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Engineering Update from Energy Library

December 2011

Welcome to the December copy of the "**Engineering Update**"

This update includes articles on a wide range of engineering disciplines, including management. There are also 2 Special topics.

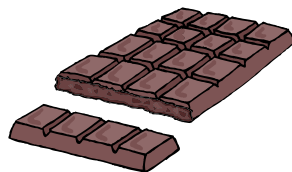


Special Topic One : Popular articles from Harvard Business Review
Special Topic Two : Nanotechnology

All items listed are available to you as part of your Energy Library membership and you can request items by emailing the item code to library@energylibrary.org.nz. So take the opportunity to catch on your reading over the holidays.

We are open for requests until midday on Thursday 22nd Dec and we will reopen on Wednesday 4th Jan 2012. We hope you have a safe, happy and relaxing holiday season.

Congratulations to Peter who won the draw for a large Energy choc bar. We will post to you.





MANAGEMENT/ STRATEGIC PLANNING

PROJECT MANAGEMENT

RISK MANAGEMENT

CORPORATE RESPONSIBILITY

ENG 52/01 The frontline advantage.

Hassan, F. Harvard Business Review, Volume 89, Issue 5 (May 2011) Pages 106-114.

The managers most responsible for a company's success or failure happen to be the ones with whom the CEO spends the least amount of time: frontline managers, such as shop-floor supervisors, heads of R&D or sales teams, and managers in restaurant chains or call centers. That's a mistake, says Hassan, the CEO who led dramatic turnarounds at Schering-Plough and Pharmacia and who is now a senior adviser at Warburg Pincus. In this article, Hassan makes the case that systematic interactions with individual and small groups of frontline managers are important to executing a company's strategy and represent an all-important feedback loop that allows the CEO to stay abreast of the latest developments in the business. He provides guidelines for how CEOs and other senior managers should structure interactions with this vital, and often overlooked, cadre of managers.

ENG 52/02 The latest frontier: Using iPads for electronic delivery of board materials.

Veaco, K. Corporate Governance Advisor, Volume 19, Issue 4 (July/August 2011) Pages 1-3.

ENG 52/03 Are leaders' well-being, behaviours and style associated with the affective well-being of their employees? A systematic review of three decades of research.

Skakon, J. et al. Work & Stress, Volume 24, Issue 2 (April/June 2010) Pages 107-139.

ENG 52/04 New models for corporate governance.

Steinberg, R. M. Corporate Board, Volume 32, Issue 190 (September/October 2011,) Pages 1-5.

ENG 52/05 Assessing directors' core competencies – the case of the Mass Transit Railway Corporation, Hong Kong.

Tricker, R. I. and Lee, K. Corporate Governance: An International Review, Volume 5, Issue 2 (April 1997) Pages 87-102.

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ENG 52/06 Comparative analysis of diffusion of the ISO 14001 standard by sector of activity.

Marimon, F., Llach, J. and Bernardo, M. Journal of Cleaner Production, Volume 19, Issue 15 (October 2011) Pages 1734-1744.

In recent years there have been many approaches to understand the cross-country diffusion rate of the most common environmental management standards issued by the International Organization for Standardization, the ISO 14000 series, due to their spectacular growth around the world, even though a certain saturation has been detected in some countries. However, few studies have shed light on the diffusion process of these standards across sectors of activity. Therefore, the present paper examines whether there are patterns of diffusion of the ISO 14001 standard that are singular at specific sectors of economic activity.

ENG 52/07 Integrating environmental and international strategies in a world of regulatory turbulence.

Wijen, F. and van Tulder, R. California Management Review, Volume 53, Issue 4 (Summer 2011) Pages 23-46.

ENG 52/08 Remote leadership, communication effectiveness and leader performance.

Neufeld, D. J., Zeying Wan and Yulin Fang. Group Decision & Negotiation, Volume 19, Issue 3 (May 2010) Pages 227-246.

ENG 52/09 Strategic planning implementation and creation of value in the firm.

Aldehayyat, J. S. and Anchor, J. R. Strategic Change, Volume 19, Issue 3/4 (May 2010) Pages 163-176.

