

Technologies that will change our buildings

Generative design maximises sustainability in construction through technology. [Combining algorithms with AI technology](#), designers can input their goals into the software along with parameters such as materials, manufacturing methods and cost constraints, to be presented with thousands of potential solutions. It also allows for thorough testing before construction, reducing material wastage. Whether it provides better solutions than a human designer remains to be seen.

Pee power converts urine into electricity. Urine passes through a series of Microbial Fuel Cells (MFCs). The microbes feed on the organic materials found in urine, releasing electrons and generating electricity. The [PEE POWER® system](#) was developed at the University of the West of England (UWE Bristol) and has been used to provide some of the power at Glastonbury Festival for the last four years.

Additive Manufacturing has gained a lot of publicity for projects such as the [3D printed house that can be built in one day at low cost](#) - which start up business ICON wants to use to print affordable houses for families living in slums across the world – and [Arup's collaboration with CLS Architects](#) in Europe. Future developments mean that houses will likely move from concrete to advanced hybrid materials.

Buildings as Materials Banks. [By repositioning buildings within a cycle of value](#), BAMB aims to reduce waste and virgin materials. Using high quality, reusable materials with easy-to-disassemble components suitable for reuse means they can be dismantled and returned to manufacturers at the end of the building's life. "Leasing" these materials may become the future of sustainable construction.

Solar glass technology makes use of [a photovoltaic coating that can offer several degrees of transparency and that transforms solar power into electricity](#). [New Energy Technologies](#) (USA), which has developed an almost invisible photovoltaic liquid that can be spread over any transparent surface. Together with photovoltaic graphene paint, photovoltaic glass might very well prove to be a game changer in the generation of energy.