

Automation for additive manufacturing

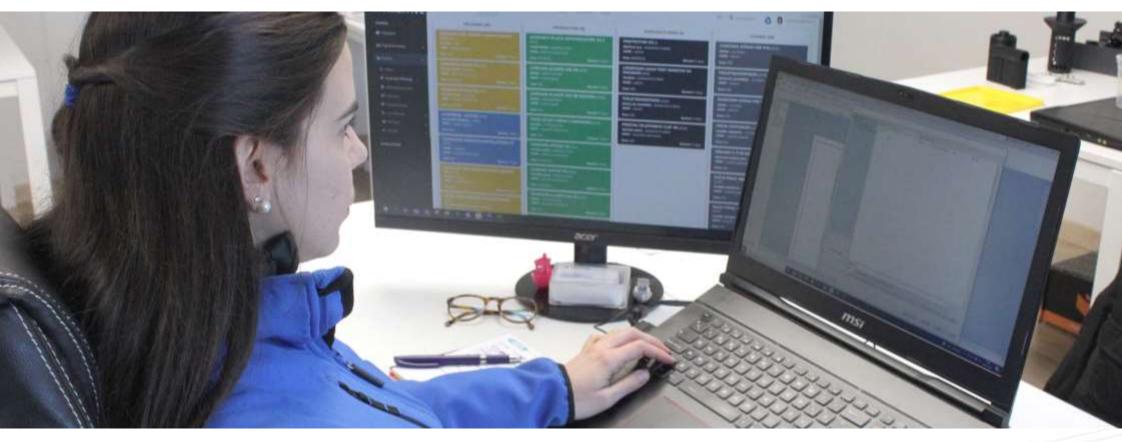


About Us

TRIDITIVE is manufacturer of industrial automated additive manufacturing machinery. TRIDITIVE has patented AMCELL®, the first hybrid and automated industrial AM machine for mass production of metal and polymer parts. Integrated with EVAM®, our proprietary software for remote control and production optimization, AMCELL® enables manufacturers to shorten the supply chain, digitalize inventories and deliver solutions to their customers faster.







Our differences

TRIDITIVE has taken Industrial 3D printing from prototyping to mass manufacturing.



Highest throughput in the market.



High-density metallic parts.



Cloud-management of real-time factory production, workflow and traceability.



High resolution (Dimensional accuracy and surface quality).



Metal and technical polymers, automatic feedstock control.



User access level control and security.

Patents and Trademarks

- Patent Granted AMCELL Machine and System for Automated Additive Manufacturing. ES1259719.
- EVAM Software®
- AMCELL®
- SCALADD®
- AMD Technology®

Awards and recognitions

- Innovators Spotlight. Newlab + Bank of America, 2021.
- Top 100 Santander Global X Award, 2020.
- Top 50 Spanish Innovator Companies 2020.
- Emprendedores, 2020.
- Investhorizon company, 2020.
- Seal of excellence. European Commission, 2019.
- Shortlisted "Best 3D Printing Startup of the year 2019".
- TCT worldwide, 2019Techstars backed company, USA, 2019.
- lot Tribe accelerator, UK, 2019
- Startups talents Taipei accelerator, TAIPEI, 2019.
- Award "Best Startup Gijón 2019".
- Award "Entrepreneur Awards XXI. 2019".
- Finalist "Industrial technologies. Everis Spain. 2019".
- Finalist "SME Entrepreneur Project. 2018".
- Finalist "Entrepreneur Awards XXI. 2018".
- Award "Excellent entrepreneur woman Spain. 2018".
- "EIBT seal (Innovative Technological Company). 2017.
- Award "Accessit for innovation. 2017".
- "Inclusive Design Award" ASPAYM, 2017.
- Finalist "Best Startup" Asturias Investors day. 2017









AM Standardization committee



Entrepreneur XXI Award

Technology based company







Best 3D printing Startup '19
Best 3D printing Startup '20







∕imoulsa

Startup of the year 19°

Our Expertise





Design for AM included topological optimization, simulation, and mechanical characterization in a turnkey project basis for our

> Development of international R&D projects related to additive manufacturing and our patented technology

> > Development of additive manufacturing technology based on material extrusion of metals and polymers. Capable of making very diverse and complex parts for several sectors such as food, defense, and automotive industry



TECHNOLOGY

TRIDITIVE MACHINES



AMCELL 8300®

AMCELL 8300® is an automated additive manufacturing cell for the mass production of high complexity and precise final parts, controlled by EVAM Software® to manage production orders, inprocess control, and reduce machine downtimes.

