

CSSE Newsletter

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The President's Remarks

AGM Update by Dan MacDonald

A successful AGM for CSSE-SCIS was held in Fredericton, NB on May 11, 2019. The AGM was followed by an Awards Dinner in which 10 Fellowships were conveyed.

The most important issue addressed was the good news that CRA had changed their rules and CSSE-SCIS could remain as a charitable society and still carry on our function of advocacy for the engineering profession. Another significant issue was that it was agreed that the incoming President, **Dan MacDonald**, would Chair a Donations Committee to create terms of reference and criteria for selecting and awarding CSSE-SCIS charitable disbursements.



President Dan MacDonald

Following are some of the highlights of the AGM, for more details, please refer to the formal minutes on the CSSE/SCIS website.

Discussion/motion - CSSE-SCIS Bylaws update for Bill C-86 compliance - after discussion a motion was moved by **J. Beckett** and seconded by **D. MacDonald** to accept and approve the CSSE/SCIS Bylaws updated to be compliant with Bill C-86 as presented by the Bylaws Committee - carried.

Announcement - It is my pleasure to announce that **Ken Putt**, after many years of service to the society, was appointed as a Honorary Director, congratulations **Ken**.

Action Items - For your information, the following are the action items from the meeting:

- **S. Barrington** to make recommendations on the CSSE-SCIS organization;

The President's Remarks ... continued

- **J. Beckett** to obtain a proposal from CSSE Administrator, **J. Kizas**, for his assumption of additional secretarial services;
- **J. Beckett** to discuss with EIC Executive Director, **G. Gosselin**, options for simplifying release of CSSE-SCIS designated charitable funds from the EIC charitable foundation (EIC Fund);
- **J. Beckett** to make arrangements for re-registration of the CSSE-SCIS "Wise Owl" logo and copyright if same and CSSE-SCIS official name;
- **J. Beckett** to arrange to have new Bylaws submitted to the CRA as a continuing registered charity, with note made of the minor change in the English language portion of the full CSSE-SCIS official name; and
- **K. Putt** to obtain an official French language version of the CSSE-SCIS Bylaws disclaimer.

I would like to thank the Board, the Executive and the Membership for appointing me as President for the upcoming term, with the assistance of the past president and the Board, I am confident we can have a successful year fulfilling the mandate of the CSSE/SCIS and move forward with our initiatives.

Regards,

Dan MacDonald, M.A.Sc., P.Eng., FEC FCCSE
President CSSE/SCIS

Fellows awarded at the CSSE Annual Meeting

CSSE is happy to report the awarding of 10 new Fellows at its Fredericton Annual Meeting:

Robert (Bob) MacDonald, N.S.

Lorne Martin, N.S.

Sarah Deveraux, N.S.

Christine MacKinnon, P.E.I.

Leonard Shara, QC.

John McDougall, AB.

Nick Malychuk, AB.

Rod Savoie, YT.

Ann English, B.C.

Tony Chong, B.C.



Four of CSSE/SCIS's new Fellows: From left to right, **Sarah Deveraux**, **Leonard Shara**, **Lorne Martin** and **Robert MacDonald**

National News

1. Design for Resilience North 3A

George W. Thorpe, P.Eng. and **Ken Johnson**, P.Eng., have produced a paper on the design of infrastructures for resilience, whereas before, infrastructure design was limited to risk focus.

The term resilience in this case is specifically related to the reliability and robustness of Critical Infrastructures (C.I.) after a severe disturbance. Measuring resilience is one of the most demanding tasks due to the complexity involved in the process. Resilience of an engineered system can be improved through dynamic design principles. The science of design for resilience is key to integrating the factors that are required for a successful future. It is therefore defined as the strategic design and construction of C.I., buildings and other related systems to sustain required operations during and after the impact of severe disturbances, plus prevent or adapt to, longer term influences.

Substantial progress has been made on the science of design for resilience for urban infrastructure, but to advance our understanding of the best detailed methodology for northern latitudes, major collaboration between institutions and stakeholders is required. The reality of climate change is here now and time for infrastructure improvement is limited.

