate risk in preliminary design stage.**

Shariff, A. M. and Leong, C. T. Process Safety & Environmental Protection: Transactions of the Institution of Chemical Engineers Part B, Volume 87, Issue 6 (November 2009) Pages 371-376.

√IPENZ 48/10 Examining accountability dimensions in state-owned enterprises.

Luke, B. Financial Accountability & Management, Volume 26, Issue 2 (May 2010) Pages 134-162. An extended accountability framework for New Zealand's state-owned enterprises (SOEs) is discussed in this article.

√IPENZ 48/11 The long term development of New Zealand's electricity supply industry.

Abbott, M. New Zealand Economic Papers, Volume 44, Issue 1 (01/04/2010) Pages 75-89.

√IPENZ 48/12 Development of a water infrastructure finance innovations authority.

Curtis, T. American Water Works Association, Volume 103, Issue 4 (April 2011) Pages 18-20.

√**IPENZ 48/13 The power of small wins.**

Amabile, T. M. and Kramer, S. J. Harvard Business Review, Volume 89, Issue 5 (May 2011) Pages 70-80.

What is the best way to motivate employees to do creative work? Help them take a step forward every day. In an analysis of knowledge workers' diaries, the authors found that nothing contributed more to a positive inner work life (the mix of emotions, motivations, and perceptions that is critical to performance) than making progress in meaningful work. If a person is motivated and happy at the end of the workday, it's a good bet that he or she achieved something, however small. If the person drags out of the office disengaged and joyless, a setback is likely to blame. This progress principle suggests that managers have more influence than they may realize over employees' well-being, motivation, and creative output. The key is to learn which actions support progress- such as setting clear goals, providing sufficient time and resources, and offering recognition-and which have the opposite effect. Even small wins can boost inner work life tremendously. On the flip side, small losses or setbacks can have an extremely negative effect. And the work doesn't need to involve curing cancer in order to be meaningful. It simply must matter to the person doing it. The actions that set in motion the positive feedback loop between progress and inner work life may sound like Management 101, but it takes discipline to establish new habits. The authors provide a checklist that managers can use on a daily basis to monitor their progress-enhancing behaviours.

√**IPENZ 48/14 Creating a culture of excellence.**

Daley, J. Entrepreneur, Volume 38, Issue 3 (March 2010) Pages 81-87.

The article provides information on how to pursue excellence in workplaces. It states that it could be done through developing a master document that would demonstrate the true essence of excellence to the business. It cites that the companies can use the outlook of the customers in achieving the goal through conducting surveys and polls. It notes that they could also ask help from outside sources such as consultants and local management coach.

√**IPENZ 48/15 Sustaining business excellence.**

Aras, G. and Crowther, D. Total Quality Management & Business Excellence, Volume 21, Issue 5 (01/05/2010) Pages 565-576.

Many concepts have appeared fashionable as a process of business management and the latest of these is connected to sustainability. Often these concepts are merely refinements of other concepts but are presented as the answer to managing a business. We argue in this paper that these concepts do not replace earlier concepts. Instead, we argue, that the way to manage a business for excellence and sustainable competitive advantage is to focus on the four key areas of profitability, sustainability, reputation and governance.

√**IPENZ 48/16 Strengthen decision making by asking the right questions.**

Cohen, G. B. Leader to Leader, Volume 2010, Issue 56 (Spring 2010) Pages 39-42.

Many leaders believe it is incumbent on them to make any and every decision they can. Before long, nobody will make a decision without the leader's approval. As a result, the decision-making process becomes tedious, inefficient, and often ineffective. And morale dips as people on all levels of the organization get frustrated since they aren't being trusted to do challenging and important work. Cohen explains that to combat the speed of change and cascade of information, leaders must direct decisions to the appropriate party. First ask, –Whose decision is it? and let job descriptions dictate who should decide. Then ask supportive, open-ended questions that empower and motivate the decision-maker.

√IPENZ 48/17 Evidence-based decision making.

Marr, B. CMA Management, Volume 85, Issue 1 (March 2011) Pages 24-41.

