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VESTED INTEREST

Company supplies complete CHP solution to large-scale greenhouse

PEAK VALUE

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VESTED INTEREST

ENVEST SUPPLIES COMPLETE CHP SOLUTION TO LARGE-SCALE GREENHOUSE

As an independent power producer delivering private utility energy solutions to industrial and governmental customers in North America, Envest Corp. provides clean, distributed energy systems using renewable and natural resources.

The Toronto-based company delivers turnkey energy systems tailored to meet customers' specific objectives and power requirements in mission critical environments.

Envest's turnkey model includes financing, building, owning and operating a power system for the end user. It invests the necessary up-front capital and operating expenditures required over the lifecycle of its energy systems to the benefit of its customers.

Envest's primary focus is the generation of combined heat and power (CHP or cogeneration) using natural and renewable fuels. In addition to cogeneration facilities, Envest has

developed distributed energy projects such as microgrids, as well as bioenergy operations in North America.

Green and growing

Since December 2017, Envest's staff has operated and maintained all aspects of an onsite power system for CannTrust, one of Canada's leading licensed producers of cannabis under the Health Canada Access to Cannabis for Medical Purposes Regulation (ACMPR) program. Since its inception in 2014, CannTrust has been a major player in the Canadian market by producing pharmaceutically standardized product.

Envest currently supplies 75 percent of the power and heat to CannTrust's 430,000 square-foot greenhouse operation in the Niagara region of Ontario. CannTrust is currently working to expand the electrical system so that Envest's cogeneration will provide 100 percent of the facility's energy load by the second quarter of this year.

The Niagara facility is a state-of-the-art hydroponic greenhouse with computer-controlled irrigation and full supplemental lighting. The facility is equipped with a perpetual harvest system which produces cannabis 365 days a year, and results in a continuous production capacity.

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CUSTOMER PROFILE

Envest Corp.

Location: Fenwick, Ontario Canada

Application: CHP for greenhouse

Cat® Equipment: G3520H gas generator sets (4)



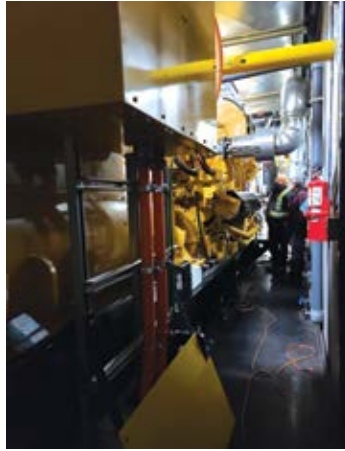
The location of the greenhouse in Fenwick, Ontario meant that CannTrust's electrical needs could not be fully met by the utility provider, Hydro One. After looking into all available options, it was decided that cogeneration utilizing natural gas generators was the best fit, says David Hamby, vice president of grow operations for CannTrust.

Four Cat® G3520H gas generator sets are capable of producing 10 MW of electrical energy that powers the facility's grow lights 24/7/365. The generated energy also powers some product processing and drying equipment.

The gas generator sets are equipped with jacket water heat recovery systems. System heat recovered as hot water from the jacket water circuit is collected in an on-site thermal storage tank from which heat is supplied to the entire greenhouse. The energy recovered from the CHP plant offsets 100 percent of the natural gas previously used to heat the existing boilers.

"As an islanded facility, maintenance and uptime are critical to our off-taker's operations," says Jason Moretto, Envest president and CEO. "We have two operators dedicated exclusively to this system, as well as other support staff."

To date, the CHP system has achieved 97 percent uptime, according to Roger



Tiessen, general manager of operations for Envest.

The greenhouse has faced some energy challenges, especially during the summer months, when it comes to the quality of power received from the public utility, which has led to equipment-related and operational issues.

"The power quality received from the CHP is high quality and consistent, so much so that our off-taker is currently evaluating using the CHP for base load power supply going forward," Moretto says. "In addition to providing low-cost electricity and offsetting natural gas consumption in the boilers, the CHP system also provides a reliable and stable source of electricity."

As electricity rates in Ontario continue to rise, the business case for the project centers on significant savings in electricity costs realized by CannTrust. Cultivating cannabis at scale, even in a greenhouse, requires significant amounts of supplemental heating and lighting—which are among the grower's highest operating costs.

Envest's CHP solution provides energy cost certainty for the greenhouse operation, and was a deciding factor for CannTrust when evaluating future electricity rates forecasted in the province of Ontario.

"There is a substantial cost difference with our cogenerated electricity versus buying power from the grid," Hamby says. "An added cost savings is realized



by utilizing the heat from the generators to heat our greenhouse, which limits the use of boilers.”

If there is a power outage on the 1 MW base load provided by the public utility (Hydro One), the greenhouse facility is equipped with automatic transfer switches to switch the base load power supply to the cogeneration facility. The Envest system is capable of powering the entire greenhouse facility in the absence of grid power. This includes grow lights, computer servers, processing equipment and emergency/critical loads.

Dealer support is critical

Envest has a 15-year association with Cat dealer Toromont Power Systems developing natural gas, biogas, syngas and battery storage projects. Toromont provided essential input and equipment expertise in the developmental stage of the CannTrust project, and was also involved in final commissioning.

“Both Toromont and Caterpillar have been critical to Envest’s success,” Moretto says. “They have been a team member at the early development stages of potential projects. Their early support on opportunities is invaluable to our initial evaluation of a project’s viability from a technical perspective.

“We have also worked closely with Cat Financial for over a decade, and their support has been invaluable,” Moretto adds.

Envest and Toromont complement each other in providing energy solutions to the Canadian marketplace, Moretto says. Toromont is able to provide its customers with a unique financing alternative by offering a third-party ownership model through Envest. Therefore, the customer may realize immediate savings and hassle-free operations as Envest invests the significant up-front capital required for a turnkey energy system. Envest also funds the operating expenditures over the life cycle of the energy system.

The turnkey business model enables CannTrust to focus on its core business.



“Extending the Caterpillar offering with a prolific parts and service network backed by a strong local dealer like Toromont, we believe our energy services have been designed for the highest possible quality and uptime for our end user.”

JASON MORETTO, President & CEO, Envest Corp.



“The Envest operators and engineers are professionals and are experts in their field,” Hamby says. “They do an outstanding job in providing clean, uninterrupted electricity to our greenhouse operations. We at CannTrust feel we are professionals in the field of growing cannabis and producing exceptional products for our patients. Our focus has to be on our core values and our patients. Envest and CannTrust have a great partnership, and working in our respected fields together, we optimize the efficiencies of our grow operations.”

Envest maintains all aspects of the onsite cogeneration system at CannTrust, including system operation and routine maintenance and repairs to the four G3520H gensets. It works closely with Toromont for parts and more complex troubleshooting and repairs.

“Toromont has a tremendous depth and network of service personnel and locations in their territory,” Moretto says. “Parts and service availability is vital to uptime, which directly relates to project economics over the course of a long-term energy contract.”

Moretto says Envest is pleased with the performance and reliability of the Cat CHP system to date, noting that the system operator has not met with any material challenges since commissioning the cogeneration plant in July 2019.

“We believe that Caterpillar is a world leader in manufacturing and supporting its energy generation products,” Moretto says. “Extending the Caterpillar offering with a prolific parts and service network backed by a strong local dealer like Toromont, we believe our energy services have been designed for the highest possible quality and uptime for our end user.”