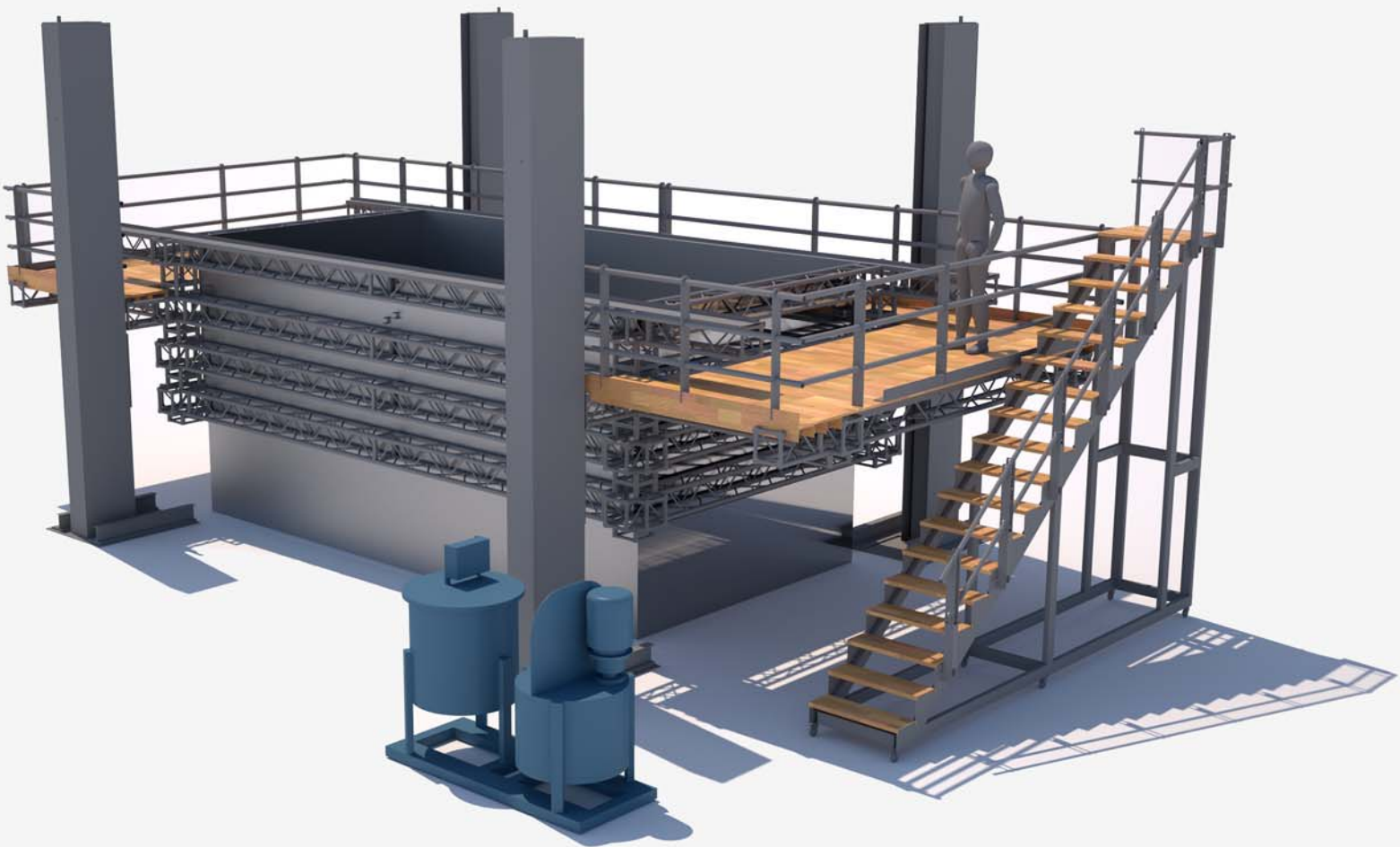


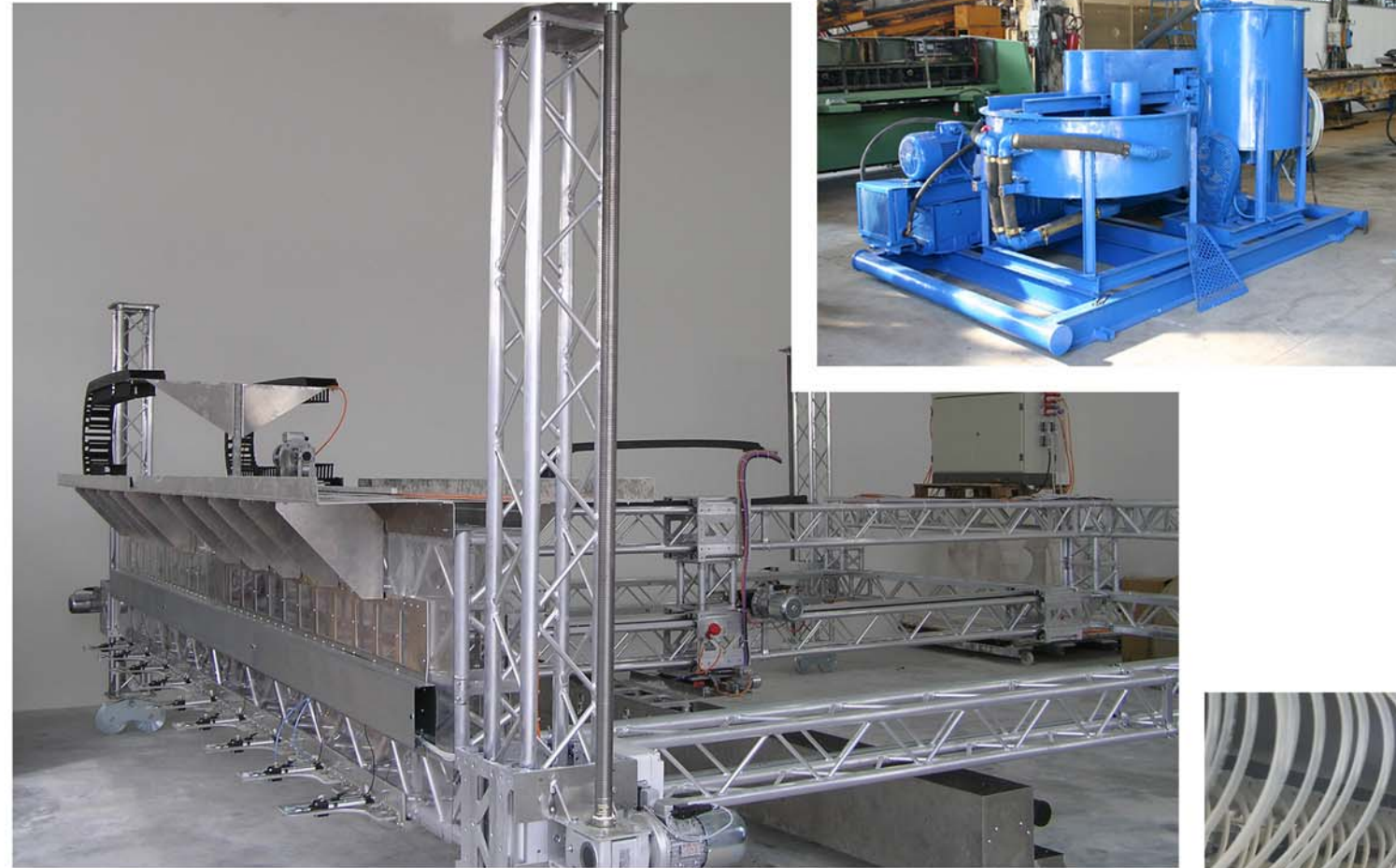
3D-Printer DS 6x3x2



**The first and unique real
3D concrete printer**

D-shape® DS 6x3x2 is a patented Particle-bed 3D-printer of conglomerate building blocks. Particle-bed 3D-printing is a digital additive manufacturing technique which materialises three dimensional objects in layers of aggregates bound with cementitious binders. The 3D file of the block is sliced into layers of constant thickness (pitch); the layer is furtherly partitioned into a dot matrix to form a bitmap. A printhead driven by the PLC of the printer deposits selectively the binder only on the full areas of the object.

