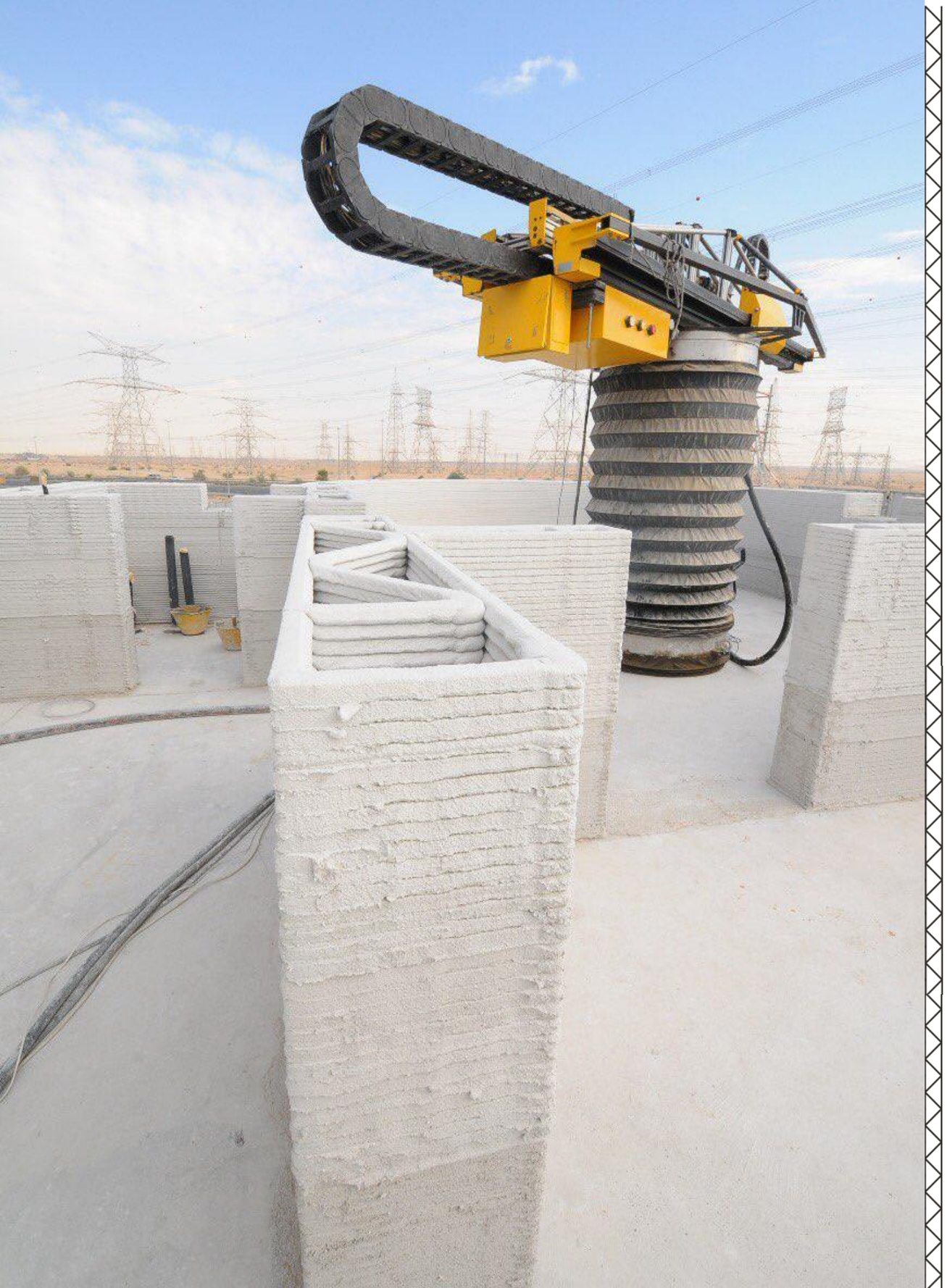
apis cor | we print buildings

Construction can be fast, environmentally friendly, and affordable if we entrust all the complex work to smart machines



Reducing cost and time while enhancing quality

It is fair to say that **construction has not changed** much over the years. We rely on tightening wooden pieces together with nuts and bolts or assembling heavy bricks and block together the same way. It takes a lot of time. Speed and quality depend on skilled labor, which is limited. As a result, we cannot meet the growing demand for new housing across the world.

But **Apis Cor** is a response to that.