Evidence-based management (EbM) enables businesses to systematically collect information and gain competitive advantage. Some of the key steps in effective EbM are: defining objectives, collecting data and analysing data. When it comes to evidence-based decision making, information technology (IT) infrastructure and business intelligence (BI) play important roles.

√IPENZ 48/18 Resourcing challenges for post-disaster housing reconstruction: a comparative analysis.

Yan Chang et al. Building Research & Information, Volume 38, Issue 3 (May/June 2010) Pages 247-264.

Project deficiencies regarding resource availability are likely to impact post-disaster housing reconstruction. Three types of resource-led reconstruction are compared: government-driven in China after the 2008 Wenchuan earthquake, donor-driven in Indonesia after the 2004 tsunami and market-driven in Australia after the 2009 bushfire.

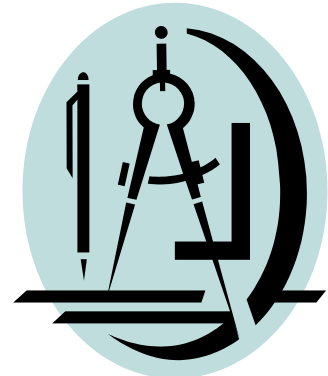
√IPENZ 48/19 Environmental costs.

Rannou, C. and Henri, J. CMA Management, Volume 84, Issue 4 (June/July 2010) Pages 28-32.

The value of environmental costs in the US is discussed in this article. The Environmental Protection Agency developed a classification in 1995 that can be used to define costs. Different methods used by companies are also presented as well as offering methods to measure the external environment.

TECHNICAL ASPECTS OF ENGINEERING.

Abstracts for most are available on request.

**√IPENZ 48/20 Seismic strengthening of infilled reinforced concrete frames with composite materials.**

Ozden, S., Akguzel, U. and Ozturan, T. ACI Structural Journal, Volume 108, Issue 4 (July/August 2011) Pages 414-423.

√IPENZ 48/21 Effectiveness of steel fiber as minimum shear reinforcement.

Susetyo, J., Gauvreau, P. and Vecchio, F. J. ACI Structural Journal, Volume 108, Issue 4 (July/August 2011) Pages 488-497.

√IPENZ 48/22 Modeling strategy for jointed rock masses reinforced by rock bolts in tunneling practice.

Sakurai, S. Acta Geotechnica, Volume 5, Issue 2 (June 2010) Page 121.

- √IPENZ 48/23 **Analysis of cut-and-cover tunnels against large tectonic deformation.**
Anastasopoulos, I. and Gazetas, G. Bulletin of Earthquake Engineering, Volume 8, Issue 2 (April 2010) Page 283.
- √IPENZ 48/24 **Seismic evaluation of an existing complex RC building.**
Kreslin, M. and Fajfar, P. Bulletin of Earthquake Engineering, Volume 8, Issue 2 (April 2010) Pages 363-385.
- √IPENZ 48/25 **Distribution and characteristics of gravelly soil liquefaction in the Wenchuan M s 8.0 earthquake.**
Cao, Z. et al. Earthquake Engineering and Engineering Vibration, Volume 9, Issue 2 (June 2010) Page 167.
- √IPENZ 48/26 **Investigation of liquefaction and pore water pressure development in layered sands.**
Özener, P. T., Özaydin, K. and Berilgen, M. M. Bulletin of Earthquake Engineering, Volume 7, Issue 1 (February 2009) Page 199.
- √IPENZ 48/27 **Investigation of gas turbine material performance in high CO₂ and steam atmospheres.**
Mabbutt, S. J. and Simms, N. J. Anti-Corrosion Methods and Materials, Volume 57, Issue 4 (2010) Page 192.
- √IPENZ 48/28 **Assessing the impact fire heat release rate has on infrastructure design and constructability of rail and road tunnels ventilation systems.**
Sanchez, J. G. ASHRAE Transactions, Volume 117 (2011) Pages 649-655.
- √IPENZ 48/29 **Impact of tunnel ventilation on tunnel fixed fire suppression system.**
Maeviski, I. and Klein, R. C. ASHRAE Transactions, Volume 117 (2011) Pages 629-637.
- √IPENZ 48/30 **Using the peak heat release rate to determine the fire risk level of road tunnels.**
Cheong, M. K., Spearpoint, M. and Fleischmann, C. M. Proceedings of the Institution of Mechanical Engineers, Volume 222, Issue 4 (December 2008) Pages 595-605.
- √IPENZ 48/31 **Corrosion degradation of pipeline carbon steels subjected to geothermal plant conditions.**
Miranda-Herrera, C. et al. Anti-Corrosion Methods and Materials, Volume 57, Issue 4 (2010) Page 167.
- √IPENZ 48/32 **Eco-efficiency of the world cement industry: A data envelopment analysis.**
Oggioni, G., Riccardi, R. and Toninelli, R. Energy Policy, Volume 39, Issue 5 (May 2011) Pages 2842-2854.

