Prefab Housing

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Kit-of-Parts

definition

Is a building where the individual parts and raw materials have been developed into easy to manufacture components that are prefabricated and assembled on site.
Kit-of-Parts

itHouse - by Taalman Koch

project description

The itHouse is a building system that is custom tailored and made to order.

fabrication/assembly

Everything is pre-cut and pre-drilled, which allows for quick and easy assembly. The insulated glass walls have been designed with storefront systems, which also are available in aluminum skinned opaque panels. The roof is comprised of steel decking planks with acoustic baffles on the interior and rigid insulation mechanically fastened to the top. The it house is delivered as a kit-of-parts to be assembled on site with minimal

http://www.tkithouse.com/
Kit-of-Parts
loq-kit house

project description

loq-kit house is a system for a modular house that is made up of snap-lock parts, which means it can be released to easily modify and adapt the house to meet the needs of its occupants. Due to the loq-kit system each house can have a unique look and layout.

fabrication/assembly

The house is made up of 3 types of components: modular metal frame, modular infill, and modular snap-cladding. The size of each component is a result of loq-kits alternating grid sequence and the locations are geometrically coordinated.
Tropical House - by John Prouve

project description

The Tropical House was a prototype, by John Prouve in 1949, that was to be inexpensive, easily erected and disassembled and could be transported to France’s African colonies. It is an in-depth look at the early French modernist’s applied theories of prefabricated architecture.

fabrication/assembly

The house sits on a 1-metre grid system with fork shaped portico supports. He made each component as flat as possible in order to fit efficiently into a cargo plane. All of the components are made from aluminum except for the largest and weigh no more than 100 kilos (allow handling by 2 men). The inner skin is made up of sliding doors and fixed panels, while the outer skin is made up of louvres.
Kit-of-Parts
N55 SPACEFRAME - by Anders Remmer

project description
The N55 Spaceframe is a living unit that was configured using a space lattice known as octet truss, or the octahedron-tetrahedron complex.

fabrication/assembly
Using spaceframes as a building block allows for high strength and self-load bearing structure, which can be easily erected, transformed and moved. The components are made from acid resistant stainless steel, which is highly durable, and are bolted together by hand using stainless acid resistant bolts and nuts. The outer skin is made up of triangulated acid resistant stainless steel plates. The floor is made of birch plywood and the windows are polycarbonate. Insulation is placed within each spaceframe and any number of insulation types can be used.

http://www.n55.dk/manuals/spaceframe/spaceframe.html
Kit-of-Parts
Versadomes - by Deger Cengiz

project description
Versadome is a concept for island modular living. It is a low maintenance product with all utilities incorporated.

fabrication/assembly
It is a modular system based on the interconnection between a shell, arches and domes. The shell forms the exterior skin, keeping out the elements, while the domes and arches form the interior and provides support for the shells. The combination creates a low-weight and high strength system.

The components are designed to stack for ease of transportation. Once on site the components are easily assembled and can also be easily added on too in the future.

http://living.privateislandsonline.com/articles/versa-dome.htm
Panelized (Stick-built)

Definition

The walls are pre-built in sections prior to delivery and come delivered to your site ready to lift into place.
Panelized (SIPS)

definition
SIPS are a composite building material, consisting of a rigid insulating layer sandwiched between two layers of structural board, that can be sheet metal, plywood, cement or oriented strand board.
Panelized (SIPS)
Straw House - by Felix Jerusalem

project description
The straw house was an experimental approach in designing and constructing a straw house.

fabrication/assembly
It is made from solid panels of compressed straw. The highly dense outer layers perform load bearing function and the lightweight interior layer creates the thermal insulation. It also houses a concrete core, which contains the kitchen, bathroom and mini wine cellar below.

http://strohhaus.net/strohhaus/home
Panelized (SIPS)/Modular Mobile Apartment - by NEAPO

project description
The 3-storey apartment building, made from extremely lightweight materials was designed to be a mobile apartment building (the world’s first).

