

The Kendeda Building for Innovative Sustainable Design – Atlanta, Georgia, USA

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The Kendeda Building for Innovative Sustainable Design, designed by The Miller Hull Partnership, is a multi-disciplinary academic building located on the Georgia Tech campus in Atlanta, Georgia. Kendeda is one of 28 buildings which satisfies the “Living Building Challenge” (LBC)¹. The LBC certification requires each building prove it is net-positive for both energy and water over a designated “performance period”, which lasts one year. Kendeda’s building material, energy and plumbing systems, and overall design contribute to the it being one of the most environmentally friendly buildings in the world.

Kendeda is primarily constructed using mass timber, which is made by binding wood fibers together with various forms of adhesive. Mass timber, when sourced locally, is very sustainable, producing much less carbon dioxide than the two most popular building materials – concrete and steel. According to Kendeda’s general contractor, Skanska USA, the building is composed of 200+ glue-laminated columns and beams, and roughly 500 nail-laminated floor panels². To reduce material shipment time and distance, the lumber was also gathered from the Forest Stewardship Council, located less than 500 kilometers away from site. The other materials used in construction were carefully picked, avoiding anything that contained chemicals on the International Living Future “Red List.” The Red List compiles a record of heavily used construction materials that contain chemicals harmful to both human health and the surrounding environment³.

During the 12-month performance period, Kendeda generated 438,709 kWh worth of power (225% of its total energy need)⁴, directly from 900+ PV panels located on the building’s roof⁵. The remaining 243,520 kWh of excess power was transferred to nearby buildings. The PV panels are also strategically placed to help gather rainwater. When rainwater hits the panels, it is first drained to a roof washer, then to the building’s 50,000-gallon cistern located in the basement. After collection, the rainwater is filtered and treated using a UV disinfection skid, and eventually is sent to sinks, water fountains, and other potable water systems. After flowing through filtration and disinfection tanks, the building’s greywater is also collected and eventually delivered back to the soil. Kendeda has no need for blackwater treatment since each bathroom contains foam flush toilets and/or waterless urinals. The foam flush toilets use a surprisingly small amount of water (one teaspoon) and biocompatible soap, which cleans the toilet after each flush. Waste in the form of solids is later converted into fertilizer and used on campus gardens⁶.

Kendeda uses passive solar design and natural ventilation to assist in reduced energy consumption. These features include stack ventilation, triple glazed windows, and radiant heating. The building also has a ~5000 square foot rooftop garden. Not only does this help with cooling (reduces urban

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heat island effect), but it also serves as a honeybee apiary and blueberry orchard, which incentivizes community gathering⁷.

Sources

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