

# LFAM BRIDGING THE GAP

Caracol developed HERON AM a Large-Format Additive Manufacturing system: a robotized extrusion head, with direct and continuous feeding of composites and polymers, a dedicated software platform for the most complex tool paths, and many more features to fully integrate all that is needed to manufacture advance industrial parts.

Our solution is one of the leading LFAM systems in the world, and the only one that is offered as a turnkey solution to maximize flexibility, process control, and performance for clients who want to manufacture parts on-demand and in-situ.

## BENEFITS V. OTHER MANUFACTURING SYSTEMS

### 1. BETTER MECHANICAL RESISTANCE & PERFORMANCE

Caracol's robotic system prints parts with no scale limits, with better material adherence, precision, compactness and resistance

### 2. COMPLEX PARTS

Caracol's software algorithms and use of a 6-axis robotic arm allow to manufacture a higher number of applications and more complex geometries

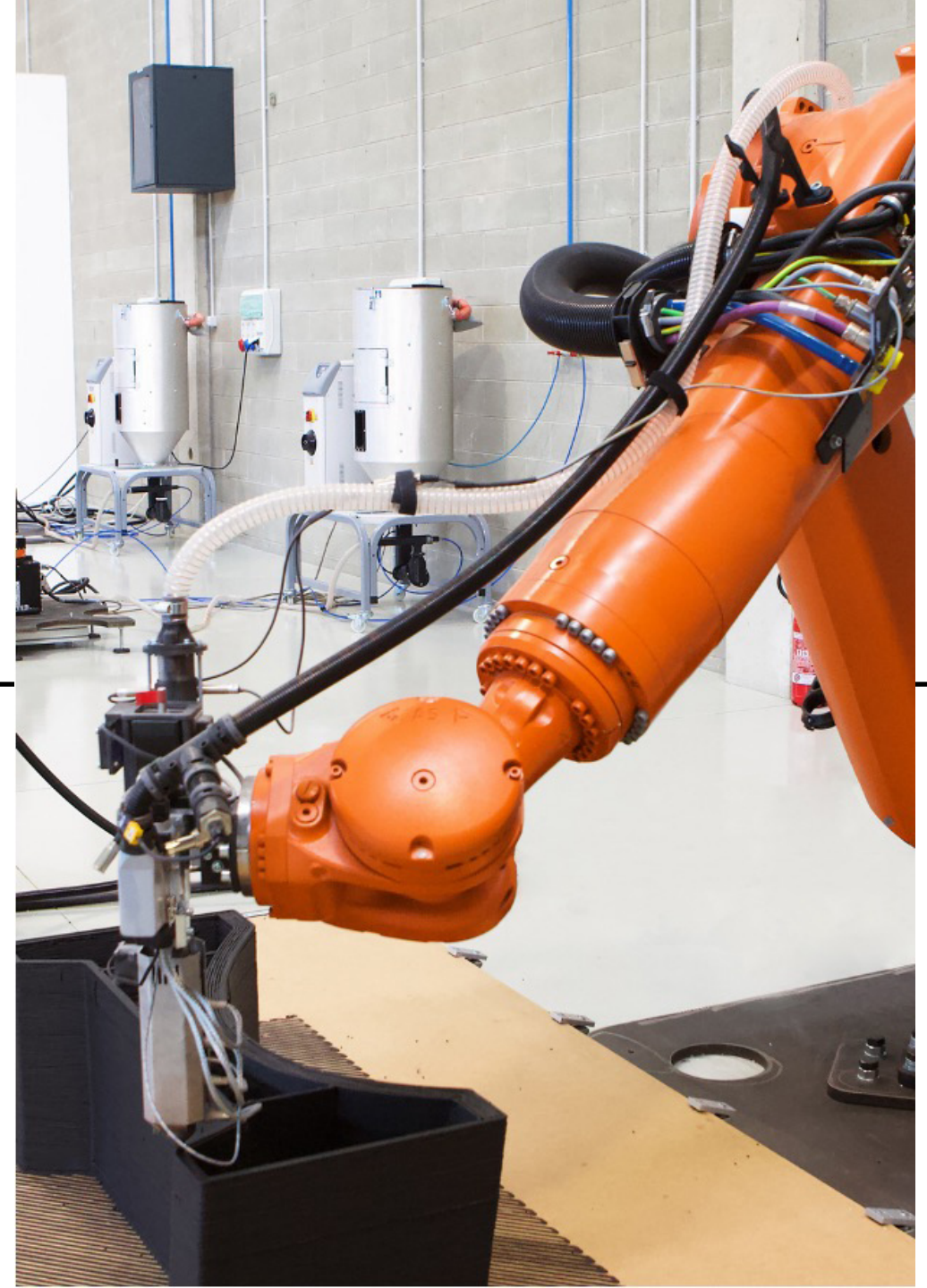
### 3. LOWER OPERATING AND RAW MATERIAL COSTS & FLEXIBILITY

A highly flexible that adapts to productive needs, it works efficiently with low operating costs and with a wide range of composites

