

 **apis cor** | we print
buildings

ABOUT THE COMPANY



Apis Cor is the developer company of unique mobile construction 3D printer that works in polar coordinates.

In future we plan to implement functions of inter-story floors and roof printing as well as automatic horizontal wall and foundation reinforcements placement.



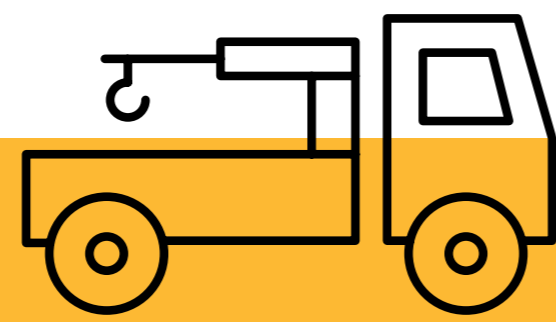
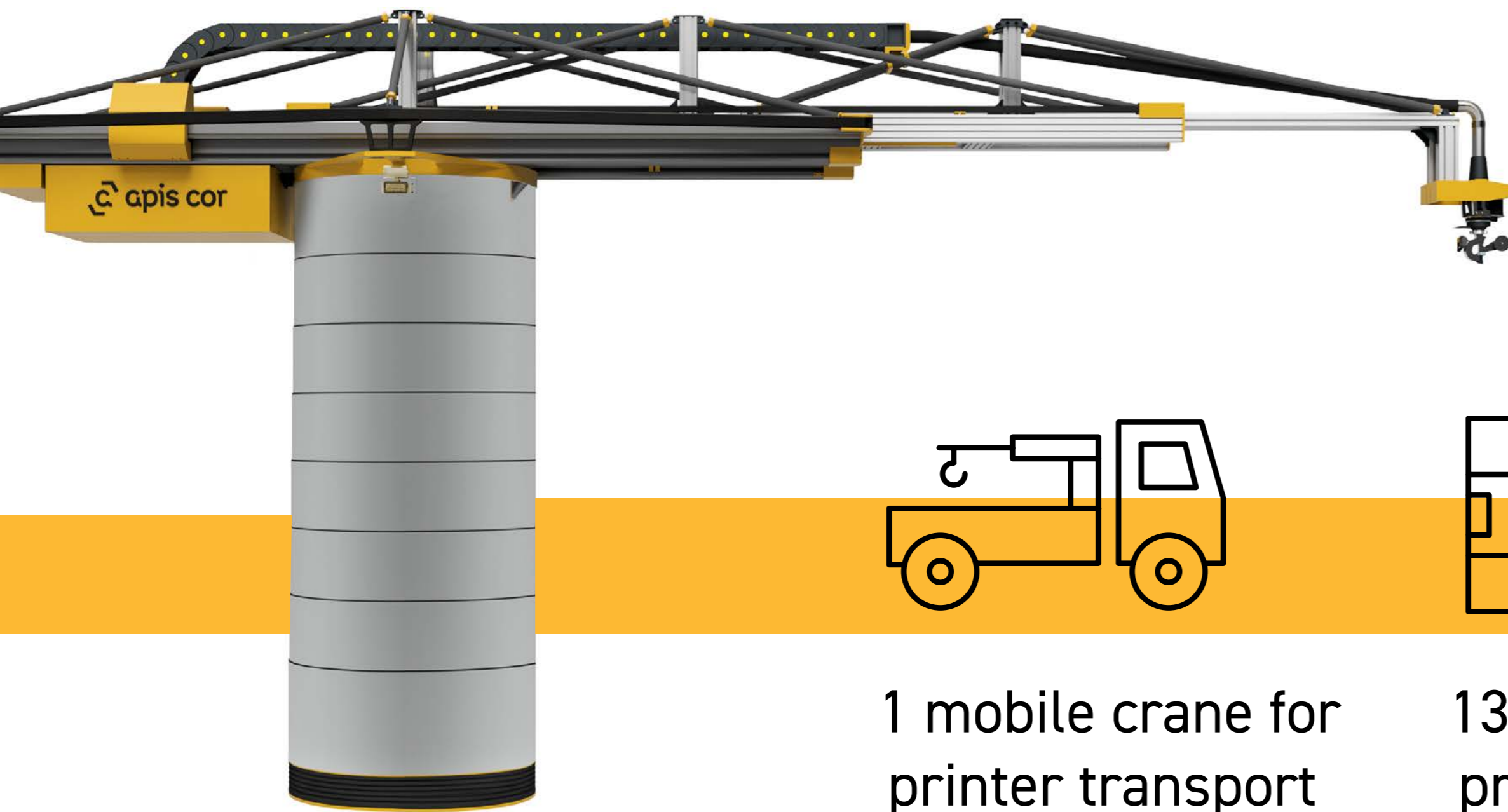
Construction 3D printer Apis Cor prints self-supporting walls and partitions, as well as permanent formwork for strip foundation and columns of reinforced ferro-concrete framework.

