

Message from the Chair



We had our annual general meeting (AGM) in March. For the first time in the recent history of our chapter, more than 15 members joined the executive to help out with the business affairs of the chapter. As the new chair, I am very glad to see these new, enthusiastic, young faces on our chapter's board, bringing their new ideas and commitment to Willowdale-Thornhill. The months ahead promise to be very productive ones.

We held our first board meeting after the AGM on March 10th when the new board was elected. In addition to continuing with the existing, established committees of the chapter, we introduced new committees, including the AGM and Certificate Presentation committee, which was derived from the Programs committee. In time, this means we will have more people for each committee and more programs for our members.

If you're interested, here are our chapter committees:

- AGM and Certificate Presentation
- Education and Scholarship
- Engineer-in-Training (EIT)
- Government Liaison Program
- Newsletter
- Programs (Seminars and Tours)
- Website

We also introduced a new task force to look into the by-laws of the chapter. We gave the task force the mandate to recommend changes that make our by-laws as consistent as possible with the PEO's chapter operation's guidelines while simultaneously bringing more flexibility to the chapter operation.

We have updated our website. We plan to consider this activity as an ongoing priority, so that you can always keep up to date. More updates and user-friendly features will be added soon. I invite you all to check the website periodically and provide us with your feedback to make it as informative as it can be.

In the end, I invite you to join the committees that you're interested in and help plan as much events and programs as we can execute. I look forward to working with you all and wish you the best.

Regards,
Changiz Sadr, P.Eng.
Chair, Willowdale-Thornhill PEO chapter

The Chronicle Editor: Nanda Lwin, Contributors: Mohammad Abachi, Changiz Sadr.

Willowdale-Thornhill PEO Chapter Executive Changiz Sadr, **Chair**; Mark Friedberg, **Vice-Chair**; Noubar Takessian, **Past Chair**; Noubar Takessian, **Treasurer**; Mehrangiz Kafi, **Secretary**; Gary Marcarian, **Certificate Presentations**; Michael Chan, **Government Liaison**; Arun Chopra, **Education**; Mark Friedberg, **Seminars**; Miriam Vasen, **Engineers-in-Training**; Nanda Lwin, **Newsletter**; Adethya Vuppal, **Webmaster**

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Sadr Acclaimed as New Chair of Willowdale-Thornhill

By Nanda Lwin, P.Eng.



Newly-acclaimed chair Changiz Sadr, P.Eng.

Changiz Sadr, P.Eng., was acclaimed chair of the Willowdale-Thornhill PEO Chapter at the organization's board meeting on March 10, 2009. He takes over from Noubar Takessian, P.Eng., who was chair since 2005 and now sits as the chapter's past chair. A license holder with the Professional Engineers Ontario (PEO) since December 1999, Sadr previously held the position of vice-chair for four years. He has also sat on various committees at the chapter level and with the PEO, including the latter's experience requirements committee.

Sadr began his engineering career with the Iranian government in the late 1970's. He has held positions as an engineer at AT&T Canada and Sprint Canada and is presently an information and communications technology consultant and manager at Symcor Inc. of Mississauga. Sadr holds a bachelor's degree in telecommunications engineering from the Telecom Faculty in Tehran, Iran, and has over 30 management and industry-related certificates to his credit.

The New Chair at a Glance Changiz Sadr, P.Eng.

Employment: Presently an information and communications technology consultant and manager at Symcor Inc. in Mississauga. Former engineer at Optel, Bell Sigma, Sprint, and AT&T. Teacher at Tehran Technical Training Complex/College in Tehran, Iran in the 1980's.

Education: Bachelor's degree in telecommunications engineering, Telecom Faculty, Tehran, Iran. Holds more than 30 professional certificates, including Convergence Technologies Professional (CTP) and Certified Telecom Management Executive (CTME) certificates.

PEO involvement: Member and professional engineering license holder since December 1999. Vice-Chair, Willowdale-Thornhill, 2005-2009. Member of various Willowdale-Thornhill committees including Government Liaison, and Newsletter. PEO experience requirements committee (ERC) for electrical engineering since 2000. Vice Chair, Emerging Disciplines Task Force. Chair, Communications Infrastructure Networks.

Other engineering-related memberships: Ontario Society of Professional Engineers, Engineers without Borders (Toronto Professional Chapter), Canadian Society of Iranian Engineers and Architects (served on executive from 2002-2004), Association of Telecom Management Professionals (AOTMP).

Other facts: Nominated and selected as the finalist for AOTMP Industry Excellence Award as Telecom Professional of the Year in 2008. Speaks Farsi, Turkish, English, and some Arabic and German. Received two Ontario Volunteer Service Awards from Minister of Citizenship and Immigration Michael Chan for mentoring newcomers and his participation in the Canadian Association of Iranian Architects and Engineers.

Piezoelectric for Cleaning Air Conditioning Systems

By Mohammad Abachi, EIT

In this article engineer-in-training Mohammad Abachi explains the fine details of his former position. He explains the role of piezoelectric in air conditioning, just as the weather starts to cool...

Piezoelectric is a small ceramic composite transducer (or crystal) used as a cleaner in the air conditioning system of a vehicle. Piezoelectric acts as an electrical/mechanical transducer. When an electric signal is applied to the piezoelectric, it starts to oscillate and can in turn, oscillate a small amount of liquid. This very characteristic is used to design another piece of equipment called the MIST (Mobile Interior Sonic Treatment) Cleaning Unit, a portable unit which treats bacteria, mold, mildew and other microbes trapped in a ventilation system.

First, however, a brief explanation of the ultrasonic principle as it pertains to the operations of the MIST Cleaning Unit is in order.

