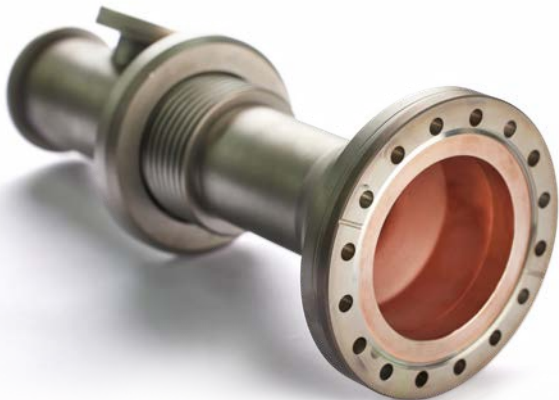




COATING

METAL DEPOSIT



corimatec

SOLUTIONS BEYOND BOUNDARIES

THE COATING BRANCH OF CORIMATEC IS DEDICATED TO THE TECHNICAL METALLIZATION OF PARTS IN ORDER TO IMPROVE OR ADD MECHANICAL PROPERTIES.

Metallization is made by electroforming, a process which enables to cover, totally or partially with a layer of metal, a part, that is naturally conductive or that has been made conductive prior to the metallization.

DEPOSITED METAL

- ▶ Nickel
- ▶ Copper
- ▶ Gold
- ▶ Silver

APPLICATIONS

- ▶ EMC boxes
- ▶ Farady shields
- ▶ Antennas / Wave guides
- ▶ Welding by coating
- ▶ Particle accelerator
- ▶ Reflectors

METALLIZATION CAPABILITY

- ▶ Unit part / prototypes
- ▶ Small and medium serie
- ▶ Small and large dimensions
 - Copper bath: 2700*2400*1400mm
 - Nickel bath: 6800*3800*2400mm

MATERIAL

Rapid prototyping

- ▶ SLA / DLP / CLIP
- ▶ SLS / MJF
- ▶ FDM

Plastic

- ▶ ABS / PC / PVC / PP / PA
- ▶ PEI (ULTEM) / PEEK / PEKK
- ▶ Casting resin

Metal

- ▶ Aluminium
- ▶ Steel, Stainless Steel
- ▶ Bronze, Copper

Other

- ▶ Carbon
- ▶ Composite
- ▶ Glass

Liste non-exhaustive

SECTEURS

- ✈ AEROSPACE
 🚀 SPACE
 🏥 MEDICAL
☢ NUCLEAR
 🏭 INDUSTRY
 🛡 DEFENSE



1 ADDING MECHANICAL PROPERTIES



MECHANICAL RESISTANCE

Metallization significantly improves the mechanical rigidity. A deposit of 65µm enables to double the mechanical resistance of a part and it will be multiplied by 5 with a deposit of 125µm.



TEMPERATURE, FIRE RESISTANCE

The substrate is covered (so isolated) by a thick metal coating which is forming a metallic shell all over the part.



IMPACT RESISTANCE

Nickel has a surface hardness from 15 to 40 HRC.



CORROSION AND ABRASION RESISTANCE

Nickel is resistant to abrasion and corrosion.

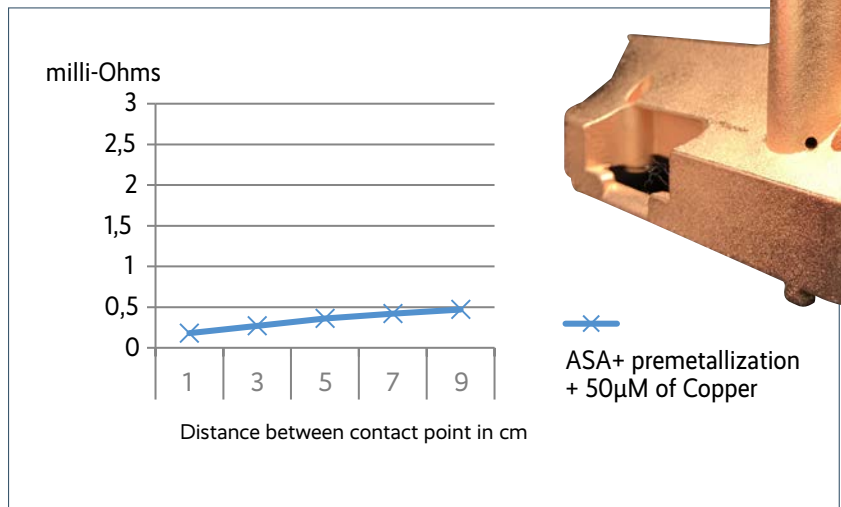
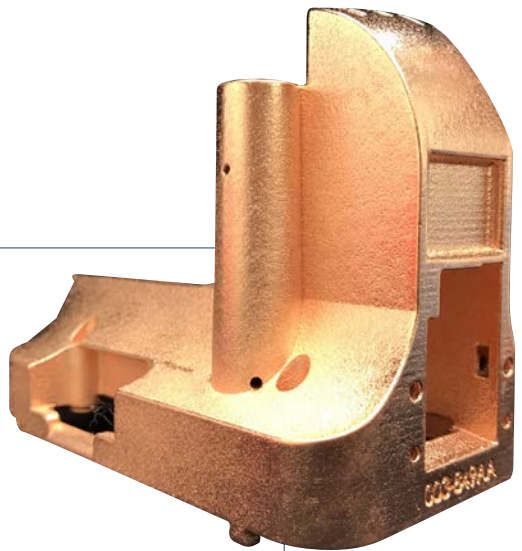


THERMAL AND ELECTRICAL CONDUCTIVITY

Copper is an excellent conductor.

