

# AMCELL BULKAM®

Large volume industrial additive manufacturing cell to print metal and polymer parts.



AMCELL BULKAM® makes additive manufacturing a viable solution manufacturing large parts.  
An Industrial 3D Printer for manufacturing functional parts.

## Additive Manufacturing Solutions

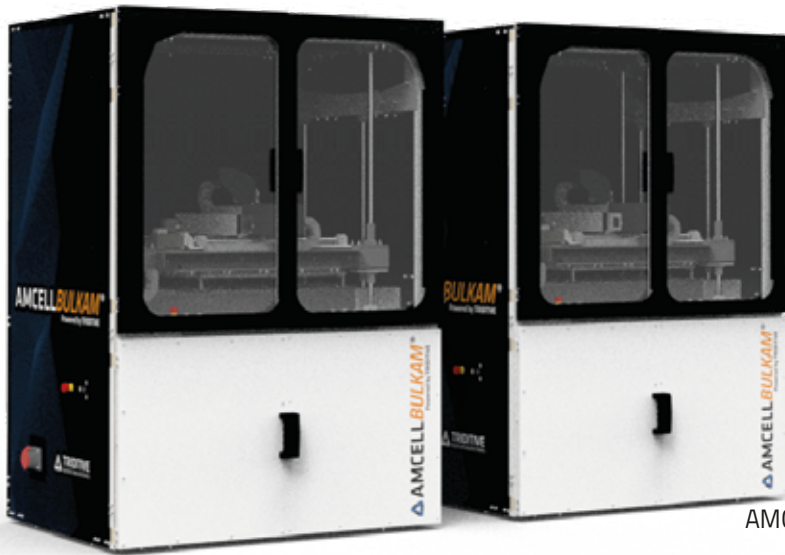
### Production in metal and polymers

#### Accurate and functional parts

- Polymers
- Composites
- Metals
- High tolerance (ISO 2768)
- Large format

#### EVAM Software®

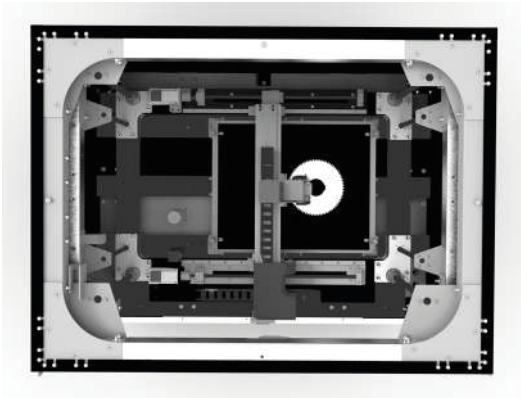
- Centralized control and monitoring
- Feedstock smart control
- Production optimization
- Printer integration
- Build simulation
- Scheduling
- Shopfloor connectivity
- Quality and process monitoring
- Traceability



AMCELL BULKAM® is an industrial additive manufacturing cell to print high complexity and precise final parts, controlled by EVAM Software® to manage production orders, in-process control, and reduce machine downtimes.

## AMCELL BULKAM®

Manufacturing orders, process monitoring, feedstock control, smart environmental control, are just some of the features that makes AMCELL BULKAM® a robust platform for production of large parts.



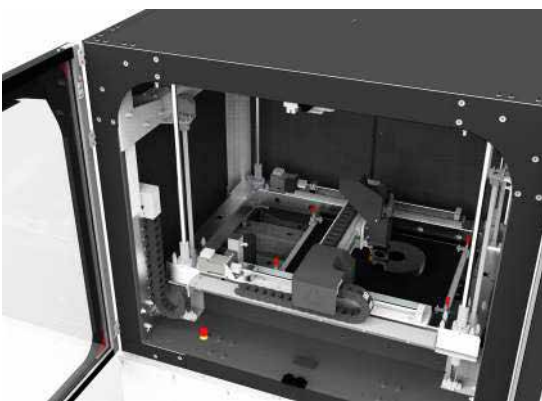
### Robust and Reliable system

Built for continuous operation in tough applications. Extremely robust components.



### Large format

High-performance large volume industrial 3D Printer.  
Printing volume: 500x500x500



### Heated chamber

Unleash the potential of technical materials.



### Software-controlled workflow and process monitoring

AMCELL BULKAM® includes EVAM Software®, the most advanced production control and remote monitoring solution.