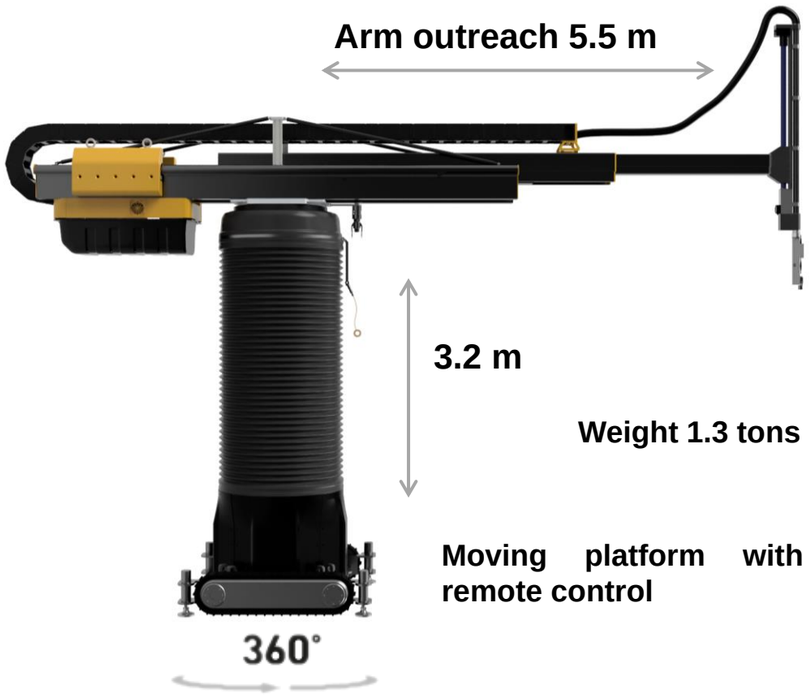
We apply additive manufacturing to **build houses robotically**. Apis Cor's unique robotics arm distributes a concrete mortar, creating a desired shape for a building and taking the hard work from us.

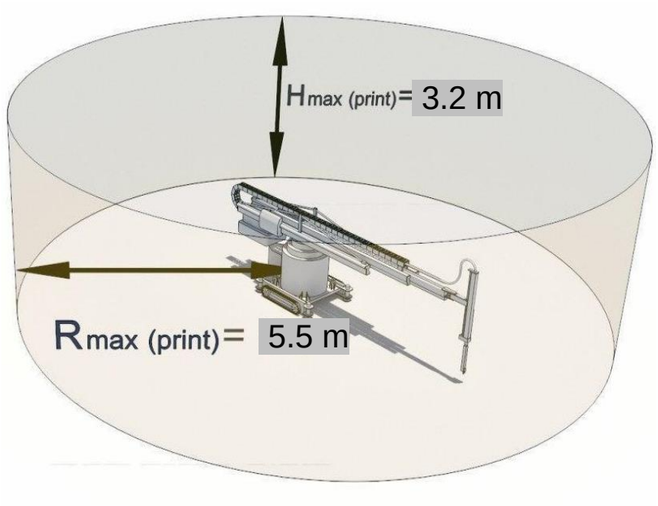
Now, with 3D printing technology, we can build houses in a way that was not possible or affordable with traditional construction.

- Constant and better quality
- Faster. Delivering project on schedule
- No construction waste
- Less finishing works
- Freedom of design

KEY FEATURES

- Significant reduction of overall construction costs and time
- No limitations on square footage – keep printing by moving the printer
- 3D printing continuous walls of a whole house structure directly on site without any extra assembly
- Predictability and elimination human errors
- Freedom of design
- No construction waste after 3D printing the walls





APIS COR 3D printer is a turn-key solution to build wall structures of whole houses directly on site and without extra assembly.

MOBILITY
No crane machine is required to move the 3D printing equipment at the construction site: it is mounted on a mobile platform with remote control that can be moved on any surfaces like ground, sand or grass.

COMPACT DIMENTIONS
Thanks to compact dimensions and light weight Apis Cor 3D printer can be easily transported by a regular truck. Moreover, the 3D printer fits the sizes of doors and can exit a building through the doors once its job is done.

SEMI AUTONOMY
2 personell are needed to install and operate the 3D printer and mixing & pump machine. Equipment set is easy to operate and does not require on-going surveillance.

