

Advanced Modular CHP Systems

InVerde - Inverter-Based Cogeneration Module

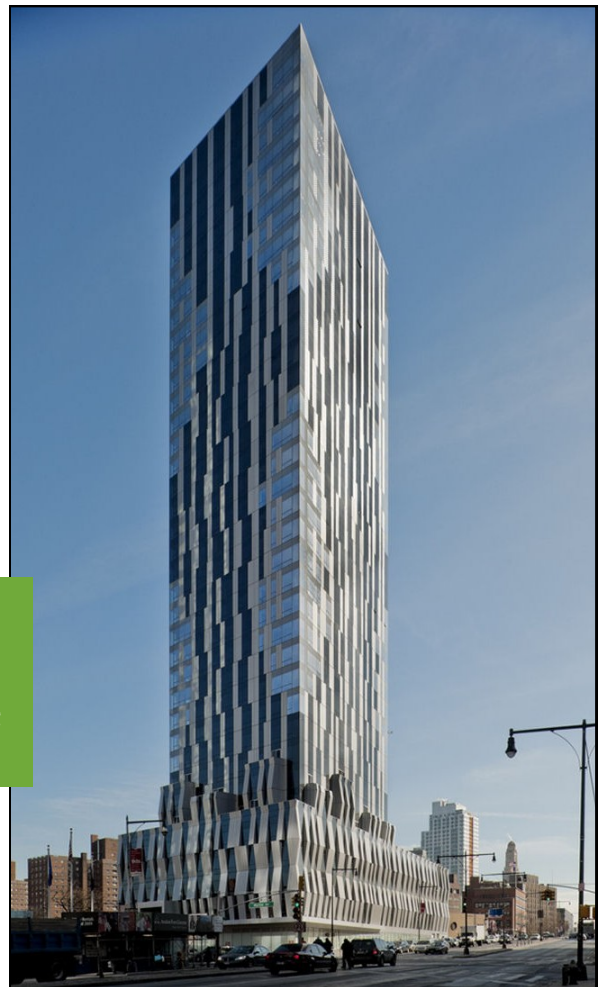
TOREN, designed by Skidmore, Owings and Merrill, an architectural firm known internationally for their cutting edge skyscrapers, is an iconic glass landmark that has forever changed downtown Brooklyn. The 37 story building offers 240 condominium homes with breathtaking floor-to-ceiling views of the Manhattan skyline and New York Harbor as well as the opportunity to live in the most environmentally advanced high-rise residential building in New York, perhaps even in the U.S.

LEED Gold certified by the U.S. Green Building Council, Toren was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources.

Tecogen's cogeneration system reduces Toren's carbon footprint by more than 2000 tons of CO₂ each year while providing an annual energy cost savings of \$540,000.

We tend to measure how GREEN we live in terms of turning off our lights, unplugging our laptops and driving hybrid cars, but those efforts only get us part of the way to reducing our energy consumption. The reality is that the buildings where we live and work use

nearly two-thirds of the electricity and roughly a third of the overall energy we use. At Toren, green living means bringing the power closer to home.



TOREN - Where Conscience Meets Science

Only 30 to 40% of the fuel burned at a conventional power plant is actually converted into electricity. The rest is turned into heat. There is no practical way for the utility company to get that heat to a place that can use it so they waste it by venting it off. An on-site cogeneration system can capture that heat and puts it to use.

Toren's super-efficient, ultra-clean mechanical systems, designed by Energy Concepts Engineering, uses five Tecogen 100 kilowatt, InVerde™ cogeneration modules, located on-site, to fill much of the building's energy needs. At Toren, the cogen modules provide electricity for laptops and elevators and the waste heat they produce is used to heat interior spaces, provide domestic hot water, heat the pool and even run the air conditioning. Additionally, electricity typically travels over miles of wires from the power plant to our homes. Along the way, a significant amount of energy is lost to the wires. Toren's on-site system eliminates that inefficiency. In fact, the remarkably efficient Tecogen's cogeneration system reduces Toren's carbon footprint by more than 2000 tons of CO₂



Toren's floor-to-ceiling views of the Manhattan skyline and New York Harbor

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Toren's CHP plant is designed to automatically follow the building's electric demand. As demand for electricity increases and decreases within the building, the electrical output from each of the five InVerde modules will also increase and decrease. Through highly sophisticated load control software built into each unit, the amount of electricity being purchase from Consolidated Edison, the electric utility in Brooklyn, can be maintained at less than 20kW. "For a building of this size, and with its luxury features, to be consuming less than 20kW from Con Edison is extremely satisfying" says Bill Cristofaro from Energy Concepts Engineering.

Another innovative, unique and very desirable feature of Toren's InVerde system is that it is a "Micro-Grid" with the ability to run independent from the grid in "Island Mode", providing power for the building if New York should ever experience a blackout like the one in 2002.

For more information about Tecogen's InVerde, INV-100, Inverter-Based Cogen Module or our other Natural Gas Engine-Driven Products please email us at products@tecogen.com

