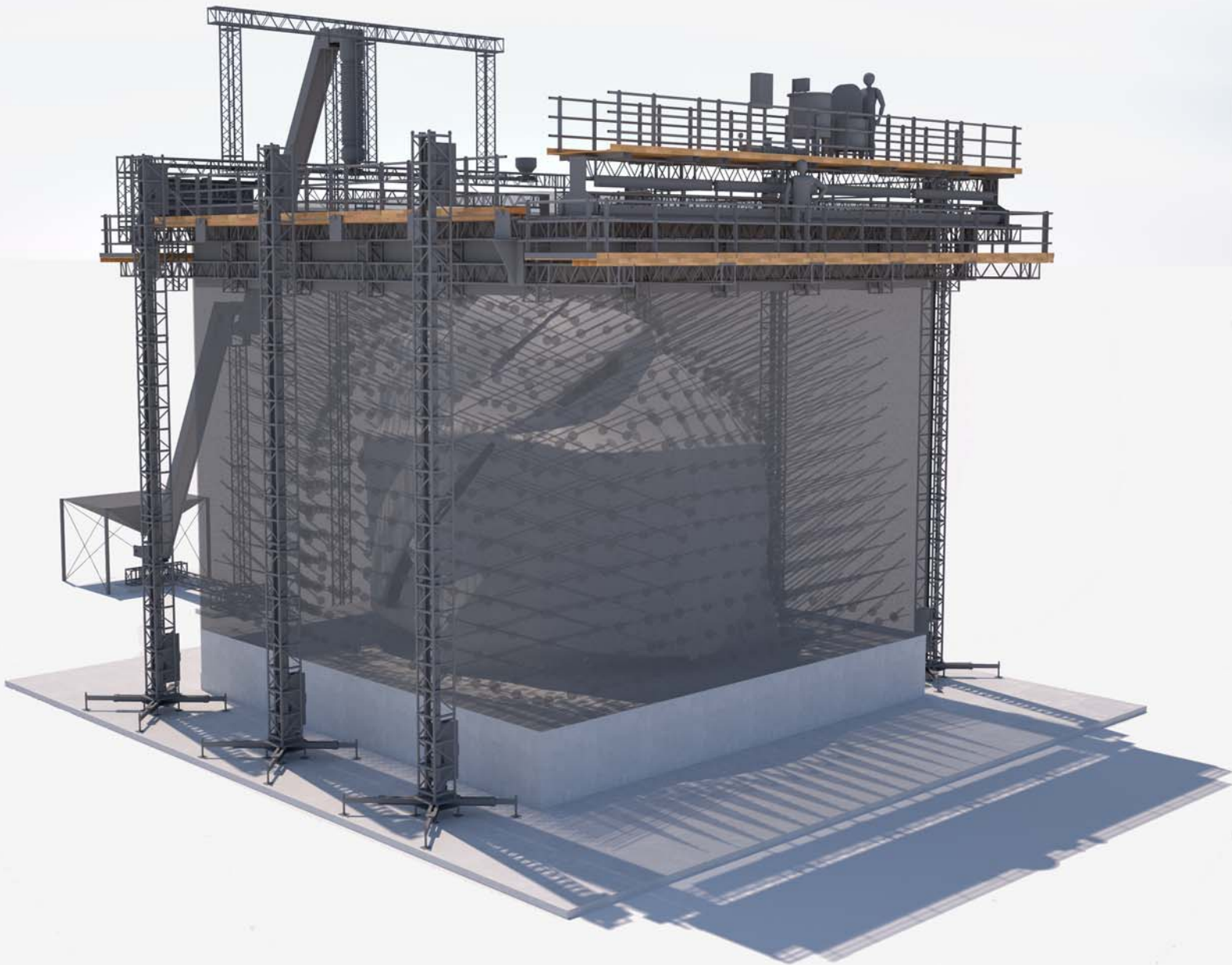
