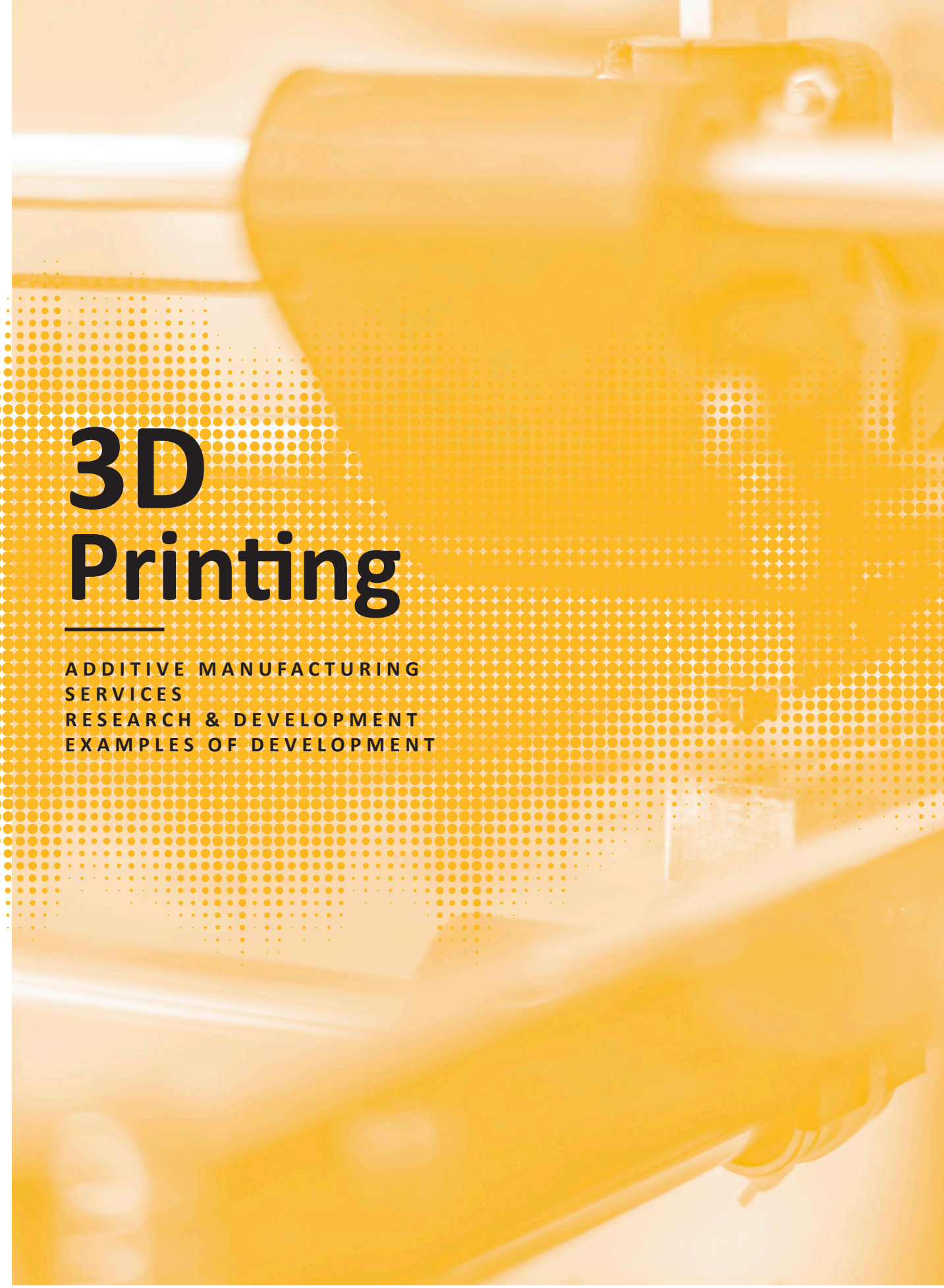


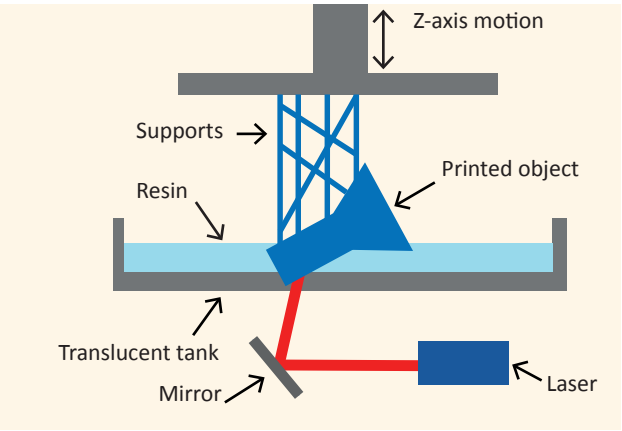
3D Printing

ADDITIVE MANUFACTURING
SERVICES
RESEARCH & DEVELOPMENT
EXAMPLES OF DEVELOPMENT

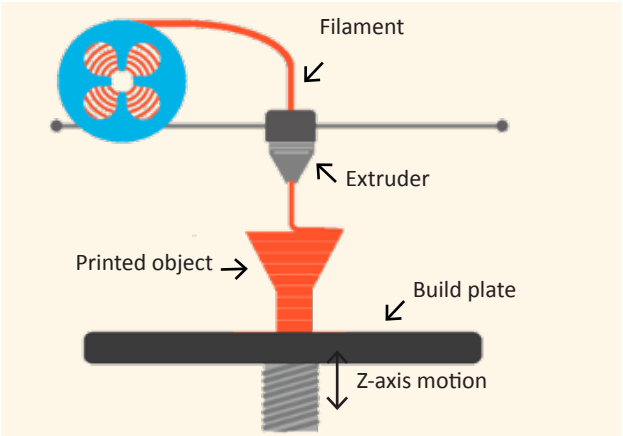
ADDITIVE MANUFACTURING

RESIN PRINTING

- Maximal printing volume of 292 x 165 x 400 mm^3
- Resolution up to (jusqu'à 47µm in the x/y plane and 10µm along z-axis)
- Low surface roughness (Ra ~12µm)
- Suited to metal plating



• More than 10 resins available to match the properties of the printed part to your needs.
High temperature (HDT@0,45MPa of 238°C), rigid, elastic (shore 50A), biocompatible, ...



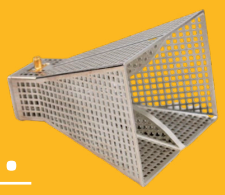
FILAMENT FABRICATION

- Maximal printing volume of 300 x 300 x 400 mm^3 (260 x 260 x 260 mm^2 for high performences materials)
- Dual extrusion available

• Wide panel of materials available, including materials with excellent mechanical and chemical resistance properties that are retained to high temperatures.
PEEK, Ultem, Premix (permittivité de 2 à 15), ABS, PLA, ...PEEK, PEI

Other printing methods, other materials and wider printing volume available on demand

PRESTATIONS



01.
SHORT DELAY PROTOTYPING

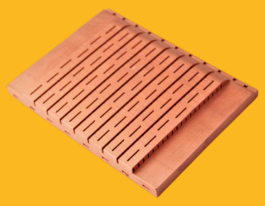
• Based in Brest, France, we can quickly deliver your prototype thanks to our on site production plant.

02.
CUSTOM MICROWAVE COMPONENTS…

• Elliptika is well-known for its ability in RF design thanks to its team of PhDs and engineers at your service to develop a custom solution for your needs.

03.
…WITH A CUSTOM SURROUNDING

• Elliptika can also design the packaging of your microwave component, custom flange, or antenna displacement device.