ENG 52/10 Organizational risk as it derives from what managers value: A practice-based approach to risk assessment.

Corvellec, H. Journal of Contingencies & Crisis Management, Volume 18, Issue 3 (September 2010) Pages 145-154.

ENG 52/11 Risk management of large-scale development projects in developing countries: Cases from MDI's projects.

Baydoun, M. International Journal of Technology Management & Sustainable Development, Volume 9, Issue 3 (2010) Pages 237-249.

ENG 52/12 Wastewater infrastructure financing: Stakeholder views on a national infrastructure bank and public-private partnerships.

Trimble, D. C. GAO Reports (7/30/2010) Pages 1-51.

ENG 52/13 Structured approach to project execution, monitoring and control at operational level.

Ashok, M., Biswajit, S. and Jibitesh, M. Management Science & Engineering, Volume 5, Issue 1 (March 2011) Pages 10-18.

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ENG 52/14 A rating system for sustainability of industrial projects with application in oil sands and heavy oil projects: Areas of excellence, sub-divisions, and management interactions.

Poveda, C. A. and Lipsett, M. G. Journal of Sustainable Development, Volume 4, Issue 4 (2011) Pages 3-13.



HUMAN RESOURCES

TRAINING/HEALTH/SAFETY

PROFESSIONAL DEVELOPMENT/SELF IMPROVEMENT

ENG 52/15 Reengineering engineers: management philosophies at the Jet Propulsion Laboratory in the 1990s.

Westwick, P. Technology and Culture, Volume 48, Issue 1 (January 2007) Pages 67-91.

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.

ENG 52/16 Does learning about NLP give leaders the edge?

Vickers, A. Training Journal (August 2009) Pages 28-31.

ENG 52/17 Conducting organizational-level occupational health interventions: What works?

Nielsen, K. et al. Work & Stress, Volume 24, Issue 3 (July/September 2010) Pages 234-259.

ENG 52/18 Organizational interventions for balancing work and home demands: An overview.

Brough, P. and O'Driscoll, M. P. Work & Stress, Volume 24, Issue 3 (July/September 2010) Pages 280-297.



ENG 52/19 Conducting organizational-level occupational health interventions: What works?

Nielsen, K. et al. *Work & Stress*, Volume 24, Issue 3 (July/September 2010) Pages 234-259.

ENG 52/20 Welding safety.

Spear, J. E. *Professional Safety*, Volume 55, Issue 9 (September 2010) Pages 22-31.

ENG 52/21 Emotions in organizations.

Kangasharju, H. and Nikko, T. *Journal of Business Communication*, Volume 46, Issue 1 (January 2009) Pages 100-119.

Using conversational analysis the authors explore some ways in which humour and laughter can be useful in an organisational setting.

ENG 52/22 The four C's of emotion: A framework for managing emotions in organizations.

Callahan, J. L. *Organization Development Journal*, Volume 26, Issue 2 (Summer 2008) Pages 33-38.

ENG 52/23 Putting brain training to the test.

Owen, A. M. et al. *Nature*, Volume 465, Issue 7299 (6/10/2010) Pages 775-778.

ENG 52/24 Time management training and perceived control of time at work.

Häfner, A. and Stock, A. *Journal of Psychology*, Volume 144, Issue 5 (September/October 2010) Pages 429-447.

ENG 52/25 Corporate environmental reporting and disclosure: Where to look and what you get.

Stray, S. *Environmental Research Journal*, Volume 5, Issue 4 (2011) Pages 463-483.

ENG 52/26 Geography is alive and well in virtual teams.

Communications of the ACM, Volume 54, Issue 8 (August 2011) Pages 24-26.

ENG 52/27 Critical review of collaborative working in construction projects: Business environment and human behaviors.

Xue, X., Shen, Q. and Ren, Z. *Journal of Management in Engineering*, Volume 26, Issue 4 (October 2010) Pages 196-208.