# AMCELL BULKAM®

## Technical information

AM technology	MEX; MMEX
Maximum printing height	500 mm
Maximum printing area	500x500 mm
Extruder system	Direct extrusion
Nozzle diameter	0.4 - 1.2 mm
Manufacturing materials	Polymers: ABS, ASA, CPE, HIPS, IGLIDUR I150, PA, PC, PETG, PLA, PP, TPU, VINYL. Composites: PA+ARAMIDE, PA+CF, PC+ABS, PC+PBT, CPE+CF Metals: SS 316, SS 17-4 PH, Inconel, Titanium.
Minimum layer height	50 µm
Build chamber	Heated with temperature control, Bofa® Filter system
External and weight dimensions	1,059x 1,32 x 1,96 m. Weight: 350 kg

## Manufacturing platforms

Platform change system	Manual
Build platform	Heated, up to 130°C
Build platform material	Vitroceraic glass (customizable)
Build platform calibration	Automatic
Final parts storage	Manual

## MEX (Material extrusion); MMEX (Metal Material Extrusion)

Mex is an additive manufacturing process in which material is selectively dispensed through a nozzle to manufacture parts in polymers, composites, and metals

How MMEX works for printing metal parts:



### 1. Green part

The green part is manufactured layer by layer extruding Metal Feedstock.



### 2. Debinding

During the debinding process. The binder is removed through a debinding process.



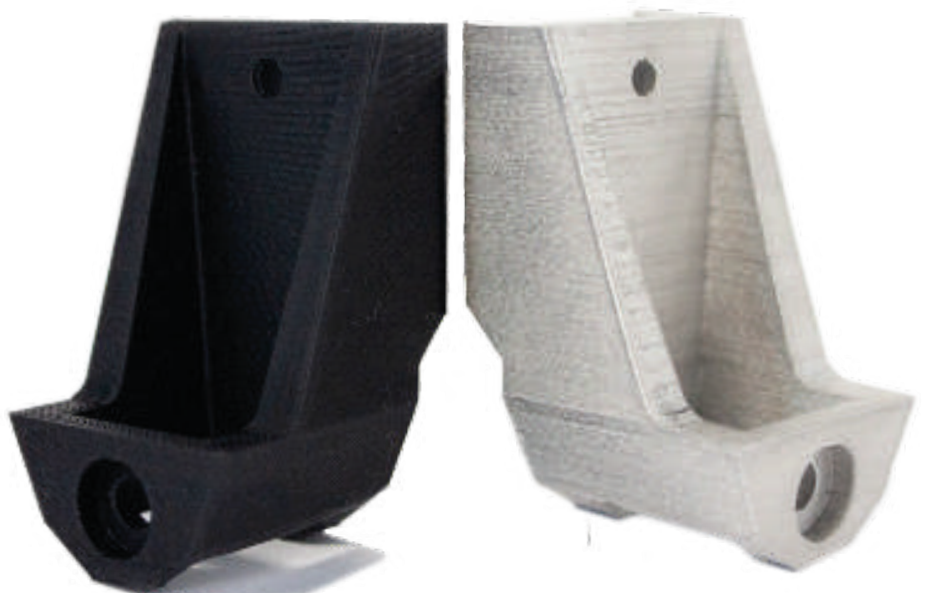
### 3. Sintering

During the sintering process, the part is heated, the metal particles are redistributed and bonded.



### 4. Final part

Once the process is finished, a 100% metallic part is obtained with a density higher than 99%.



Pulley support produced with AMCELL® using PLA and Stainless Steel 316L without surface finish.

# Metals

## STAINLESS STEEL 316L

Metal polymer composite filament to produce metal components in an austenitic stainless steel type 316L.

**Standards** DIN 1.4404, X 2 CrNiMo 17 13 2, AISI 316L; UNS S31603

Material density	7,83 g/cm <sup>3</sup>	ISO 1183-1
Yield Strength, Rp 0.2	174 MPa	DIN EN ISO 6892-1
Tensile strength	561 MPa	DIN EN ISO 6892-1
Vickers Hardness	128 HV10	DIN EN ISO 6507-1

## 17-4 PH

Material density	880 MPa	DIN EN ISO 6892-1
Yield Strength, Rp 0.2	680 MPa	DIN EN ISO 6892-1
Tensile strength	5,8%	DIN EN ISO 6892-1
Vickers Hardness	257 HV 10	DIN EN ISO 6507-1

## TITANIUM

Titanium filament manufacturing offers the possibility of producing complex shaped parts with quality at a very competitive cost.

