

## **CONFERENCE REPORT:**



### **OGA conference celebrates positive future and 10-year birthday**

This year's Ontario Geothermal Association (OGA) conference was described by many as 'one of the best ever,' with participant numbers up, the exhibitor section sold out, and plenty of positive news at the event, delivered by a fine roster of expert speakers.

### **STAN REITSMA & BRIAN BEATTY**

#### **HAPPY 10<sup>TH</sup> BIRTHDAY TO THE OGA**

The two-day event began with a gala banquet April 3, celebrating the organization's 10<sup>th</sup> birthday. New OGA President Stan Reitsma marked the occasion by reviewing the history of how a number of individuals created the fledgling organization in 2009. He honoured one of them, founding President Brian Beatty, with the first-ever Groundbreaker Award. Reitsma also reported that numerous research organizations are projecting strong growth in the geothermal industry for the next five years at minimum.

## **GEOFF CAPE**

The evening's keynote address was made by Geoff Cape, CEO of Evergreen, who described the low carbon world of the future, the key role that modern cities will play, and the exciting dramatic increase in opportunities for geothermal expected, beginning immediately.

## **ANDREW GORDON – NEW GEO PROGRAM AT FLEMING COLLEGE**

Andrew Gordon from Fleming College in Peterborough, Ontario, made a presentation on a new one-year geothermal program. He reported that the college has received initial Ministry approval and is now developing a curriculum for tradespeople associated with the geothermal industry, including drillers, plumbers, HVAC, pipefitters, and mechanical engineers.

The first semester will focus on geology and installation of the external heat exchanger portion of a geothermal installation. The second semester will explore interior system components and design, including feasibility assessments, system sizing, system balancing and more. The program is expected to be characterized by hands-on exercises and demonstrations, a safety focus, guidance from applicable EPA, OHS and other regulations, and training by field-experienced practitioners who can reinforce the effects of improper installation methods or sub-standard industry practices.

Geo students will attend the Frost Campus in Lindsay for the first semester and the Sutherland Campus in Peterborough for the second semester.

Gordon expects students who complete the program to be highly

employable, given the high quality of instruction, and the current and future demand for qualified people. The developers are hoping the new program will be offered for the September 2019 school year, pending approval by Fleming and the Ministry.

### **BRUCE NAGY - GEOTHERMAL STORYTELLING**

The gala evening wrapped up with a birthday celebration, which followed a short presentation by Bruce Nagy on OGA communications. He reported on progress with The Loop Newsletter, the revitalization of the web site, event and training communications, and the Customer Stories program. The latter was a response to member requests for ways to counteract misinformation and increase promotion of geothermal in Ontario. It involves the development of testimonial material for social media, web sites and mainstream media. The program began in 2018 and continues this year with Nagy encouraging OGA members to collaborate on interviewing and preparation of the materials.

### **DAY TWO**

The optimistic tone continued on day two, April 4, as Master of Ceremonies and New OGA Vice-President Jeff Hunter introduced a dozen top-notch speakers and panellists. Presentations (available [here](#)) confirmed the high level of activity in the industry, described new government initiatives in Canada and the USA, new technical solutions, case studies and training opportunities.

## **MARTIN LUYMES, HRAI – ADVOCACY UPDATE**

The day began with good news from Martin Luymes who described several positive government developments and plans for future advocacy efforts.

Martin advised that the Federal government is spending \$20 million over 5 years to implement its Market Transformation Roadmap, which calls for 44 clean energy initiatives, including some related to geothermal (see Jamie Hulan below), and is expected to also include extensive consultation with members of the OGA and other segments of the mechanical industry.

He also expressed optimism in connection with updates to the Toronto Green Standard (see Fernando Carou below), and also the Federal Fall and Spring economic statements/budgets which have included:

- Carbon tax with 90% of tax to be refunded to taxpayers and 10% held in a fund for green initiatives.
- Corporate clean energy tax incentives that are expected to provide a significant inducement to investment in geothermal (as similar USA measures did for solar) including an Accelerated Capital Cost Allowance -  
- 100% depreciation of energy efficiency and renewable energy upgrades in first year.
- A spring budget allocation to the Federation of Canadian Municipalities of \$1.01B for energy efficiency upgrades.

- Some emphasis on the use of PACE (Property-Assessed clean energy) or LIC (Local Improvement Charges) as vehicles for boosting building system efficiency and clean energy.
- Training allocations for industry, relating to the low carbon economy.

### **ANDREW BOWERBANK – INSTITUTIONAL PROJECTS**

Also speaking at the conference was Andrew Bowerbank, National Vice President, Sustainability & Energy, WSP Global. He delivered an inspiring talk on the low carbon economy of the future, building technology trends, and described some of the details of the carbon neutral heritage retrofit of the Joyce Centre for Partnership & Innovation at Mohawk College (HRAI is sponsoring a symposium/tour there on April 23). He described some of the challenges associated with life-cycle emissions assessments and other aspects of contemporary institutional building design.

### **BRIAN URLAUB – RESIDENTIAL COMMUNITY GEOTHERMAL**

Brian Urlaub, Director of Geothermal Operations at MEP Associates offered an excellent case study comparing centralized community geo plant with two-pipe distribution to single pipe-distributed heat exchangers. The latter solution was advantageous for the project discussed, and the process of developing it resulted in valuable lessons learned for future designers working on similar community residential geothermal.

### **SERGIO ALMEIDA**

Based on comments from many OGA members, commercial and multi-unit residential installations appear to be the most robust part of the geothermal market at the moment, and perhaps for the next few years. Sergio Almeida of Geo-Xergy Systems explored some commercial projects and provided insights on the effects on system design decisions of a more precise, integrated approach to design and construction of projects, sophisticated controls and building operation, and also improving building envelopes. When talking about integrated design he covered elements such as ventilation/ makeup air heating and cooling, secondary boiler loops, building envelope considerations, sensitivity analysis, snow melt, and domestic water preheating.