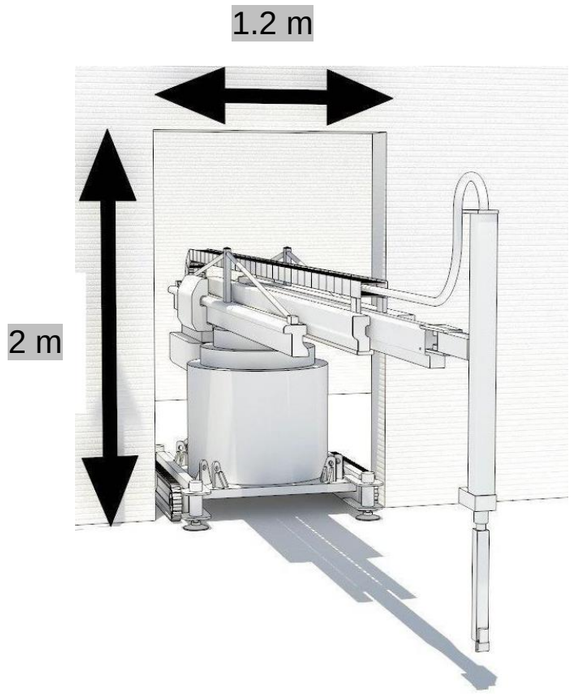
ANY SQUARE FOOTAGE
Keep printing a building just by moving the printer as long as you have land available.

Regular truck for transportation

2 operators for operation control

1 hour to get the printer ready for printing

no construction waste



Mobility of the APIS COR printers is a game-changer bringing truly automated and efficacious wall construction.

1st true portable solution

APIS COR 3D PRINTING SYSTEM

WEATHER RESISTANT

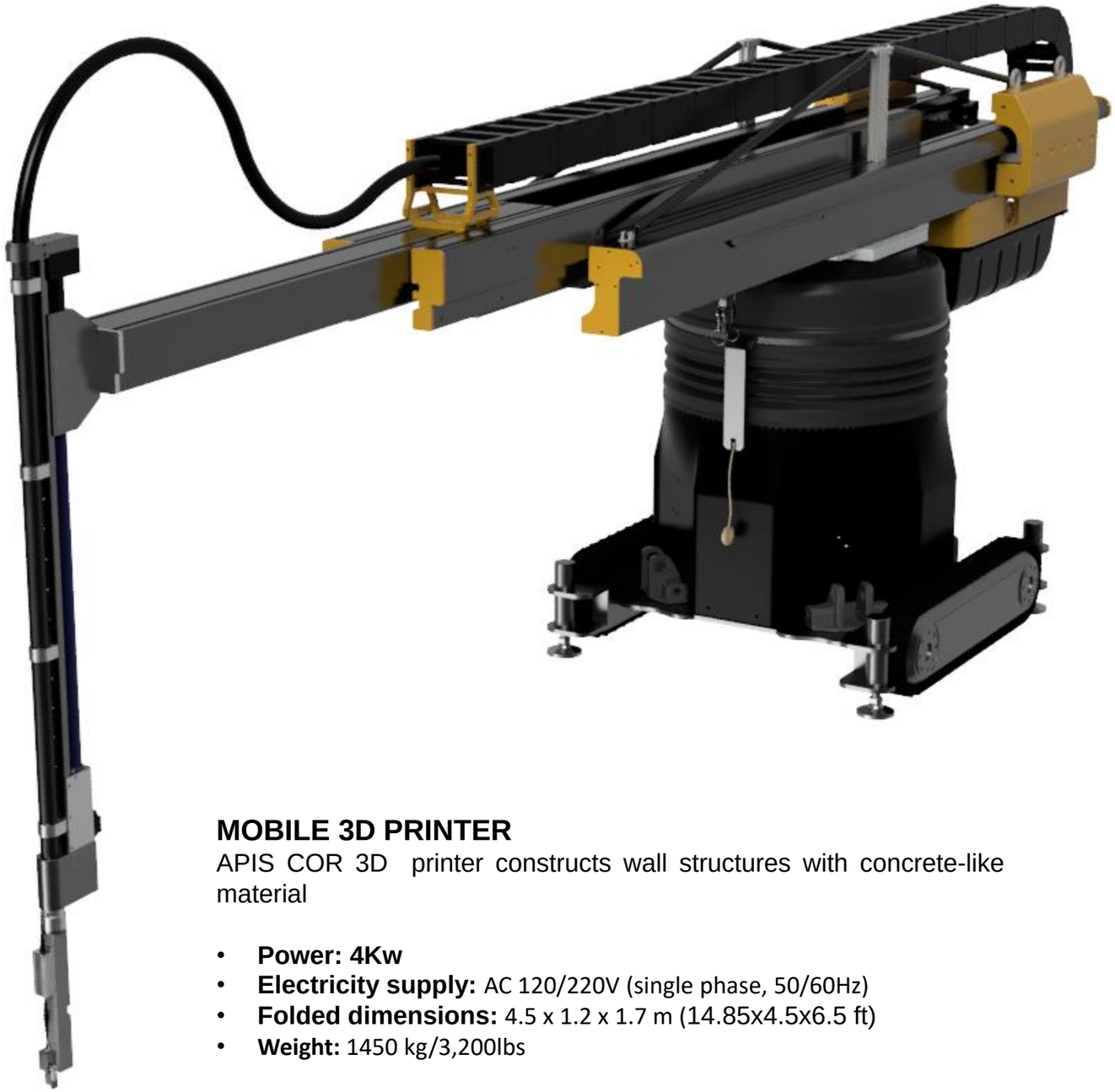
Operating elements are IP 65 – IP 67 rated to protect equipment from environmental impacts