TECHNICAL ARTICLES

(ABSTRACTS AVAILABLE ON REQUEST)

ENG 52/28 Effects of a construction tower crane on the wind loading of a high-rise building.

Mara, T. G. Journal of Structural Engineering, Volume 136, Issue 11 (November 2010) Pages 1453-1460.

ENG 52/29 Compaction of fills involving stabilisation of expansive soils.

Rahmat, M. N. and Kinuthia, J. M. Proceedings of the ICE - Geotechnical Engineering, Volume 164, Issue 2 (April 2011) Pages 113-126.

ENG 52/30 Greenhouse gas emissions from electricity generating CCS upstream and downstream transport processes.

Cockerill, T., Odeh, N. and Laczay, S. Journal of Pipeline Engineering, Volume 9, Issue 4 (December 2010) Pages 289-301.

ENG 52/31 Replacement or renovation of dwellings: The relevance of a more sustainable approach.

Thomsen, A. A. F. and van der Flier, K. C. L. Building Research & Information, Volume 37, Issue 5/6 (September/November 2009) Pages 649-659.

ENG 52/32 The lightning threat to pipelines and coatings.

Pikas, J. and Shoaf, W. Journal of Pipeline Engineering, Volume 9, Issue 3 (September 2010) Pages 191-196.

ENG 52/33 Blueprints for blackouts?

Harris, A. Engineering & Technology, Volume 6, Issue 9 (October 2011) Pages 56-60.

ENG 52/34 Preliminary design of a floating wind turbine: support structure and relevant system: cost assessment.

Casale, C. et al. Wind Engineering, Volume 34, Issue 1 (January 2010) Pages 29-50.

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ENG 52/35 Forest biorefineries – A business opportunity for the Finnish forest cluster.

Hämäläinen, S., Näyhä, A. and Pesonen, H. Journal of Cleaner Production, Volume 19, Issue 16 (November 2011) Pages 1884-1891.

ENG 52/36 Small-scale use of solar power in remote, developing regions: A case study.

Osende, B., Abraham, J. and Mowry, G. Journal of Sustainable Development, Volume 4, Issue 3 (2011) Pages 3-9.

ENG 52/37 Implications of local lifecycle analyses and low carbon fuel standard design on gasohol transportation fuels

Energy Policy, Volume 39, Issue 11, Pages 7191-7201.

ENG 52/38 Advanced logistical systems for the maintenance of overhead distribution lines through dcc with the use of laser monitoring.

Tajnssek, V., Pihler, J. and Roser, M. IEEE Transactions on Power Delivery, Volume 26, Issue 3 (July 2011) Pages 1337-1343.

ENG 52/39 Long-term monitoring of cable stays with a wireless sensor network.

Feltrin, G. et al. Structure & Infrastructure Engineering: Maintenance, Life-Cycle Design & Performance, Volume 6, Issue 5 (October 2010).

ENG 52/40 Integrated monitoring of offshore wind turbines - requirements, concepts and experiences.

Rohrmann, R. G., Thöns, S. and Rücker, W. Structure & Infrastructure Engineering:

ENG 52/41 The smart city: A nexus for open innovation?

Paskaleva, K. A. Intelligent Buildings International, Volume 3, Issue 3 (2011) Pages 153-171.

ENG 52/42 Recycling of FRP composites: Reusing fine GFRP waste in concrete mixtures.

Correia, J. R., Almeida, N. M. and Figueira, J. R. Journal of Cleaner Production, Volume 19, Issue 15 (October 2011) Pages 1745-1753.

ENG 52/43 Analysis of energy usage at membrane water treatment plants.

Singh, R. Desalination & Water Treatment, Volume 29, Issue 1-3 (May 2011) Pages 63-72.

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ENG 52/44 Recycle of waste backwash water in ultrafiltration drinking water treatment processes.

Gora, S. L. and Walsh, M. E. Journal of Water Supply: Research & Technology-AQUA, Volume 60, Issue 4 (June 2011) Pages 185-196.

ENG 52/45 Combination of advanced oxidation processes and biological treatments for wastewater decontamination—a review.