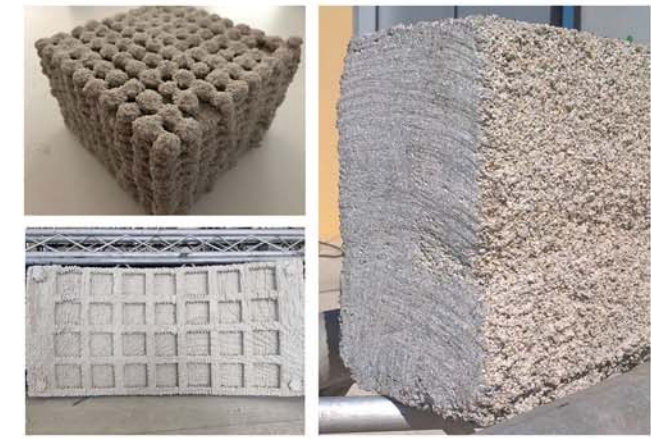
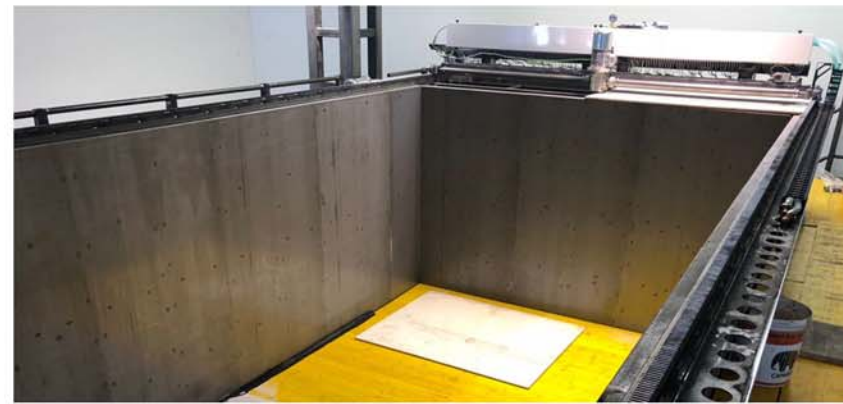
The printer operates four repetitive steps: (1) applying a layer of aggregates; (2) moving vertically the printing device according to the pitch (3) depositing the binder selectively according the bitmap (4) repeating the 1 to 3 operations for all the layers into which the 3d object has been partitioned in a bottom-up process. Finally the un-bound aggregates are removed and the block is unveiled.



