

## IPENZ ENGINEERING UPDATE October/November 2008



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### Samplings from this Issue

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### ► Special Focus on Women in Engineering

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

### √IPENZ 19/01 Evaluating the CEO.

Kaufman, S. Harvard Business Review, Volume 86 Issue 10 (October 2008) Pages 53-57.  
After Kaufman became a CEO, he was struck by how perfunctory the board was in its feedback on his performance. The chair of the compensation committee would pop by his office following the year-end board meeting, congratulate him on the company's making its numbers, and then hand him an envelope containing the details of his comp package before walking out the door. The entire exchange would last no more than 10 minutes. That sort of review was a big contrast from the intense evaluations Kaufman received as a senior executive – assessments based on input from many sources and on multiple dimensions of his performance. As chief executive, all of sudden his total worth was summed up in just three or four financial measures. Although CEOs should have autonomy, reducing performance management to only financial measures makes little sense. All the financial incentives in the world won't transform CEOs into better decision makers. And bad decisions can bring companies down. Boards have an obligation to shareholders to ensure that companies are led well, and the sooner they can spot problems with leaders' performance, the better. With that in mind, Kaufman encouraged Arrow Electronics, where he was CEO for 14 years, to adopt a formal process that obliged independent directors to talk to executives and observe operations firsthand. Directors considered CEO performance in five key areas: leadership, strategy, people management, operating metrics, and relationships with external constituencies. As a result, they picked up on problems Kaufman might not have noticed, provided counsel that made him a stronger leader – and avoided disasters along the way.

### √IPENZ 19/02 Five mistakes newly promoted leaders make.

Watkins, M Harvard Management Update, Volume 13 Issue 10, (October 2008) Pages 1-3.

### √IPENZ 19/03 A dynamic perspective on next-generation offshoring: The global sourcing of science and engineering talent.

Manning, S et al. Academy of Management Perspectives, Volume 22 Issue 3 (August 2008) Pages 35-54.

### √IPENZ 19/04 All I ever needed to know about change management I learned at engineering school.

Dickout, R. McKinsey Quarterly, Issue 2 (1997) Pages 114-121.  
One mechanical engineer's perspective on change management.

### √IPENZ 19/05 Observations of a project engineer. Gold metal address 2008.

Glover, M. The Structural Engineer, Volume 86 Issue 113 (1 July 2008) Pages 31-37.  
Michael Glover is a director of Arup. He has been involved with many UK infrastructure projects.

**√IPENZ 19/06 Strategic planning on the shoulders of history.**

Georg, D. Engineers Australia, Volume 80 Issue 11 (November 2008) Pages 30-34.

A major marketing campaign to raise the profile of engineering, strategic planning for the next five years and Engineers Australia's 90<sup>th</sup> anniversary celebrations will be on the agenda for Peter Godfrey's year at the helm of the Institution.

**√IPENZ 19/07 Mentoring engineers : myths, motivations and models.**

Smith, A. Consulting Specifying Engineer (February 2008) Pages 27-30.

More mentoring and better mentoring will raise engineering quality and improve the business performance of engineering firms.

**√IPENZ 19/08 When teams can't decide.**

Frisch, B. Harvard Business Review, Volume 86 Issue 11 (November 2008) Pages 121-126.

Leadership teams that can't reach consensus wait for the CEO to make the final call – and often are disappointed by the outcome. Frisch calls this phenomenon the dictator-by-default syndrome. Many companies turn to team-building and communication exercises to try to fix the situation. But that won't work, the author argues, because the trouble is not with the people, it's with the decision-making process. Attempting to arrive at a collective preference on the basis of individual opinions is inherently problematic. Once leadership teams realize that voting-system mathematics are the culprit, they can stop wasting time on irrelevant psychological exercises and instead adopt practical measures designed to break the impasse. They must begin by acknowledging the problem and understanding what causes it. When more than two options are on the table, the scene is set for the CEO to become a dictator by default. Even yes-or-no choices present difficulties, because they always include a third, implied alternative: "Neither of the above." When the CEO and the team understand why they have trouble making decisions, they can adopt the following tactics to minimize dysfunction: Clearly articulate the desired outcome, generate a range of options for achieving it, test "fences" (which can be moved) and "walls" (which cannot), surface preferences early, state each option's pros and cons, and devise new options that preserve the best features of existing ones. Teams using such tactics need to adhere to two ground rules. First, they must deliberate confidentially, because a secure climate for conversation allows members to float trial balloons and cut deals. And second, members must be given enough time to study their options and assess the counterarguments. Only then can they achieve genuine alignment.