Material density	4,43 g/cm <sup>3</sup>
Yield Strength, Rp 0.2	920 MPa
Tensile strength Rm	1005 MPa
Elongation A	14%

## COMING SOON: INCONEL AND M4



# Polymers

## CPE

- Excellent mechanical & chemical properties
- Excellent surface finish
- High printability
- Food contact approved

## ASA

- Excellent outdoor resistance
- Excellent surface finish
- Good dimensional stability
- Production of functional parts

## HIPS

- High impact resistance
- Excellent surface quality
- High printability
- Food contact approved

## IGLIDUR I150

- Excellent mechanical properties
- Used in parts subjected to wear
- Food contact approved

## PLA

- Excellent surface finish
- High printability
- Biodegradable by composting
- Food contact approved

## PA

- Chemical & wear resistance
- Used in electrical and electronic components
- Good functionality under temperature
- Food contact approved

## TPU

- Elastic material
- Good tear strength in all directions
- Chemical & abrasion resistance
- Used in electrical and electronic components

## PP

- Electrical insulator & thermal resistance
- High dimensional stability
- Easily recycled
- Food contact approved

## PVC

- Excellent surface finish
- Corrosion resistance
- High tensile strength and hardness
- Used in electrical and electronic components

## ABS

- Good surface finish
- Production of functional parts

	Density	Tensile Strength	Tensile Modulus	Elongation at break	Izod impact strength	Vicat softening temperature	Heat distortion temperature
<b>CPE</b>	1,25 g/cm ASTM D792	47 MPa ASTM D638	-	150% ASTM D638	No break ASTM D256	-	80°C ASTM D648
<b>ASA</b>	1,07 g/cm ASTM D792	40 MPa ASTM D638	1726 MPa ASTM D638	35% ASTM D638	44.1 J/m ASTM D256	94°C ASTM D1525	86/96°C ASTM D648
<b>HIPS</b>	1,05 g/cm ISO 1183	26 MPa ISO 527	-	40% ISO 527	No break ISO 179eU	88,5°C ISO 306	85/89°C ISO 75
<b>IGLIDUR 150</b>	1,3 g/cm	-	-	-	-	-	-
<b>PLA</b>	1,4 g/cm ASTM D792	60/32 MPa ASTM D882	3600 MPa ASTM D882	6% ASTM D882	16 J/m ASTM D256	-	55°C ASTM E2092
<b>PA</b>	1,4 g/cm ISO 1183	200 MPa ISO 527	-	-	-	140°C ISO 306	110°C ISO 75
<b>TPU</b>	1,20 g/cm ISO 1183-1	49 MPa DIN 53504	7,5/16 MPa DIN 53504	600% DIN 53504	-	-	-
<b>PP</b>	0,96 g/cm ISO 1183A	23 MPa ISO 527	1400 MPa ISO 527	20% ISO 527	-	-	-
<b>PVC</b>	1,35 g/cm 10-LA 022	49 MPa 10-LA 049	-	13,1% 10-LA 049	-	71 °C ISO 306	-
<b>ABS</b>	1,04 g/cm ISO 1183	39/32 MPa ISO 527	-	20% ISO 527	24/10 kJ/m ISO 180+1A	103/96°C ISO 306	81°C ISO 75-A

# Composites

## PA+CF

- High strength, hardness and rigidity.
- High-technical durable long-life material.
- Good properties also at low temperatures.
- Easy to print.

## PA+Aramid

- The reinforcement with aramid fibers gives it tribological properties and wear resistance.
- Smooth surface.
- Properties kept in a wide range of temperatures.

## PC+PBT

- Chemical resistance.
- Easy to print, glossy finish.
- PC gives it good impact resistance and PBT good lubrication.

## PC+ABS

- Great mechanical properties such as impact resistance, flexural strength.
- Excellent temperature resistance.
- Smooth finish.
- Resistant to chemicals wear and long-term loads.

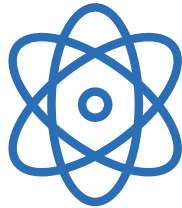
	Density	Tensile Strength	Tensile Modulus	Elongation at break	Izod impact strength	Vicat softening temperature	Heat distortion temperature
PA+CF	1,25 g/cm ASTM D792	54,5 MPa ISO 527	103% ISO 527	103% ISO 527	-	-	-
PC+ABS	1,07 g/cm ASTM D792	42 MPa ISO 527-1,2	7% ISO 527-1,2	7% ISO 527-1,2	55/41 J/m ISO 180-1A	113/115 °C ISO 306	-
PC+PBT	1,05 g/cm ISO 1183	2050 MPa ISO 257	-	-	-	155°C ISO 306	105°C ISO 75
ARAMID	1,3 g/cm	42 MPa ISO 527-1,2	7% ISO 527-1,2	7% ISO 527-1,2	55/41 J/m ISO 180-1A	113/115 °C ISO 306	-

# EVAM Software <sup>®</sup>

Additive manufacturing Execution System (MES)  
to control and monitor all your AM factories.



