

How a bathroom is 3D-printed

A specially designed concrete mixture is fed into mixers and pumped out of a nozzle mounted on the robotic arm, depositing the mixture layer by layer according to the digital blueprint.

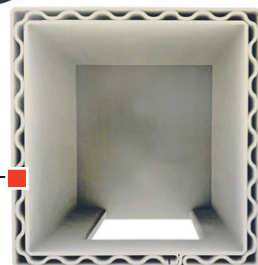
6-axis robotic arm

Has a reach of about 6m in diameter.

- A special concrete mix is used. It includes green building materials such as geopolymers, which are made from fly ash waste.
- It is fluid enough to flow through the hoses and print nozzle.
- It hardens fast enough so that the next layer can be printed over it.
- The final product is as strong as conventional concrete.



To save material and achieve weight savings of up to 30 per cent, the walls of the prefabricated bathroom are printed in a W-lattice shape, which lends additional strength to the final structure.



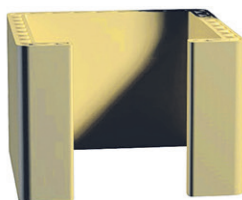
Top view of layer

STEP-BY-STEP 3D-PRINTING

1 First layer printed at 10cm per second. This layer can be seen as a thinly sliced horizontal cross-section of the 3D object



2 Each layer of mixture hardens within minutes so that the next layer can be printed over



3 Bathroom unit printed in nine hours. The first part was printed in six hours and the top part in three hours (the structure has to be printed in two parts due to space constraint in the lab)