**√IPENZ 19/09 New goal setting theory.**

Lycette, B and Herniman, J. Industrial Management, Volume 40 Issue 5 (September 2008) Pages 25-31.

Performance metrics are important, but it is also important to combine the human psychological and business aspects when goal setting.

**√IPENZ 19/10 Neuroscientific implications of psychological capital: Are the brains of optimistic, hopeful, confident, and resilient leaders different?**

Peterson, S et al. Organizational Dynamics, Volume 37, Issue 4 (October-December 2008) Pages 342-353.

**√IPENZ 19/11 Is Managerial level related to personality?**

Moutafi, J., Furnham, A and Crump, J. British Journal of Management, Volume 18 Issue 3, (September 2007) Pages 272-280.

**√IPENZ 19/12 The impact of acquisitions on firm performance: A review of the evidence.**

Tuch, C and O'Sullivan, N. International Journal of Management Reviews, Volume 9 Issue 2 (June 2007) Pages 141-170.

**√IPENZ 19/13 The disintegrating effects of equality: A study of a failed international merger.**

Meyer, C and Altenborg, E. British Journal of Management, Volume 18 Issue 3 (September 2007) Pages 257-271.

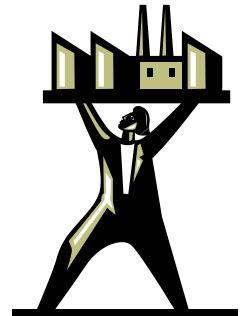
Case study of a merger between two state owned telecommunication companies in Scandinavia.

**√IPENZ 19/14 Five missteps to avoid in volatile times.**

Schiff, C. Harvard Management Update, Volume 13 Issue 11 (November 2008) Pages 3-5.  
An updated version of an article originally published in September 2002 issue of Harvard Management Update.

**√IPENZ 19/15 Cost reductions, downsizing-related layoffs, and HR practices.**

Gandolfi, F. SAM Advanced Management Journal, Volume 73 Issue 3 (Summer 2008) Pages 52-58.

**√IPENZ 19/16 An Examination of customer relationship management (CRM) technology adoption and its impact on business-to-business customer relationships.**

Richard, J., Thirkell, P and Huff, S. Total Quality Management & Business Excellence, Volume 18 Issue 8 (October 2007) Pages 927-945.

New Zealand sales and marketing managers were surveyed to find out their views on CRM technology and business relationships. The results show that while CRM technology is important, the people aspect in customer communication is regarded as more important. Opinion on the important aspects of customer relations is also summarized.

**√IPENZ 19/17 Redefining BPM (business performance management): Why results and performance must be separated.**

Greene, H. Business Performance Management, Volume 6 Issue 2 (June 2008) Pages p4-11.

**√IPENZ 19/18 Watch your step: The potentially perilous route to BPM in 2008.**

Schiff, C. Business Performance Management, Volume 6 Issue 3 (September 2008) Pages 21-24.

Outlines the key issues relating to successful business performance management, including the use of consultants.

**√IPENZ 19/19 Managing user expectations on software projects: Lessons from the trenches.**

Stacie P. International Journal of Project Management, Volume 26 Issue 7, Special Issue: Achieving IT Project Success (October 2008) Pages 700-712.

Prior research has demonstrated that inappropriate user expectations can have a downstream effect on the use of and user satisfaction with an information system. Although several studies have examined the importance of managing user expectations, there has been little work on how project managers can and should manage user expectations on a software project. In this research, software project managers were interviewed to discover the strategies and tactics that were successful and not-as-successful in managing user expectations. Three general strategies for managing user expectations were identified: user involvement, leadership, and trust. These findings as well as the implications for researchers and practitioners are discussed.

**√IPENZ 19/20 Success in IT projects: A matter of definition?**

Thomas ,G and Fernandez, W International Journal of Project Management, Volume 26 Issue 7, Special Issue: Achieving IT Project Success (October 2008) Pages 733-742.

This paper presents findings from an exploratory study that investigated how 36 companies operating in three industry sectors in Australia define and measure Information Technology (IT) project success. Our study suggests that when success criteria are formally defined and then measured, IT project outcomes are improved and project resources are better utilized. In addition, those companies with the most effective methods for defining and measuring IT project success shared some important common practices. Based on these findings, this paper provides insights for defining (and improving) project success in complex environments and presents a model of effective practices.