Manufacturing orders, process monitoring, feedstock control, smart environmental control, are just some of the features that make AMCELL 8300® a real platform for mass production.

Software-controlled workflow and process monitoring

AMCELL 8300® includes EVAM Software®, the most advanced production control and remote monitoring solution.

Automatic calibration

Each printhead is automatically calibrated before each printing job to ensure the highest quality of the final part.

Automatic ejection of printed parts

The printed part is ejected to the automatic storage module and a new platform is loaded to ensure 24/7 production.

Automatic storage

Traceability and automatic storage of printed parts.





AMCELL 1400®

AMCELL 1400® is an industrial additive manufacturing cell to print medium complexity and precise final parts.

Manufacturing orders, process monitoring, feedstock control, smart environmental control, are just some of the features that make AMCELL 1400® a robust platform for large parts production.

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 mm

Heated chamber

Unleash the potential of technical materials.

Software-controlled workflow and process monitoring

AMCELL 1400® includes EVAM Software®, the most advanced production control and remote monitoring solution.





TRACED®

TRACED is an automatic storage module to keep traceability and store under safe the finished printed parts. It is integrated with EVAM Software® for factory connectivity and factory floor integration.

Scale storage capacity for Additive Manufacturing

- •Each column represents a group of slots (can be increased up to 8). Each slot can hold up to 5 platforms.
- •Tracking information such as material, order number, customer information, production date, postprocessing, and shipping details is accessible at any time through EVAM® platform.





AMCELL JET®



The AMCELLJet® operates under Binder Jetting technology and enables the production of metal parts with a very high degree of dimensional and geometrical accuracy as well as mechanical properties at the forefront of additive manufacturing technologies. AMCELLJet® is a machine designed for the production of small and medium-sized metal parts, for highly demanding application, allowing to reduce the cost per part by 10 times compared to SLM additive manufacturing technology.

The equipment works by depositing metal powder layer by layer, after finishing the printing process the parts are sintered in a post-process.

Key Features

- **Cutting edge technology:** Binder Jetting is a high resolution metal printing technology that allows high complexity in the printed parts as is a support free technology.
- **Easy integration:** Software and hardware environment can be integrated into existing manufacturing lines.
- **Affordable:** Binder Jetting is the most efficient and cost effective way to print metal parts.
- Tech Specs:
 - · Box to box form factor.
 - 120x216x80mm Model tray (print volume).
 - 4,724x2,928 resolution (>4K).
 - · Water based binder.





EVAM SOFTWARE®

A software platform that allows companies to **create digital inventories** and **manage on-demand production** in a simple way

Main features



EVAM® is the fastest sourcing platform to produce parts on demand, centralize orders and optimize production.



Triditive Software organizes and manages the workflow to ensure repeatability, traceability and productivity.



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





Automated Additive Manufacturing for series production

SCALADD® is an Automated Additive Manufacturing Center capable of producing large tons of metal and polymer parts per AMCELL® a year.

SCALADD® provides turnkey custom engineering and 360° services from design for AM to manufacturing of large series of final parts.

Benefits of SCALADD

- Reproducible, high quality for series production.
- Process optimized for maximum productivity.
- Modular and scalable concept.
- Turnkey supply of AM services.



USE CASES

Reengineering & Parts Production

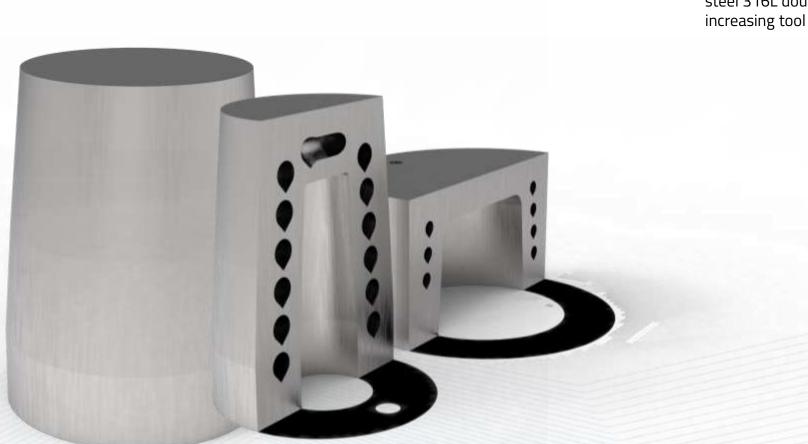
INJECTION MOLD



Customer: **SOLÍS** Material: **SS 316L**

System: **AMCELL 8300**®

Units: 1



USE CASE

Injection molding inserts redesigned with conformal cooling channels to achieve a reduced production cycle time by 50%.

