



Guelph Engineering Society



Report on PEO Student Conference at the University of Toronto,
November 2-4, 2007.

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1. Purpose of Conference

The Professional Engineers of Ontario Student Conference was held by the Engineering Student Society Council of Ontario and was a means for leaders in the engineering community and society across Ontario to connect and network. It scheduled many informative speakers based around the theme "How Engineers Can Improve the Quality of Life".

2. Personal Goals for Conference

I was really interested in the speakers at this conference, as the theme was related to the role of engineers in society. I was expecting the conference to be a good learning experience that I could bring back to engineering students in Guelph. I was also hoping to network with professionals and students in engineering.

3. Summary of Events

What Does It Mean To Be A Professional Engineer?

- Presented by George R. Comrie
- Competence, responsibility and judgment make a true professional
- The public trusts professional engineers
- Professional engineers must conduct activities with diligence, transparency, and fairness
- Licensing is a form of regulation; Professional Engineering Act acts as a contract between the Attorney General and the PEO
- Outline of how lessons learned in the past have impacted how projects are completed now

Rehabilitation Engineering: Maximizing Possibilities for Children and Youth with Disabilities

- Presented by Tom Chau
- Discussion of his work on maximizing opportunities for disabled children to increase their quality of life
- Increasing the ability for people to express intention and preference

- Analyzing muscle movement to translate them to commands
- Nervous system responses through thermal imaging and skin conductance to determine emotional state
- Musical therapy – form of emotional and physical rehabilitation – children are able to make music using a computer program
- Attending and participating in their classes virtually
- Control of prosthetics by muscle contractions
- Monitoring of swallowing by monitoring sounds and vibrations
- Mediated reality for to assist people with topographical disorientation

Achieving Global Sustainability: The Role and Responsibility of Engineers

- Presented by Bryan W. Karney
- The human success has been remarkable but dangerous, has distanced us from nature and has allowed a growing population with growing material needs, putting the world under stress
- We need not just more engineering but the right kind of engineering
- Link creativity to conservation and human and planetary health
- Ask critical questions
- Dare to try new ideas
- Seven rules of sustainable engineering:
 1. Design it better
 2. Build it better
 3. Maintain it better
 4. Monitor it better
 5. Rehabilitate it better
 6. Rebuild it better
 7. Understand it better

Improving Our World Through Our Professional and Volunteer Work

- Presented by Helen Wojcinski
- Transferable skills can taken from your professional work and used to improve the quality of life for others through volunteer work
- Transferable skills can include: management, organizational, negotiation, contract, communication, creativity, linear / lateral thinking, problem solving, team work, public relations, leadership
- Helen Wojcinski worked as a manager for the Highway 407 design-build extension project and now operates her own change management consulting business
- She volunteers on healthcare committees and with the PEO and OSPE

Engineering Sustainable Cities

- Presented by Chris Kennedy
- Urban metabolism: transformation of raw materials in a city; the energy balance of a city
- A more sustainable city decreases numbers in the metabolism
- Transportation systems should not be focusing on cars for individuals
- Must consider the life cycle of a design
- Design of infrastructure to meet stringent environmental constraints
- Discussion of a project for the Toronto Waterfront Revitalization Corporation
- Must meet building standards (LEED platinum buildings), 30-35% tree coverage, maximum of 1,300 km/cap/year of driving, renewable energy supply, minimize emissions of greenhouse gases
- Really interesting discussion of design ideas to meet these challenges
- Energy supply: passive solar, natural ventilation, photo voltaic, waste energy
- Reduction of energy losses
- Mixed land use: incorporating residential areas with parks and commercial

Engineering Solutions: Reducing the Impact of Aviation on Climate Change

- Presented by David W. Zingg
- Environmental effects of aviation include: noise, decrease in local air quality, and contribution to climate change due to CO₂, NO_x, and contrails
- ~14% of the world total for CO₂ is from transportation, of which ~12% is from aviation
- 4-6% growth in air travel each year
- Solutions: reduce flights, focus on other sources of greenhouse gases emissions, or invest in new aviation technologies now
- Discussion of potential solutions:
 - Optimization of operations, new aircraft design technologies, alternative fuels and increased efficiency of fuels
 - Reduce drag
- Potentially by 2050: net effect on climate change reduced by 4-8

Transportation: It's Positive Impacts on Society

- Presented by Tara Erwin and Chris Philip from iTrans Consulting Inc.
- Discussion of projects that their company works on
- How safety, accessibility work into transportation systems

4. Evaluation

i) Conference Organizers

The conference ran really smoothly throughout the weekend. The speakers all related very well to the theme and the schedule allowed for an interesting option of speakers all of the time. It wrapped up on the last day with a summary of the speakers which was good since not all sessions could be attended and it enforced what we had learned as we were leaving. It was a really enjoyable weekend.

ii) Delegate

I was really inspired by the work of the speakers. It was interesting to discuss different opportunities that engineers have to contribute to a higher quality of life and environmental sustainability. I was definitely able to absorb a lot of information.