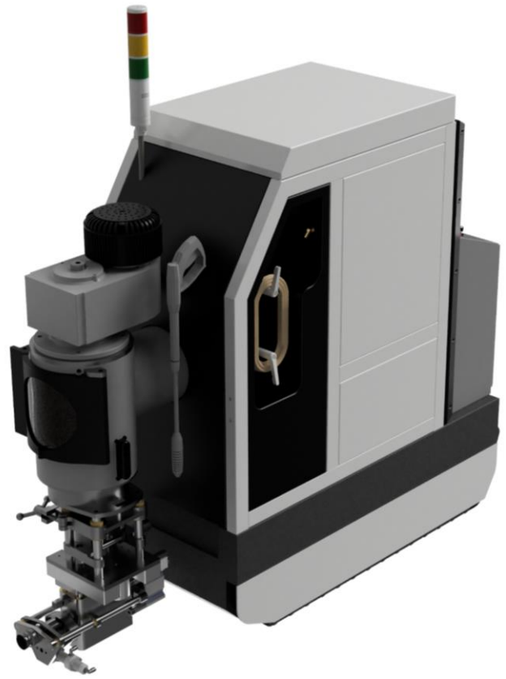
2 PEOPLE TO OPERATE

Equipment set is easy to operate and does not require on-going surveillance

REMOTLEY CONTROLLED

mounted on a mobile platform with remote control that allows for platform to be moved on any surfaces like ground, sand or grass





MOBILE 3D PRINTER

APIS COR 3D printer constructs wall structures with concrete-like material

- **Power: 4Kw**
- **Electricity supply:** AC 120/220V (single phase, 50/60Hz)
- **Folded dimensions:** 4.5 x 1.2 x 1.7 m (14.85x4.5x6.5 ft)
- **Weight:** 1450 kg/3,200lbs

MIXING & PUMP MACHINE

Tailored solution to perfectly mix 3D printing material and automatically deliver it into the 3D printer.

- **Power: 8Kw**
- **Electricity supply:** DC 96V or 3 phases, 350 - 528VAC
- **Dimensions:** 1.5 x 0.6 x 1.3 m (5x2x4.3 ft)
- **Weight:** 600 kg/1,322 lbs

APIS COR 3D PRINTER

3D PRINTER

We have developed a unique 3D printer with overall dimensions less than a SUV that can construct the wall structures with concrete-like material (Ink) directly on a construction site.

The 3D printer has a precise mechanism for feeding the Ink mixture layer by layer, directly forming a building at the construction site without extra assembly, thus minimizing labor hours and reducing errors in the construction process.

APIS COR 3D Printer has no analogs and is the most advanced solution to date.

1 **EASY TO MOVE**
The 3D Printer is mounted on a moving platform with remote control to easily move the unit around a site on any surfaces (ground, sand, grass, etc.)

2 **ADVANCED EXTRUDER**
provides more flexibility of 3D printing process such as back to back printing option, spatula self-cleaning and adjustable height to 3D print right from the ground level.