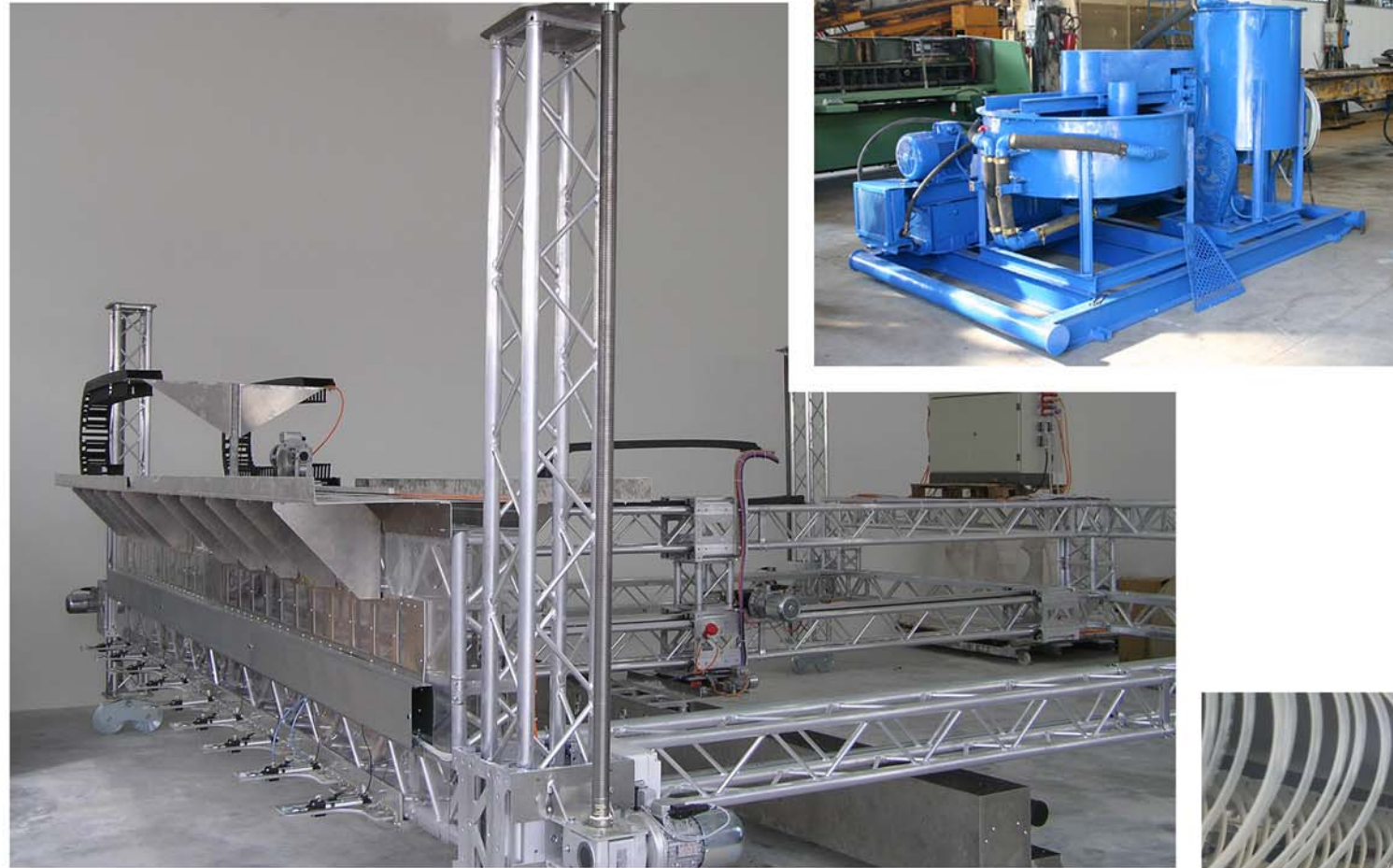