**√IPENZ 19/21 Bridging the gap from concept to prototype: A case study.**

Wilson, J. and Vozikis, G. SAM Advanced Management Journal , Volume 73 Issue 3 (Summer 2008) Pages 39-51.

A case study of a power wheelchair suspension system, showing the route of product development thorough to prototype.

**√IPENZ 19/22 Cranes : Out of this year's deadly accidents, a critical mass is building.**

ENR, Volume 261 Issue 6 (25 August-1 September 2008) Pages 40-44.

Call for tighter crane oversight raise perennial questions over hoisting.

**√IPENZ 19/23 Tower crane safety in Hong Kong and Japan : a comparison.**

Hong Kong Engineer (September 2008) Pages 17-18.



## Technical Aspects of Engineering

√IPENZ 19/24 **Shear jump in “plate bending” structure and other problems.**

Cheng, Y and Law, C. The Hong Kong Institution of Civil Engineers Transactions, Volume 15 Number 3 (September 2008) Pages 1-8.

√IPENZ 19/25 **Seismic performance assessment of simply supported and continuous multispan concrete girder highway bridges.**

Nielson, B and Des Roches, R. Journal of Bridge Engineering, Volume 12 Issue 5 (September 2007) Pages 611-620.

√IPENZ 19/26 **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 19/27 **Integrating counter-terrorist resilience into sustainability.**

Coaffee, J and Boshier, L. Proceedings of the Institution of Civil Engineers: Urban Design and Planning, Volume 161 Issue DP2 (June 2008) Pages 75-83.

√IPENZ 19/28 **Protecting buildings against bioterrorism-review of guidance and tools/discussion.**

Yeboah, F. et al. ASHRAE Transactions, Volume 113 Part 1 (2007) Pages 263-272.

√IPENZ 19/29 **Prefabricated vertical drains: A simplified design procedure.**

Bellezza, I and Fenini, R. Proceedings of the Institution of Civil Engineers: Ground Improvement, Volume 161 Issue GI4 (November 2008) Pages 173-178.

√IPENZ 19/30 **Quantifiable performance indicators for managing road assets.**

Haas, R., Tighe, S and Falls, L. Canadian Civil Engineer, Volume 24 Issue 2 (May 2007) Pages 16-21.

√IPENZ 19/31 **Heathrow Terminal 5: Tunnelled underground infrastructure.**

Williams, I. Proceedings of the Institution of Civil Engineers: Civil Engineering, Volume 161 Special Issue 1 (May 2008) Pages 30-37.

√IPENZ 19/32 **Heathrow Terminal 5: Substructures and pavements.**

Dawson, T et al. Proceedings of the Institution of Civil Engineers: Civil Engineering, Volume 161 Special Issue 1 (May 2008) Pages 38-44.



√**IPENZ 19/33 DOD: Measure requires life-cycle cost consideration.**

ENR: Engineering News-Record, Volume 261 Issue 12 (20 October 2008) Page 11.

Under the 2009 U.S. Dept of Defence Authorization Bill, there will be more emphasis placed on life cycle costs for future construction projects.

√**IPENZ 19/34 Life cycle cost based procurement decisions: A case study of Norwegian Defence Procurement projects.**

Bernt E. Tysseland. International Journal of Project Management, Volume 26 Issue 4 (May 2008) Pages 366-375.

A Norwegian Ministry of Defence publication states that when procurement decisions are made, systems that yield the lowest possible life cycle cost (LCC) for the Norwegian Defence must be procured, even if this means that initial procurement cost becomes higher. However, several projects within the community are still carried out and reviewed based on initial procurement cost alone. This study investigates four hypotheses, based on agency theory and earlier LCC work, in order to help explain why this is happening. A questionnaire was administered to all projects currently running in the defence community. Findings regarding project uncertainty, information symmetry, the project leader's attitude and knowledge about LCC, as well as control variables are discussed both towards theory and in terms of managerial implications.

√**IPENZ 19/35 Estimating net changes in life-cycle emissions from adoption of emerging civil infrastructure technologies.**

Amponsah, I et al. Journal of the Air and Waste Management Association, Volume 58 Issue 1 (2008) Pages 55-64.