The complete article can be obtained at: www.academia.edu/38526075/Design_for_Resilience_North_3B.docx

2. CSSE/SCIS has a new communications committee

Your new communications committee for 2019-2020 will be made up of: **Andrew Jones**, **Suzelle Barrington** and **Don Kjosness**. **Andrew** who remains in charge of the Web site, will be proposing a new face for CSSE/SCIS: watch for these changes. **Suzelle Barrington**, will be gathering information for the Newsletter while **John Kizas**, our administration will still be in charge of its final editing. **Don Kjosness** will be an advisor, thanks to his many years of experience.

Thank you to our previous contributors

During 2018-2019, CSSE/SCIS saw several of its contributors leave their functions because of personal reasons, such as illness. The society wishes to recognize the following persons for their contributions:

Arnold Eyre: responsible for the Newsletter for several years, and also a Past Secretary and Secretary again for 6 months in 2018.

William Altimas: Chair of the Membership committee and our contact with the Canadian Youth Science Fair.

National News ... continued

(Continued from page 3)

3. Canada-Wide Youth Science Fair

Once more, CSSE/SCIS participated in the Canada-Wide Youth Science fair activity, as judge and also as prize contributor of \$750. EIC adds an additional 1500\$. This year the event was held in Fredericton, N.B., and Past-President, **Suzelle Barrington** represented CSSE/SCIS. Some 450 students took part from all over Canada. Some 350 judges evaluated the projects as each project is judged several times, and for several prizes.

The recipient of the CSSE award for Engineering Innovation is **Ethan Chan**, of the Glenlyon Norfolk School in Victoria B.C. **Ethan** designed an automated system to accurately monitor and record kidney: urinary strips are read colorimetrically, and a treatment is more accurately determined to avoid taking unnecessary medication. The diagnostic printed and recorded.



Past-President, Suzelle Barrington representing CSSE/SCIS as judge



Recipient of the CSSE award for Engineering Innovation, **Ethan Chan**, with Canada Youth Fair Official

4. Membership Dues

The second half of the year dues will be requested in July, but great news.

As CSSE is now a Charitable Organization, allowing for charity privileges for members, the receipt will be eligible as a receipt for a reduction of one's taxable income when filing the 2019 tax return.

Having recovered its official status, CSSE as an organization will be able to pursue its support of activities supporting the engineering profession, through the support of its members.

From Sea to Sea to Sea ... Current and Coming Events

MARITIMES (Contact: Dan MacDonald, danm@cbcl.ca)

New Brunswick testing a new Nuclear Energy concept

The guest speaker at the Awards banquet of CSSE/SCIS, **Rory O'Sullivan**, CEO of Moltex Energy, was unable to attend, but Brent Smith filled in by presenting this very interesting use of nuclear power, centered around the work being done in the R&D field in the province of New Brunswick. The province has committed 10M\$ toward the development of an Advanced Small Modular Reactor (SMR) Nuclear Energy Research Cluster, and in separate announcement two private companies - Advanced Research Concepts (ARC) and Moltex Energy - committed 5M\$ each to fund activities within New Brunswick to explore the development, licensing, and construction of Advanced SMRs at the Point Lepreau site, and to establish R&D teams in New Brunswick. Both designs being studied as part of the R&D are currently undergoing the Vendor Design Review through the Canadian Nuclear Safety Commission's early assessment program.

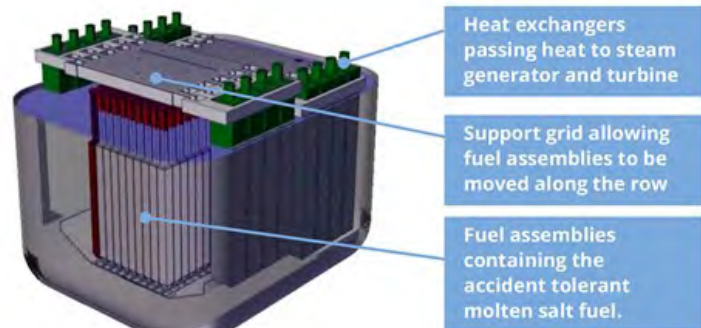
The partners will explore commercial opportunities to manufacture and export the technology, expertise, and components across Canada and around the world. This technology is expected to provide sustainable electricity and will power New Brunswick's growth.