UP TO 20 METERS / MINUTE
is linear horizontal operating speed

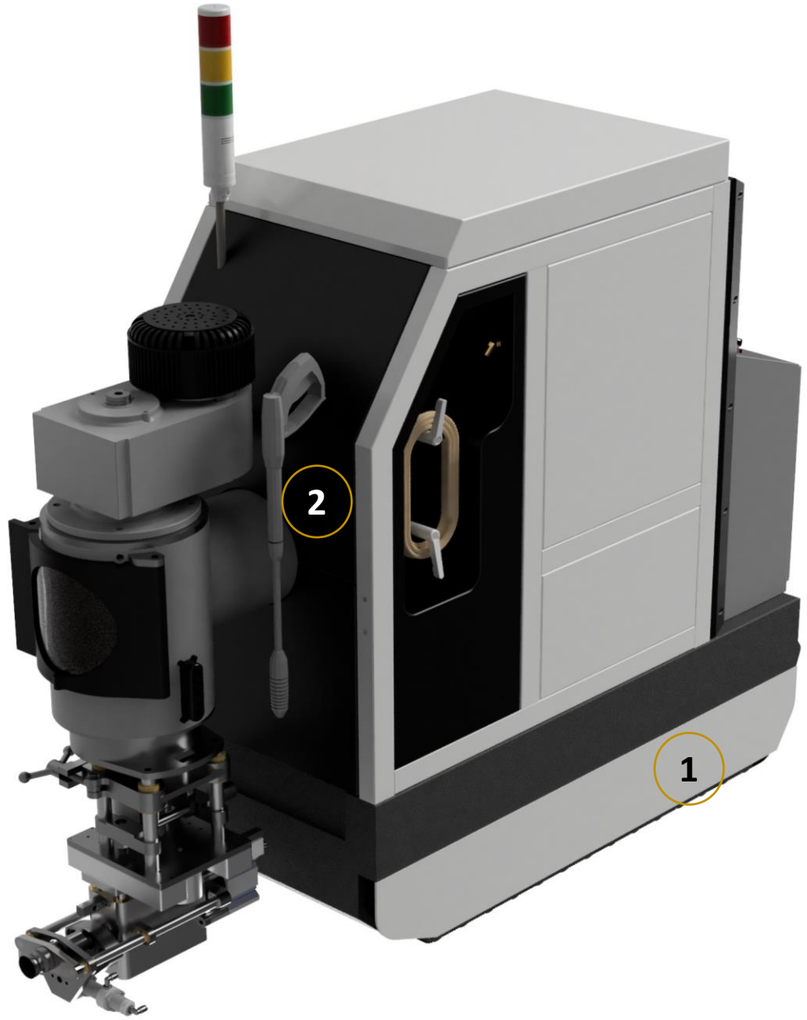
20 mm TALL, 40 mm WIDE
0.8” TALL, 1.6” WIDE
of a 3D printed layer

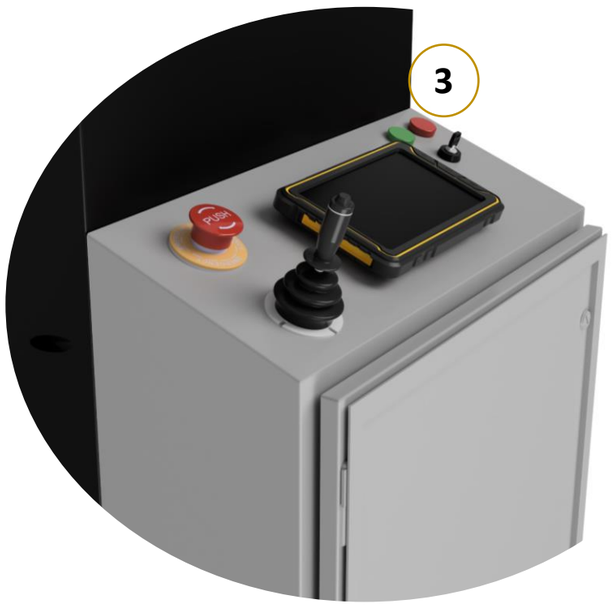
MIXING&PUMP MACHINE

Tailored solution for 3D printing in construction to perfectly mix 3D printing material and automatically deliver it into the 3D printer. The machine provides the maximum level of automation making the printing process as easy as pushing a button.

Apis Cor mixing & pump machine is easy in use and maintenance and features combination of technological solutions for 24-hour operations with high viscosity and fast hardening 3D printing materials.