Manufactured on an AMCELL 8300 in stainless steel 316L doubling the production and increasing tool life.

MOTORISED EXOMUSCULAR SYSTEM

Customer: LOUTKAR

Material: Biopolymer + TPU

System: AMCELL 8300®

Units: 500

oRciTi is a motorised exomuscular robotic rehabilitation system for ankle motion support.

Additive manufacturing allows for rapid iterations that are necessary in the development of prototypes for medical applications and enables customer to deliver to market hundreds of systems in a couple of weeks.



CONCRETE MOLD

TRIDITIVE ADDITIVE MANUFACTURING

Customer: PREFABRICADOS ROCES

Material: **CPE**

System: **AMCELL 1400**®

Units: 30

USE CASE

Customer needs to stamp it's client name on the concrete wall of the offices they are building.



SOLUTION

Three pieces were created and combined to make a mold to engrave the client's name on the concrete. The final dimensions of the mold are 40x120cm.



RESULT

- ✓ 80% cost savings.
- ✓ 3 weeks lead time reduction.
- ✓ Get rid of physical inventory.
- ✓ Digitalized part ready to order On-Demand at anytime.
- ✓ Rapid production of new designs.

ENGINEERING TIME

1 Hours

MANUFACTURING TIME (HOUR/MACHINE)

60 Hours

BUS POS HOUSING

Customer: **DESIC**

Material: **PLA**

System: AMCELL 8300®

Units: 3000

USE CASE

System manufacturing that allows the payment of the bus trip with bank card with EVM technology terminals.





DESIGN

The set is made of 6 parts in biopolymer, 3 are produced in metallic grey and 1 in RAL 1023 canary yellow specified by the customer. The last part it's painted to give it a better aesthetic finish.

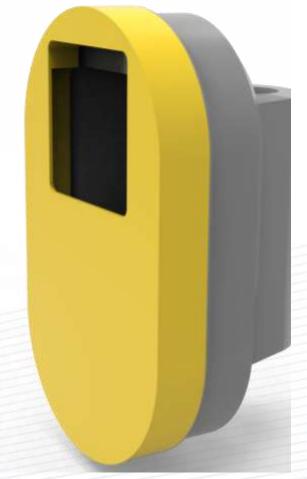
Inside the box, the electronics (made by DESIC), are placed and anchored to a laser-cut plate and fixed through a piece printed with Nylon.

RESULT

- √ 80% cost savings
- ✓ **On-Demand production** 24/7.
- Get rid of physical inventory.
- ✓ Digitalized part ready to order On-Demand at anytime

ENGINEERING TIME

15 Hours



WATER TAP HOLDER





Customer: ROCA

Material: **Biopolymer**

System: **AMCELL 8300**®

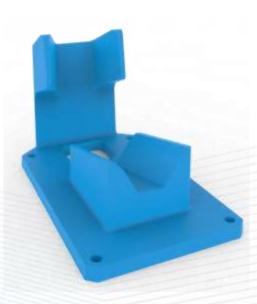
Units: **400**

USE CASE

This piece is mounted on a conveyor belt and its mission is to hold a water tap and take it from one process to another.

Customer decided to print all those parts in a biopolymer to reduce the plastic impact in the environment

All the parts were re-designed by Triditive with a internal reinforcement structure using DfAM (Design for Additive Manufacturing) to increase the final mechanical propierties.



DfAM RE-DESIGNED PART

TOOLING FOR LASER ENGRAVING





Customer: **GRIP-ON**

Material: **Biopolymer**

System: **AMCELL 8300**®

Units: 140

USE CASE

This modular system is used to hold various Grip-on tools to be perfectly positioned for a laser engraver to obtain the best results in the marking process.





Tool support parts

HANDRAIL TURBOTRACK

Customer: THYSSENKRUPP

Material: PC+PBT

System: **AMCELL 8300**®

Units: 600

USE CASE

The Turbo Track closes a gap in passenger transportation that conventional systems, such as automated people movers, cannot fill. It allows for continuous transportation without waiting times, and because it moves significantly faster than conventional moving walks, it helps passengers overcome a common issue in many airports – the long distances that must be covered.







DESING

This component, made of PC+PBT, is utilized as a handrail in the mechanical walkways at Toronto Airport. They are coated with antibacterial paint to ensure hygiene.



ROBOT GRIP

TRIDITIVE ADDITIVE MANUFACTURING

Customer: **DCM**

Material: **PC+PBT**

System: **AMCELL 1400**®

Units: 24



ORIGINAL PART

USE CASE

The original parts are metal set assembled by welding, resulting in an exceptionally expensive and heavy component that necessitated a redesign.

