Morphosis Los Angeles

LOS ANGELES, CA / 2011

DATES 2010–2011
SIZE 11,600 gross square feet
PROGRAM Studio, Model Shop
CONSTRUCTION COST Withheld at Owner's Request

PROJECT NARRATIVE

Morphosis Architects and Buro Happold, both pioneers in high-performance building design, have recently undertaken a post-occupancy evaluation (POE) to more effectively identify and substantiate lessons learned. With the drive towards net-zero energy performance, POEs that provide a detailed understanding of energy use and occupant comfort become increasingly critical to truly achieving these ambitious performance goals.

Completed in 2011, Morphosis Architects' new office building in Los Angeles, California provides an opportunity to investigate the potential of net-zero-energy design. The office building, a 12,000-square-foot, double-height volume with a mezzanine, houses an open-plan workspace, meeting spaces, formal conference room, workshop and kitchen.

To meet the project's stringent energy goals, Buro Happold designed an engineering solution that incorporated Monodraught Windcatchers, a natural ventilation system not previously used in the United States; underfloor air distribution (UFAD); and an extensive photovoltaic array, which shelters on-site parking. What better way to understand the implications of one's work than living and breathing one's own design?

To evaluate and optimize the building's performance, one important factor is to determine how comfortable the space is by assessing the design's impact on staff behavior and satisfaction.

Initial monitoring, including temperature, humidity, light levels, and carbon dioxide data that shows the building cools by about 4 to 5°F overnight, ready for the next day. Lighting levels, maintained through large side windows and many smaller skylights integrated with daylight responsive lighting, provide an illuminance at plane of up to 80lumen/sf. Carbon dioxide levels are maintained below 650ppm at all times, a good indication of the air quality benefits provided by the natural ventilation system.

Smart energy meters and current meters installed on the electrical panels monitor the usage. Once sufficient data is captured, a breakdown of electrical plug, HVAC, lighting, shop equipment, and water-heating loads will be understood. Any anomalies in the results will allow Buro Happold to troubleshoot the cause, resulting in improved efficiencies with a modification to behavior and/or a change to control settings or sequences.

The natural ventilation system, driven by innovative Windcatchers, is not only healthy for occupants, but also is expected to reduce energy consumption.

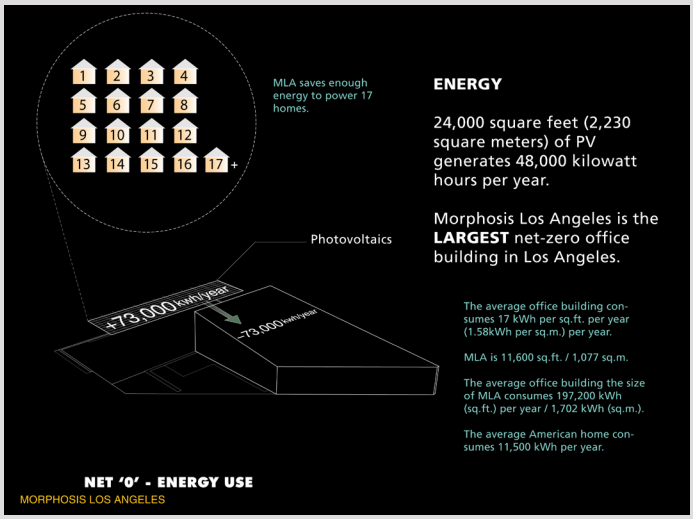
Morphosis and Buro Happold use post occupancy evaluation as a central part of the building lifecycle, informing design decisions at all stages of a building's life, from design to demolition. Improving energy and water efficiency, indoor environmental quality, and occupant well being and productivity. In particular, POE is vital to improving the performance of low- and zero-carbon buildings, as without it, the sustainability of occupied buildings can only be assumed.

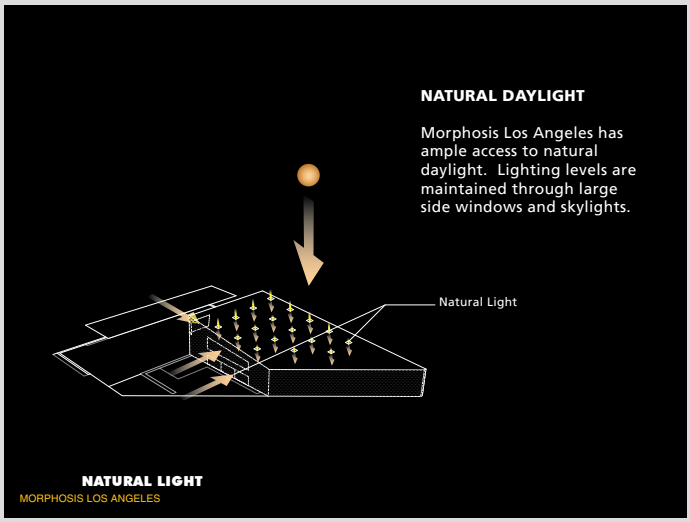
ENERGY PERFORMANCE DATA
June 2012– May 2013