The unique mixing & pump machine ensures consistency in the quality of the 3D Ink and does not depend on extremal factors such as voltage drops during operation or pressure drops in water supply system





SELF CLEANING
Mixing & pump machine includes a set of features to automatically clean hoses and mixing chambers:

- ✓ Allowing automatically complete printing job
- ✓ No mess or dirty work
- ✓ Prevents hardening of the 3D printing material in hoses

NO STICKING
Polyurethane covering of mixing chambers together with smart process of simultaneous water dosing and cleaning of mixing chambers prevents sticking the 3D printing material and so clogging the mixing system. As a result, constant surveillance is not required to maintain the stable water ratio or to stop the printing process to clean the chambers and hoses.

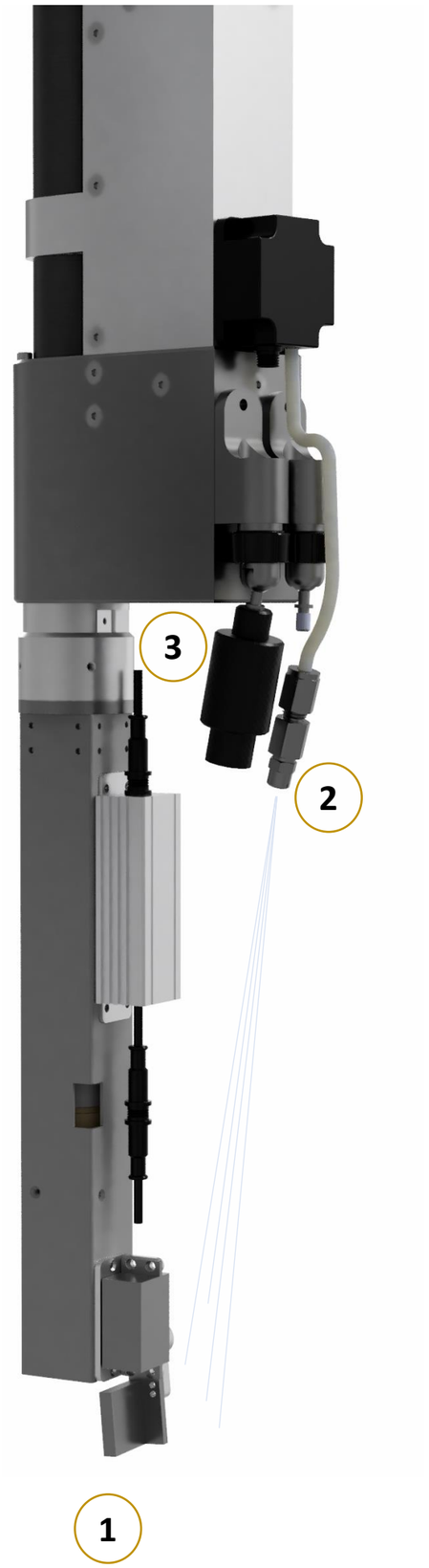
CONSISTENCY OF MATERIAL FLOW
Smart water dosing allows to maintain stable water ratio resulting in excellence consistency of viscosity and other crucial properties required for 3D printing material.

3 OPERATING CONSOLE
All you need to operate the 3D printer and Mixing & pump machine, and manage the printing process: a tablet with installed Apis Cor software, e-stop, remote controlling joysticks. There are more than 20 sensors to indicate errors, predict maintenance, and run self-diagnostic.

1 REMOTLEY CONTROLLED MOVING UNIT
The mixing & pump machine is mounted on a moving platform with remote control to easily move the unit around a site on any surfaces (ground, sand, grass, etc.)

2 HIGH PREASSURE WASHER
is incorporated directly into the Mixing & Pump machine for immediate and easy washing.

ADVANCED EXTRUDER



Back to back printing option:
56 mm (2.2'') width of the extruder to print structures next to each one.

