

Factsheet: PERI 3D construction printing

A) The BOD2 3D construction printer – Technical specifications

The BOD2 is a 2nd generation gantry printer. The gantry system is configured from multiple 2.5m modules in length, width & height.

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| Printer- and building sizes | <ul style="list-style-type: none"> ▪ Individually configurable and expandable with standard 8.2 ft modules ▪ Maximum dimensions : 49.2 ft wide, 32.8 ft and as long as you want ▪ Example sizes of printable buildings: <ul style="list-style-type: none"> ○ 3D construction printer in our rental park: buildings with a maximum floor area of 2,195.8 sqft and 3 floors ○ Largest printer sold so far: building with a floor area of 3,229.2 sqft and 3 floors |
| Print speed | <ul style="list-style-type: none"> ▪ Maximum speed: 3.3 ft/s ▪ Speed that allows the integration of manual work into the printing process: 9.8 inch/s (\triangleq ~5 minutes for 10.8 sqm hollow wall) |
| Tangential control | <ul style="list-style-type: none"> ▪ Allows to print very smooth surfaces (if desired) ▪ Rough surfaces are also possible as a style element or for easier plastering. |
| Layer height & -width | <ul style="list-style-type: none"> ▪ Layer heights between 0.4 - 1.2 inch ▪ Layer widths between 1.2 - 3.9 inch |
| Print material | <ul style="list-style-type: none"> ▪ Any locally available, 3D printable mortar or concrete (up to a grain size of 0.3 inch) |
| Safety technology | <ul style="list-style-type: none"> ▪ Anti crush protection and emergency stops ▪ IP67 certified cabling and galvanized steel routes ▪ Camera monitoring of the printing process and results |
| Mounting and assembly | <ul style="list-style-type: none"> ▪ Assembly and dismantling time: 8h each for a machine with a printing area of 39.4 ft width, 55.8 ft length and 26.3 ft height (but depends on the configuration of the printer) ▪ Mounting: On the base plate or on concrete blocks |
| Data formats slicer-Software | <ul style="list-style-type: none"> ▪ All formats of conventional CAD software (.STP, .IGS, .BREP as well as .OCC) |

B) The construction printing process

With 3D construction printing concrete structures are build in an automatic and additive way, which means that the robotic construction printer lays layers of 3D printing material on top of each other, which combine to form a monolithic structure.

However, before the printing process can start, a 3D model of the building is first created using conventional CAD software, which is then translated with our slicer software into machine code readable by the BOD2 and transferred to the construction printer.

Once the printer is set up on site, the silo is filled with 3D printing material and connected to the 3D printer along with the mixing pump, the printing process can start.

The BOD2 works in three dimensions: The print head moves right and left along the X-axis, the X-axis moves forward and backward along the Y-axis, and the entire XY group moves up and down along the Z-columns. Thanks to this gantry principle, the printer can move to any position within the structure, pulling up both inner and outer walls layer by layer.

The 3D construction printer is designed in such a way that the workers can also work in the print area during the printing process. Manual work, such as laying empty conduits and connections, can thus be easily integrated into the printing process. A control unit allows you to operate the BOD2 - either via a web interface or touch screen.

Once the walls of a building are printed, the ceilings can be integrated. These are built in the traditional way. For example, a filigree ceiling can be placed on the printed wall and be concreted out. Then the walls of the next floor are printed.