3D-Printer DS 12x12x10



**The fastest and cheapest way
to print houses in 3D!**

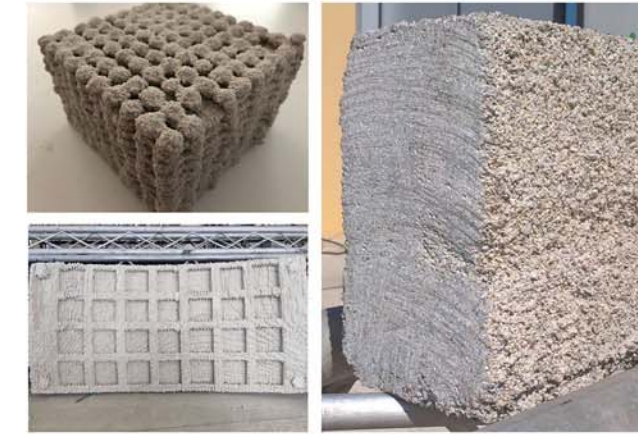
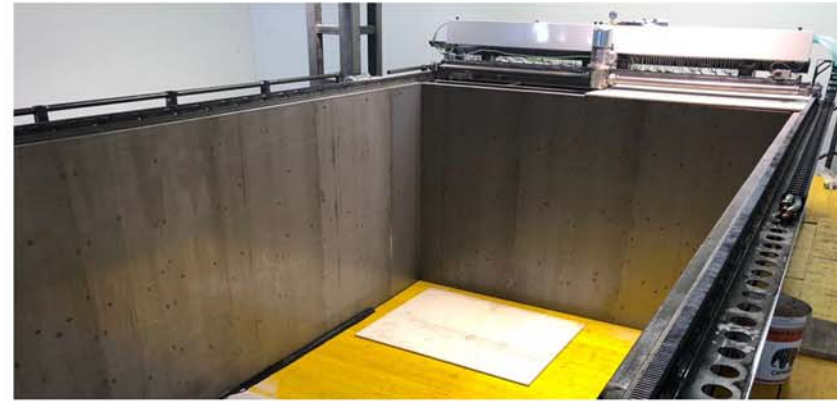
D-shape® DS 12x12x10 is a patented Particle-bed 3D-printer of conglomerate buildings, printed in one go from the foundations up to the roof. Particle-bed 3D-printing is a digital additive manufacturing technique which materialises three dimensional objects in layers of aggregates bound with cementitious binders. The 3D file of the building 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 rough building is unveiled.