### 4. DRASTICALLY CUTS MATERIAL WASTE

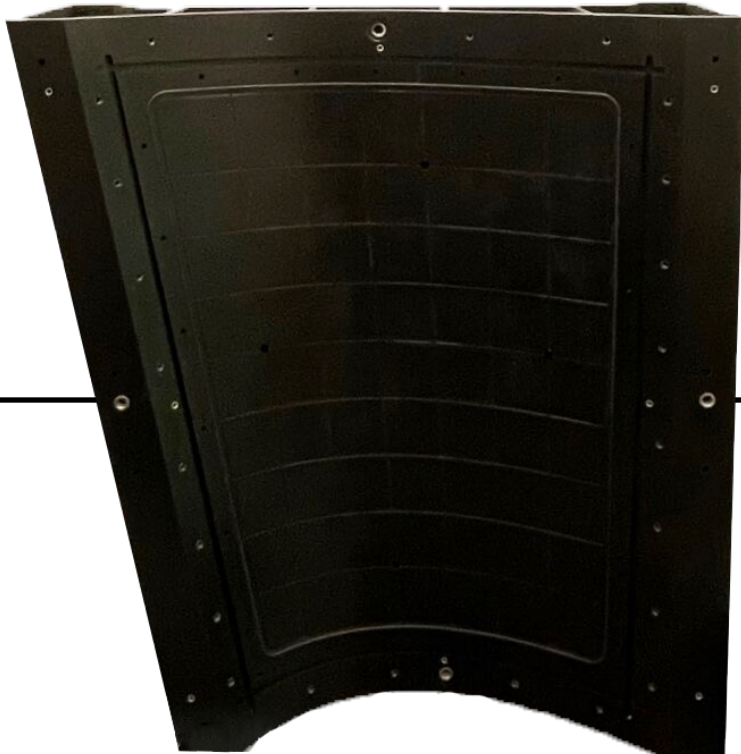
Can reduce up to 60% of raw material used in production, eliminates all waste using only needed material and no supports, it can also manufacture using recycled material

**CARACOL**



# POSITIONING AND VACUUM GRIPPED DRILLING TOOL FOR AIRPLANE FUSELAGE PANELS

Caracol worked to manufacture a positioning and vacuum gripped drilling tool for our client to manufacture airplane fuselage panels. By using AM as an alternative, there were several advantages achieved (weight) and efficiencies (time, costs).



## PERFORMANCE CRITERIA

### MEASUREMENTS (mm)

850 w x 1250 l x 330 h

### SURFACE ROUGHNESS (µm)

1.6 µm

### DIMENSIONAL TOLERANCES (mm)

0.1

### MATERIAL

Polypropylene + 30% Glass Fiber

## SAVINGS & RESULTS

### WEIGHT

From 1 ton to 100 kg

### MATERIAL WASTED

- 45%

### COSTS

- 30-50%

### PARTS INTEGRATION

From 30+ to 1

### PRODUCTION TIME

From 2 month to 2 weeks

# TOOL FOR MILLING, TRIMMING, AND DRILLING LARGE STRUCTURAL PARTS FOR AIRCRAFT SYSTEMS

Caracol worked to manufacture this tool which was then tested in heavy-duty 5-axis milling machines to validate mechanical performance of the part, providing the clients with drastic advantages in terms of part weight, optimized geometry, and raw material used - overall lowering costs.



## PERFORMANCE CRITERIA

### MEASUREMENTS (mm)

160 w x 1600 l x 1200 h

### SURFACE ROUGHNESS (µm)

1.6 µm

### DIMENSIONAL TOLERANCES (mm)

0.1

### MATERIAL

Polypropylene + 35% Glass Fiber

## SAVINGS & RESULTS

### WEIGHT

- 70%

### COSTS

- 90%

### MATERIAL WASTED

- 45%

### PRODUCTION TIME

From 10 weeks to 5