DESIGN

We consolidate all the components for subsequent printing through additive manufacturing, resulting in a unified single piece. This approach leads to reduced costs associated with welding, treatments, and materials, along with an overall weight reduction of 85%.



REDESIGNED PART

DOOR CLAMP



Customer: **DCM**

Material: PLA & CPE

System: AMCELL 1400®

Units: 24

USE CASE

The part must fulfill the following requirements:

- •Manufactured with FDA-approved materials.
- •Capable of withstanding impacts.
- •The hinges must have a consistent joint.
- •Smooth surface to prevent ingredients from sticking to the part.

SOLUTION

Two printing tests were conducted with PLA and CPE for this component. Following the tests, the piece was redesigned to reinforce the blade.



KOSHER CHICKEN CLAMP

TRIDITIVE ADDITIVE MANUFACTURING

Customer: **DCM**

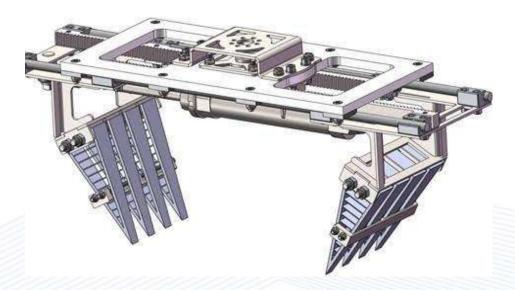
Material: **TPU98A - 95A - 85A**

System: **AMCELL 1400**®

Units: 100

USE CASE

This component is a part of a set known as DHAS Automatic Adaptive Grippers, designed for securely holding chickens. There are eight units of this particular piece for restraining each animal. The challenge with these components lies in their limited sliding ability, and the manufacturer of these grippers does not consider it feasible to implement design changes for small batches.



ORIGINAL PART

DESIGN

We introduce a redesign that, after undergoing several iterations, has culminated in this final outcome. A crucial prerequisite was obtaining FDA certification and ensuring the component could endure repeated cycles without material fatigue. It was produced in three different hardness levels to accommodate the diverse needs of our customers.

HARDENESS

BLACK: 98A SHOREWHITE: 95A SHORE

BLUE: 85A SHORE



REDESIGNED PART

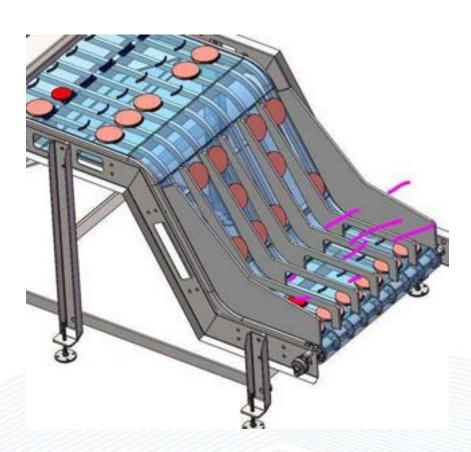
BURGER CONVEYOR PUSHER

TRIDITIVE ADDITIVE MANUFACTURING

Customer: **DCM** Material: **Nylon**

System: Laser Sintering

Units: **125**



HAMBURGER CONVEYOR BELT

USE CASE

Redesign a part for pushing burgers on a conveyor belt. Current part is not a standard part from the belt supplier, to keep the all part functionality the new part were printed in Nylon.



ORIGINAL PART



ORIGINAL GEOMETRY PRINTED PART



CHOCOLATE BAR SEPARATORS

TRIDITIVE ADDITIVE MANUFACTURING

Customer: **NESTLE**

Material: Nylon MDT

System: **AMCELL 8300**®

Units: 200

USE CASE

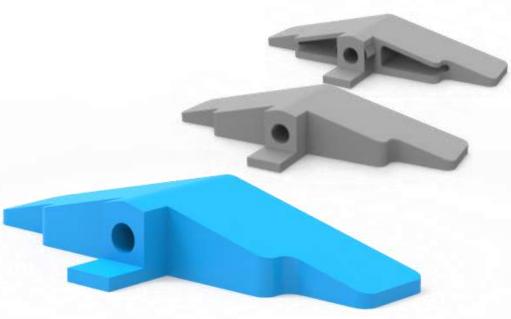
These components separate the chocolate bars during their passage through the production lines. Due to the fragility of the geometry, the separators break easily.



