design report

BLUE-SKY THINKING

Architects are getting creative in solving the problems around how we live now – and these four new home design trends are set to inform how we live next

FEATURE Keith Flanagan

House Zero in Austin, Texas, was created by Lake Flato Architects with piped walls made from 3D printers

3D-printed designs

Just as the home printer feels anachronistic, architecture made via 3D printing is all the rage. Why? Much of the waste associated with new buildings is from a fragmented construction process – too many steps, too little time. Architects are looking towards 3D-printed structures as the new way to optimise construction with minimal waste. And that's not all; 3D-printed designs enable all sorts of curvy, textured forms, while also allowing architects to dream up high-precision architectural models from the get-go. But the bigger bonus here is the ease with which these designs can be replicated across the globe, in hopes of creating a commercially viable, streamlined and sustainable approach to architecture.

PHOTOGRAPHS (LEFT) CASEY DUNN; (TOP) HANNAH; (ABOVE) CRISTOBAL VIVERA

LAKE FLATO ARCHITECTS

In a partnership between Lake Flato Architects and Icon, a 3D-printing robotics start-up, House Zero in Austin (left) shapes up as a handsome ranch-style home. The 3D- printed walls, piped in undulating layers, skip many of the steps associated with conventional construction.

HANNAH DESIGN OFFICE

This two-storey building (top) in Houston (a collab with PERI 3D Construction and CIVE) features a hybrid construction method with traditional wood framing and 3D-printed structures. Made through an easily replicable building model, it's the first multi-storey building of its kind in the US.

IAAC

This itty-bitty design (above) called TOVA, located in Spain, claims to be the first 3D-printed building made using all local material – it's literally made from local earth, in seven weeks and with zero waste ➤

plant-based materials

Among the pioneering materials flexing their steel, 'biomaterials' are giving carbon-hungry defaults such as concrete an honest run. Building materials such as hempcrete, a biocomposite, yield promising returns (hemp sequesters large amounts of CO_2, and compared with trees grows faster in less space). Fellow plant-based materials (think bamboo and cork) prove that architecture can blur the lines between nature and our built environment.

ATELIER SAD

Cork, a renewable and biodegradable material long used in interiors, is breaking outside in the form of cladding. Here (top), a home in the Czech Republic is clad in Portuguese cork panels, picked for their weather-resistant and thermal benefits.

THE BROOKLYN HOME COMPANY AND MESH ARCHITECTURES

Wood might not seem ground-breaking in the construction industry, but Timber House (above), a mass-timber condo in Brooklyn, upends the idea that cities are built with concrete and steel. The stronger-than-steel and fire-resistant beams are thoughtfully exposed throughout six storeys, proving this carbon-friendly material is on the rise.

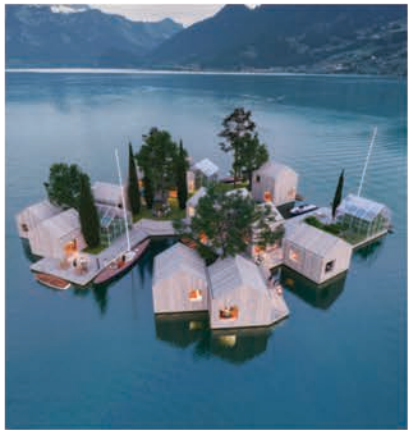
IDEO ARQUITECTURA

Why stop at just one bio-based material? This 'Natural Home' (right) in the Balearic Islands was primarily constructed with hemp to increase thermal capacity and decrease its footprint, while additional materials (such as clay, lime, wood and a local stone called marés) dig even deeper.

PHOTOGRAPHS (TOP) BOYS PLAY NICE; (CENTRE) TRAVIS MARK; (LEFT) SALVA LÓPEZ

buoyant buildings

A raft of floating homes, buoyed by innovative materials and technology that allow familiar structures with proper height, have quickly moved once-upon-a-time renderings into reality. Anything from floating public saunas in Seattle to entire floating cities in South Korea are leading the charge. The bulk of these designs factor in inclement weather and are often hurricane- and flood-proofed for what future climate scenarios might bring.



PHOTOGRAPHS (TOP) WATERSTUDIO/DUTCH DOCKLANDS MALDIVES; (CENTRE) MARCEL IZERMAN; (RIGHT) AVANTI

WATERSTUDIO

Moving beyond a single structure, the Maldives, an archipelago most vulnerable to climate change, is busy architecting an entire floating city (top) – one that can house as many as 20,000 people.

MAST

Along with support from Hubert Rhomberg and FRAGILE, this Copenhagen-based firm has broken ground with Land on Water (left), a new system that promises a flexible design for floating buildings. The flat-pack units, designed with recycled reinforced plastic, are modular and can easily cast about the globe.

POWERHOUSE COMPANY

This new building (above) in Rotterdam's harbour is officially the world's largest floating office – not that it had much competition. Atop buoyant concrete pontoons, a lightweight wooden structure doubles down on its reduced footprint while ample office space (38,770 square-feet of it) benefits from the watery setting thanks to massive panoramic windows – go ahead and soak up the view. ➤

portable homes

To say that portable homes are new wouldn't be accurate – we've long hitched our nomadic daydreams on the concept of mobile homes. But renewed interest in sleek prefabricated structures is spurred by rising costs of rents and mortgages. These pieces of architecture often have social benefits, touted as one solution to the affordable housing crisis: space for those without the fortune of land, making micro and moveable structures just the ticket.

COMMON KNOWLEDGE

Rooted in the mission to provide affordable living options, Ireland's Common Knowledge partnered with the UK's Margent Farm, which grows hemp in Cambridgeshire, to create these two-level TIGÍN Tiny Homes (top) on wheels. The 20 square-metre space flexes sustainable materials beyond hemp, like cork insulation and natural rubber linoleum flooring, and its simple design can even be built by hand.

MOLIVING

Portability is breaking into hospitality thanks to these moveable 'pods' (above) in the United States that contain a proper hotel room complete with distinct living, sleeping, and working areas. Billed as the world's first nomadic hotel concept, the prefabricated pods can be moved with ease all about your property – perfect for anyone dreaming of opening an Airbnb.

MADEIGUINCHO

Part of the Portuguese studio's long-running collection of portable compact homes, these timber units (left) are often kitted out with double-height interiors, built-in furniture and off-grid systems that make mobile living well within reach – with layouts just a few hundred square feet large.

PHOTOGRAPHS (TOP) SHANTANU STARICK; (CENTRE) DAVID MITCHELL; (LEFT) JOÃO CARRANCO