

FOR IMMEDIATE RELEASE

## The Clear Future of Off-Site Fabrication

KieranTimberlake designs a transparent, mass customizable house for The Museum of Modern Art



Philadelphia, PA – July 15, 2008 –Cellophane House, a five-story dwelling of transparent, recyclable materials is on display with four other prefabricated houses in the Museum of Modern Art’s exhibition, *Home Delivery: Fabricating the Modern Dwelling*, on view July 20 through October 20, 2008. The exhibition is both a survey of the past, present and future of the prefabricated home and a building project on the Museum’s vacant west lot. Designed specifically for *Home Delivery* by Philadelphia-based architecture firm KieranTimberlake, Cellophane House is a full-scale prototype that radically reinvents the way buildings are made by using an aluminum structural frame as a matrix on which other off-site fabricated elements like floors and ceilings, stairs, bathrooms, and mechanical rooms can be attached. Held together by bolted connections, rather than welds, nails or glue, the house is by nature an impermanent object that can be modified easily, and presumes disassembly – not demolition – at the end of its life. It addresses head-on the obligation of architects to assume responsibility for the full life cycle of a building, from inception to eventual demise.



The project aims to tap unrealized potential for mass customization of factory-built homes. Conceived as a system of building that can adapt to a range of climates and site conditions, the structure can be fully customized from a single family to a multi-family dwelling, and tailored to meet the differing tastes and needs of individual consumers.

“We wanted to create at a system of building as the basis, rather than start with a design and figure out how to make it work,” says design partner James Timberlake. “This way we get to the root of improving the product, we’re not bound to the confines of what we are able to ship, and the possibilities for customization are expansive.”



The use of transparent materials allows the house to use natural light and harness solar power via the building envelope, which is made from an advanced form of SmartWrap™, a building skin developed by KieranTimberlake in 2003, that generates energy, controls climate, and provides lighting and display on a printed substrate. The new product, NextGen SmartWrap™, consists of an outer layer of transparent PET, laminated with thin-film photovoltaic cells that allow the house to function off-grid. The inner layer uses 3M solar heat and UV blocking film to admit daylight while deflecting solar gain. A passive ventilation system between the two layers traps heat in the winter and vents it in the summer, greatly reducing the amount of energy required to heat and cool the house. In addition, the south side of the building features Schüco E<sup>2</sup> Glazing embedded with photovoltaic cells, promising further energy independence. Monitoring equipment will measure the amount of solar energy collected for the duration of the exhibit.



At night, the house will be illuminated with light-emitting diodes (LED) donated by Phillips Solid-State Lighting Solutions and designed by Arup Lighting, chosen for its low-voltage and energy efficiency. LED generates very little heat, minimizing the need for cooling, and automatic sensors switch the lights on only when needed to limit wasted energy.

Off-site assembly of the house was completed in thirteen weeks from March through June at Kullman Buildings Corp. in Lebanon, NJ. Borrowing manufacturing methods from the automotive industry, the four-story, 1,800 square foot house was segregated

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into an assembly line of sixteen pre-wired “chunks” containing the structure, walls, floors, ceilings, stairs and lighting. Once complete, the chunks were delivered by flatbed truck to the exhibition site, and hoisted and stacked in place in less than one week.

To solve environmental issues from the bottom up, KieranTimberlake speculates on the process of building itself. By using a three-dimensional model, high-precision materials, and streamlined assembly in the controlled atmosphere of a factory, Cellophane House proposes a way forward to higher quality, productivity and sustainability.

“Only if the design and construction industries can unite to deliver higher quality buildings, in less time with less waste and at a lower cost, can we form a truly robust plan of environmental reparation,” says Stephen Kieran, design partner. “By fabricating houses in a factory, we can achieve a higher degree of design, precision and quality than houses built on site and stick-by-stick.”

Cellophane House is the result of integrated collaboration between KieranTimberlake and the consultants, fabricators, and suppliers who were seeking innovative applications for their products. These relationships led to the discovery of new and more efficient ways of building, which will be applied to future projects.

Collaborators include:

Kullman Buildings Corp.; F.J. Sciamè Construction Co., Inc.; CVM Engineers; Budco Enterprises, Inc.; Arup; Arup Lighting; Schüco USA; Philips Solid-State Lighting Solutions; Bosch Rexroth distributed by Airline Hydraulics Corporation; Sky King Skylights; 3form; DuPont Teijin Films; PowerFilm; Valcucine; 3M Window Films™; Miele; Duravit; AF New York; Universal Services Associates, Inc.; Capital Plastics Company, Inc.; Craftweld Fabrication Company Inc.; A&B / McKeon Glass, Inc.; Czarnowski; Total Plastics, Inc.; Maspeth Welding, Inc.; Burgess Steel; JE Berkowitz, LP and Oldcastle; CPI Daylighting, Inc.; Greenheck, distributed by Del Ren Associates; ICI Paints; Burnett Products Company, Inc.

For over two decades, KieranTimberlake Associates has created beautifully crafted, thoughtfully made designs which are holistically integrated to site, program and people. The firm is recognized for its research-based practice that focuses on new materials, processes, assemblies and products. They have received over eighty design citations, including the 2008 Architecture Firm Award from the American Institute of Architects. Their influential book *refabricating ARCHITECTURE*, investigates how transfer processes from aerospace, auto and ship manufacturers are poised to transform architecture.

View time lapse of the assembly at <http://kierantimberlake.com/cellophane-house>

MoMA's exhibition website [www.moma.org/homedelivery](http://www.moma.org/homedelivery)

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## Project Team

### Client

The Museum of Modern Art

### Architect

KieranTimberlake Associates LLP

Stephen Kieran, FAIA, James Timberlake, FAIA, *Design Partners*

David Riz, AIA, *Associate-in-Charge*

Steven Johns, AIA, *Project Architect*

Chris Macneal, AIA, *Technical Review*

### Competition

Richard Maimon, AIA, Matthew Krissel, AIA, Andrew Schlatter, Sarah Savage, Bradley Baer, David Hinchler, AIA, Jeremy Leman, AIA, Alex Gauzza

### Design Development and Execution

Bradley Baer, Andrew Schlatter, Cesar Querales, David Feaster, Ryan Meillier, Kate Czembor, AIA, Jose Galarza, Peter Curry, Dominic Muren, Jason Niebish, Laurent Hedquist, AIA, Casey Boss, AIA, Rod Bates, Derek Brown, Vincent Calabro, Erin Crowe, Mark Davis, Trevor Horst, Aaron Knorr, Caleb Knutson, Marina Rubina, AIA, Sarah Savage, Paul Worrell, AIA

### Consultants

Fabrication and Assembly

Kullman Buildings Corp.

Construction Manager

F.J. Sciamè Construction Co., Inc.

Structural Engineer

CVM Engineers

Mechanical/Electrical Engineer

Arup

Lighting Designer

Arup Lighting

On-site Riggers

Budco Enterprises, Inc.

Photography

Albert Vecerka/Esto (Assembly)

Peter Aaron/Esto (Final)