

British Columbia-designed facility tests and develops negative-ion sources



The Ion Source Test Facility is located at Buckley Systems Ltd (BSL), in Auckland, New Zealand. A joint project owned by Canadian company D-Pace, Inc., and BSL, the facility was conceived, designed, and partially built at D-Pace's location in Nelson, BC. BSL manufactured the hardware and D-Pace staff assembled and integrated the system in Auckland, with support from BSL staff. The facility has been operational since March 2016.

D-Pace uses the facility to research and develop ion sources—devices that generate charged particles for particle accelerators. The company also tests beam diagnostic instruments used to

measure particle characteristics such as beam current, position, spatial profiles and trajectories. Researchers from BC and New Zealand also use the facility in experiments to optimize ion sources for different charged particle types. Applications include diagnostic and treatment accelerators used in medicine and ion implantation accelerators used in the semiconductor industry.

The facility is one of the few installations built for testing and developing ion sources used to generate negatively charged particles.

APEGBC members: Dr. Morgan Dehnel, P.Eng., David Potkins, P.Eng., Philip Jackle, EIT

BC actuators control fine linear motion in orbit



Actuators are small motorized components that perform the highly precise back-and-forth micro-movements of intricate devices.

Actuonix Motion Devices Inc. designed and provided the PQ12 actuators that make possible and control linear motion within NASA's Strata-1 regolith experiment, currently installed on the International Space Station.

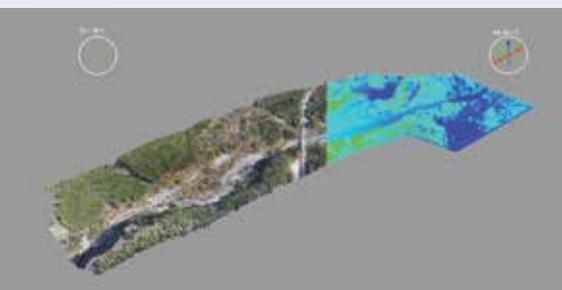
Regolith is the soil-like, rocky material that is found on asteroids and other space objects that have no atmospheres. Actuonix's PQ12s adjust the Entrapulator assembly,

which compresses and holds the study's simulated-regolith materials in place during launch to the space station and return to Earth.

Strata-1 aims to answer questions about the regolith behaviour in micro-gravity and ambient vibration. The study's results will help answer questions about how regolith affects the safety of spacecraft and spacesuits, as well as adding to research on actual regolith samples that have been collected and brought to Earth during past missions.

APEGBC members: Mike (Simon) Baker, P.Eng., Ruaridh Mackinnon, EIT

Flood risk near popular Alberta park facilities mitigated



In June 2013, a significant rainfall event in southern Alberta over a three-day period triggered debris flooding in a number of creeks in Kananaskis Country. The floods damaged, among other infrastructure, existing Ribbon Creek Day Use Area facilities and deposited large amounts of debris in Ribbon Creek.

Alberta Parks retained SweetTech to provide a practical design of additional flood mitigation and protection works for the creek to protect against future design flood events (1:100-year return period).

The work includes river engineering, flood protection, bank stabilization, erosion protection, and parking lot, bridge, and road protection measures.

SweetTech is providing full-concept design, detailed engineering design, and construction administration support to this project. The company also coordinated a full site aerial drone survey with Skymatics Ltd. to gather current survey data and aerial imagery of the Ribbon Creek and nearby Kovach Pond day use areas.

APEGBC member, SweetTech Engineering: Eric Sweet, P.Eng.