√IPENZ 48/33 **Influence of recycled concrete aggregates on specific gravity and absorption rates of mixes.**

Ayan, V., Limbachiya, M. C. and Nasr Azadani, S. M. Proceedings of the International Conference on Waste Technology & Management (2011) Pages 155-166.

√IPENZ 48/34 **How the rooftop turbine ventilator powered by hybrid renewable energy affects factory ventilation performance.**

Lin, Y.-P. et al. Proceedings of the Institution of Mechanical Engineers, Volume 224, Issue E4 (Nov 2010) Pages 275-279.

√IPENZ 48/35 **Fighting water with water: Behavioral change versus climate change.**

Strassberg, V. and Lancaster, B. American Water Works Association, Volume 103, Issue 6 (June 2011) Pages 54-62.

√IPENZ 48/36 **Within water-body management: A needed but neglected complement to watershed management.**

Hudnell, H. K. Clean Technologies and Environmental Policy, Volume 12, Issue 3 (June 2010) Page 205.

√IPENZ 48/37 **The influence of city water consumption on the water balance and quality of drinking water supply with implications for altered operating rules.**

Pedusaar, T. et al. Water Science & Technology: Water Supply, Volume 10, Issue 3 (2010) Pages 376-382.

√IPENZ 48/38 **Mycobacterium lentiflavum in drinking water supplies, Australia.**

Marshall, H. M. et al. Emerging Infectious Diseases, Volume 17, Issue 3 (March 2011) Pages 395-402.

√IPENZ 48/39 **Valorization of wine industry wastes by mesophilic anaerobic reaction.**

Fabbi, A., Serranti, S. and Bonifazi, G. Proceedings of the International Conference on Waste Technology & Management (2011) Pages 109-122.

The wine industry represents one of the most important agro-industrial working activity in Mediterranean.



√IPENZ 48/40 **Quantifying the effects of climate change and risk level on peak load design in buildings.**

Watkins, R. and Levermore, G. J. Building Services Engineering Research & Technology, Volume 32, Issue 1 (February 2011) Pages 9-20.

√IPENZ 48/41 **Climate policies for road transport revisited (I): Evaluation of the current framework.**
Creutzig, F. et al. Energy Policy, Volume 39, Issue 5 (May 2011) Pages 2396-2406.

√IPENZ 48/42 **Innovative in-situ sensing techniques for demolition waste quality assessment.**
Serranti, S. and Bonifazi, G. Proceedings of the International Conference on Waste Technology & Management (2011) Pages 141-154.

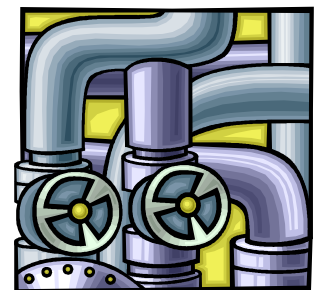
√IPENZ 48/43 **Assessing the potential for the uptake of on-farm anaerobic digestion for energy production in England.**
Tranter, R. B. et al. Energy Policy, Volume 39, Issue 5 (May 2011) Pages 2424-2430.

√IPENZ 48/44 **Renewable energy from wastes in Queensland: A policy overview.**
Davis, G. U. Proceedings of the International Conference on Waste Technology & Management (2011) Pages 13-22.

