

AWARD OF EXCELLENCE

26 to 100 Employees

Improving Amazing

Redesigned HVAC makes Earth Rangers Centre a national leader in sustainability

BY ROBERT PRICE

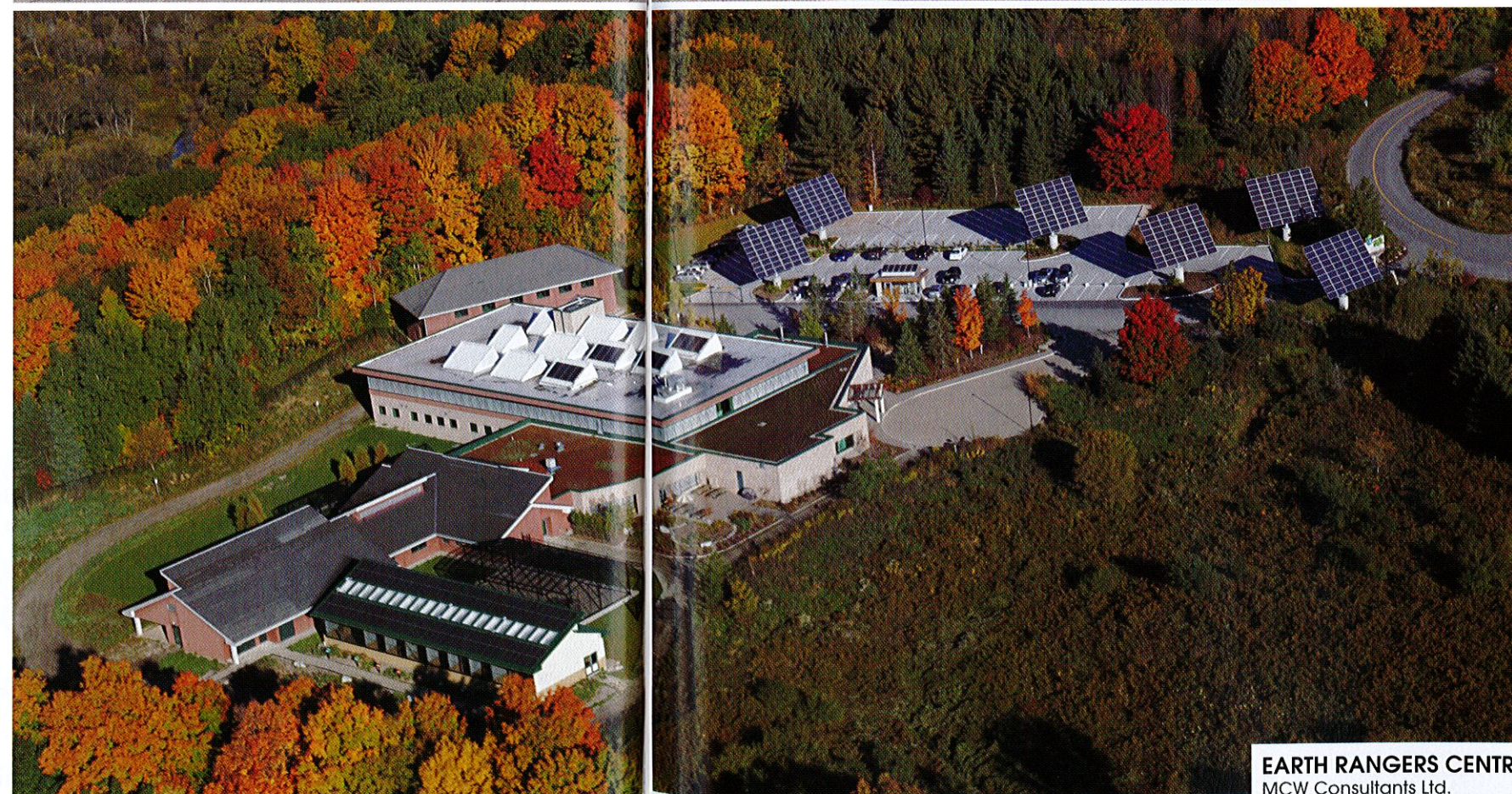
Good engineering improves “amazing.” This is the case at the Earth Rangers Centre for Sustainable Technology in Woodbridge, Ontario, where MCW Consultants improved the centre’s LEED® gold status to achieve one of the country’s first LEED® EB O&M Platinum certifications (Existing Buildings: Operations & Maintenance).

MCW Consultants undertook the redesign of the centre’s heating, cooling, ventilation and control systems in 2009, when the Earth Rangers – an organization dedicated to education and awareness of environmental conservation – set a goal to become carbon-neutral.

James Raven, the engineer at MCW Consultants who managed the project, says the job came with a unique problem. The Earth Rangers Centre already topped many of the measures for building sustainability. The question became: How do you improve what’s already amazing?

One way was to integrate all the sustainable technologies into one digital control system. With one system, Raven says, the Earth Rangers would have better information about the building’s energy use and how to find new efficiencies in the building.

“Getting that [integrated system] operational and efficiently working was a challenge,” says Raven. To integrate individual technologies spread across the



EARTH RANGERS CENTRE
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vastly complex building required the engineers to create an integrated energy submetering system and to rewrite sequences of operations.

“Getting all the pipes and valves hooked up the right way, that’s one thing, but making sure everything is being controlled properly is a practical, hands-on part of the job,” says Raven. “It took a lot of time sitting at the control system and making sure that the right system was coming online for each of a number of scenarios and we were getting the most bang for our buck for energy performance.”

In addition to the submetering system, the redesign generated other changes to the building. The revamped building now has a geothermal field to heat and cool water, six energy-tracking solar photovoltaic panels, a reconfigured heating system that collects waste heat from other systems, and other sustainable features.

Completed in 2011, the centre’s redesigned environmental systems stretch previous understandings of building efficiency.

The centre now achieves an Energy Star rating of 95, the maximum achievable score under LEED® and operates with an efficiency of more than 80 per cent the national average. In terms of actual numbers, the centre exceeds initial projections. In 2011, the re-engineered environmental systems saved more than 675,000 kWh – or enough to power 50 homes for a year. A total net annual greenhouse gas reduction of 111 tons/year was also achieved – the equivalent of planting 2,500 trees or removing