The presentation described one of the technologies, Moltex Energy's stable salt reactor, that will be tested in New Brunswick in collaboration with the Province. These reactors are inherently safer than the traditional systems

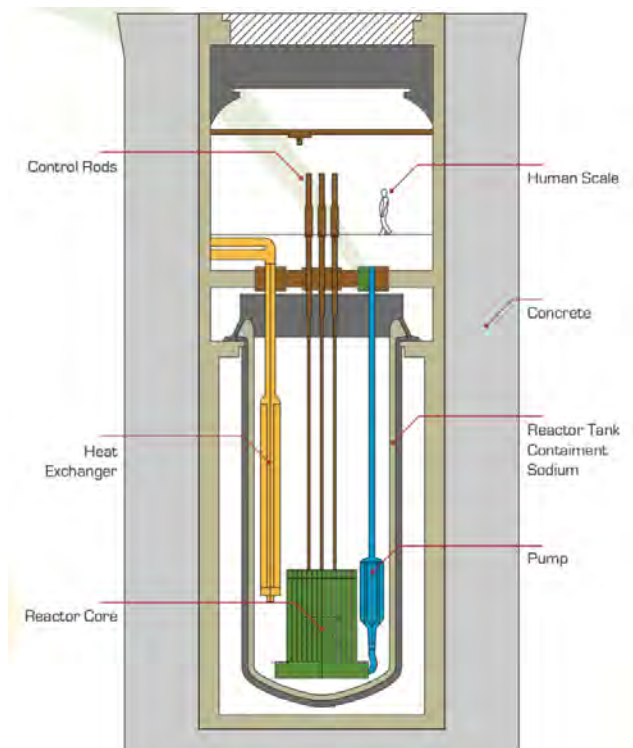
More information can be found at: Moltex Energy - <https://www.moltexenergy.com/stablesaltreactors>

Advanced Research Concepts (ARC) - <https://www.arcnuclear.com/technology>

The Moltex Energy Reactor



The ArcNuclear Technology.



The use of sodium instead of water as the heat transfer agent in the reactor allows the reactor to operate at ambient pressure. Its containment vessel is a double walled stainless steel tank rather than a 12 inch thick forged steel containment vessel required for traditional light water reactors.

The ARC-100 design creates a "walk away" passive safety system that insures the reactor will never melt down even in a disaster that causes a complete loss of power to the plant site. In addition, it can be fueled with the nuclear waste produced by traditional reactors, and its 20 year refueling cycle offers new levels of proliferation resistance.



From Sea to Sea to Sea ... Current and Coming Events ... Continued

QUEBEC PROVINCE (Contact: **Jean-Guy René**, jg.rene@sympatico.ca)

MONTREAL (Contact: **Bill Altimas**, waltimas@hotmail.com)

The Montreal group meets at the Manoir Resto in Pointe Claire on the first Monday of each month for lunch; also, at The Royal Saint Lawrence Yacht Club (The RSLYC) in Dorval, Quebec.

ONTARIO (Contact: **Jon Jennekens**, jonorah@rogers.com)

THE GREATER OTTAWA AREA (Contact: **Tony Thatcher**, jathat@rogers.com)

The Ottawa Branch of the CSSE SCIS continues to hold its monthly lunch-seminars. Attendees include current members, former members, and friends from the Montreal Branch and others who are attracted by the seminar topics, their association with or knowledge of the guest speakers and the informative comment / question / answer sessions that follow the presentations. The informal / no fee approach seems to be an important factor. Attendance during 2018 ranged from 16 to 21 per meeting, invariably weather dependent.

The Ottawa Chapter meets at The KS Restaurant on Daze Ave., south of Southgate Shopping Mall, usually on the 3rd Monday of the month, at 11:30 for lunch.

MANITOBA (Contact: **Dave Ennis**, ns2@mymts.net)

The Manitoba Chapter meets at the premises of Engineers Geoscientists Manitoba at 870 Pembina Highway in Winnipeg.

The next event will be on June 18th on the topic "Engineering Ethics: A Game-Based Approach".