√IPENZ 48/45 **Techno-economic evaluation of coal-to-liquids (CTL) plants with carbon capture and sequestration.**
Mantripragada, H. C. and Rubin, E. S. Energy Policy, Volume 39, Issue 5 (May 2011) Pages 2808-2816.

√IPENZ 48/46 **Combustion of agro-waste with coal in a fluidized bed**
Atimtay, A. T. Clean Technologies and Environmental Policy, Volume 12, Issue 1 (February 2010) Page 43-

√IPENZ 48/47 **Pipeline design: Are current pipe standards adequate?**
Haswell, J. and Boothby, P. Journal of Pipeline Engineering, Volume 10, Issue 1 (March 2011) Pages 5-17.



√IPENZ 48/48 **Effects of polluted water on the metallic water pipelines.**
Hussain, A. M., Tantosh, B. A. and Abdalla, E. A. Proceedings of World Academy of Science: Engineering & Technology, Volume 70 (November 2010) Pages 67-72.

√IPENZ 48/49 **An economic analysis of the production of hydrogen from wind-generated electricity for use in transport applications.**
Menanteau, P. et al. Energy Policy, Volume 39, Issue 5 (May 2011) Pages 2957-2965.

√IPENZ 48/50 **Design and analysis of biodiesel production from algae grown through carbon sequestration.**
Pokoo-Aikins, G. et al. Clean Technologies and Environmental Policy, Volume 12, Issue 3 (June 2010) Page 239.

√IPENZ 48/51 **A new method for assessing CO₂-emissions from container terminals: a promising approach applied in Rotterdam.**

Geerlings, H. and van Duin, R. Journal of Cleaner Production, Volume 19, Issues 6/7 (April/May 2011) Pages 657-666.

√IPENZ 48/52 **Greywater treatment with biological aerated filter (BAF) for urban water reuse.**

Water Science & Technology: Water Supply, Volume 10, Issue 6 (2010) Pages 907-913.

√IPENZ 48/53 **Reuse of greywater for irrigation around homes in Australia: Understanding community views, issues and practices.**

Pinto, U. and Maheshwari, B. L. Urban Water Journal, Volume 7, Issue 2 (April 2010) Pages 141-153.

√IPENZ 48/54 **Distributing responsibility in the debate on sustainable biofuels.**

Landeweerd, L., Osseweijer, P. and Kinderlerer, J. Science and Engineering Ethics, Volume 15, Issue 4 (December 2009) Pages 531-543.

√IPENZ 48/55 **Ruskin dam spillway shotcrete assessed.**

Zhang, L. et al. Concrete International (February 2011) Pages 37-44.

√IPENZ 48/56 **Geotechnical and structural benefits of utilizing reinforced soil in earth dams.**

Journal of Environmental Science & Engineering, Volume 5, Issue 5 (May 2011) Pages 622-625.

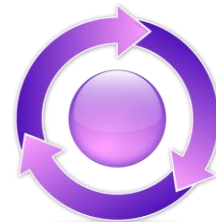
√IPENZ 48/57 **Effect of concrete nonlinear parameters on the seismic response of concrete gravity dams.**

Heirany, Z. and Ghaemian, M. Proceedings of World Academy of Science: Engineering & Technology, Volume 75 (June 2011) Pages 638-641.

√IPENZ 48/58 **A comparative review of environmental protection policies and laws involving hazardous private dams: 'Appropriate' practice models for safe catchments.**

Pisaniello, J. D. William & Mary, Environmental Law & Policy Review, Volume 35, Issue 2 (Winter 2011) Pages 515-580.

SPECIAL FOCUS – Life Cycle Assessment



√IPENZ 48/59 **A survey of unresolved problems in life cycle assessment: Part 1: Goal and scope and inventory analysis.**

Reap, J. et al. The International Journal of Life Cycle Assessment Volume 13, Issue 4 (June 2008) Pages 290-300.

√**IPENZ 48/60 A survey of unresolved problems in life cycle assessment: Part 2: Impact assessment and interpretation.**

Reap, J. et al. The International Journal of Life Cycle Assessment, Volume 13, Issue 5 (August 2008) Pages 374-388.

