COMPANY

**Geotectura, Axelrod-Grobman Architects, NCA, Assa Aharoni Consulting Engineers**

LOCATION

**Tel Aviv, Israel**

SOFTWARE

**Autodesk® Revit®**
**Autodesk® A360™**
**Autodesk® ReCap™**

# First LEED Platinum Building in Israel, The Porter School of Environmental Studies

BIM helped us to fulfill the vision of building one of the greenest projects in the world. The Porter School of Environmental Studies shows the power of BIM to improve the design and sustainability aspects during the planning and after completion of building. No matter the scale, budget, or program of your next project it should share the same sustainable values and adopt BIM to meet the current and upcoming challenges

– **Joseph Cory**
Professor and Architect
Geotectura

Image courtesy of Shai Epstein

## A Green Education

As a place for environmental education, The Porter School of Environmental Studies at Tel Aviv University truly embodies what is taught and researched both within and outside of its walls.

Designed and constructed by Geotectura, Axelrod Grobman Architects, NCA, and Assa Aharoni Consulting Engineers, the 4,000 square-meter building is the first of its kind in Israel, achieving both LEED Platinum certification (92 points) and 5 stars in the Israeli Green Code 5281. Each aspect of the building includes an "eco-conscious" design and each side serves a purpose as well. The north brings in natural light; the west is shaped like a funnel to increase air flow to the main atrium; and the east blocks heat during the winter and noise from the highway. The south side's Eco-Wall—an iconic portion of the building—absorbs the hot southern sun with thermo solar fields heated by glass-evacuated tubes, producing the energy source for the mechanical ventilation and air conditioning of the building. As a result, this saves 60 percent of the energy and reduces carbon emissions.

The mechanical room on the building's roof contains one 60-ton refrigeration absorption chiller (operating from the thermo solar fields) and one 70-ton refrigeration air-cooled chiller operating with electricity. In total, a cooling capacity of 130-ton refrigeration was installed, compared to a standard building where 170 tons would be required. Additionally, the building chiller produces 25-30 tons of water cooling after four hours of work.

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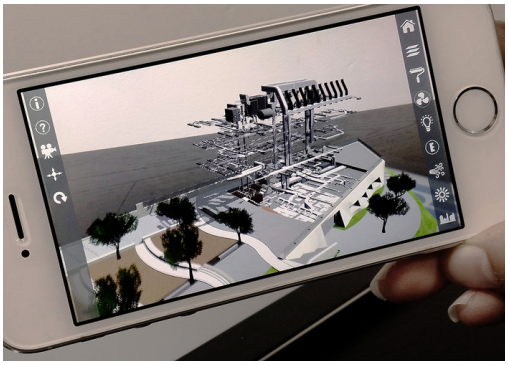
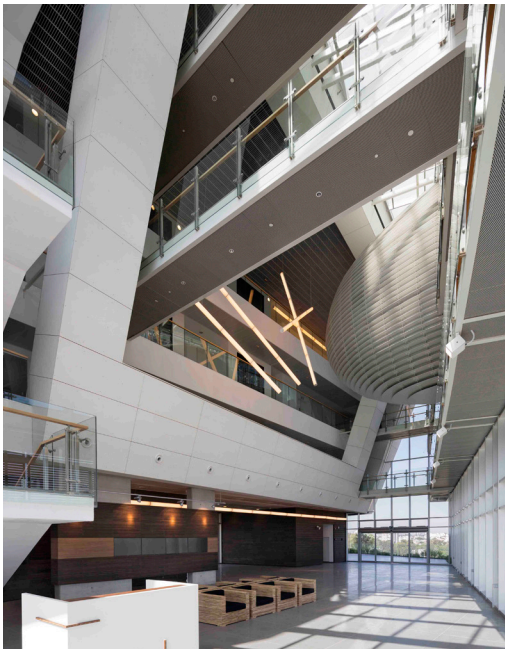


Image courtesy of Geotectura and ARki

## BIM from the start

To achieve their sustainable goals and improve collaboration and communication, the project team used BIM from the very start in order to complete the project with a tight schedule and on a historical site—all without compromising the design qualities. The digital model helped make it much easier to discuss important decisions with all of the stakeholders and synchronize the structure, architecture, and MEP in an effortless way. And, by knowing right from the beginning the potential costs, they could uncover the insights where the design might exceed the budget.

BIM was crucial to improve the design with energy and natural and artificial light simulations. This included a passive ventilation strategy after studying wind directions and temperatures based on meteorological data during different seasons and times of day. By conducting computational fluid dynamics simulations, they could improve the geometry of the building as well as optimize the ventilation pipes. All of the energy simulations in the cloud made the entire process extremely fast and accurate.

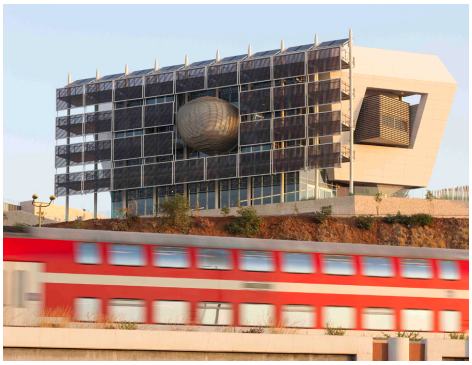


Parametric design was also incorporated to solve a complex, double-curved geometry of the floating capsule, allowing the inner cladding of this double-curved space with flat bamboo boards.

## Constructing a sustainable design

Point cloud data from laser scanning was incorporated and served as a basis for the as-built architectural drawings. The digital information highlighted issues with the geometry during the construction phase and enabled real-time solutions and adjustments to those structural elements. By using the point cloud data in the BIM model, they could readily see inaccuracies as well as the need to redesign the façade's cladding.

Prefabrication was integral to construction with many parts of the building designed in a detailed way, built in advance, and then brought to the site. The entire steel structure and floating capsule were prefabricated; work could be done in parallel and the project finished ahead of schedule.



## BIM guides material use

Another benefit was the ability to configure materials in a very detailed way. Green standards directed the use of local, recycled, and renewable materials in the project. The team could create those materials in BIM and add information properties for each, such as cost, thermal insulation, strength, durability, life cycle assessment, and much more.

Lighting itself became a major factor in saving both costs and meeting sustainability criteria. In order to deliver the optimal light for occupants in relation to the use of the space (working, relaxing, studying, and more), shaping the design of the windows and all of the curtain walls was imperative. Doing so helped to let in natural light or block direct sun during the hot season.

## First place winner of the AEC Excellence Awards 2017

Global projects that embrace connected BIM technologies and sustainable design in Architecture, Engineering, and Construction



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