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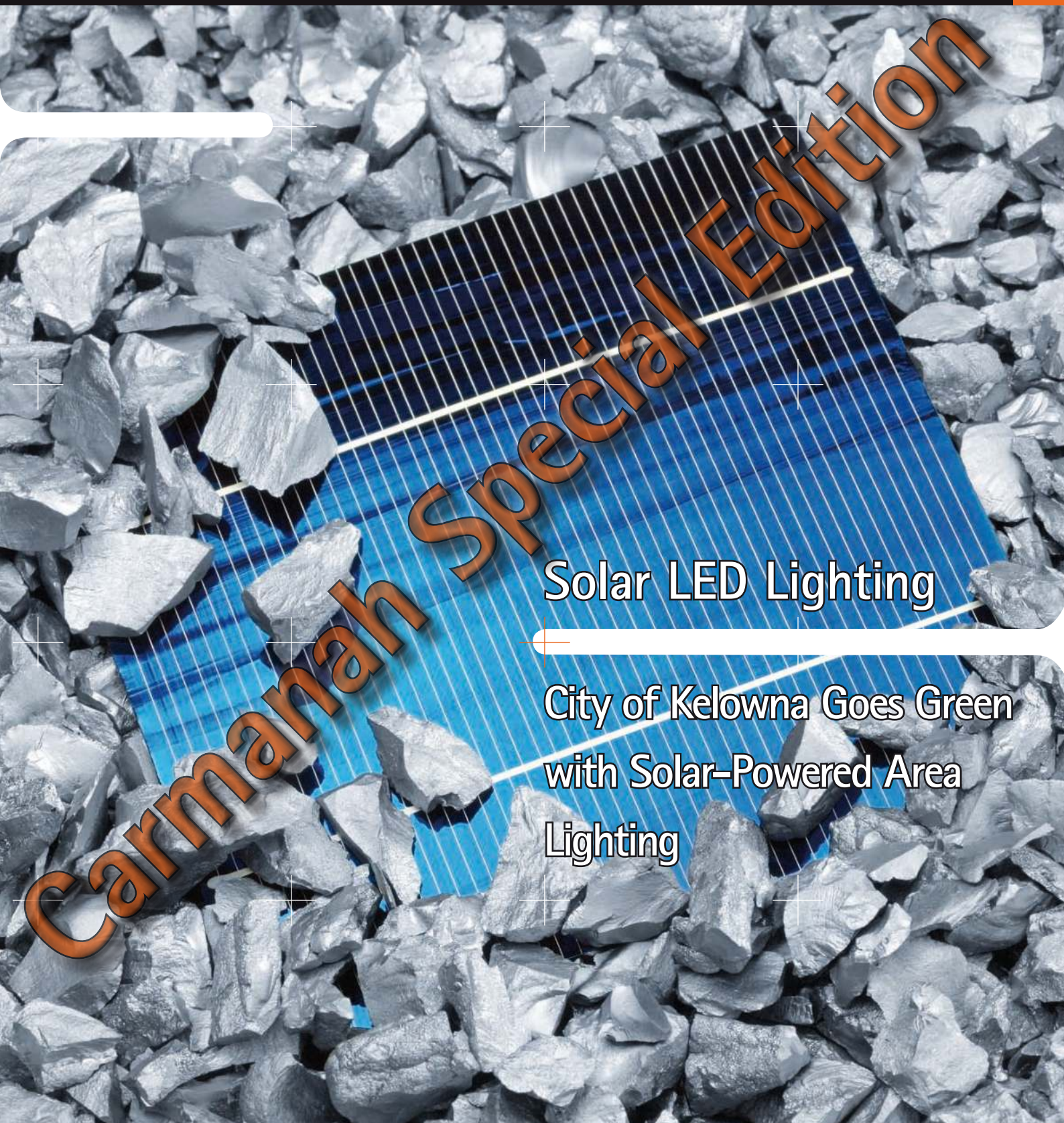

Carmanah Special Edition

Solar LED Lighting

City of Kelowna Goes Green with Solar-Powered Area Lighting

Application

City of Kelowna Goes Green with Solar-Powered Area Lighting

> Anthony Tisot, Communications Manager, Carmanah Technologies

The City of Kelowna recently launched its latest green initiative with the unveiling of a new type of solar powered LED area light near the entrance to City Hall – the first of many stand-alone lights that will soon illuminate parks and pathways throughout the city.