fabrication/assembly
The apartment building is entirely built in factory with the use of FIXCEL®. FIXCEL is a patented steel sandwich structure developed for use in modular construction. It uses triple seam rolling technology to join hot-galvanized steel profiles to create the load-bearing and corrosion resistant steel sandwich structure. It provides both horizontal and vertical rigidity along with a low nominal weight. It can be used for floors, walls, intermediate flooring and roofing.

http://flavorwire.com/207816/this-is-the-worlds-first-mobile-apartment-building
**Geodesic Dome**

**definition**

Is a partial-spherical shell structure or lattice shell based on a network of geodesics on the surface. They intersect to form triangular elements that have local triangular rigidity and also distribute the stress across the structure.
Geodesic Dome
Zendome - by Zendome

project description
The dome is an innovative, flexible, and stylish dome-like space.

fabrication/assembly
A Zendome can be assembled in 10% of construction time of traditional architecture. The domes are available in sizes ranging from 30 m² to 300 m². They can not only be single domes, but can also be combined to form entire Zendome “domescape”. Each member is powder coated stainless steel and the envelope is PVC coated polyester-fabric that is welded together.

http://www.zendome.com
Geodesic Dome
Easy Dome - by Easy Dome Ltd.

project description
The Easy Dome is a geodesic dome house made up of wood panels.

fabrication/assembly
The domes are made of wood sections that are ready for assembly with bolts and then sealed with asphalt paper or rubber. Once sealed, both interior and exterior skins are applied.
**Heavy Timber-Post and Beam**

**Definition**

It is a construction method that utilizes 2 posts to carry the load of a single lintel (beam). The members come pre-cut and sometimes whole sections come pre-assembled for ease of erection.
Living Edge design for a prefab house uses a Japanese post and beam system of construction to create somewhat traditional prefab home. All of the trees that are used are reclaimed urban trees, which are removed for disease, storm damage, danger of falling, or construction clearing.

The kit consists of posts, beams, floor panels, wall panels, doors, roof and ceiling components and are produced in their shop, adapted to each design and assembled on site. It is a set of parts which can be arranged in an infinite number of ways.
Heavy Timber-Post and Beam
Huf Haus

project description

Every Huf Haus is a custom design, based on the clients needs.

fabrication/assembly

The kit consists of posts, beams, floor panels, wall panels, doors, roof and ceiling components and are produced in their shop, adapted to each design and assembled on site. The company creates kits for bungalows, flat-roofed houses, town houses, luxury apartments, extensions, office buildings, business parks and retirement homes.

Sectional Construction

definition
Homes that are completely built in factory, including all windows, doors, partitions, finishes etc., and arrive on site in 2 or more sections which are site assembled.

major advantages
Speed of Construction
Controlled Construction Environment
Time-savings of Simultaneous Site Preparation and Building Construction

major disadvantages
Sizing Limitations
Transportation Costs, Damages
Installation Costs
Structural Dependency of Components Limits Upgrading Potential
Connection of Components Can Result a More Permanent Structure
Sectional Construction
CELLOPHANE HOUSE, By KieranTimberlake Associates

project description

This single family 1,800-sq-ft., four storey home contains four bedrooms, two bathrooms, a living and dining area, a rooftop terrace and a car port. Based on the notion that a building is "nothing more than an assemblage of materials forming an enclosure," according to KieranTimberlake Associates, the Cellophane House does not make any claims of permanence. Rather, this modern design is a temporary place to keep your stuff, to put it simply.

fabrication/assembly

Factory produced, and built from an unlimited palette of off-the-shelf materials, the idea is that the cellophane house is customizable to modifiers such as site conditions, style preference and budget.

Shipped to site on trucks in a number of components and constructed with a crane. The idea is that these individual building blocks, once they've served their purpose, can be dismantled and repurposed.

http://www.trendir.com/house-design/contemporary-prefab-cellophane.html
prefab housing - modular

Sectional Construction
UMA HOUSE, By u.m.a. Architektur ZT GmbH

project description

UMA House is seen by u.m.a. as the culmination of technology and the human need to feel at home resulting from close cooperation with leading teams in the fields of home automation, lighting technology, safety and structural engineering.

fabrication/assembly

Factory produced using a strongly standardized production process. According to u.m.a., “the combinability of the modules and the variety of finishes have allowed us to create flexible, variable and changeable structures which respect and promote individuality.”

