Ottawa Chapter Newsletter

February 2024

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SRE OTTAWA CHAPTER

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POINT OF VIEW

Greetings to all our members! We have passed through some very mild temperatures on Feb 8th, 2024. That Friday will live in the records as one of Southern Ontario's warmest-ever February days. Temperatures climbed up to 15.7 deg C at in Toronto securing a spot as the city's fifth-warmest February day on record. A similarly impressive temperature of 9.9 deg C was recorded in Ottawa as the eight-warmest February day on record. This brings about great interest in heat-pump retrofits in Canadian homes. Canada's cold climate means that space heating accounts for over 60% of the energy used in the average home. Making the switch to more energy-efficient heating equipment such as an electric cold climate air source heat pump can save between $1500 to $4500 on energy bills and reduce the carbon footprint of your home. But what about the reliability of heat pumps? This is the subject of this newsletter with reliability statistics mentioned below.

We are in the early planning stages of a training course/seminar to be offered to our members as well as affiliated societies such as the PEO, OSPE, ASQ and IEEE. The subject will be heat pumps, their functioning, energy savings and reliability. We think that a Saturday afternoon might work the best with a small attendance fee under $20 and provided virtually as well as with an in-classroom instructor. We would be interested in hearing other suggestions from our members or whether you think the course outlined above will be of interest.

On the subject of training I'd like to introduce Paul Dobrovolny as our new Education Chair. He is taking the lead on the heat pump course. He says that as a follower of the LRT saga in Ottawa, with its separate subsystem aspects, diverse designers and suppliers leading to its most notable failures he's increased his interest in reliability and thus joined us last fall. His current function at the Department of National Defence is life-cycle materiel management, condition assessments and end of life wearout. Please join me in welcoming him aboard.

We are now collecting $50 for the 2023/2024 season membership fees. We accept e-transfer payments however there is an important change in the email address as explained under chapter news below. Two years ago the international SRE had voted to increase the yearly dues from US$5 to US$20 starting in 2022/2023. This is the portion of your membership fee that gets sent directly to the international SRE for helping to run their operations and to help fund SRE awards for RAMS participants. Our chapter has chosen to phase this in for our members over the next three years to soften the blow.

We have another line-up of fantastic speakers for our Feb, Mar and Apr 2024 meetings. Details are provided below. Please join us in person or virtually and bring your friends an colleagues. We are looking for speakers for our 2024/2025 season so please come forth and submit your name to our Membership Chair, Jim Arsenault, whose phone number appears in the masthead and whose email address is liard2@bell.net. Hope to see you soon!
- Ahmed Bashir

SPRING 2024 OTTAWA SRE TECHNICAL PROGRAM

Mark your calendar! Here are the dates for presentations this Spring:

28 Feb., Khalil Zeaiter, Ciena, Corrosion and Conformal Coating,
27 March, Julio Pulido, SREI President, Reliability of Thermoelectric Devices,
24 April, Ray Lee, TC Consultants, Design for Reliability - A Lifecycle Management View

7:00 p.m. Greetings & Chapter Business
7:15 p.m. Presentation
8:00 - 9:00 Questions and Discussion

All presentations for the 2024 Spring season will be delivered in person in the Edge Room at General Dynamics Canada, 1941 Robertson Rd, and on-line via Zoom. The link will be sent with the meeting notices.

CHAPTER NEWS

Its time to pay your membership dues! Our fiscal year is synced with the SRE International - we pay them based on the number of paid-up members at the end of May, which is why we start collecting dues now. There has been a change to the e-transfer process - the email to be used is: sreotreasurer@gmail.com. ***This is important!*** If you use the old e-mail, I get the money in my personal account, so don't just use the default stored in memory.
See the masthead for positions available on our executive - join the fun!
Copies of Ray Lee's "Design for Reliability - A Lifecycle Management View" which covers all aspects of Reliability from a high level suitable for persons just entering the field and for those practitioners wishing to brush up the latest developments will be on sale for $10 at the February 28 Technical Program meeting. Zoom participants can request a copy which will be snail-mailed and payment can be by e-transfer.

RELIABILITY IN THE NEWS

The North American Electric Reliability Corporation (NERC)'s 2023 State of Reliability finds that overall, the North American bulk power system remains highly reliable and resilient. However, extreme weather events continue to pose the greatest risk to its reliability and stability. Transmission system reliability has improved significantly for the fifth consecutive year, and the rate of protection system misoperation also continues to improve. Conventional generation, challenged by more frequent extreme weather, experienced its highest level of unavailability overall since NERC began gathering generator availability data in 2 013. In addition, cyber security compromises and increased physical attacks on critical infrastructure in the latter part of 2022 reinforce the need for further development and adaptation of reliability standards and guidelines.

ALL AHEAD FOR HEAT PUMPS

Global sales of heat pumps grew by 11% in 2022, according to the latest International Energy Agency analysis, marking a second year of double-digit growth for the central technology in the world's transition to secure and sustainable heating.

Increased policy support and incentives for heat pumps in light of high natural gas prices and efforts to reduce greenhouse gas emissions were key drivers behind the strong uptake. In Europe, heat pumps enjoyed a record year, with sales growing by nearly 40%. In the United States, heat pump purchases exceeded those of gas furnaces. However, in China, the world's largest heat pump market, sales remained stable amidst a general slowdown of the economy.

Confused over how heat pumps differ from air conditioning? This article from Forbes Magazine explains pros and cons, and ROM costs, in $US. Want to know even more? Here is a Technology Review article on everything you need to know.

A comprehensive study of heat pump failure modes led to the following conclusions:
'This study presented a review of faults described in operational large-scale heat pump systems. Faults from 53 case studies were described based on potential causes, effects on the system operation, mitigation or prevention strategies as well as detection and diagnosis methods. The main conclusions of the study were the following:

• Source heat exchangers, evaporators and compressors were described to be affected by faults more frequently than other components in large-scale heat pumps and the most common faults in those systems were fouling of heat exchangers as well as refrigerant leakage.
• The origins of faults leading to system shutdown, capacity and/or performance reduction as well as refrigerant leakage were more frequently described in the compressor than in other components of large-scale heat pump systems.
• The detection and diagnosis of faults in large-scale heat pump systems has the potential to reduce downtime periods, performance degradation and negative environmental and health-related externalities.

• Fault detection and diagnosis methods may leverage existing supervisory systems and the criteria for their design should include data requirement, adaptability, robustness and provision of interpretable results, which can be beneficial for their application in large-scale heat pump systems.'

SREO Newsletter

If you have something to share with the Ottawa SRE community, please send it to: James Menard menardsj@sympatico.ca. Deadline for the next Newsletter is Jul 31, 2024