



PARTS

ELECTROFORMED PARTS - COMPOSITE PARTS



**corimatec**

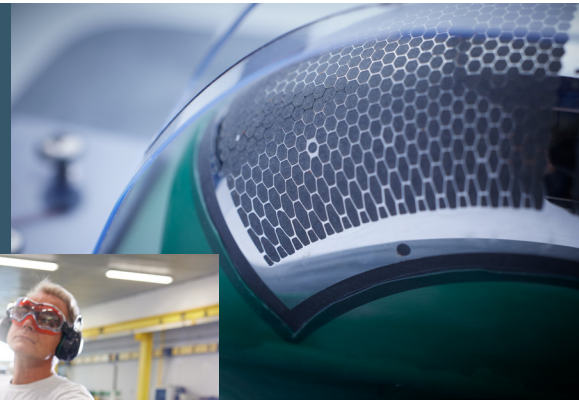
SOLUTIONS BEYOND BOUNDARIES

**THE PARTS DIVISION OF CORIMATEC IS DEDICATED TO THE MANUFACTURING OF ELECTROFORMED METALLIC PARTS AND COMPOSITE PARTS.**

Electroformed parts are made of copper or nickel and can have a thickness from microns up to several millimeters by means of a galvanic process.

The process is different according to the geometry of the part. Thus, we differentiate demoldable parts from non-demoldable parts.

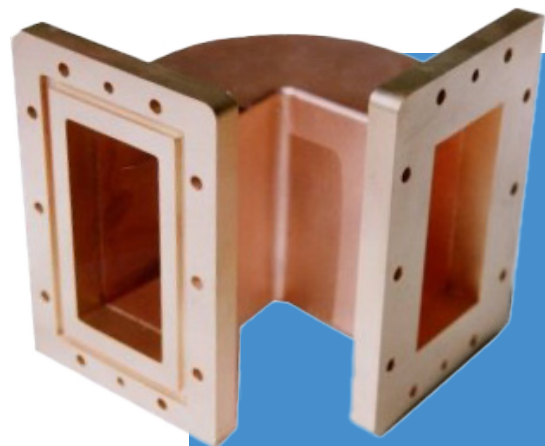
**DEMOLDABLE PARTS ARE MANUFACTURED FROM A MANDREL OR A MASTER MODEL ON WHICH WE DEPOSIT A THICK LAYER OF METAL.**



Then, the manufactured part is demolded from the mandrel to obtain what is called an « **electroformed part** ».



**NON-DEMOLDABLE PARTS ARE MANUFACTURED FROM A SOLUBLE MANDREL (ALUMINUM OR WAX) THAT IS DISSOLVED AFTER METALLIZATION BY THERMAL OR CHEMICAL PROCESS.**



We offer Non Destructive Services (NOT) for aeronautical parts or other parts with high criticality. our NDT cabin of 5x4x3 m is equipped with dye penetrant inspection devices and an electrostatic gun for parts with complex surfaces.

Non-destructive testing is managed in accordance with standard EN 4179.

# 1 ELECTROFORMED NICKEL PARTS

## APPLICATIONS

- ▶ Erosion shields parts
- ▶ Complex parts that are difficult to CNC
- ▶ Non-exhaustive list of examples:

▶ PROPELLER
▶ WING
▶ WINGLET
▶ AIR INLET
▶ FOIL FAIRING



**Nickel shielding** bring abrasion resistant properties that are required for the protection of blades, winglets or any other composite parts vulnerable to erosion.



### ADVANTAGES

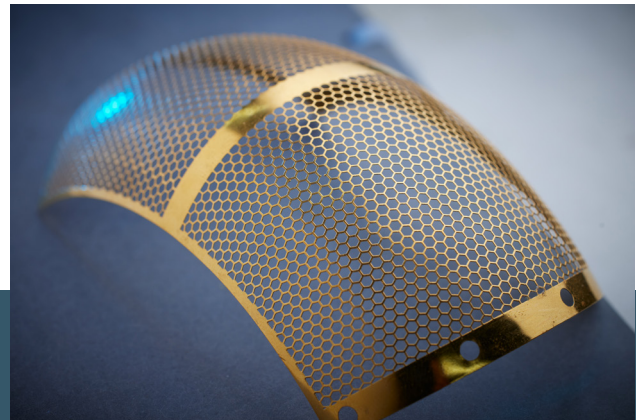
- Thickness controlled
- No welding or CNC
- Mechanical resistance
- Possibility of complex shapes

- No mechanical stress
- Corrosion and abrasion resistance
- Polishing possible to a mirror finish

## 2 ELECTROFORMED COPPER PARTS

### APPLICATIONS

- ▶ Wave guides
- ▶ Complex shapes (difficult to CNC)
- ▶ Particle accelerator



**Mass spectrometer grill** made of Copper, Nickel and Gold  
 Dimensions: 100\*50\*30 mm  
 Weight: 3,5 g  
 Deposit: copper 80 µm + nickel and gold flash



**Copper part** for particle accelerator  
 Dimensions: 1200\*1100\*350 mm  
 Weight: 70 Kg  
 Deposit: copper up to 10 mm on some areas.

### ADVANTAGES

- Possibility of complex shapes
- Excellent electrical and thermal conductivity
- Thin and thick deposit (from µm up to several mm)
- Replication
- Manufacturing of monobloc part without welds

Electroforming is commonly used for wave guides and particle accelerators as the parts are manufactured in one piece without assembly, and consequently, without welds.

**This technology has an undeniable advantage** because in this kind of application welds can generate interferences.

### 3 COMPOSITE PARTS

**Manufacturing** of monolithic, sandwich or hollow prepreg parts.

#### APPLICATIONS

- ▶ Sports and leisure
- ▶ Prototypes
- ▶ First article for tools approval

#### Process of manufacturing:

Autoclave (Ø= 3 m, L= 10 m, 250°C, 10 bar)  
 Etuve (l=3 m, L=2 m, h=2 m, 300°C)  
 Silicone bladder for the manufacturing of hollow bodies



ULM helicopter cabin.  
 Composite part, hollow body with internal and external skin.

#### ADVANTAGE

→ Our tooling expertise enables us to design the necessary industrialization for the manufacturing of a composite part and to be reactive regarding the set-up of the process.



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