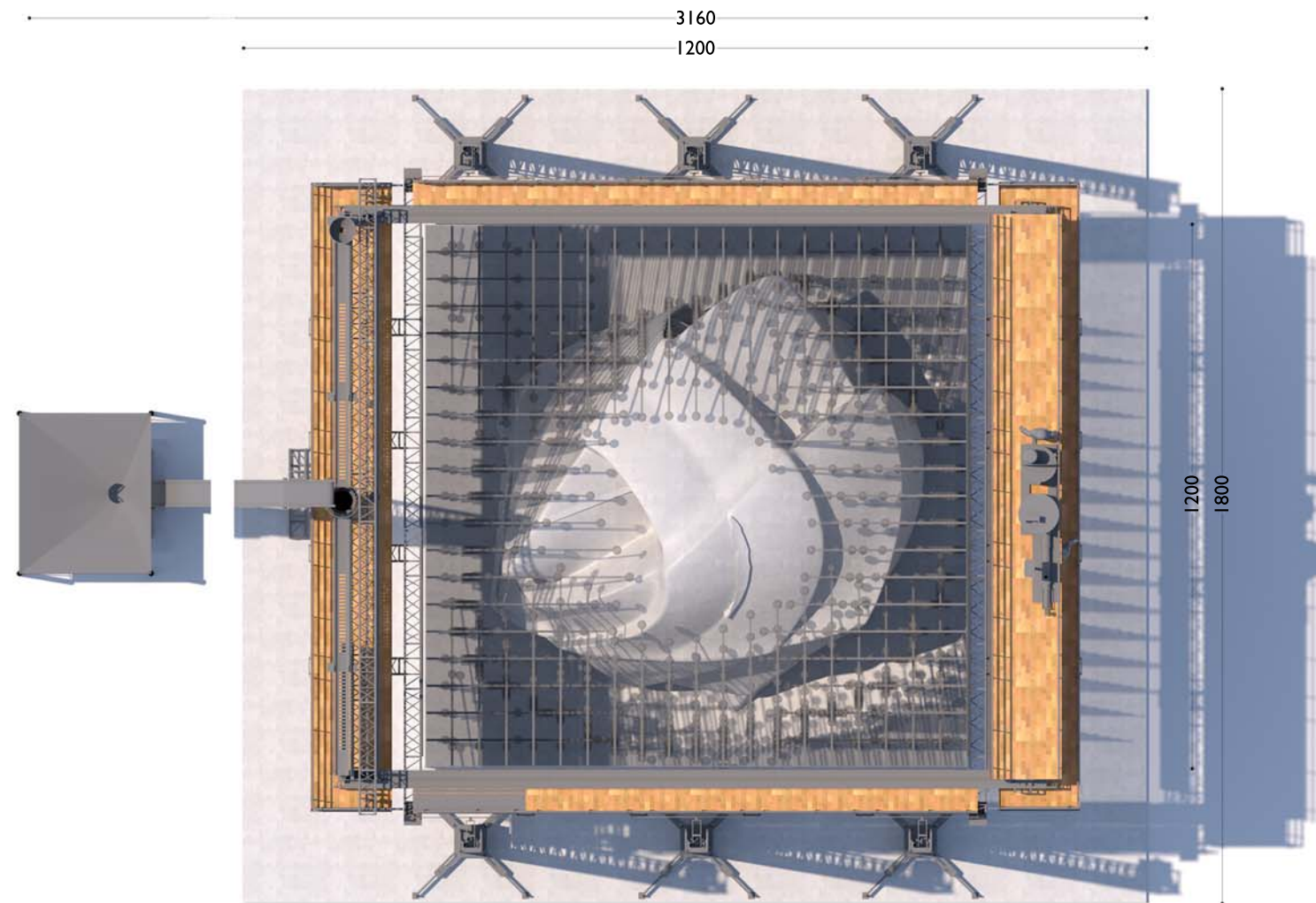
Typical material properties

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 %

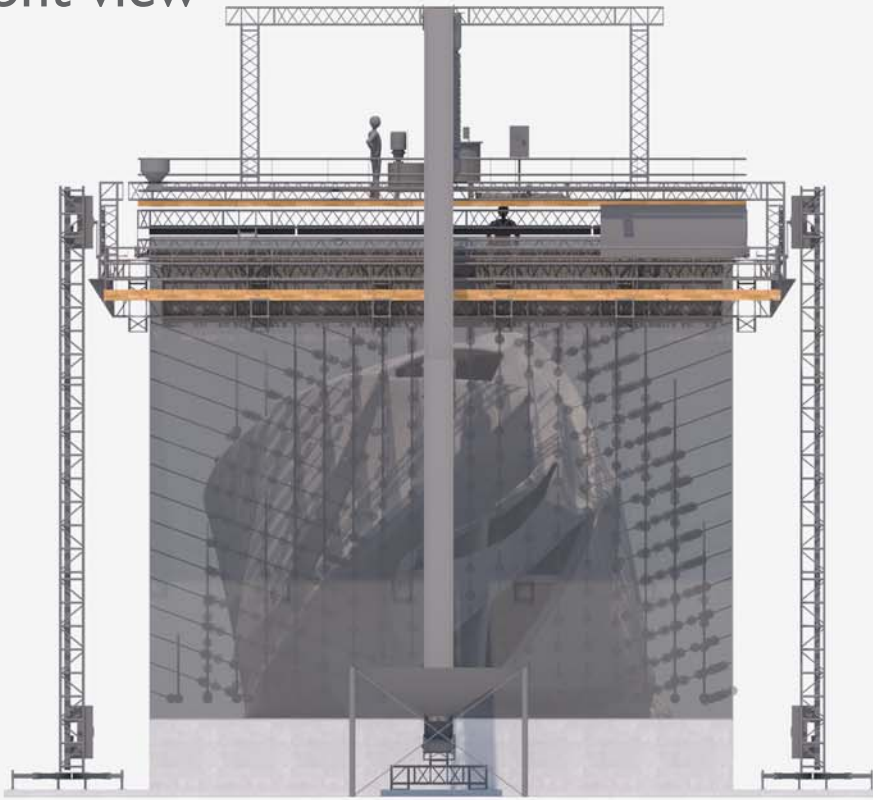
Optimal mechanical failure compared to standard UNI EN 12390-3



Plan view



Front view



Operational features

Layout clearance (LxWxH)	31x18x16 m
Operating temperature	5 - 40 °C
Voltage	220/380 V - 50 Hz
Peak power consumption	3500 W
Minimum number of operators	6

Width (print head length)	6 m
Max printing length	12 m
Max printing height	10 m
Max printing area	12 x 12 m