√**IPENZ 19/36 A life cycle methodology for mapping the flows of pollutants in the urban environment.**

Azapagic, A., Petit, C and Sinclair, P. Clean Technologies and Environmental Policy, Volume 9 Issue 3 (2007) Pages 199-214.

√**IPENZ 19/37 Long term durability of steel soil nails in Hong Kong.**

Shiu, H and Cheung, R. The Hong Kong Institution of Civil Engineers Transactions, Volume 15 Number 3 (September 2008) Pages 24-32.

√**IPENZ 19/38 Effectiveness of switching disinfectants for nitrification control.**

Carrico, B. et al. American Water Works Association Journal, Volume 100 Issue 10 (October 2008) Pages 104-115.

√**IPENZ 19/39 Microbial fouling of a reverse osmosis municipal water treatment system.**

Wright, S., Semrau, J and Keeney D. Water Environment Research, Volume 80 Number 8 (2008) Pages 703-707.

√**IPENZ 19/40 Use of membranes for heavy metal cationic wastewater treatment: Flotation and membrane filtration.**

Sudilovskiy, P.S et al. Clean Technologies and Environmental Policy, Volume 9 Number 3 (2007) Pages 189-198.

**IPENZ 19/41 New perspectives on microbiological water control for wastewater reuse.**

Campos, C. Desalination, Volume 218 Issues 1-3 (2008) Pages 34-42.

√**IPENZ 19/42 Dealing with degraded water: Making water reuse more sustainable.**

Bastian, R., O'Connor, G and Elliot, H. BioCycle, Volume 49 Issue 5 (May 2008) Pages 51-55.

√**IPENZ 19/43 Sanitation assessment of wastewater treated by stabilization ponds for potential reuse in agricultural irrigation sanitation assessment.**

Pevelli, R et al. Water Environment Research, Volume 80 Issue 3 (March 2008) Pages 205-211.

**IPENZ 19/44 Water reclamation and reuse: Implementation and management issues.**

Bixio, D et al. Desalination, Volume 218 Issues 1-3 (2008) Pages 13-23.

This paper aims to give an overview of water reuse activities around the world and to outline the specific characteristics of every sectoral use.

√**IPENZ 19/45 Statistical analysis of the structural failures of water pipes.**

Dehghan, A., McManus, K and Gad, E. Proceedings of the Institution of Civil Engineers: Water Management, Volume 161 Issue WM4 (August 2008) Pages 207-214.

√**IPENZ 19/46 A comparison between geothermal absorption and compression heat pumps for space conditioning.**

Kimmert, M et al. International Journal of Environmental Studies, Volume 64 Issue 4 (August 2007) Pages 467-487.



√**IPENZ 19/47 Multi-regime interactions in the Dutch energy sector: The case of combined heat and power technologies in the Netherlands 1970-2000.**

Raven, R and Verbong, G. Technology Analysis & Strategic Management, Volume 19 Issue 4 (July 2007) Pages 491-507.

√**IPENZ 19/48 Energy storage and electricity generation.**

Hall, J and Bain, E. Energy Policy, Volume 36 Issue 12 (December 2008) Pages 4352-4355.

√**IPENZ 19/49 New technology and possible advances in energy storage.**

Baker, J. Energy Policy, Volume 36 Issue 12 (December 2008) Pages 4368-4373.

√IPENZ 19/50 **Lighting appraisal, well-being and performance in open-plan offices: A linked mechanisms approach.**

Veitch, J.A et al. Lighting Research and Technology, Volume 40 Issue (June 2008) Pages 133-151.

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### Books held in Energy Library

These can be borrowed directly by Energy Library members or via interlibrary loan by non-members.

√IPENZ 19/51 **Piping calculations manual.**

Menon, E. Shashi. New York : McGraw-Hill, 2005.

Contains formulas, examples, calculations, and practical tips required to smoothly move gas or liquids through long-distance as well as short pipe segments. It also assesses the feasibility of improving existing pipeline performance and designing new systems.

Covers water, fire protection, wastewater and stormwater, steam systems, compressed air, oil, gas, refrigeration, slurry and sludge systems.

√IPENZ 19/52 **Developing commercial strategies & policies for connecting & integrating renewable energy projects into electricity networks.** London: London Business Conferences. This post event CD-ROM contains presentation slides and audio files from the Renewable Energy Grid Integration Summit held in London on 24th - 25th June 2008.