- 1. Separator broken on both sides
- 2. Separator broken on one side
- 3. Unbroken separator

SOLUTION

By reinforcing the part and making a true 3d design we obtain a sturdier part, and we also prevent food or dirt accumulation.



RESULT

- √ 68% cost savings
- ✓ Machine downtimes reduction.
- ✓ On-Demand production 24/7.
- ✓ Get rid of physical inventory.
- ✓ Digitalized part ready to order On-Demand at anytime

ENGINEERING TIME

2 Hours

MANUFACTURING TIME (HOUR/MACHINE)

25 Minutes

MOLD HOLDER

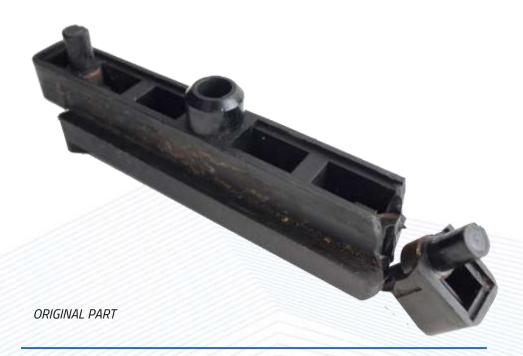
Customer: **NESTLE** Material: **PETG MDT**

System: **AMCELL 8300**®

Units: 4000

USE CASE

The original mold holder consistently breaks under mechanical and thermal stress. Additionally, the material is black and not magneticdetectable (MDT). Consequently, when a part brakes, the production line must be halted to detect any residues of the broken mold holder in the chocolate.





SOLUTION

In the redesign, the lugs were replaced by a helicoil® and the lugs will be now a machined part in IGUS (an FDA-compliant material). This completely re-designed part generate less friction in the machine and is made in blue color with an MDT FDA material to increase food safety in the production line.



- ✓ Compliant food safety regulations.
- Machine downtimes reduction.
- On-Demand production 24/7.
- ✓ Get rid of physical inventory.
- **Digitalized part** ready to order On-Demand at anytime.

ENGINEERING TIME

8 Hours

MANUFACTURING TIME (HOUR/MACHINE)

6 Hours y 30 Minutes

BONBON WRAPPING LINE TOOL

Customer: **NESTLE**

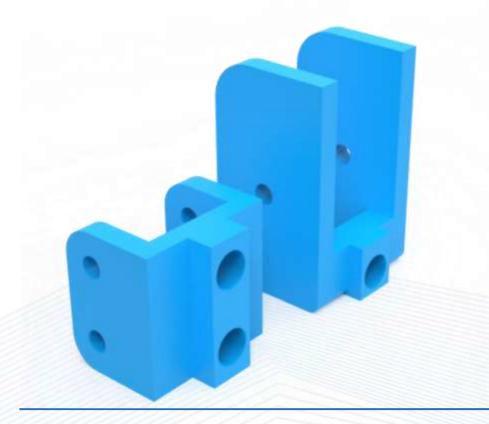
Material: **PETG**

System: **AMCELL 8300**®

Units: 50

USE CASE

These parts are used in the production line for bonbon chocolates to facilitate the folding of the chocolate wrapper.





SOLUTION

Reverse engineered the part and printed preserving the original geometry, incorporating post-processing for threaded insert housing.



RESULT

- √ 67% cost savings
- ✓ Machine downtimes reduction.
- ✓ On-Demand production 24/7.
- ✓ Get rid of physical inventory.
- ✓ Digitalized part ready to order On-Demand at anytime.

ENGINEERING TIME

1 Hour

MANUFACTURING TIME (HOUR/MACHINE)

20 Minutes small part/25 Minutes big part

CHAIN GUIDE

Customer: **NESTLE**

Material: **PC + PBT**

System: **AMCELL 8300**®

Units: 200

USE CASE

The part serves as a guide for the chain that transports the cartons. This component is subject to supply breakage and high wear.



ORIGINAL PART



SOLUTION

Re-engineered the part for additive manufacturing to be able to print these parts quickly on demand and offer the customer a better material to increase wear resistance.





RESULT

- √ 61% cost savings
- ✓ Machine downtimes reduction.
- ✓ On-Demand production 24/7.
- ✓ Get rid of physical inventory.
- Digitalized part ready to order On-Demand at anytime

ENGINEERING TIME

3 Hours

MANUFACTURING TIME (HOUR/MACHINE)

7 Hours + postprocesses

COFFEE CAPSULE SOLDER TIP

TRIDITIVE ADDITIVE MANUFACTURING

Customer: **NESTLE**

Material: 17-4PH

System: **AMCELL JET**®

Units: 100

USE CASE

This component is the thermal sealer for coffee capsules, and its cost-effectiveness can be enhanced through 3D printing.