Pitch	5 mm
Average building speed of 1 layer	8 min
Average building time	150 h

Inlet materials

CLEAN WATER

AGGREGATES

medium sand 1/2 - 1/4 mm

coarse sand 2 - 1/2 mm

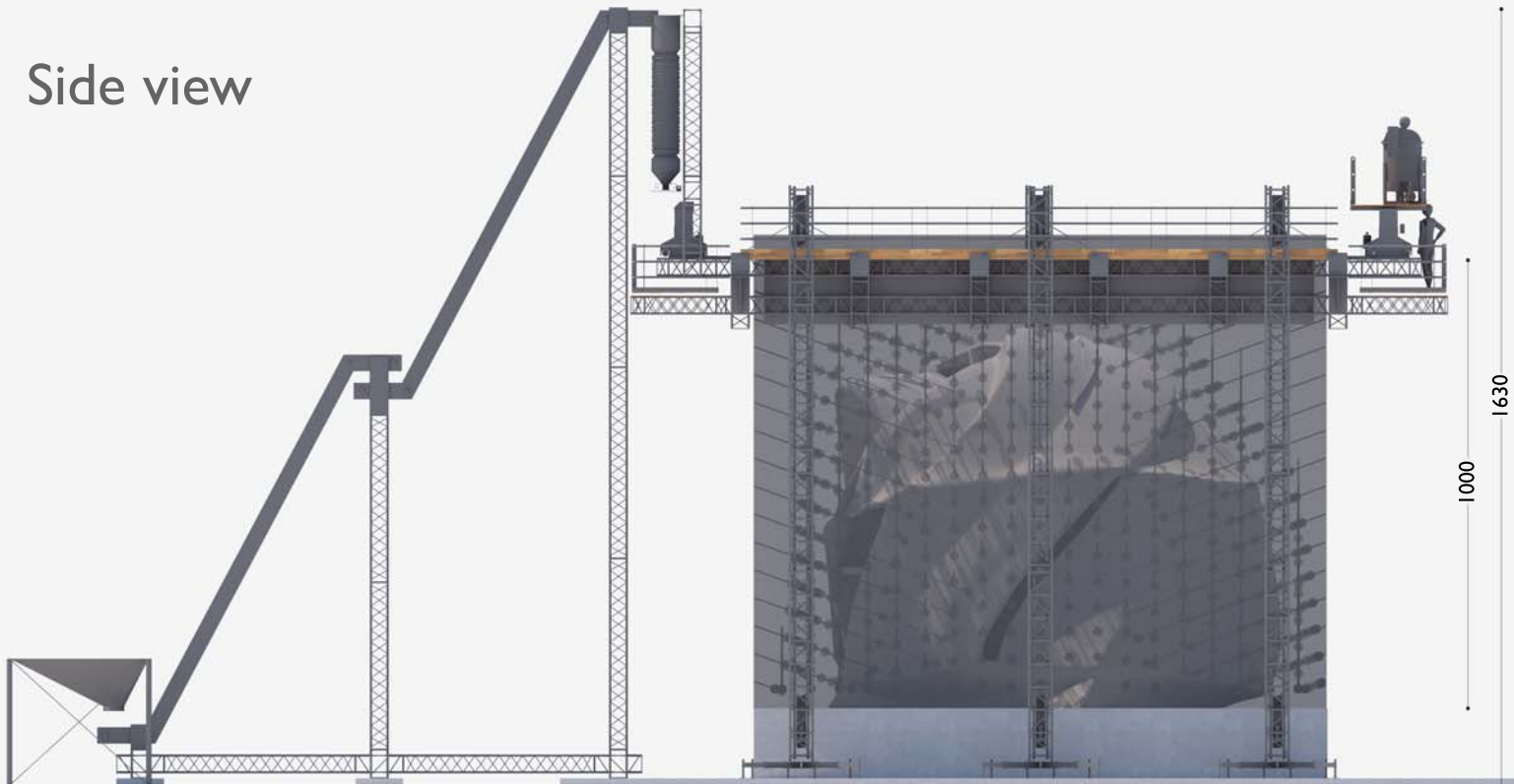
granule 4 - 2 mm

BINDER

slurry of portland cement s. c. 32,5 MPa

additives and fillers

Side view



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