SASKATCHEWAN (Contact: **Pieter Van Vliet**, p.vanvliet@sasktel.net)

Dennis Paddock, FCSSE, is recognized for his contributions to Engineering

Engineers Canada recognized a Saskatchewan CSSE Fellow at its 2019 Awards ceremony. **Dennis Paddock**, P. Eng., was awarded the Meritorious Service Award for Professional Service. **Dennis** was recorded to state that: "There is no higher calling in an engineering career than public service. It is a chance to make a positive difference in people's lives."

Congratulations **Dennis**, from the Board of CSSE/SCIS. It is well deserved.



Peter J Jackson, MBA, P.Eng., FEC, FGC(Hon) received his 2018 FCSSE Fellowship award at the APEGS/APES

At the Past Presidents' Meeting held in Regina on May 3, 2019 in the presence of his peers and representatives from various provincial and national engineering organizations, **Peter Jackson** received his 2018 Fellowship. Presenters were CSSE Past-President Shawna Argue and CSSE Director Pieter Van Vliet.

ALBERTA (Contact: **Fred Otto**, fotto@interbaun.com)

EDMONTON (Contact: **Nick Malychuk**, nmaly@telus.net)

The Edmonton Chapter meets at Chateau Louis Conference Centre, 11727 Kingsway on the 3rd Thursday of the month, at 11:30am., with a buffet lunch at 12:00, followed by a speaker.

From Sea to Sea to Sea ... Current and Coming Events ... Continued

On June 20: Alex Nassif a specialist Engineer in the ATCO Electric organization will discuss the problems and advantages Distributed Energy Resources (DERs) play in modern Electrical Systems. He will talk about the new rules governing the interconnection of generation such as solar installations, flare gas installations, wind etc. to the utilities distribution system. New regulations first initiated in California will be coming to the Canadian utility scene. He will also talk about the problems of controlling the voltage on distribution lines will large amounts of DERs being connected.

CALGARY (Contacts: **Chan Wirasinghe**, wirasing@ucalgary.ca; **Leo Flaman**, lflamn@shaw.ca)
Arrangements are made by **Leo Flaman** for The CSSE and The CSEM to hold joint luncheons. Registration for each luncheon is at 11:30 am at The Danish Canadian Club.

On May 13th, the speaker, Mark Brown, P. Eng., V.P. and Manager of Fluor Canada spoke on: Kitimat LNG

Last October, LNG Canada made a final investment decision to build its liquefied natural gas (LNG) export facility in Kitimat, British Columbia, Canada. The project represents the largest energy investment in Canadian history. The LNG export facility will liquefy surplus Canadian natural gas so it can be safely exported to help meet global energy demands. The project scope will initially consist of two liquefaction units (trains) for a total of approximately 14 million tons per year of LNG. LNG Canada has the option to expand to four trains in the future.

Fluor's joint venture with JGC Corporation will provide the engineering, procurement, fabrication and construction on the project. Fluor and JGC will begin site activities this year, with first LNG expected around the middle of next decade.

To Register for the Calgary events: Please contact Leo at lflamn@shaw.ca or go to the CSEM website: www.csem-scgi.org/calgary.html.



BRITISH COLUMBIA (Contact: **Ken Putt**, kwputt@shaw.ca)

VANCOUVER (Contact: **Aidan Gordon**, aidan@gordoncrane.com)

The Vancouver chapter normally meets at 11:45, on the first Thursday each month at the Sutton Place Hotel, Burrard Street. (3-course lunch. Cost: Members \$45.00, guests \$50.00.)

VANCOUVER ISLAND (Contact: **Robin Black**, rcbandassoc@shaw.ca)

The Vancouver Island Branch, operating as the Vancouver Island Engineering Society (VIES), gathers for lunch at 11:30 A.M., on the first Friday (adjusted for holidays) October through May, at The Oak Bay Recreation Centre, Victoria. Please link to www.viengsoc.ca for current activities and events, or secretary@viengsoc.ca for specific enquiries. At the May 3rd Branch AGM, **Guy Van Uytven**, FCSSE was elected Chair, replacing Dr. **Alan Winter**, FCSSE. Dr. **Robin Black**, FCSSE, continued as Secretary-Treasurer and Dr. **Don Kjosness**, FCSSE, continued as Program Chair. Emeritus Advisors who also continued were **Colin Smith**, **Gerry Buydens**, **Graham Morgan** and **Ken Putt**, all CSSE/SCIS Fellows.