Constant supervising:
finger camera to remotely supervise the process

Auto cleaning the spatula:
high pressure nozzle to clean the spatula

Smooth surfaces:
automatic spatula to make 3D printed surfaces perfectly smooth during the 3D printed process

SPECIFICATION

Construction 3D Printer

Folded dimensions (length, width, height)……4.5 x 1.2 x 1.7 m (14.85x4.5x6.5 ft)

Maximum height (when lifted up) ……..……..3.2 m (10.56 ft)

Maximum arm extension length (from the center……..5.5 m (18.15 ft)

Speed of printing..……..……0 - 20 m/min (0 – 66 ft/min)

Lifting speed of the printer……..……..2 m / min (6.5 ft/min)

Lifting speed of the extruder…,,,,,,…… 4 m / min (13.2 ft/min)

Weight……1450 kg /3,200 lbs

Electricity supply AC 120/220V (single phase, 50/60Hz)
Power 4 kW

Mixing and pump machine

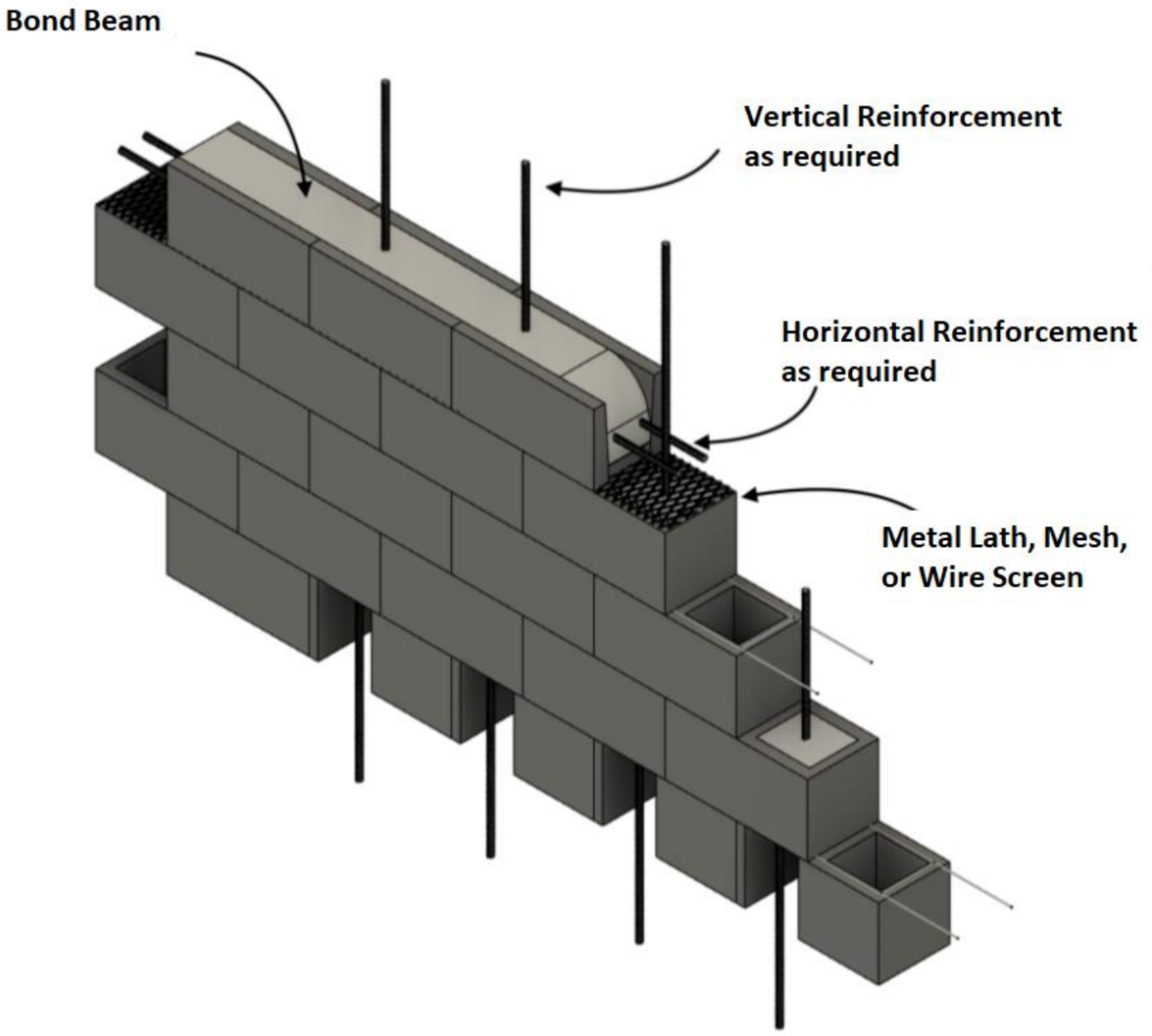
Dimensions (length, width, height)……..……1.5 x 0.6 x 1.3 m (5x2x4.3 ft)