ORIGINAL PART

SOLUTION

By printing in 17-4PH we obtain a part at a lower unit cost with better thermal and mechanical results.



- √ 57% cost savings
- ✓ On-Demand production 24/7.
- ✓ Get rid of physical inventory.
- ✓ Digitalized part ready to order On-Demand at anytime

ENGINEERING TIME

3 Hours

MANUFACTURING TIME (HOUR/MACHINE)

5 min + postprocesses

DELTA ROBOT COUPLING

TRIDITIVE ADDITIVE MANUFACTURING

Customer: **NESTLE**

Material: PC + PBT

System: AMCELL 8300®

Units: **500**

USE CASE

This is a critical part located in a delta pick-and-place robot at the wafer production line.

The manufacturer of this component does not supply any more units because it is an discontinued product.



SOLUTION

Redesign of the part adapting it to the existing product, lowering the weight improving overall robot speed



RESULT

- √ 84% cost savings
- ✓ Lighter part
- ✓ Machine downtimes reduction.
- ✓ On-Demand production 24/7.
- ✓ Get rid of physical inventory.
- ✓ **Digitalized part** ready to order On-Demand at anytime momento.

ENGINEERING TIME

1 Hour

MANUFACTURING TIME (HOUR/MACHINE)

2 Hours + postprocesses

CONVEYOR BELT SPARE PART

Customer: **NESTLE**

Material: Biopolymer

System: AMCELL 8300®

Units: **50**

USE CASE

In-line conveyor for coffee encapsulation designed to optimize manufacturing costs.



ORIGINAL PART - REDESIGNED PART



SOLUTION

Printed in biopolymer, as the customer wants to reduce plastic usage keeping the mechanical properties.



- √ 65% cost savings
- ✓ Machine downtimes reduction.
- ✓ On-Demand production 24/7.
- ✓ Get rid of physical inventory.
- Digitalized part ready to order On-Demand at anytime

ENGINEERING TIME

2 Hours

MANUFACTURING TIME (HOUR/MACHINE)

2 Hours

MULTI-CABLE TRANSIT SYSTEM

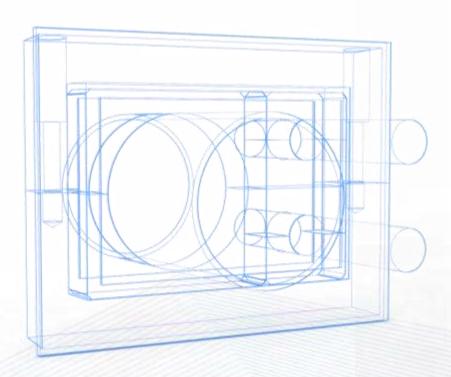


Customer: **NESTLE**

Material: CPE

System: **AMCELL 8300**®

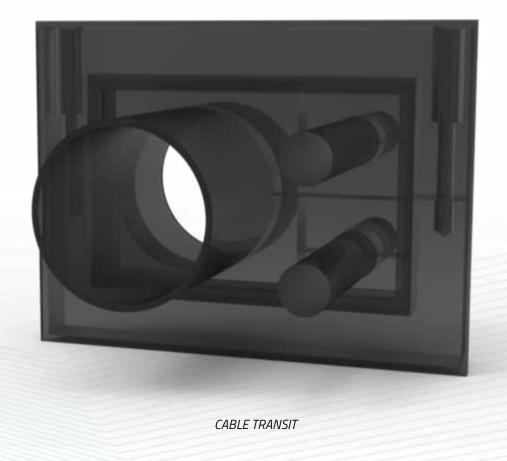
Units: N/A



CABLE TRANSIT DIAGRAM

USE CASE

This component was designed to guide cables from one side of a machine enclosure to the other or through walls. In compliance with regulatory standards, careful consideration was given to minimizing the entry of dust and dirt into the interior of the machinery or the room.



BELT PULLEY

Customer: **NESTLE**

Material: **PC+PBT**

System: **AMCELL 8300**®

Units: 80

USE CASE

Opal belt pulley. This component is subject to supply breakage.



ORIGINAL PART



SOLUTION

Re-engineered the part for additive manufacturing to be able to print these parts quickly on demand and offer the customer a better material to increase wear resistance.