From Sea to Sea to Sea ... Current and Coming Events ... Continued

The first VIES Luncheon Meeting in the Fall will be:

October 4 th	Marine Engineering - New Technology, Alternate Fuels & Applications	Greg Peterson Director of Engineering BC Ferries	BC Ferries implementing alternate energies (LNG, hydrogen) for its new ferries.
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May 3rd luncheon with guest speaker Dr. Stephanie Willerth on 3D bioprinting of neural tissues from drug screening

Neurological drugs entering clinical trials fail over 90% of the time due to lack of efficacy or unforeseen toxicity. Better pre-clinical tools for predicting drug effectiveness and toxicity would significantly lower the chance of drug failure during clinical trials. Developing novel 3D multi-cellular neural tissue models that recapitulate the features of neurodegenerative diseases and serve as a convenient drug screening tool. Human induced pluripotent stem cells (hiPSCs) serve as an important tool when engineering neural tissues as they can be expanded and differentiated into neurons. However, current methods for generating physiological neural tissue from human pluripotent stem cells are low throughput, inconsistent, and labor intensive. The Willerth lab produced 3D neural tissues derived from hiPSC-derived neural progenitors using the novel Lab-On-a-Printer (LOP)[™] bioprinting technology (Aspect Biosystems). LOP[™] technology enables rapid switching between different biomaterials during the production process, enabling multiple cell types and scaffold components to be precisely positioned in different regions within the same 3D tissue without changing the printhead. Alternative approaches to bioprinting such as ink-jet and needle extrusion, expose the cells to high levels of shear stress when they are forced out of the printhead. Higher print speeds and pressures, higher viscosities of bioink, or smaller gauge needles exacerbate these stresses. Human pluripotent stem cells, including hiPSCs, are fragile cells, particularly sensitive to high shear stress that may cause unexpected cell death and premature differentiation, thus the RX1 bioprinter is the ideal system as its printing process only exposes cells to low shear stresses during the printing process. It also prints these structures in a rapid fashion, taking minute to produce each structure - providing a distinct advantage in terms of throughput in comparison to traditional tissue engineering methods.

Dr. Stephanie Willerth
University of Victoria, Associate Professor
Mechanical Engineering and Division of Medical Sciences
Principal Investigator ICORD



Coop Awards by VIES Chair

Michael Gingras receives his coop Award from VIES Chair Dr. **Alan Winter**



Progress of CSSE Papers

"The Aging of our Vital Infrastructure and the Threat to Public Safety - an Engineering Responsibility" (Contact **Jean-Guy René**, at jg.rene@sympatico.ca or 613-821-5273) has been distributed to a representative of each province for distribution to local authorities of his or her choice.

Still being developed:

"The Erosion of Canada's Manufacturing Sector - What Can Engineers Do About It?"

(Contact **John Dinsmore** at johndins@videotron.ca, or phone 514-933-2112.)

For members who might be interested in leading a CSSE paper, there is a procedure to follow, available by contacting **Andy Jones** at stonyjones@ieee.org.

Recruit a New Member!

If you have a friend who is not a CSSE member, simply refer her or him to the CSSE website at seniorengineers.ca. Dues for the balance of 2019 are \$50

Correspondence with the CSSE Administration Office

All "snail-mail" correspondence, including cheques, and enquiries, should be sent to:

The Canadian Society of Senior Engineers
464 Briar Avenue
Ottawa, Ontario
K1H 5H6

administrator@seniorengineers.ca

Phone calls: 613-890-9363

Dues and donations can be paid securely by credit card by going to the "Members" page at the CSSE website www.seniorengineers.ca

Changed Your Coordinates?

If you have a new mailing (or emailing) address, please inform the CSSE Administration Office at administrator@seniorengineers.ca or (613) 890-9363 and the CSSE Secretary, **Don Kjosness** at kjosness@telusplanet.net.