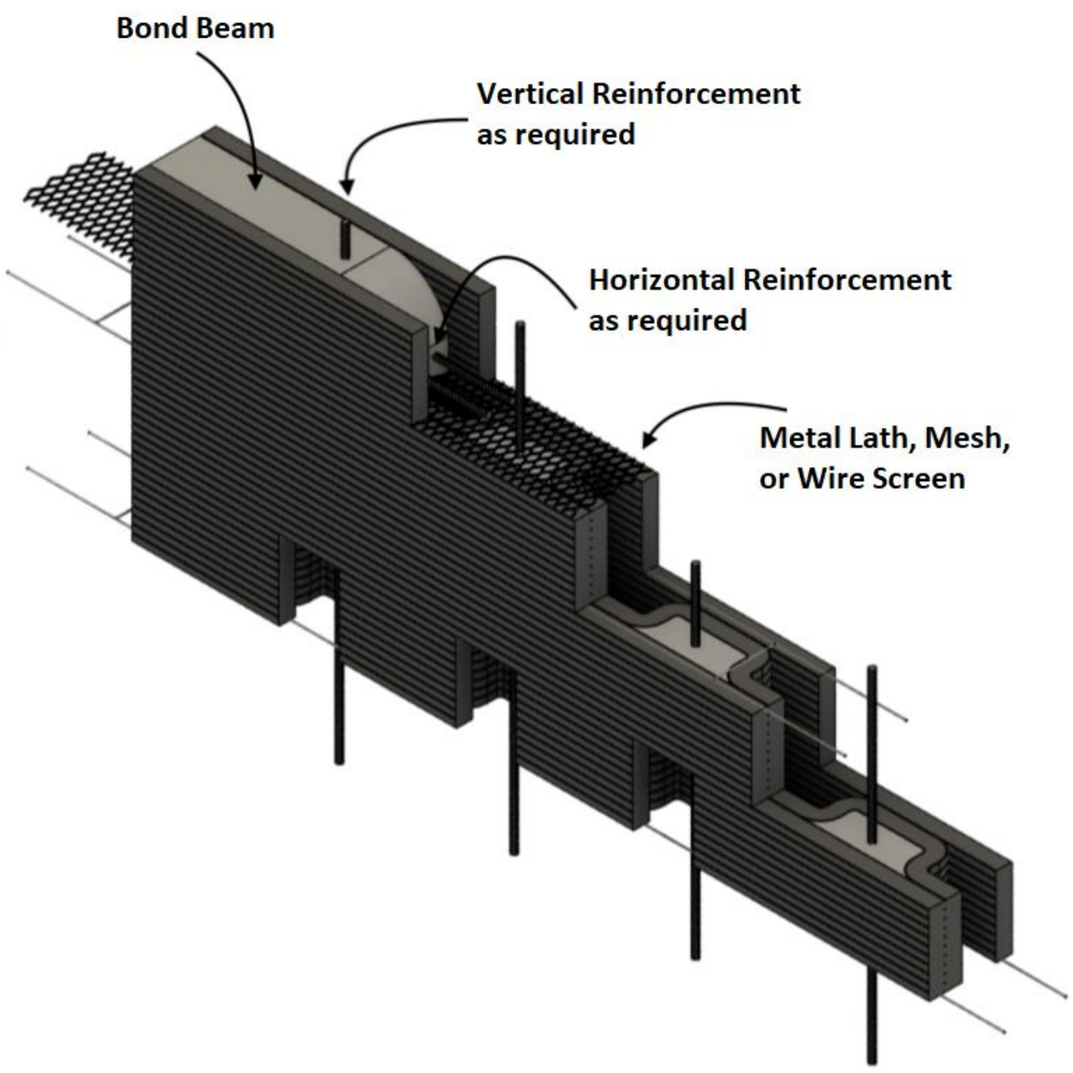
Weight……..……600 kg / 1,322 lbs

Electricity supply DC 96V or 3 phases, 350 - 528VAC
Power 8 kW

WALLS INTEGRITY

To achieve structural integrity and seismic resilience Apis Cor introduces a special configuration of 3D printed structures, comparable to the well-documented and accepted method of reinforced concrete masonry unit (CMU) construction. By comparing 3D walls to masonry unit (CMU) wall we can ensure our 3D printed walls meet existing building standards by mimicking the characteristics of the CMU wall.





3D printed wall structures as comparable to CMU (masonry untis)

Detail 1.001.004 **Version 1**

Apis Cor
2019