A piezoelectric transducer, emerged in the liquid solution bed, converts a high frequency electric signal into a high frequency mechanical oscillation.

As the oscillation speed is increased to a level where the liquid particles (molecules) can no longer follow the oscillating surface, a momentary vacuum and strong compression occur, leading to the explosive formation of air bubbles or cavitations.

At cavitations, broken capillary waves are generated and minute nebula droplets break the surface tension of the liquid and are quickly dissipated in the air. This is done by helping a small fan, and taking vapour (one

in micron diameter) form and absorbing it into the air stream.

As you can guess, this phenomenon is neither steam nor normal humidification. Instead, it is nebulization.

Here are some technical facts about the MIST Cleaning Unit. The unit:

- Is a small portable unit, powered by 110 VAC.
- Utilizes state-of-art ultrasonic technology by using an 8-bit or 16-bit microcontroller.
- Freshens the heating ventilation and air conditioner (HVAC) system and the entire vehicle interior environment.
- Is designed to eliminate unpleasant odors associated with mold, mildew, fungus and bacteria, even tobacco odors, odors from spilled food and beverages and bodily fluids such as sweat.
- Is ideal for reconditioning used cars. Complete service is performed in about 15-20 minutes.

In general, this ultra humidification system with some alterations can be used in computer rooms, switching rooms, laboratories, processing areas, operating rooms, offices, archival storage, printing houses and humidors, photo labs, bakeries, dairies, food storage, and supermarkets.

Mohammad Abachi, EIT, holds a master's degree in electrical engineering. He is presently an electronic tester at Celestica Corporation in North York.

ENGINEERING NOTES by Nanda Lwin, P.Eng.

What is causing the Infrastructure Deficit?

The following article is Part 2 of an ongoing series about the infrastructure deficit. Part 1 is featured in the February 2009 issue of The Chronicle.

Much of the Canada's infrastructure was built in the 1950's, 1960's, and 1970's. Today, a number of assets are presently due for replacement or are quickly nearing the end of their life cycle. There are a number of factors that have accelerated the deterioration over the past few decades.

1. Urbanization

Population growth in urban areas creates a demand for infrastructure. The need for roads, highways, water distribution, sewer systems and other infrastructure increases as more people require the services of public assets. Hence, significant population growth in cities has been a main factor in shaping urban infrastructure. Between 1971 and 2001, the proportion of Canadians living in census metropolitan areas increased from 56 percent to 63 percent, a trend that is expected to continue. Furthermore, it has been estimated that 80 percent of immigrants to Canada move to the three largest urban areas – Toronto, Montreal, and Vancouver. With greater urbanization anticipated in Canada, the pressure will increase to build new infrastructure as well as to repair existing assets.

2. Government Expenditures

Government fiscal policy at the federal and provincial levels also exacerbated the infrastructure deficit. In the 1970's, the federal government began operating with budget deficits, with the provinces following suit in the 1980's. By the early 1990's, the federal government was running a deficit in excess of \$40 billion; the combined deficit between the federal and provincial levels topped \$65 billion. As federal and provincial govern-

ments tightened budgets in the early 1990's, funding became scarcer and infrastructure received very little attention. Assets were adversely affected and the average age rose as a consequence.

3. Added Responsibilities for the Municipalities

Municipalities experienced trouble providing adequate infrastructure. First, provinces had and still have substantial control over municipal legislative and taxing powers dictating what goods and services can be taxed and at which rate taxes can be set. Also municipalities are not permitted to operate on a deficit. Aggravating the situation even more were the reduction of grants to the cities in the 1990's and the fact that municipalities were forced to take on added responsibilities as municipal airports, local ports, local harbours, ferries, and transit were downloaded to the cities with no additional funding. Municipal governments were hardly in a position to provide adequately for infrastructure.

4. Policy Impacting Infrastructure

Due to the shortage of public funding, governments have been kept from providing the necessary repairs to rehabilitate and maintain existing infrastructure. Even worse, governments have ineffectively used the limited funding available by setting aside funding for new infrastructure at the expense of repairing existing public assets.

The above article is based on a research paper written by the author and presented and submitted to McMaster University.

Nanda Lwin, P.Eng., is a professor of civil engineering technology at Seneca College. He is also a journalist and the author of several books. He can be reached at nanda.lwin@wtpeo.org.



Past chair Noubar Takessian, P.Eng., receives an appreciation certificate at the June 9, 2009, meeting. At the meeting (from left to right): Mehrangiz Kafi, P.Eng.; Gary Marcarian, P.Eng.; chair Changiz Sadr, P.Eng.; Takessian; Oleg Korniyenko, Ph.D., P.Eng.; Brenda Bao, P.Eng.; Mohammad Abachi, EIT; Miriam Vasen, P.Eng.; Adythy Vuppal, EIT; Miriam Moses, P.Eng.

Parting Shots...

- Past chair **Noubar Takessian**, P.Eng., was presented a certificate of appreciation at the executive meeting at the Professional Engineers Ontario (PEO) office on June 9, 2009. The mechanical engineer served as chair for four years before stepping down in March.
- In more Takessian news, the past chair was installed as treasurer at a special meeting of the executive on July 20, 2009, following the resignation of Brenda Bao, P.Eng.
- The Willowdale-Thornhill PEO chapter will be participating in the provincial **Mathletics** for the first time, tentatively scheduled for November 22, 2009. Mathletics is a mathematics competition designed for elementary-school students. Details will be announced at a later time.
- The Willowdale-Thornhill PEO chapter is working with PEO's Mentoring Task Force to participate as a pilot chapter for the first phase of the task force's new mentoring program.
- The **next certificate presentation** for newly-minted professional engineers is tentatively scheduled for October 24, 2009.