√IPENZ 19/53 **Hot, flat and crowded: Why the world needs a disruptive green revolution and how we can renew our global future.** (2008). Thomas L. Friedman. London, U.K: Allen Lane

According to the author - who is a U.S. writer and an expert on the Middle East - we need to reduce our dependence on oil for the sake of the environment and global security.

√IPENZ 19/54 **The imperfect board member: Discovering the seven disciplines of governance excellence.** (2006). Brown, Jim. San Francisco: Jossey-Bass.

This book provides valuable lessons on how to improve corporate governance. It will be of interest to all boards and directors who want to be part of a "healthy board."

√IPENZ 19/55 **We the people: Consenting to a deeper democracy: A guide to sociocratic principles and methods.** (2007) Buck. John; Villines, Sharon. Washington, D.C.: Sociocracy. Info

Sociocracy employs consent and collaboration and can create more inclusive and efficient organisations. The authors describe how this type of governance can be achieved.

√IPENZ 19/56 **Senior leadership teams: What it takes to make them great.** (2008) Ruth Wageman and others. Boston: Harvard Business School Press

This book draws on a study of over 120 top teams from around the world and explains how to create a clear and compelling purpose for your team, get the right people on it, provide structure and support, and sharpen team members' competencies and your own.

√IPENZ 19/57 **The speed of trust: The one thing that changes everything.** (2006) Stephen M.R. Covey and Rebecca R. Merrill. New York: Free Press

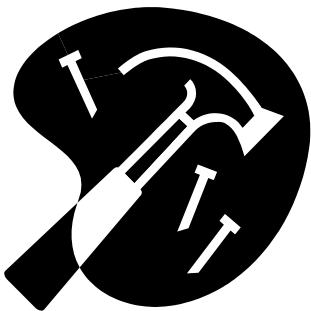
This is an inspiring and empowering book written by the younger Covey to show how greater trust in both our personal and business relationships can produce better results with both more speed and less cost.

√IPENZ 19/58 **Electrical power system essentials.** (2008). Schavemaker, Pieter and Van der Sluis, Lou. Chichester: Wiley

Provides an up-to-date overview and introduction to alternating current (AC) power systems. Looks at the basics for a steady-state analysis of three-phase power systems and also examines: the generation, transmission, distribution, and utilization of electric energy; power system control and operation; the organization of electricity markets, the changes currently taking place, and the developments that could lead to alternative power systems in the future.

√IPENZ 19/59 **Transmission and distribution electrical engineering.** (2007). Bayliss, Colin R.; Hardy, Brian J. 3rd ed. Oxford: Newnes

The scope of this third edition covers power systems, substations, cabling, switchgear, power systems protection, overhead lines, project management, planning, regulations, and more... The third edition has been fully updated throughout in line with current IEC and European standards. This has resulted in a thoroughly rewritten chapter on earthing and bonding and significant revisions to the chapters on EMC, insulation coordination and overhead line design. There is also an emphasis on reliability concepts and power quality. This text is an essential reference handbook for all.



## Special focus topic : Women in Engineering

√IPENZ 19/60 **Becoming leaders: A practical handbook for women in engineering, science and technology**  
Williams, FM. and Emerson, CJ. American Society of Civil Engineers, ASME Press, and Society of Women Engineers (2008) 208 pages.

√IPENZ 19/61 **Women don't ask: Negotiation and the gender divide**  
Babcock, L. and Laschever, S. Princeton University Press (2003) 223 pages.



**√IPENZ 19/62 Australian female engineers on international stage.**

Kanga, M. Engineers Australia, Volume 80 Issue 9 (September 2008) Page 48

The article reports on the 14<sup>th</sup> International Conference for Women Engineers and Scientists held in July 2008 in Lille, France and advises that the 15<sup>th</sup> Conference will be held in July 2011 in Adelaide.

**√IPENZ 19/63 Global efforts aim to empower women engineers.**

Chemical Engineering Progress, Volume 104 Issue 4 (April 2008) Pages 14-15.

"Empowering Women in Engineering and Technology" was the title of the June 2007 World Federation of Engineering Organizations' (WFEO) International Colloquium in Tunisia. A view of engineering education and technology at work throughout the world was provided.

**√IPENZ 19/64 Engineering women.**

Buckley, B. Texas Construction, Volume 16 Issue 2 (February 2008) Pages 23-25.

This article outlines the struggles of advocates to increase female representation at engineering firms. It reports that advocates are making progress in creating role models within the engineering field, while firms are attempting to promote talented women to visible positions.