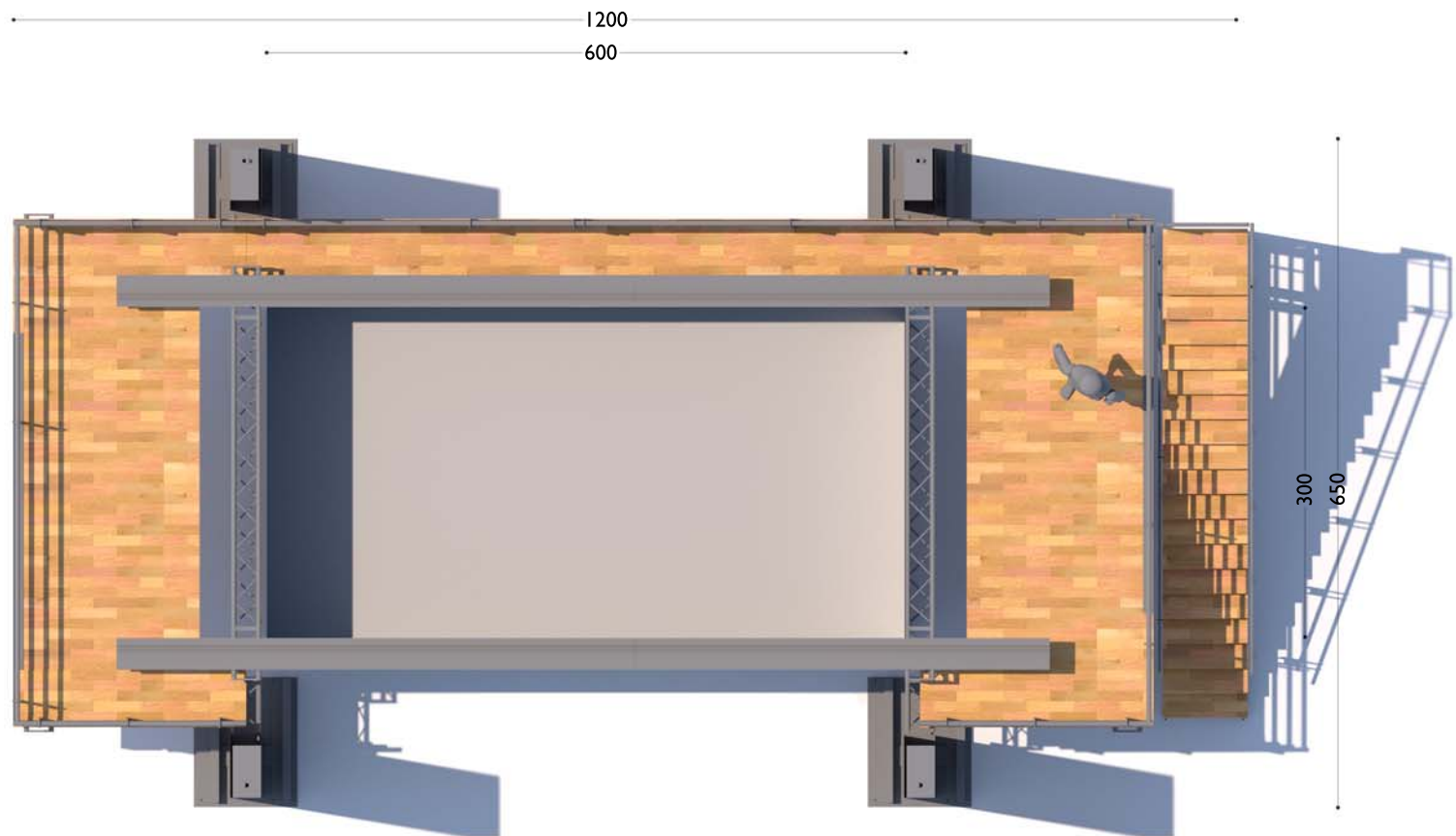
Typical material properties

Material properties	Test method	
Compressive strength		
- Orthogonal to the layers	UNI EN 12390-3	37,28 (MPa)
- Parallel to the layers		33,78 (MPa)
Tensile strength		
- Orthogonal to the layers	-	3,35 (MPa)
- Parallel to the layers		3,15 (MPa)
Density	-	2150 (kg/m ³)
Elastic modulus		
- Orthogonal to the layers	-	2000 (MPa)
- Parallel to the layers		4000 (MPa)
Porosity	Digital Image Analysis	2,5%
Aggregate binding ratio	-	From 50 to 60 %

Optimal mechanical failure compared to standard UNI EN 12390-3



Plan view



Front view



Operational features

Layout clearance (LxWxH)	15x10x6 m
Operating temperature	5 - 40 °C
Voltage	220/380 V - 50 Hz
Peak power consumption	3500 W
Minimum number of operators	3

Width (print head length)	3 m
Max printing length	6 m
Max printing height	2 m
Max printing area	6 x 3 m

Pitch	5 mm
Average building speed of 1 layer	4 min
Average building time	24 h

Inlet materials	
CLEAN WATER	
AGGREGATES	
medium sand	1/2 - 1/4 mm
coarse sand	2 - 1/2 mm
granule	4 - 2 mm
BINDER	
slurry of portland cement	s. c. 32,5 MPa
additives and fillers	

Side view