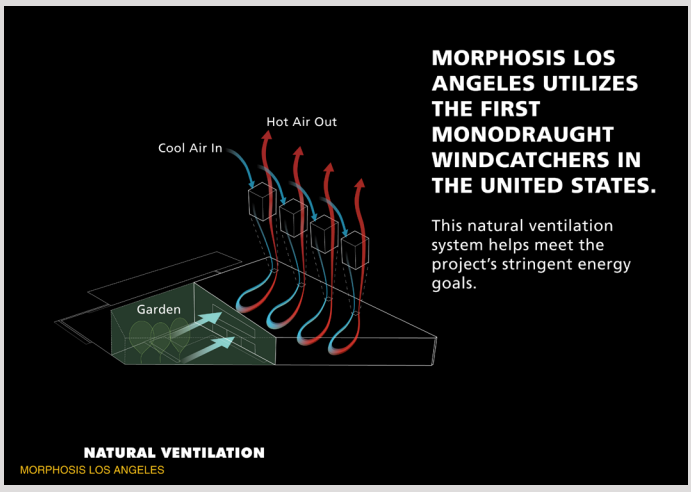
Total energy use:13,674 kBtu per year

Energy Use Intensity: 9.8 kBtu/ft2 per year

Breakdown by fuel: Electricity: 33,316 kWh per year


1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16 17 +
MLA saves enough energy to power 17 homes.
Photovoltaics
+73,000 kWh/year
-73,000 kWh/year
ENERGY
24,000 square feet (2,230 square meters) of PV generates 48,000 kilowatt hours per year.
Morphosis Los Angeles is the LARGEST net-zero office building in Los Angeles.
The average office building consumes 17 kWh per sq.ft. per year (1.58kWh per sq.m.) per year.
MLA is 11,600 sq.ft. / 1,077 sq.m.
The average office building the size of MLA consumes 197,200 kWh (sq.ft.) per year / 1,702 kWh (sq.m.).
The average American home consumes 11,500 kWh per year.
NET '0' - ENERGY USE
MORPHOSIS LOS ANGELES


NATURAL DAYLIGHT
Morphosis Los Angeles has ample access to natural daylight. Lighting levels are maintained through large side windows and skylights.
Natural Light
NATURAL LIGHT
MORPHOSIS LOS ANGELES


Hot Air Out
Cool Air In
Garden
MORPHOSIS LOS ANGELES UTILIZES THE FIRST MONODRAUGHT WINDCATCHERS IN THE UNITED STATES.
This natural ventilation system helps meet the project's stringent energy goals.
NATURAL VENTILATION
MORPHOSIS LOS ANGELES

MNS
ARK
BAF

W

PROJECT CREDITS
August 13, 2012

MORPHOSIS LOS ANGELES
Culver City, California USA

MORPHOSIS TEAM

Design Director
Thom Mayne

Project Principal
Brandon Welling

Project Manager
Kim Groves

Project Team
Chandler Ahrens
Jared Brunk
Phillip Brunk
Alex Deutschman
Graham Ferrier
Mauricio Gomez
Sal Hidalgo
Brock Hinze
Jason Minor
Aaron Ragan
Natalia Traverso Caruana
Shanna Yates

Project Assistants
Benjamin Albrecht
Chris Bennett
Amaranta Campos
John Carpenter
Jonathan Cummings
Thomas Day
Chris Eskew
Jeremy Magner
Borja Muguiro
Nick Paradowski
Anna Protasevich
Susanne Tanascaux
Michelle Young

CONSULTANTS:

Structural
John A. Martin Associates, Inc.

MEP
Buro Happold

Civil
Seaboard Engineering

Landscape Architect
Katherine Spitz Associates

Geotechnical
Geotechnologies

Lighting
Happold Lighting

Audiovisual/IT
Waveguide

Environmental
BB&J Group

Entitlements
James Suhr & Associates

Land Use
Craig Lawson Associates

Artist
Tom Farrage

CONSTRUCTION TEAM:

Construction Management
JKB Construction Management

General Contractor
X-Tech

Electrical
Sunlife Construction

Mechanical
HVAC Service

Plumbing
Rocco Meoli Plumbing

Framing
Engineered Framing Systems

Inspections
Smith Emery

Concrete
Enrique A Cruz

Cladding
Southcoast Roof Barkley Sheet Metal

Ground Concrete
Surfacing Solutions

Window Wall
Walters & Wolf

Solar
Permacity

Landscape
Yannetty Landscape

Fire Protection
Regency Fire Protection

Kitchen
Valcucine

Coatings
Stuart Dean

Demolition Grading
J Padilla

Metal Fabricator
Tom Farrage