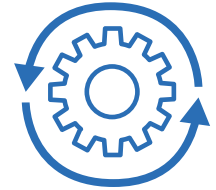
EVAM<sup>®</sup> organizes and manages the workflow to ensure repeatability, traceability and productivity



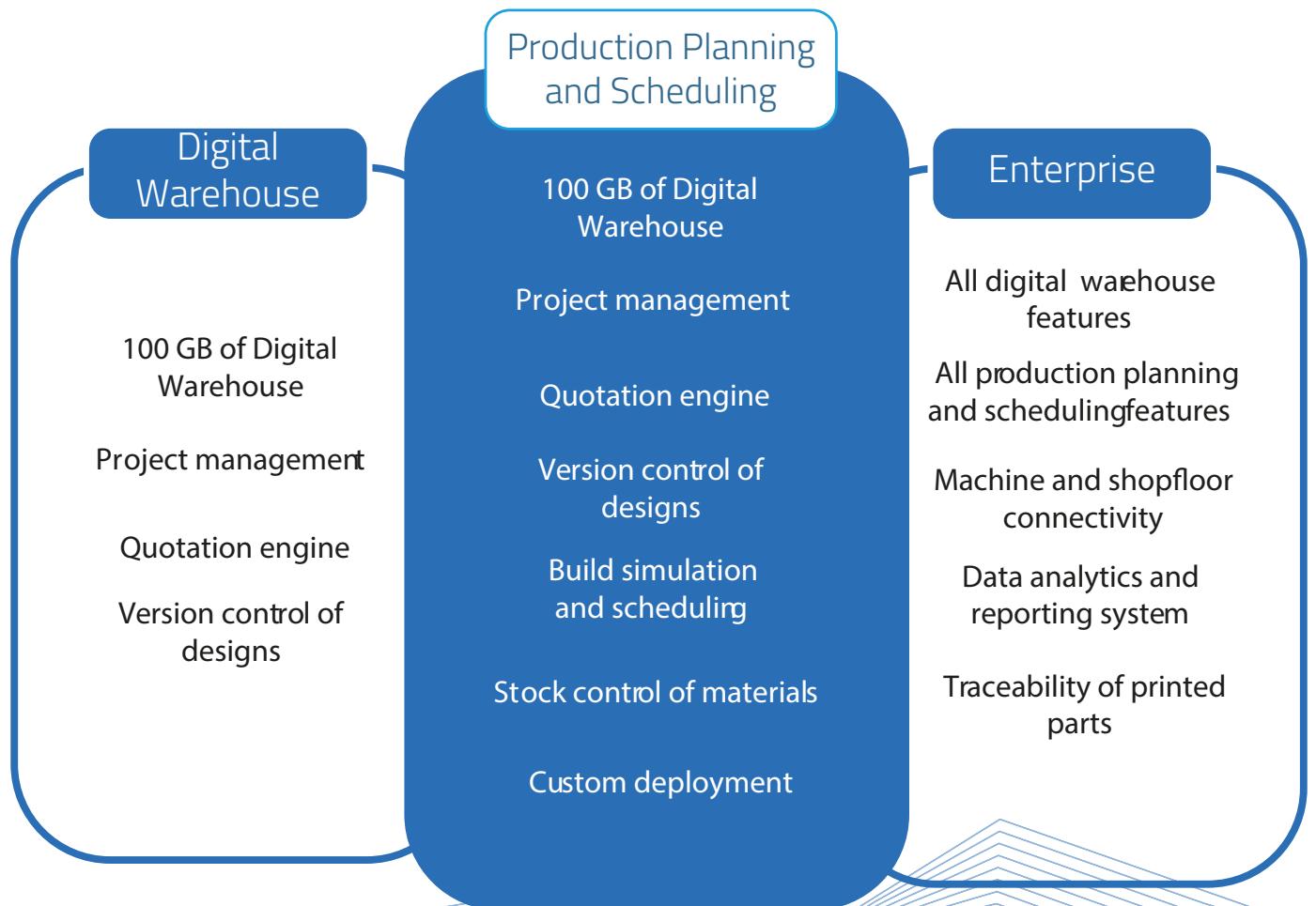
EVAM<sup>®</sup> empowers manufacturers to create and manage digital warehouses and scale production on-demand.



EVAM<sup>®</sup> is the fastest sourcing platform to produce parts on demand, centralize orders and optimize production



EVAM<sup>®</sup> empowers manufacturers to remotely control machines and factory floor.





Triditive leads the way in Additive Manufacturing automation.  
AMCELL® is an industrial 3D printer for mass production of  
metals and polymers.

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