The recommended number of stories of printed buildings — 3-floors.

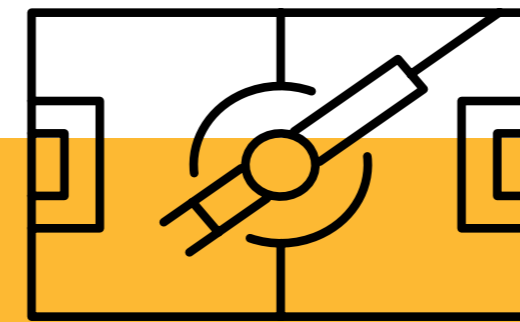
TECHNOLOGY of construction 3D printing «Apis Cor»

- Construction 3D printer
- Mobile Automated concrete mix and supply Unit (MAU)
- Proprietary software
- Control program
- Dry mixture storage silo

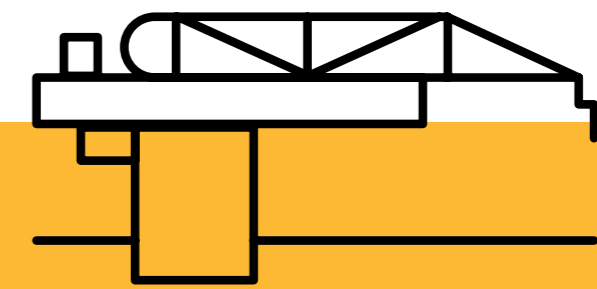




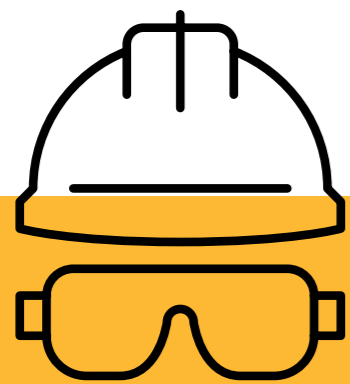
1 mobile crane for printer transport



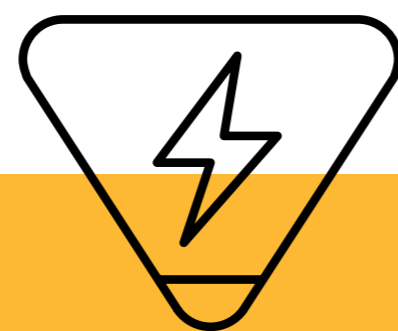
132 m² printing zone



Horizontal stabilization



2 people required for operation control



8 KW of power consumed by operating printer



30 minutes required for installation and set-up



0 kg construction waste

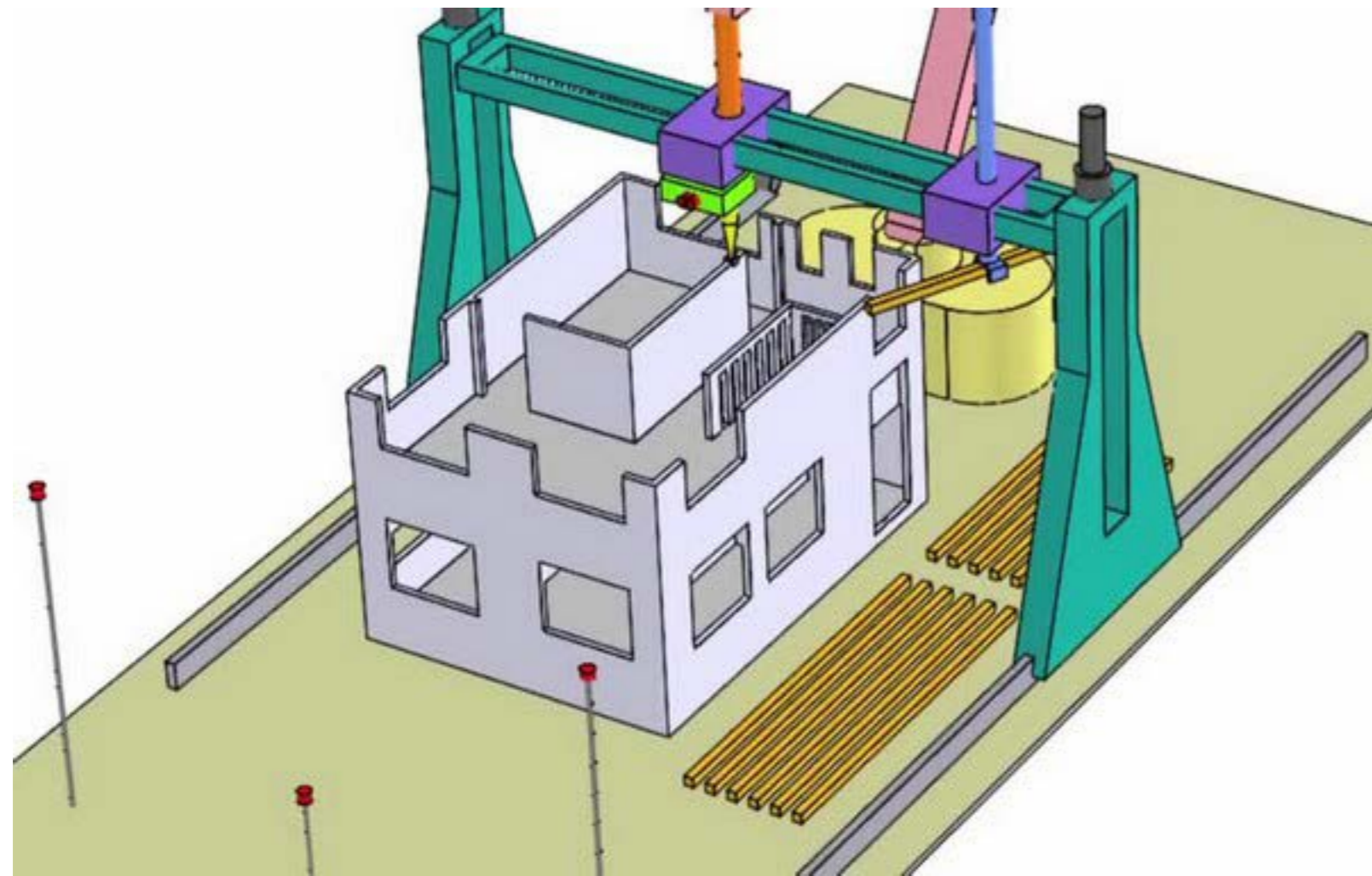
COMPARISON with existing construction 3D printers



Existing commercial construction 3D printers represent the portal design and work in rectangular coordinate systems.

3D printers based on portal design move along the rail track guides that require a flat surface for installation. If the rails are not installed on the same plane relative to each other, the entire structure of the equipment will jam or lose precision and building geometry will be compromised. Commissioning on site can take up to 3 weeks.

Precisely because of these features portal 3D printers are installed in the factories, on prepared and perfectly level concrete floors.



Portal design implies a restriction on the area and the height of the printed object. To print a house with more than one floor it is necessary to make the printer bigger than the building itself. The cost of such a printer and its installation will increase accordingly.