REDESIGN PART

RESULT

- ✓ 50% cost savings
- ✓ Machine downtimes reduction.
- ✓ On-Demand production 24/7.
- ✓ Get rid of physical inventory.
- ✓ **Digitalized part** ready to order On-Demand at anytime

ENGINEERING TIME

1 Hours

MANUFACTURING TIME (HOUR/MACHINE)

6 Hours + postprocesses

CRIMPING TOOLS

TRIDITIVE ADDITIVE MANUFACTURING

Customer: **APTA**

Material: PLA & CPE

System: **AMCELL 8300**®

Units: 10

USE CASE

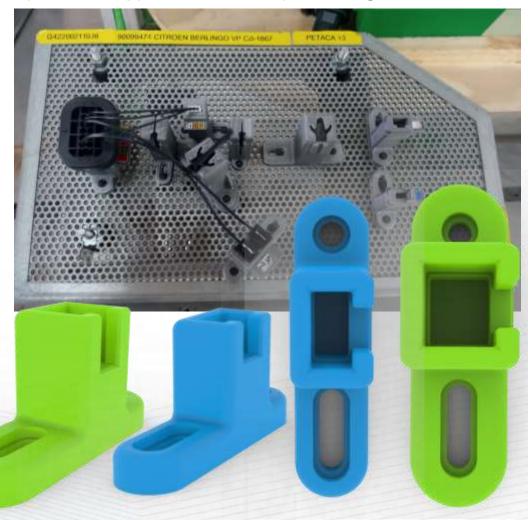
The customer requests parts to be used as holders to facilitate crimping of automotive wiring connectors.

There are different models of connectors, so each support must be designed, adapting it according to the geometry.



SOLUTION

We carry out the design of the crimping tools in 3 dimensions so that they adapt to the different types of connectors. They were printed in biopolymer in different color to help operator identify product references by color coding.



PHOTOCELL HOUSING



Customer: **DELISANO**

Material: TPU 98A

System: **AMCELL 8300**®

Units: **100+**



USE CASE

Client required a solution to safeguard sensors in a food production line, shielding them from water, detergents, dust, and contaminants. The ultimate design was 3D printed using TPU 98A, chosen for its optimal mechanical properties for this application and a wide range of bright colors to help operators be aware of the sensor locations.



PRINTED PARTS

LASER SENSOR HOUSING

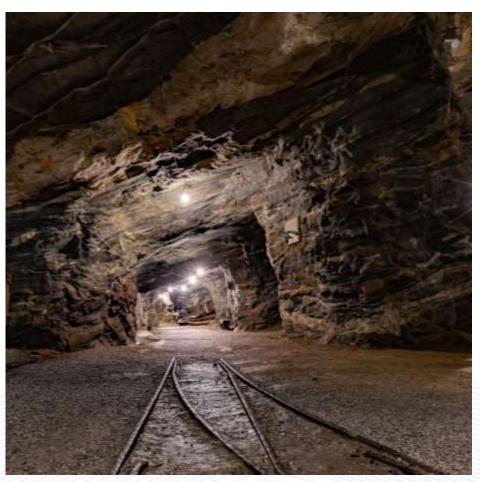
TRIDITIVE ADDITIVE MANUFACTURING

Customer: **SATIC**

Material: CPE + PETG UL94 VO

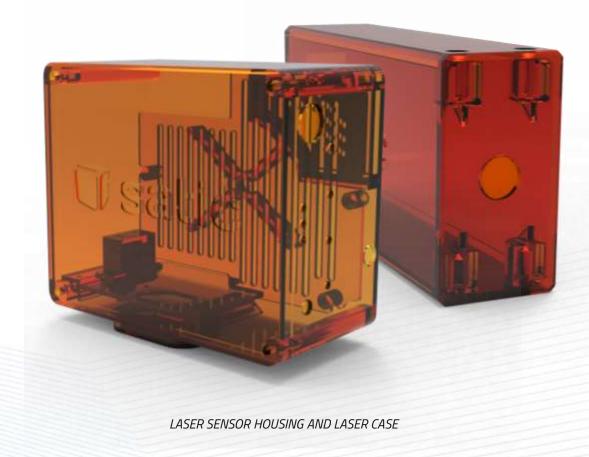
System: **AMCELL 8300**®

Units: **400**



USE CASE

The client required an enclosure for a laser sensor intended for deployment in underground tunnels. Consequently, a custom-designed set was developed by Triditive using CPE material, chosen for its commendable mechanical properties. The system is complemented by an external battery, housed in a separate casing specifically designed and manufacured for this purpose in PETG UL94 VO.



OXIMETER



Customer: **I4LIFE**Material: **PA + CF**

System: **AMCELL 8300**®

Units: **1000**

USE CASE

We engineered a casing set for an oximeter that doubles as a bracelet or key ring. The design features a side-mounted power on/off mechanism and a top-mounted oximeter sensor for accurate measurements. The interior accommodates the battery and electronic components.