#### **FERNANDO CAROU – TORONTO GREEN STANDARD**

Fernando Carou, Manager, Public Energy Initiatives at the City of Toronto confirmed for OGA delegates some key conclusions about the Toronto Green Standard (TGS). The TGS is a guideline for developers that is being phased in over time to help the city reach its greenhouse gas emission targets. Measures are introduced in voluntary tiers first, then are moved into mandated tiers. There are many details, but two overarching points underscore the strong future opportunities for the geothermal industry:

- By 2030, new buildings will be built to produce near-zero greenhouse gas (GHG) emissions.
- By 2050, all existing buildings will have been retrofitted to improve energy performance an average of 40%.

Similar aggressive measures are being implemented to move the city to 100% low-carbon vehicles and 95% landfill waste diversion.

### **TIM WEBER – LARGE PROJECTS & THE UTILITY MODEL**

Tim Weber of Diverso walked delegates methodically through the life of a large project developer, so that everyone could understand the tricky, but possible pathway to persuading them to take advantage of geothermal systems. For multi-unit residential projects, he reinforced the many advantages of the developing third-party geo/HVAC utility models. Diverso is now working on big projects in Ontario and the USA, involving university buildings and condominiums. One Toronto project will be more than 500 residential units.

### **MARC-ANTOINE RENAUD**

Marc-Antoine Renaud, Vice-President, Strategic Development Eolectric Capital, is Diverso's financial partner. He said that his company would invest \$550M in Ontario geothermal projects. He described the uniquely positive conditions that exist in Ontario today, attracting investment in such projects. He also explained how a geothermal utility model can satisfy rigorous financial risk analysis. His encouraging presentation provided advice to would-be technical partners on financial partnership considerations.

## **PRODUCT INNOVATION**

The conference featured presentations from Armstrong Fluid Technology and Multistack. Greg Pimento from Armstrong reviewed how a Toronto project replaced pumps from the 1980s with new Wi-Fi enabled equipment. The combination of variable speeds, parallel staging, and Wi-Fi connection to Armstrong's optimization service resulted in significant efficiencies that recover the upgrade investment quickly. Pimento noted that there are thousands of existing systems in Ontario built in the 70s and 80s that are prime candidates for geothermal systems and upgraded pumping technology. Mike Clatworthy from Multistack described modern day modular water chillers and their use in geothermal projects.

## **NORTHEASTERN USA GEO MARKET EXPLOSION PANEL**

Will Lange from WaterFurnace, Jay Egg of Egg Geothermal, and a panel of visitors from the USA described the incredible transformation taking place, and driven by government initiatives in the northeastern US market, especially in New York State and Massachusetts. Ryan Dougherty, CEO of Geothermal Exchange Organization (GEO), Zachary Fink, Board Member of NY-GEO, and Tim Wright, VP of Sales at Enertech Global noted that NYSERDA (New York State Energy Research and Development Authority) is a main player. New York State has established a moratorium on gas service expansion, replacing it with multiple incentive and regulatory programs involving low carbon alternatives. Westchester County alone is expected to become home to 8,800 geothermal installations in the next 5 years, with financial support coming from a budget allocation of US \$250 million.



## **DR. YASSER ABDELSALAM – RESEARCH AT MCMASTER UNIVERSITY**

Dr. Yasser Abdelsalam, from McMaster University briefed participants on a geothermal research project involving 20 researchers, six faculty and 17 industry partners. The aim of the geothermal part of the initiative is to create a thermal energy storage technology for integrated communities. The new ICE-Harvest DER system recovers waste heat to meet thermal demands, provides for energy sharing between neighboring buildings, and the opportunity for demand side management. He said that if we installed 1.45 GW<sub>e</sub> of ICE-Harvest systems by 2030, we could reduce 5.6 million tonnes of CO<sub>2e</sub> annually.

## **JAMIE HULAN**

The conference ended on a high note from Jamie Hulan, new Director of the Equipment Division of Natural Resources Canada's Office of Energy Efficiency. He provided an overview of *Canada's Market transformation road map for energy efficiency equipment in the building sector*, which has been endorsed by federal, provincial and territorial energy Ministers. Some of the initiatives relate specifically to geothermal market development, including:

- Expansion of access to and uptake of existing and future heat pump incentive programs.

- Research to reduce ground loop installation costs for ground source heat pumps, by exploring a CO<sub>2</sub> direct expansion heat pump system that could reduce field size by up to 50% and reduce costs by between 20% and 50%.
- Investigation of potential of multiple u-pipe configurations, saturated sand and standing column well (potential borefield reductions of 20%).
- Developing a reference borehole concept, which could better estimate the ground properties for more accurate system sizing

Detailed work plans for implementation are expected by Summer/Fall of this year.

## **ANNUAL GENERAL MEETING**

The conference also included the OGA's Annual General Meeting. Members ratified presentation of the financial statements, and the slate of Board Members, including our new VP and President.

Stan Reitsma	GeoSource (President & Chair)
Jeff Hunter	Redmond Williams (Vice-President)
Jim Bolger	Waterloo Energy Products (Past Chair)
Gabriela Grigoriu	Next Project (Treasurer & Secretary)
Rose Anderson	Buchanan & Hall Ltd.

Grant Blackmore

Eden Energy

Stan Marco

GeoSmart

John Bosman

Bostech Mechanical

Chad Hayter

The Hayter Group

Ron J. Wright

Enertech Global