**√IPENZ 19/65 U.K. Women in and out of engineering.**

Thilmany J. Mechanical Engineering, Volume 129 Issue 3 (March 2007) Pages 10-11.

New research in the UK has found that women students have identified engineering degrees as a good launch pad for a variety of career paths.

**√IPENZ 19/66 Women build careers in a man's world.**

Broderick, P. San Diego Business Journal, Volume 28 Issue 5 (29 January 2007) Pages 24-36, 4 pages.

The proportion of women in the construction industry seems to be growing, and this article features several women who have established a career in this sector in San Diego, California. They include project engineers Danielle Slagal and Karla Bokhoven and executive assistant Jeanne Fenton of Reno Contracting Inc.

**√IPENZ 18/67 Why aren't more women going into engineering?**

ASHRAE Journal, Volume 48 Issue 11 (November 2006) Pages 7-8

**√IPENZ 19/68 Mentoring in engineering.**

Russell, J. Leadership and Management in Engineering, Volume 6 Issue 1 (January 2006) Pages 34-37.

This article deals with the challenges and rewards of experienced engineers and educators becoming mentors for students or young practicing engineers. An approach to mentoring that is deep in self-evaluation, considers the intellectual, social, and professional development needs of students and young professionals, as well as the need for taking little steps can make big differences and can be expected to help encourage more underrepresented groups, such as women and minorities, to pursue careers in engineering.

**√IPENZ 19/69 Trying to do it all: A female perspective**

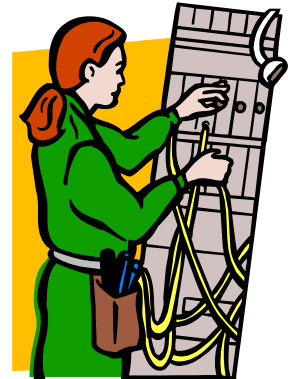
Longueira, N. Canadian Consulting Engineer, Volume 46 Issue 6 (October/November 2005) Pages 70-73.

The views of a young female engineer and mother about her work as a consulting engineer are presented in this article. It appears that her attitude about being a woman in engineering has changed over recent years.

**√IPENZ 19/70 "Regenderneering" the mining industry**

Gibson, G and Scobie, M. CIM Bulletin, Volume 97 Issue 1082 (September 2004) Pages 54-59.

The mining industry has an aging work force and so needs to draw in more professionals, but the numbers indicate the sector remains an alienating one for women. Details of a survey on fifty women and their career experiences in mining are presented.

**√IPENZ 19/71 Frontier masculinity in the oil industry: The experience of women engineers.**

Miller, G E. Gender, Work & Organisation, Volume 11 Issue 1 (January 2004) Pages 47-73.

This study looks at the oil industry in Canada through an interpretive, ethnographic analysis. It is based on data from interviews with women professionals who have extensive employment experience in the industry, a historical analysis of the industry's development and the personal experience of the author. The masculinity of the industry is structured by everyday interactions, values and beliefs that reinforce gender divisions; as well as a consciousness derived from the powerful symbols of the frontier myth with its romanticized cowboy hero. It is revealed that the women's survival strategies also help to reinforce the masculine system.

**IPENZ 19/72 Women and the engineering profession: The stereotypical engineer.**

Cory, SN and Rezaie, B. Journal of Women and Minorities in Science and Engineering, Volume 14 Issue 2 (2008) Pages 141-157.

Results of a survey of 1st-year college students based on the Personality Factor (PF) questionnaire originally developed by Cattell (1943) indicate that personality traits most often associated with engineers were primarily masculine. Perceived characteristics and the probable gender of engineers were compared to those of 5 other professions: accountants, lawyers, physicians, insurance broker/agents, and computer and information systems specialists, whereby several differences were found. There is a discussion of possible ways to begin changing young women's perceptions of these factors.

**IPENZ 19/73 I still wanna be an engineer! Women, education and the engineering profession..**

Gill, J, Sharp, R. Mills, J, and Franzway, S. European Journal of Engineering Education, Volume 33 Issue 4 (2008) Pages 391-402.

The low enrolment of women in engineering degrees continues to be a problem for engineering faculties and the profession generally. A study based on interviews with Australian women engineers across the range of engineering disciplines revealed the importance of success in maths and science at school to enrolment in engineering at university. Yet for a significant number the positive self-image related to this success at school did not carry over into the workplace. The attitudes and experiences of working engineers at three large firms were investigated via a mixed methods approach and results indicate that workplaces continue to be challenging environments for

professional women. This paper identifies particular issues for women working as professional engineers and some educational strategies are recommended so as to better prepare engineers for an inclusive and participatory professional life.