√**IPENZ 48/61 Generalized make and use framework for allocation in life cycle assessment.**

Suh, S. et al. Journal of Industrial Ecology, Volume 14, Issue 2 (March/April 2010) Pages 335-353

√**IPENZ 48/62 Hybrid framework for managing uncertainty in life cycle inventories.**

Williams, E. D., Weber, C. L. and Hawkins, T. R. Journal of Industrial Ecology, Volume 13, Issue 6 (December 2009) Pages 928-944.

√**IPENZ 48/63 A hybrid life cycle assessment model for comparison with conventional methodologies in Australia.**

Rowley, H. V., Lundie, S. and Peters, G. M. The International Journal of Life Cycle Assessment, Volume 14, Issue 6 (September 2009) Pages 508-516.

√**IPENZ 48/64 Implications of an interpretive understanding of LCA practice.**

Rex, E. and Baumann, H. Business Strategy & the Environment, Volume 17, Issue 7 (November 2008) Pages 420-430.

There has been a relatively slow adoption by industry of life cycle assessment (LCA) in spite of the desirability of its perspective and the many attempts to facilitate it. LCA practices in industry are investigated in this article and a literature review reveals the current understanding that 'structural' conditions, for instance location and sector, determine industry's use of LCA. But a field study of two companies in the forest product industry in Sweden points to individual preferences and chance events actually shaping LCA practice, so a more interpretative conception of LCA.

√**IPENZ 48/65 A comparative study of two Swedish ICA-based tools for practical environmental evaluation of buildings.**

Brick, K. and Frostell, B. Journal of Environmental Assessment Policy & Management, Volume 9, Issue 3 (September 2007) Pages 319-339.

√**IPENZ 48/66 Life cycle impact assessment: A challenge for risk analysts.**

Matthews, H. S., Lave, L. and MacLean, H. Risk Analysis: An International Journal, Volume 22, Issue 5 (October 2002) Pages 853-859.

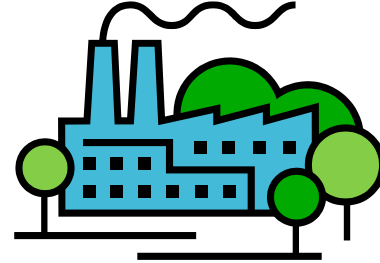
√**IPENZ 48/67 Similarities, differences and synergisms between HERA and LCA—An analysis at three levels.**

Udo de Haes, H. A., Wegener Sleeswijk, A. and Heijungs, R. Human & Ecological Risk Assessment, Volume 12, Issue 3 (June 2006) Pages 431-449.

√IPENZ 48/68 **Three strategies to overcome the limitations of life-cycle assessment.**

Udo de Haes, H. A. et al. Journal of Industrial Ecology, Volume 8, Issue 3 (Summer 2004) Pages 19-32.

APPLICATIONS IN VARIOUS INDUSTRIES



√IPENZ 48/69 **Hybrid life-cycle inventory for road construction and use.**

Treloar, G. J., Love, P. E. D. and Crawford, R. H. Journal of Construction Engineering & Management, Volume 130, Issue 1 (January/February 2004) Pages 43-49.

A global technique for assessing the environmental impact of projects is life-cycle assessment (LCA) and its primary advantage is assisting decision making with quantitative data. Fully developed LCAs take time to prepare and are expensive. Streamlined LCAs can be effective when considering environmental performance during the design process, although inventory completeness is lost. This paper outlines a hybrid LCA methodology, where input-output data is used to fill in the gaps that conventional LCA inventories often leave, and demonstrates its use in a life-cycle energy study of eight different road designs. While initially the road construction process was the most important, in the long run the manufacture, use and maintenance of vehicles utilising the road became most significant.

√IPENZ 48/70 **The incorporation of waste prevention activities into life cycle assessments of municipal solid waste management systems: methodological issues.**

Cleary, J. The International Journal of Life Cycle Assessment, Volume 15, Issue 6 (July 2010) Pages 579-589.

√IPENZ 48/71 **Life cycle assessment of soil and groundwater remediation technologies: Literature review.**

Lemming, G., Hauschild, M. Z. and Bjerg, P. L. The International Journal of Life Cycle Assessment, Volume 15, Issue 1 (January 2010) Pages 115-127.