Oller, I., Malato, S. and Sánchez-Pérez, J. A. Science of the Total Environment, Volume 409, Issue 20 (September 2011) Pages 4141-4166.

ENG 52/46 Ferrate(VI): In situ generation and water treatment - A review.

Ghernaout, D. and Naceur, M. W. Desalination & Water Treatment, Volume 30, Issue 1/3 (June 2011) Pages 319-332.

ENG 52/47 Considerate constructors scheme: Glenfarg water treatment works

Murray, M., Forbes, D. and Mason, S. Proceedings of the ICE - Engineering Sustainability, Volume 164, Issue 1 (March 2011) Pages 49–57.

ENG 52/48 The right to water and its relevance to sustainable water governance

Grimes, H. J. Proceedings of the ICE - Engineering Sustainability, Volume 164, Issue 2 (June 2011) Pages 119–128.

ENG 52/49 Electric vehicle noise: Are they too quiet?

Fender, D. L. Professional Safety, Volume 56, Issue 1 (January 2011) Pages 34-38.

SPECIAL TOPIC 1:

POPULAR ARTICLES FROM HARVARD BUSINESS REVIEW

(ABSTRACTS AVAILABLE ON REQUEST)

ENG 52/50 Mind tricks to explore your brain.

Lawton, G. New Scientist, Volume 195, Issue 2622 (9/22/2007) Pages 34-41.

ENG 52/51 The science of thinking smarter.

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

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ENG 52/52 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.

ENG 52/53 Competitive advantage on a warming planet.

Lash, J. and Wellington, F. Harvard Business Review, Volume 85, Issue 3 (March 2007) Pages 94-102.

Reviews the impact of climate change/global warming issues on business activities, competitive advantage, finances and decision making. Proposes a four step approach to responding to the risk of climate change, including quantifying the company's carbon footprint.

ENG 52/54 Sleep deficit: The performance killer.

Czeisler, C. A. Harvard Business Review, Volume 84, Issue 10 (2006) Pages 53-59.

Long hours and traveling often in multiple time zones, do not lead to high performance. The four neurobiological functions that affect sleep duration and quality and high performance are outlined. Recommendations for corporate sleep policies are discussed.

ENG 52/55 Strategy & society: The link between competitive advantage and corporate social responsibility.

Porter, M. and Kramer, M. Harvard Business Review, Volume 84, Issue 12 (December 2006) Pages 78-92.

It has become more common for companies to be held account for the social consequences of their actions. Corporate social responsibility (CSR) has emerged as an inescapable priority for business leaders in every country. Frequently, though, CSR efforts are counterproductive. The authors propose a fundamentally new way to look at the relationship between business and society. Perceiving social responsibility as an opportunity rather than as damage control or a PR campaign requires a mind-set that will become increasingly important to competitive success.

ENG 52/56 Discovering your authentic leadership.

George, B. et al. Harvard Business Review, Volume 85, Issue 2 (February 2007) Pages 129-138.

The article discusses leadership traits and characteristics. The article focuses on "authentic" leadership, consisting of people who find their own voice rather than emulating those perceived to be good leaders. The article details research done to discover how leaders developed their leadership abilities and interviews with 125 leaders in profit and nonprofit enterprises.

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ENG 52/57 Using the balanced scorecard as a strategic management system.

Kaplan, R. S. and Norton, D. P. Harvard Business Review, Volume, 85, Issue 7/8 (July/August 2007) Pages 150-161.

The balanced scorecard introduced by Kaplan and Norton revolutionized conventional thinking about performance metrics. The scorecard allowed companies to track financial results while monitoring progress in building the capabilities needed for growth. The tool was not intended to be a replacement for financial measures but rather a complement--and that's just how most companies treated it. Some companies went a step further, however, and discovered the scorecard's value as the cornerstone of a new strategic management system. In this article from 1996, the authors describe how the balanced scorecard can address a serious deficiency in traditional management systems: the inability to link a company's long-term strategy with its short-term financial goals.

ENG 52/58 The 4 principles of enduring success.

