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YOUR 3D POWDERHOUSE

ALTEM
TECHNOLOGIES

THE **ELEPHANT GRAY** 3D PRINTER

LARGE SCALE STONE 3D PRINTING

OFFICIAL BROCHURE - SUMMER 2023

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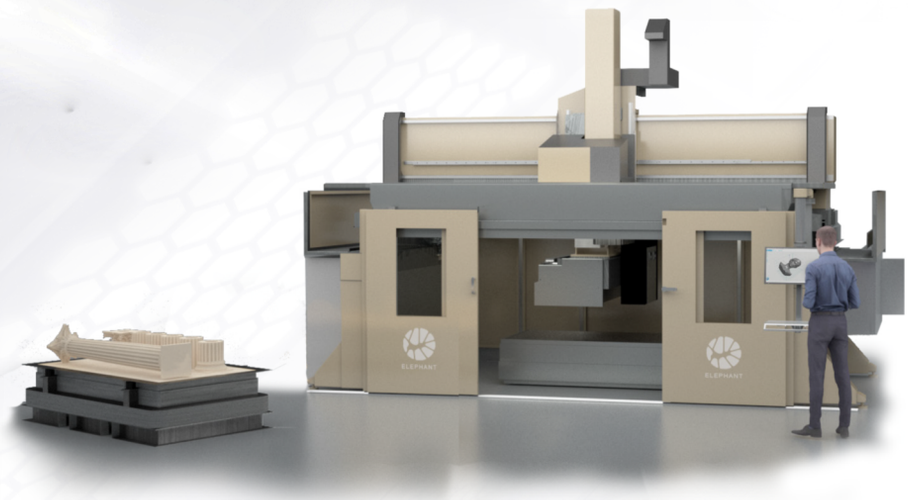
YOUR **ELEPHANT** 3D PRINTER



YOUR ELEPHANT GRAY 3D PRINTER

The Elephant is a highly precise binder jetting 3D printer designed for production of stone elements. It is a fully autonomous patented system that uses a recoater and an array of printheads for single pass high precision jetting of an aqueous fluid on a mineral powder bed.

Powder is fed into the printer filling unit by vacuum. The filling unit deposits powder into the recoating system mounted on the gantries' Z-axis. This is also where the inkjet systems are attached and the fluid is fed into.

The jobbox is fuly removable and multiple jobboxes can be ordered.

Accuracy X, Y, Z (micron)	50, 50, 30
Repeatability X, Y, Z (micron)	50, 50, 30
Printing Resolution (dpi)	400
Layer height (mm)	0.3
Drop size (pL)	40 to 200
Speed(cm*h)	5,4 cm
Single pass swath (mm)	520
Printing bed size (X, Y, Z)	1 x 2 x 1 m
Printer size	2.800 x 6.500 x 4.500
Ink types	G3CO aqueous binder
Powder types	Stone powders
Software	NOAH Mammoth (included)
Connectivity	Ethernet
Power requirements	2 x 400V
Operating temperature	22 ± 2 °C air conditioned
Operating humidity	55 ± 5 % humidified
Colour	RAL 7032

MATERIALS

BINDER

The liquid binder is an aqueous solution that comes in an IBC container and is stored next to the printer on a drip tray. A pump brings the binder to a reservoir inside the printer, after which it is jetted on the powder bed.

The binder is non-toxic and safe to handle. The lid however must remain closed at all times to prevent spoiling or contamination of the solution, which would cause problems with the printer. We recommend to always store binder on a drip tray.

POWDER

The powder is a carefully engineered mineral. There are 4-6 components in the powder formulation, carefully matched towards each other, the binder and the binder jetting production method. The printer is engineered to the powder and will only have limited settings in order to guarantee a consistent result.

The powder is safe to handle and is non-toxic. But, as it remains a powder we recommend the use of dust masks and gloves when handling the powder - generally similar PPE as for working with stone or concrete.

Powder is typically delivered in big bags and stored in a silo. Multiple silos can be arranged for the use of multiple types of powder.

The process is designed to be as dust-free for the operator as possible. Loading, printing, moving and post processing your prints is all dust-free. Depowdering is the only part of the job where the operator may touch the powder and suitable protective gear will be provided with the depowdering station. The depowdering station will keep powders within its boundaries.

MATERIAL TECHNICAL DATA

CONCR3DE MATERIALS CONCR3DE
provides standardized 'G3CO' stone based powders and binders. The properties of these materials have been validated according to the fixed parameters below.

DPI	400
Layerthickness	250 pm
Drop size	150-200 pL
Binder	63C0 binder
Powder	63C0 powder
Support	Not required
Accuracy	± 2% or ± 0.2 mm
Walls	Min. 1-2 mm

Mechanical properties (250 pm)	**Standard Result**	**Result**
Compressive strength (MPa)	ASTM C349-18	17
Flexural strength (Mpa)	ASTM C348-21	2.2
Density (kg/cm3)	ASTM	1750
Porosity (%)	ASTM	30-35
Heat resistance (degrees)	ASTM	1200

CUSTOM MATERIALS

It is possible to develop custom materials for your printer using your waste stream or other locally available materials. In this case a report will have to be made what material properties can be achieved. CONCR3DE has excellent know-how in developing printable materials and can advise you on material compositions, development and properties.

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