Resistivity of copper: 1,98 µ Ω cm à 20°

Thermal conductivity : 395 à 405 W.m-1.K-1 à 20°C



2 FOCUS ON ELECTROMAGNETIC SHIELDING

Electromagnetic compatibility (EMC) is *the ability of electrical equipment and systems to function acceptably in their electromagnetic environment*, by limiting the unintentional generation, propagation and reception of electromagnetic energy which may cause unwanted effects such as electromagnetic interference (EMI) or even physical damage in operational equipment. The goal of EMC is the correct operation of different equipment in a common electromagnetic environment.

HOW TO GET AN ELECTROMAGNETIC SHIELDING ?

- ▶ Thin **copper** deposit (20/50µm)
- ▶ Anti-corrosion finish: **nickel** or **silver**
- ▶ Possibility of **selective** coating



ADVANTAGES

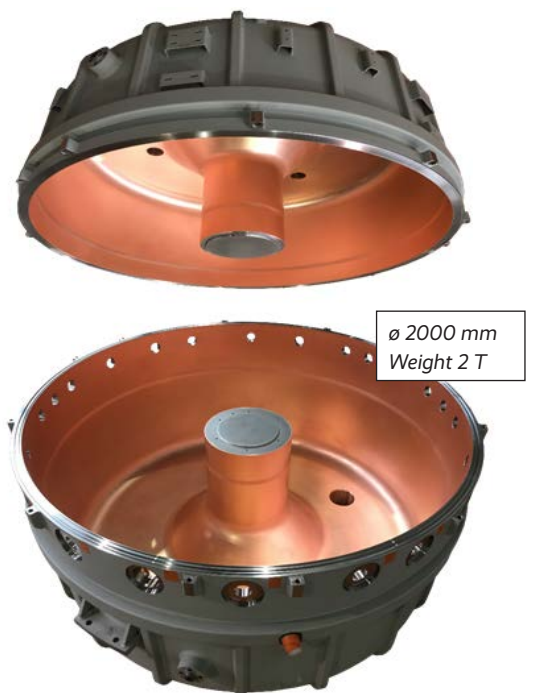
Replacement of metal parts by metallized polymers enabling:

- **Weight reduction**
- **Part or box functionalisation**
- **Quick process**
- **Cost savings**
- **Strong performances**

3 FOCUS ON ELECTRICAL CONDUCTIVITY

AN APPLICATION EXAMPLE RHODOTRON: PARTICLE ACCELERATOR

A layer of **80µm** of copper is deposited on the internal faces of steel element that make up of the Rhodotron. As an excellent conductor, copper plays a major part during the process of accelerating electrons that will allow the sterilization of medical material and food by breaking the DNA of bacterias that are contained in the products, preventing them from growing.



4 FOCUS ON MOLD METALLIZATION

ADVANTAGE OF PLASTIC 3D PRINTED MOLD

- Time savings
- Cost savings
- Manufacturing with right material

EXTRA ADVANTAGES WITH METALLIZATION

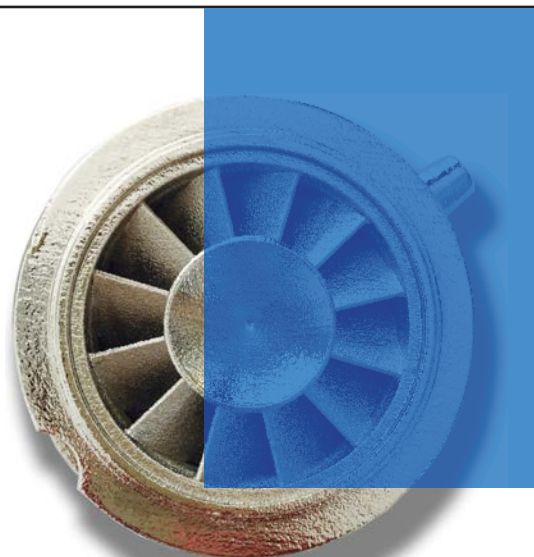
- ▶ Better temperature resistance
- ▶ Better pressure resistance
- ▶ Protection against abrasive resins
- ▶ Better demolding
- ▶ Better surface quality
- ▶ Better lifetime



5 METALLIZED PLASTIC PARTS VS METAL PARTS

METALLIZED PLASTIC PARTS ARE CONSIDERED AS A REAL ALTERNATIVE TO METAL PARTS, MAINLY BECAUSE THEY ENABLE:

- ▶ Weight reduction of parts
- ▶ Better surface
- ▶ Better impact resistance
- ▶ Higher mechanical properties (strength, hardness)
- ▶ Design of complex parts
- ▶ Lower costs
- ▶ Quicker manufacturing process



ISO 9001:2015
BUREAU VERITAS
Certification



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