**IPENZ 19/74 Learners in transition: The use of ePortfolios for women returners to science, engineering and technology.**

Herman, C., Kirkup, G. *Innovations in Education and Teaching International*, Volume 45 Issue 1 (2008) Pages 67-76.

In response to a 2002 UK government report that highlighted the problems faced by women returning to employment in science, engineering and technology (SET) after a career break, a national strategy was developed. A key component of this strategy was the creation of a short (100 hours), online course by the Open University (UK) aimed at supporting and empowering women who were returning to employment in SET after a break. An integral part of the course is an ePortfolio. The experiences of the first 100 women who took part in this course are reported.

**IPENZ 19/75 Pit stops and scenic routes: How to aid women to stay on track in their careers.**

Mattei, NJ and Jennings, N. *Leadership and Management in Engineering*, Volume 8 Issue 1 (2008) Pages 27-31.

It has been found that since 2000 the proportion of married mothers with infants and small children in the workforce has dropped by an average of 5 percent. Furthermore women who temporarily leave the workforce lose an average of 18 percent of their earning power and usually cannot regain the lost income or status. As engineers are in demand, it is important for employers to lure this talent back into the workforce. Potential solutions that allow women and men flexibility in employment are explored in this article.

**IPENZ 19/76 Women: Support factors and persistence in engineering.**

Yong, Z. Duncan, J.R. *ASCE Annual Conference and Exposition, Conference Proceedings* (2007) 25 pages

More women engineers are needed in general and in proportion to male engineers, but there is little information about the factors that promote persistence by women in engineering programs. This study looked at the following two questions: (1) What are the factors that support women in engineering? and (2) What are the factors that attract women to and help them to persist in a career in engineering? The findings aim to help faculty, advisers, and program planners to better meet the needs of women in engineering programs as well as helping to reduce the attrition rates of women in engineering.

**IPENZ 19/77 Assessing the impact of career and family choices in mid-life: Striking the right balance for women engineers in their 40s.**

Ingram, S. *International Journal of Engineering Education*, Volume 23 Issue 5 (2007) Pages 954-959.

The 20-year career paths of three women engineering graduates who participated in a larger quantitative/qualitative research study on the career mobility of engineers in the Canadian province of Manitoba are examined in this paper. In-depth interviews reveal that women graduates of the 1980s, although they were subject to discriminatory attitudes and practices at the start of their careers, have also benefited from societal, organizational and engineering-related trends towards

gender equity. Implications on the importance of mentoring strategies to women's career success in the field are drawn.

**IPENZ 19/78 Women in construction: Tapping the untapped resource to meet future demands.**  
 Menches, C and Abraham. D. Journal of Construction Engineering and Management, Volume 133 Issue 9 (September 2007) Pages 701-707.

The construction industry is affected by the global lack of skilled workers. In partnership with government agencies, the industry has developed initiatives to bring new workers for high-skill positions, including women and minorities, into construction. But enticing women into a career field known for conflict and aggression is problematic, Therefore an effort is being made to alter the image and culture of the industry, in cooperation with professional associations, labour unions and universities. The current status of women in construction trades, management, education and research positions is highlighted in this paper. Many of the challenges, opportunities and support networks are also identified.

## Special focus topics in recent Energy Library Updates

TOPIC	Energy Update Link
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➤ Topic One: Electric Vehicles Topic Two : Advanced metering	➤ <a href="#">Sept 08</a>
➤ Hydrogen	➤ <a href="#">July 08</a>
➤ Energy conservation / energy behaviour	➤ <a href="#">June 08</a>
➤ Marketing green energy	➤ <a href="#">May 08</a>
➤ The reform of New Zealand's' electricity sector	➤ <a href="#">Feb 08</a>
➤ Modern metering	➤ <a href="#">Oct 07</a>
➤ Energy and transport	➤ <a href="#">Sept 07</a>
➤ Weather related blackouts	➤ <a href="#">July 07</a>
➤ Carbon capture and storage	➤ <a href="#">June 07</a>
➤ Energy efficient lighting	➤ <a href="#">Feb 07</a>
➤ Transport emissions	➤ <a href="#">Jan 07</a>