Stadler, C. Harvard Business Review, Volume 85, Issue 7/8 (July/August 2007) Pages 62-72.

When your company is doing well, and money is pouring in, how do you know if it could be doing better? How can you tell which management practices are making the difference--and which are merely not doing obvious harm? To find out, Professor Stadler and a team at Innsbruck University's business school conducted a massive benchmarking study comparing nine pairs of European companies over 50 years. Each pair was from the same industry (and preferably, the same country) and included one exceptional performer and one less impressive, but solid performer. The project yielded four main findings, which Stadler calls the four principles of enduring success.

ENG 52/59 Overloaded circuits: Why smart people underperform.

Hallowell, E. Harvard Business Review, Volume 83, Issue 1 (January 2005) Pages 54-62.

Today's hyperkinetic work environment can lead to newly recognized neurological phenomenon called attention deficit trait or ADT. People with ADT have difficulty staying organized, setting priorities, and they feel a constant low level of panic and guilt.

ENG 52/60 Inner work life.

Amabile, T. and Kramer, S. Harvard Business Review, Volume 85, Issue 5 (May 2007) Pages 72-83.

Employees have their good days and their bad days and, for the most part, the reasons for their ups and downs are unknown. Most managers simply shrug their shoulders at this fact of work life. But does it matter, in terms of performance, if people have more good days than bad days? The authors' new stream of research reveals the dramatic impact of employees' inner work lives their perceptions, emotions, and motivation levels-on several dimensions of performance.

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ENG 52/61 Picking the right transition strategy.

Watkins, M. Harvard Business Review, Volume 87, Issue 1 (January 2008) Pages 46-53. Leaders in transition reflexively rely on the skills and strategies that worked for them in the past. That's a mistake, say Watkins, whose research shows that executives moving into new roles must gain a deep understanding of the situation at hand to adapt to it. To help them accurately assess their organizations and tailor their strategies and styles accordingly, he developed the STARS framework. "STARS" is an acronym for five common situations leaders move into: start-up, turnaround, accelerated growth, realignment, and sustaining success.

ENG 52/62 6 ways companies mismanage risk.

Stulz, R. Harvard Business Review, Volume 87, Issue 3 (March 2009) Pages 86-94. Financial risk management is hard to get right even in the best of times. It can take one of six paths to failure, nearly all of them exemplified in the current crisis.

ENG 52/63 How GE teaches teams to lead change.

Prokesch, S. Harvard Business Review, Volume 87, Issue 1 (January 2009) Pages 99-106. In 2006, General Electric launched its Leadership, Innovation, and Growth (LIG) program to support CEO Jeffrey Immelt's priority of achieving corporate growth primarily by expanding businesses and creating new ones. LIG represented a radical approach for GE's famed management development center in Crotonville, New York, because it was the first effort to train all the senior members of a GE business's management team as a group. Prokesch went through LIG with 19 senior managers of GE Power Generation, one of the company's oldest businesses, in October 2007. About a year later he revisited the "turbine heads," as Immelt affectionately calls them, to see how much impact the program had made. The answer was a lot. Team training accelerated the pace of change by giving managers an opportunity to reach consensus on the barriers they faced and how to overcome them. LIG participants were encouraged to consider both hard (organizational) and soft (behavioral) barriers. The training explicitly addressed how to balance the short term and the long term. The program created a common vocabulary of change -- actual words that are used daily inside and across GE's businesses. And LIG was not an academic exercise: It was structured so that a team would emerge with the first draft of an action plan for instituting change

ENG 52/64 Value-for-money strategies for recessionary times.

Williamson, P and Ming Z. Harvard Business Review, Volume 87, Issue 3 (March 2009) Pages 66-74.

In tough economic times, some companies have outmaneuvered rivals to become market leaders through value-for-money strategies. That is, they have enabled recession-hit consumers to economize (do less and spend less), become more efficient (do the same for less), or become more effective (do more but spend no more).

SPECIAL TOPIC 2:

NANOTEchnology (ABSTRACTS AVAILABLE ON REQUEST)

ENG 52/65 Analysis of technical standards in the field of nanotechnology.

