THE HOUSE | AT CORNELL TECH

The House at Cornell Tech is the largest residential Passive House building in the world. This building has made history for its groundbreaking construction and engineering meth-ods and is an example of how we can lower greenhouse gas (GHG) emissions from buildings (buildings account for nearly 75% of GHG emission in NYC) and curb global warming. The House at Cornell Tech is a model for high-rise residential de-velopment built to Passive House standards - the most rigor-ous energy efficiency standard for buildings.

Passive House buildings are designed to cut energy con-sumption by 60-80% compared to standard buildings of simi-lar type and size. At The House at Cornell Tech this translates to a projected savings of 882 tons of CO_2 per year. Passive House buildings are known for providing occupants with out-standing air quality and comfortable interior living environ-ments with constant temperatures that are not affected by seasonal exterior temperatures. Many features of Passive House buildings are not obvious to the building residents.

*The following are the most prominent design features:*

Façade

The façade of the building, the exterior walls and win-dows, were assembled in approximately 9' x 36' panels in a shop off-site. The panels were then delivered to the site and lifted onto the building with a crane. The advantage to this method is that great care and quality control was implemented during fabrication which, when combined with excellent field installation, yields an envelope that performs 7-10x better than a typical wall. The windows are tightly sealed, substantially reducing air infiltration and thus completely eliminating drafts. The exterior walls contain 8" to 13" of insulation, have an effective R value that ranges between R-19 and R-37, and triple pane windows that have a whole window U-Value of .18. This contributes to superior thermal comfort and excellent acoustical separation from the outdoors. While windows are operable within all the apartments, keeping windows closed when the apartment is not occupied will allow the building to perform more efficiently.
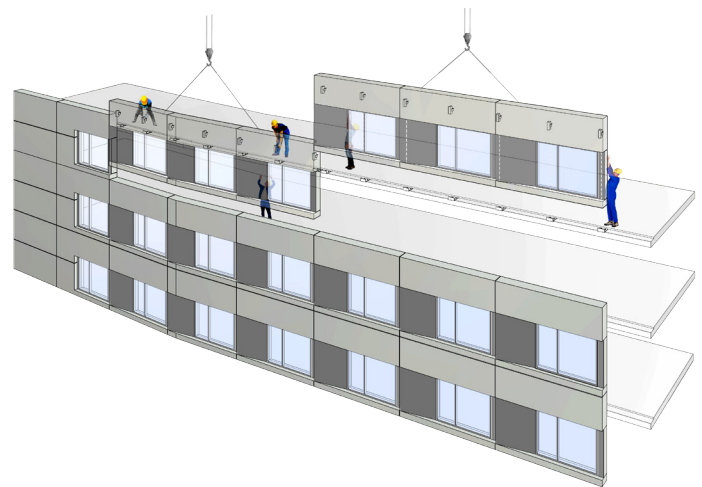
Ventilation

The apartments have a ventilation system that is constantly removing stale "exhaust air" from kitchens and baths and replacing it with fresh tempered "supply" air to each living room and bedroom in the apartment, a health benefit to building residents. Furthermore, the exhaust air from each apartment travels through a machine on the roof, known as an Energy Recovery Ventilator (ERV), that pulls energy out of the exhaust air prior to expelling it into the atmosphere. This energy is then transferred to the supply air coming into the building and contributes to the efficiency of the system. Residents should refrain from putting anything over the supply and exhaust air vents within the apartments.

← Exhaust air   → Fresh air

ERV
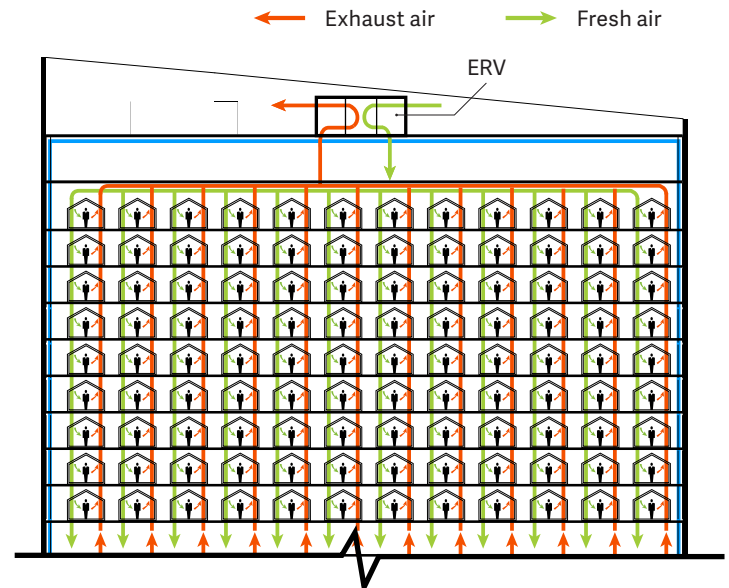
Heating & Cooling

Within each living room and bedroom of an apartment there is a mechanical unit located under the window. This is called an evaporator. These units provide heating and cooling. Residents can manually control the temperature in the apartments. Residents are encouraged to turn off the heating and cooling while they are not occupying the apartment to save energy. Most likely residents will not need to use heat very often – this alone will be an indication that the building is using 60-80% less energy than a typical home for heating.

Lighting & Appliances

Most of the lighting within the building is LED. Common corridor and stair lighting is on occupancy sensors. Apartments are equipped with an energy efficient refrigerator, dishwasher, stove and oven. Apartments are all electric systems and residents are billed monthly for their energy usage. Real time energy usage per apartment is available for occupants via an online web portal. Building energy usage is also displayed on the energy touch screen in the ground floor lobby.

We hope you enjoy your experience in this new state of the art building, which showcases a new way of living that can directly reduce your carbon footprint. Welcome.

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