Shipped to site on trucks in a number of components and site assembled with the use of a crane. Due to its unique way of construction, the uma house can be disassembled and moved to a new location, for reassembly, with minimum effort involved.

http://www.uma-fertighaus.com/index.html
Full Construction

definition
Homes that are completely built in factory, including all windows, doors, partitions, finishes etc., and arrive on site in one piece that does not require site assembly.

major advantages
Speed of Construction
Controlled Construction Environment
Time-savings of Simultaneous Site Preparation and Building Construction
Can Combine Multiple Houses Without Formal Connections or With Minimal Connections

major disadvantages
Sizing Limitations
Transportation Costs, Damages
Installation Costs

Full Construction
SPACEBOX, Operated By Gainsgrove Ltd

project description

Spacebox is a high quality, fast and flexible housing concept that offers a solution for housing shortages of a temporary nature. In urban areas many pieces of land lie fallow and unused, that could be used temporarily for the housing of students, starters, key workers, or to place for example a temporary hotel. Each unit contains a sleeping/living area as well as a bathroom and kitchen areas.

fabrication/assembly

Turn-key factory production of Spacebox allows for, in principle, custom-made systems according to customer wishes. SpaceBoxes are comprised of a foam core and a very smooth polyester exterior finish. All internal build out elements such as kitchens and bathrooms can be designed according to the wishes of the customer.

Each SpaceBox is shipped to site on a truck. The standardized unit can be stacked vertically or horizontally, and, if required, vertical circulation is constructed on the exterior of the compiled SpaceBox structure. The units sit on a foundations of concrete pads. The weight of each SpaceBox, and the nature of each SpaceBox as a fully independent unit, makes disassembly easy as there are no connections to be undone.

http://www.spacebox.nl/index.cfm?lng=en&mi=2&pmi=0
**Full Construction**

**NAKAGIN CAPSULE TOWER, By Kisho Kurokawa**

**project description**

Built from 1970 and opened in 1972 the Nakagin Capsule Tower is a series of 2.3m x 3.8m x 2.1m sized capsule units which connect to a concrete core. The capsules were designed to accommodate the individual as either an apartment or studio space, and by connecting units they could also accommodate a family. In almost 40 years, the capsules have not been re-arranged or altered once. In recent years, the building has been slated for demolition to make way for a modern tower with larger living units.

**fabrication/assembly**

Each concrete capsule was factory assembled, including all appliances and furniture, from audio system to a telephone.

Kurokawa developed the technology to install capsule units into a concrete and steel core with only 4 high-tension bolts, making the units detachable and replaceable.

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http://www.lewism.org/2007/05/21/nakagin-capsule-tower/
Full Construction
ZENKAYA, Headed By Eric Bigot

project description

The driving concept behind ZenKaya is to make building a house as simple as buying a car. Once you have the house, the design is such that your lifestyle will be compact and simple as well; the studio unit is 3.4 meters wide by 6 meters in length; their system is expandable up to a two bed, two bathroom-sized home. They want the design, production and delivery process to be as efficient as possible, leaving more time, money and energy to enjoy living.

fabrication/assembly

Almost completely factory assembled using steel construction.

Delivered to site on the back of a truck.

http://www.zenkaya.com/#!__zenkaya-design
Full Construction
LOFT CUBE, Headed By Eric Bigot

project description

LoftCube is a personalized home container ideal for under utilised rooftop settings. Segmented into living and sleeping areas with partitioning panels, LoftCube offers compact rooftop living and plenty of windows from which to enjoy the view.

fabrication/assembly

Factory fabricated and assembled, LoftCube’s modular structure is made from steel extrusion frame with glass windows. The four window spaces allow opportunities for customized design.

After arriving at site, it’s so compact, it can be transferred whole to the top of a building with a crane. LoftCube’s can be connected together using gangways.

http://www.loftcube.net/