Violet, F. Nanotechnology Law & Business, Volume 7, Issue 3 (2010) Pages 299-307.

ENG 52/66 Community participation in Australian science and technology policy: The case of nanotechnology.

Harwood, J and Schibeci, R. Prometheus, Volume 26, Issue 2 (June 2008) Pages 153-163.

ENG 52/67 Engineered nanomaterials: exposures, hazards, and risk prevention.

Yokel, R. A. and MacPhail, R. C. Journal of Occupational Medicine & Toxicology, Volume 6, Issue 1 (2011) Pages 7-33.

ENG 52/68 Nanotechnology: The incredible invisible world.

Roberts, A. S. Technology & Engineering Teacher, Volume 70, Issue 6 (March 2011) Pages 10-17.

ENG 52/69 Nanoscale science and engineering and responsible nanotechnology.

Dash, S. et al. International Journal of Nanotechnology & Applications, Volume 4, Issue 3 (2010) Pages 223-229.

ENG 52/70 Nanotechnology, risk, and oversight: Learning lessons from related emerging technologies.

Kuzma, J. and Priest, S. Risk Analysis: An International Journal, Volume 30, Issue 11 (November 2010) Pages 1688-1698.

ENG 52/71 Nanotechnology and in situ remediation: A review of the benefits and potential risks.

Karn, B., Kuiken, T. and Otto, M. Environmental Health Perspectives, Volume 117, Issue 12 (December 2009) Pages 1823-1831.

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ENG 52/72 Nanotechnology and its institutionalization as an innovative technology: Professional associations and the market as two mechanisms of intervention in the field of nanotechnology.

Hoser, N. Nanotechnology Law & Business, Volume 7, Issue 2 (2010) Pages 180-197.

ENG 52/73 Nanotechnology applications in pollution sensing and degradation in agriculture: A review.

Baruah, S. and Dutta, J. Environmental Chemistry Letters, Volume 7, Issue 3 (September 2009) Pages 191-204.

ENG 52/74 Nanotechnology risk assessment from a waste management perspective: Are the current tools adequate?

Musee, N. Human & Experimental Toxicology, Volume 30, Issue 8 (August 2011) Pages 820-835.

ENG 52/75 Nanotechnology risk communication past and prologue.

Bostrom, A. and Löfstedt, R. Risk Analysis: An International Journal, Volume 30, Issue 11 (November 2010) Pages 1645-1662.

ENG 52/76 Nanotechnology: The incredible invisible world.

Roberts, A. S. Technology & Engineering Teacher, Volume 70, Issue 6 (March 2011) Pages 10-17.

ENG 52/77 On the use of nanotechnology to manage steel corrosion.

Xianming Shi. Recent Patents on Engineering, Volume 4, Issue 1 (January 2010) Pages 44-50.

ENG 52/78 Outlining ethical issues in nanotechnologies.

Spagnolo, A. G. and Daliso, V. Bioethics, Volume 23, Issue 7 (September 2009) Pages 394-402.

ENG 52/79 Potential applications of nanotechnology in pavement engineering.

Steyn, W. J. Journal of Transportation Engineering, Volume 135, Issue 10 (October 2009) Pages 764-772.

ENG 52/80 Risk characterization for nanotechnology.

Williams, R. A. et al. Risk Analysis: An International Journal, Volume 30, Issue 11 (November 2010) Pages 1671-1679.

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ENG 52/81 A study on the present environmental scenario due to pollution by conventional energy sources-and remedies: Solar cell with nanotechnology.

Raha, S. and Pal, S. Strategic Planning for Energy & the Environment, Volume 30, Issue 2 (Fall 2010) Pages 8-19.

ENG 52/82 The security implications of nanotechnology.

Kosal, M. E. Bulletin of the Atomic Scientists, Volume 66, Issue 4 (July 2010) Pages 58-69.

Take the opportunity to catch up on some reading over the holiday break. View all our newsletters online, including our monthly Energy Update and a quarterly Environment Update. <http://www.energylibrary.org.nz/news.asp>

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