NFC RING AND BRACELET



Customer: WEETECH

Material: ABS & TPU 85A

System: **AMCELL 8300**®

Units: **150**

USE CASE

We designed a ring and bracelet set, incorporating an embedded NFC chip into the part. These components serve banks, enabling their clients to make contactless payments. The ring, printed in ABS, integrates the chip during the printing process. In contrast, the bracelet, made of TPU, houses the NFC chip in an open slot, allowing for easy replacement in case of failure.





GPS TRACKING DEVICE CASE



Customer: WEETECH

Material: ASA

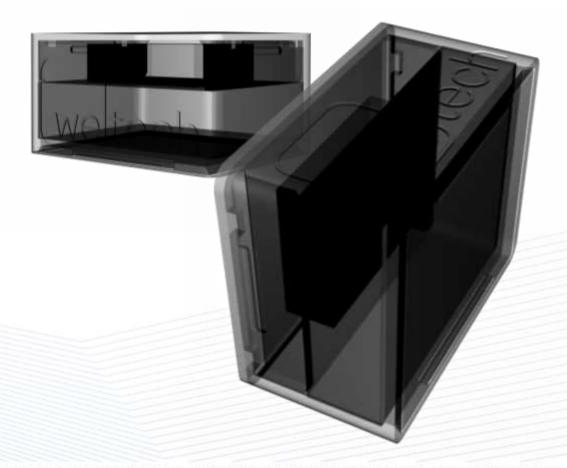
System: **AMCELL 8300**®

Units: **50**



USE CASE

We designed a waterproof container to encase a GPS module for logistics systems. This assembly will be mounted on a pallet to continuously track the shipment. The casing was developed with a focus on tightness and shock resistance, leading to the selection of ASA as the manufacturing material.



MATERIALS

Technical materials for additive manufacturing

MATERIALS



Polymers

CPE (Chlorinated Polyethylene - FDA)

PETG (Polyethylene Terephthalate – FDA)

IGUS I150, I180 (Autolubricant low friction-FDA)

BIOpolímero (100% biodegradable Non CO2 emissions FDA)

PLA (Polylactide - FDA)

PA (Polyamide)

PP (Polypropilene)

PC (Polycarbonate)

PVDF Kynar® (Polyvinylidene Fluoride)

PPSU (Polyphenyl Sulfone)

HIPS (High Impact Polystyrene)

ASA (Acrylonitrile Styrene Acrylate)

ABS (Acrylonitrile Butadiene Styrene)

VINILO (Vinyl)

Elastomers (Shore A: 98, 92, 90, 85, 80...)

TPU (Polyurethane - FDA)



PEBA (Polyether Block Amide - FDA)

Composites

PC+ABS

PA+ARAMIDE

PA+CF (PA+Carbon Fiber)

PC+PBT (PC+Polybutylene Terephthalate)

Metals

Stainless Steel AISI 316L Stainless Steel 17-4PH Inconel 713 Titanium

FDA materials

Polymers FDA
Polymers magnético detectables MDT
Autoclave Resistant Polymers
Technical polymers resistant to chlorine, soda...

New materials development

Multiple colors available

MATERIALS



Polymers

CPE (Chlorinated Polyethylene - FDA)

PETG (Polyethylene Terephthalate – FDA)

IGUS I150, I180 (Autolubricant low friction-FDA)

BIOpolímero (100% biodegradable Non CO2 emissions FDA)

PLA (Polylactide - FDA)

PA (Polyamide)

PP (Polypropilene)

PC (Polycarbonate)

PVDF Kynar® (Polyvinylidene Fluoride)

PPSU (Polyphenyl Sulfone)

HIPS (High Impact Polystyrene)

ASA (Acrylonitrile Styrene Acrylate)

ABS (Acrylonitrile Butadiene Styrene)

VINILO (Vinyl)

Elastomers (Shore A: 98, 92, 90, 85, 80...)

TPU (Polyurethane - FDA)



PEBA (Polyether Block Amide - FDA)

Composites

PC+ABS

PA+ARAMIDE

PA+CF (PA+Carbon Fiber)

PC+PBT (PC+Polybutylene Terephthalate)

Metals

Stainless Steel AISI 316L Stainless Steel 17-4PH Inconel 713 Titanium

FDA materials

Polymers FDA
Polymers magnético detectables MDT
Autoclave Resistant Polymers
Technical polymers resistant to chlorine, soda...

New materials development

Multiple colors available



CONTACTO

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