As part of its "Going Green" strategy, Kelowna is installing 100 of the EverGEN™ solar-powered area lights, designed and manufactured by Victoria-based Carmanah Technologies, in a citywide deployment of renewable energy technology. Offering easy installation and freedom from grid-access requirements, the solar-powered lights will illuminate green spaces and other public areas to help enhance convenience, security, and visual appeal throughout the city.

Funding for the project is coming from a variety of sources, including $128,000 from the City of Kelowna, a contribution of $530,000 from Carmanah Technologies, and a Government of Canada grant of $500,000. Provided to help Canadians reduce energy costs, increase energy efficiency, and develop cleaner energy technologies, the Government of Canada contribution includes $480,000 from the Technology Early Actions Measures program and $20,000 of in-kind support from Natural Resources Canada.

Lighting a Green City with Solar Power

As a suitable location for solar power technology, Kelowna is ideal. Situated in the heart of the Okanagan Valley, Kelowna's beautiful lakeside location offers mild winters, hot summers and more than 2,000 hours of sunshine a year. Residents of this fast-growing "green city" also share an active commitment to sustainable development and environmental stewardship. Under the guidance of Mayor Sharon Shepherd, Kelowna is actively involved in reducing its environmental footprint, in part through renewable energy applications such as this year's solar area lighting project.

Unlike traditional lighting technology, each of the new area lights is powered by a solar engine – a stand-alone energy source that's completely self-contained, with all components (including solar modules, rechargeable batteries, sensors and electronics) integrated within a compact and durable pole-mounted enclosure.

Each solar engine powers one or more luminaires – adjustable light fixtures equipped with energy-efficient LEDs (light emitting diodes). Designed to deliver light only where needed, each LED luminaire provides a uniform illumination, while reducing or eliminating common lighting challenges such as glare or spillover onto adjacent properties. A shielded design featuring full cut-off optics also helps to reduce light pollution by preventing light from escaping upward into the night sky.

To ensure consistent lighting levels in all seasons, each solar engine also includes a built-in energy management system (EMS). The EMS monitors environmental conditions and dynamically adjusts the light output to match the level of solar charging available. In this way, the EMS ensures that energy is conserved appropriately during times of low solar charging (such as low light or winter conditions). Using the EMS, each light can also be intelligently programmed in advance to shine brightest whenever the need is anticipated to be the greatest, for example, during times of highest usage.

Figure 1: Carmanah EverGEN Solar LED streetlight in off and on state

Figure 2: Area lighting in parks is one domain, where the combination of solar technology and LED technology is today's best solution

As a stand-alone lighting solution, Kelowna's solar area lights require no trenching, cabling or electrical hook up, so installation is relatively simple. Free from the limitations of grid access, each light can be installed quickly and easily, wherever light is needed. With no bulbs to replace and an LED lifespan of up to 50,000 hours, maintenance is also expected to be minimal.

Figure 3: Preparation of the solar engine for installation at the pole by qualified personnel

Selecting Sites for Solar Powered Lights

In choosing suitable locations, the project team started with a list of 200 potential sites, and selected the final 100 spots based on a list of factors including technical and geographic considerations (such as access to sunlight), distribution throughout the community, functional variety, and distance from an existing power supply. The final list identified a variety of buildings, parks, trails, crosswalks, municipal facilities, parking lot kiosks and transit facilities.

Over the next year, Carmanah engineers will work with City of Kelowna staff to monitor the lights and evaluate their performance in field conditions. A data analysis by Natural Resources Canada will also help to assess power savings and reductions to the community's carbon footprint.

By using the sun's energy as an alternative power source, Kelowna's solar-powered LED lights can help the community to reduce its dependency on grid-based electricity, for a clean, economical and maintenance-free lighting alternative. With this wide-scale commitment to renewable energy technology, Kelowna is leading the way as a true innovator, and one of Canada's leading solar cities. ■