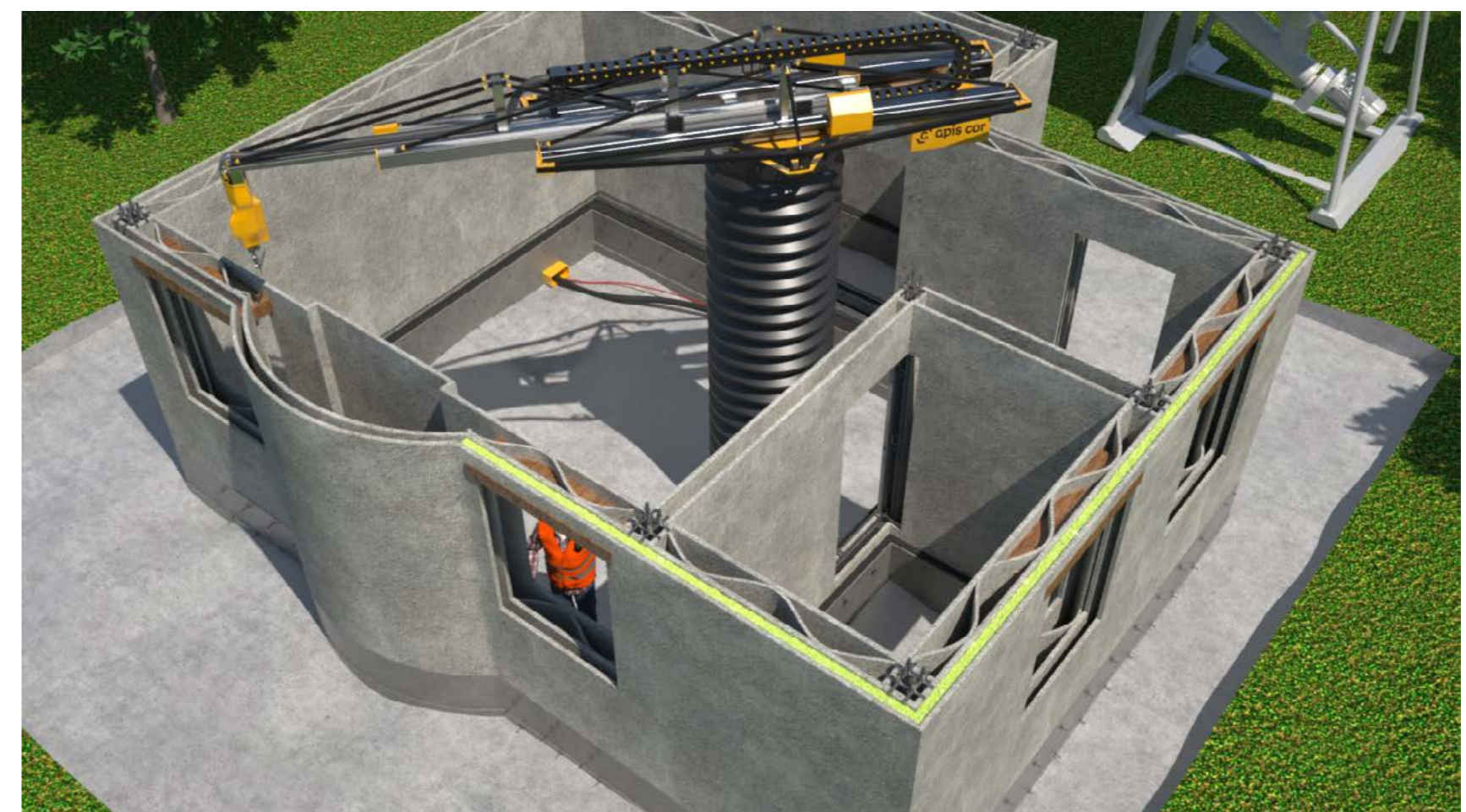
So the portal 3D printers are used to print small architectural forms (e.g. benches) or individual elements of the buildings with the subsequent delivery and installation on site.



Construction 3D printer «Apis Cor» has relatively small dimensions- 4.5 meters long, 1.5 meters in height and width, weight — 2 tons



For their delivery to the construction site standard construction machinery is used, such as a crane manipulator vehicle.



Commissioning works on site occupy no more than an hour.

Does not require a flat platform for installation — elevation differences up to 10 cm relative to the printer are permissible.

Prints self-supporting walls and partitions of the entire building while being installed in the center of the printed structure. Area coverage with a single point — 132 sq.m.

A COMPARISON with conventional method of construction

A house, printed using a 3D printer is a stone house, because Apis Cor 3D printer uses construction mix based on cement, which by its characteristics is similar to the concrete grade M250, strength class B20. Below is the comparison of all technological stages of Apis Cor construction 3D printing method and block construction method (aerated concrete).

Construction using aerated concrete

1. Blocks production at the factory
2. Delivery of blocks to the construction site
3. Masonry works — 1.5 months*
4. The need for additional insulation
5. Waste on construction site
6. Additional tools and building materials