√IPENZ 48/72 **Life cycle assessment in the minerals and metals sector: A critical review of selected issues and challenges.**

Yellishetty, M. et al. The International Journal of Life Cycle Assessment, Volume 14, Issue 3 (May 2009) Pages 257-267.

√IPENZ 48/73 **Environmental life cycle assessments for water treatment processes - A South African case study of an urban water cycle.**

Friedrich, E., Pillay, S. and Buckley, C. A. Water S.A. Volume 35, Issue 1 (January 2009) Pages 73-85.

√IPENZ 48/74 **Life cycle assessment analysis of supercritical coal power units.**

Ziębik, A., Hoinka, K. and Liszka, M. Archives of Thermodynamics, Volume 31, Issue 3 (2010) Pages 115-130.

√IPENZ 48/75 **Fire-LCA model for environmental decision-making.**

Hamzi, R., Londiche, H. and Bourmada, N. Chemical Engineering Research & Design: Transactions of the Institution of Chemical Engineers Part A, Volume 86, Issue 10 (October 2008) Pages 1161-1166.

√IPENZ 48/76 **Energy analysis and environmental life cycle assessment of a micro-wind turbine.**

Allen, S. R., Hammond, G. P. and McManus, M. C. Proceedings of the Institution of Mechanical Engineers, Volume 222, Issue A7 (November 2008) Pages 669-685.

√IPENZ 48/77 **Life cycle impact assessment of greywater recycling technologies for new developments.**

Memon, F. A. et al. Environmental Monitoring and Assessment, Volume 129, Issue 1/3 (June 2007) Page 27-

√IPENZ 48/78 **LCA of waste management systems—research opportunities.**

Gheewala, S. H. The International Journal of Life Cycle Assessment, Volume 14, Issue 7 (November 2009) Pages 589-590.

√IPENZ 48/79 **Life cycle assessment in the telecommunication industry: A review.**

Scharnhorst, W. The International Journal of Life Cycle Assessment, Volume 13, Issue 1 (January 2008) Page 75-

√IPENZ 48/80 **Life cycle impact assessment of fuel procuring and electricity generating processes in Japan by using an 'LCA-NETS' scheme.**

Sadamichi, Y. and Kato, S. International Journal of Emerging Electric Power Systems, Volume 7, Issue 1 (2006) Pages 1-16.

√IPENZ 48/81 **On the development of a sustainable design framework for steel structures.**

Zygomalas, I., Efthymiou, E. and Baniotopoulos, C. C. Transactions of FAMENA, Volume 33, Issue 2 (2009) Pages 23-34.

√IPENZ 48/82 **Using life cycle assessment as a tool for analysing household waste in Dublin, Ireland.**

Andersen, E. B., Christensen, T. H. and Morrissey, A. J. Proceedings of the International Conference on Waste Technology & Management (2011) Pages 1087-1098.

√IPENZ 48/83 **Life cycle assessment of the transmission network in Great Britain.**

Harrison, G. P. et al. Energy Policy, Volume 38, Issue 7 (July 2010) Pages 3622-3631.

√IPENZ 48/84 Exploring the use and impact of LCA-based information in corporate communications.

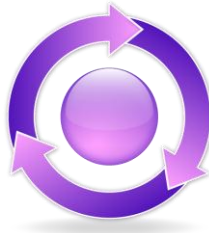
Molina-Murillo, S. A. and Smith, T. M. The International Journal of Life Cycle Assessment, Volume 14, Issue 2 (March 2009) Pages 184-194.

√IPENZ 48/85 Greenhouse gas implications of using coal for transportation: Life cycle assessment of coal-to-liquids, plug-in hybrids, and hydrogen pathways.

Jaramillo, P. et al. Energy Policy, Volume 37, Issue 7 (July 2009) Pages 2689-2695.

√IPENZ 48/86 LCA of renewable energy for electricity generation systems: A review.

Varun, I. K. and Bhat, R. P. Renewable and Sustainable Energy Reviews, Volume 13, Issue 5 (June 2009) Pages 1067-1073.



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