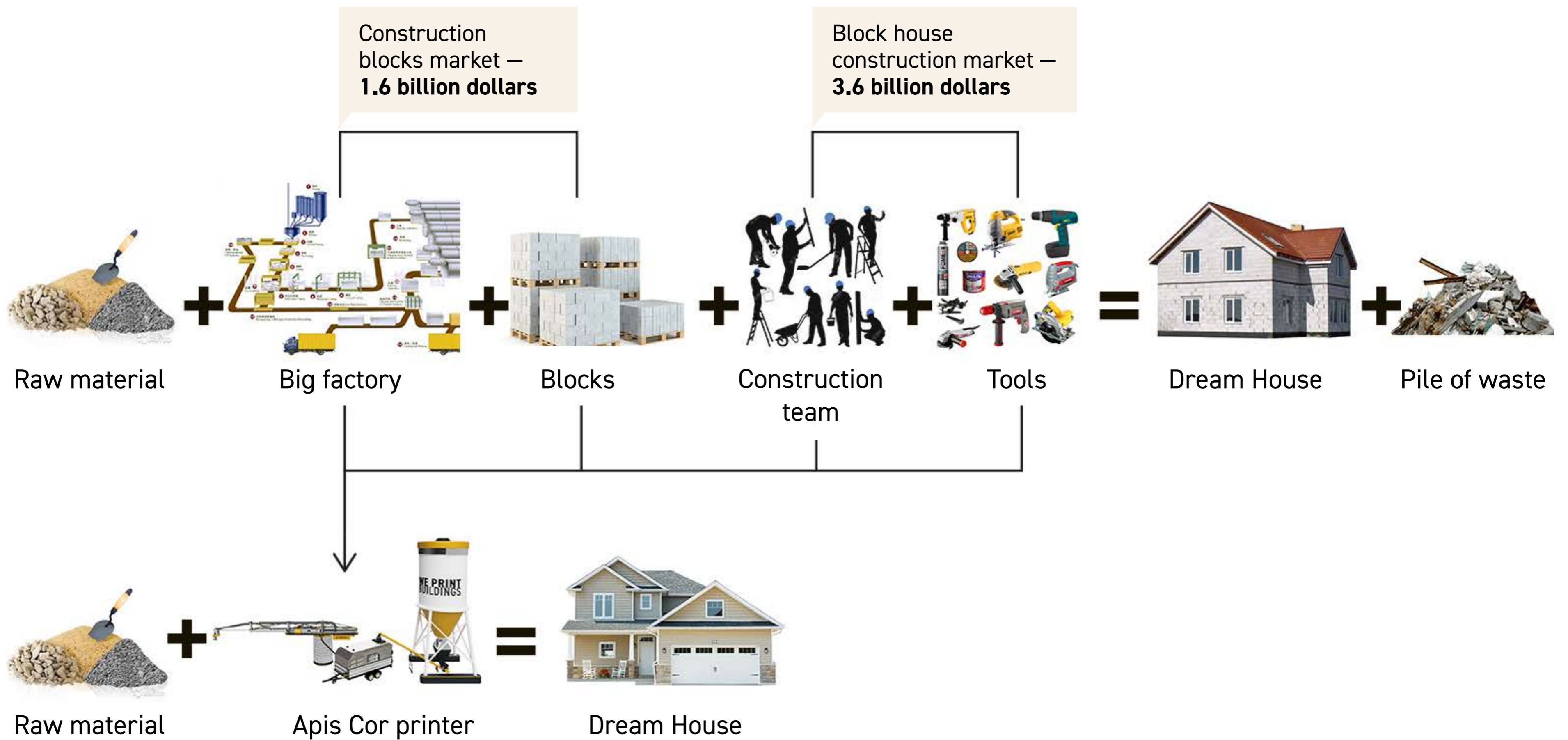
Apis Cor construction

1. Raw materials for the construction on site
2. 2 people to control the printing process
3. Walls printing — 2-3 days*
4. Absence of waste and rubbish
5. The building is immediately ready for finishing works
6. Minimum equipment handling.

* For standard a residential building of 100 sq.m.

A COMPARISON

with conventional method of construction



A COMPARISON with conventional method of construction

	AERATED BLOCKS	APIS COR
Materials logistics	—	3.7 times less
Material per 1 m³ of wall structure	1 m ³ of aerated blocks	0.267 m ³ of printing mix
Speed of construction, 1 m³ of wall structure	3.56 man-hours	0.85 machine-hours Speed increase up to 6 times
Cost per 1 m² of wall structure	4 445 ₪ [*]	1 556 ₪ ^{**} Cost reduction — 2.8 times

* Wall structure, 400 mm thick design with wet facade and foam insulation, including the cost of blocks, glue, plaster, insulation and other materials, as well as the cost of masonry works, finishing, facade thermal insulation works.

** Wall structure, similar in appearance, thermal characteristics, and bearing capacity.



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