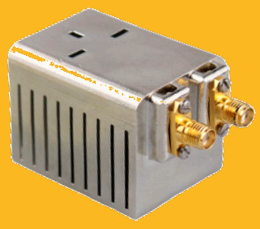


04.
LOW COST, HIGH PERFORMANCES !

• Thanks to its on site additive manufacturing capabilities Elliptika offers a wide variety of on-shelf low-cost RF components such as antennas, waveguides or SMA to waveguide transitions. Moreover these on-shelf components can quickly be modify by our team to exactly fit your needs with a compact and light device.

05.
CO-DESIGN

• Elliptika can redesign an existing component to let you enjoy the benefits of 3D printing, namely, a more compact and lighter devise and a ready to print file for long term storage.



06.
PLASTIC PLATING

• Several plating finish available on the plastic 3D printed parts (tin, copper, nickel, ...)

RESEARCH & DEVELOPMENT

ELLIPTIKA A REASEARCH STAKEHOLDER

Elliptika is a spin-off of the Lab-STICC, the laboratory of electronics of the University of Brest in France. Created in 2008, in a few year Elliptika became the French leading compagny in 3D printed RF devices and microwave design.

Thus, Elliptika contributes to the research in these field through its scientific publications.

MONOBLOC PRINT OF A FRONT-END IN THE KU-BAND

F. L. Borgne, G. Cochet, J. Haumant, D. Diedhiou, K. Donnart and A. Manchec, «An Integrated Monobloc 3D Printed Front-end in Ku-band,» 2019 49th European Microwave Conference (EuMC), Paris, France, 2019, pp. 786-789, doi: 10.23919/EuMC.2019.8910891.

3D PRINTED ULTRAWIDE BAND COAXIAL TO PARALLEL LINE TRANSITION

J. Haumant et al., «Ultra Wideband Transition From Coaxial Line to Two Parallel Lines Manufactured Using Additive Manufacturing Technology,» 2019 IEEE MTT-S International Microwave Symposium (IMS), Boston, MA, USA, 2019, pp. 1217-1220, doi: 10.1109/MWSYM.2019.8701001.

3D PRINTED ULTRALIGHT DOUBLE RIDGED HORN ANTENNA

Julien Haumant, Gwendal Cochet, Daouda Lamine Diedhiou, Alexandre Manchec, Rozenn Allanic, et al.. Ultralight Wideband Double Ridged Horn Antenna Using AdditiveTechnologies. ESA-ESTEC MTT, Apr 2019, NOORDWIJK, France. (hal-02138141)

MINIATURE 3D PRINTED RF FILTER

Kilian Donnart, Alexandre Manchec, Julien Haumant, Gwendal Cochet, Daouda Lamine Diedhiou, et al.. Miniature Air-Filled SIR Coaxial Resonators filter made by 3D printing SLA. Microwave Technology and Techniques Workshop, ESA – ESTEC, Apr 2019, Noordwijk, Netherlands. (hal-02473636)

BETTING ON 3D PRINTING TECHNOLOGIES IN THE LONG THERM

Elliptika has oriented its R&D strategy in order to be your 3D printing partner in the long term and to remain the leading company in this field.

Therefore, Elliptika has several R&D projects:

- Metal plating of 3D printed plastic parts
- Metal plating of complex shapes
- Bury SMD in 3D devices
- PCB/3D connection

3D PRINTING TO THE BENEFITS OF EVERYONE

During the Covid-19 crisis, Elliptika joined a work group to design and manufacture protection equipment for the medical staff.

This team developed an adapter to transform a full-face snorkeling mask into a full-face and breathing protecting for the intensive care unit staff.

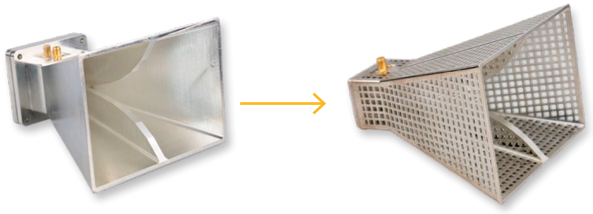
During the first weeks of the pandemic, Elliptika has also produced and given to caregivers over 3500 face shields using additive technologies. Since then, Elliptika has joined a consortium to develop and manufacture new products to respond to current and future health crises.

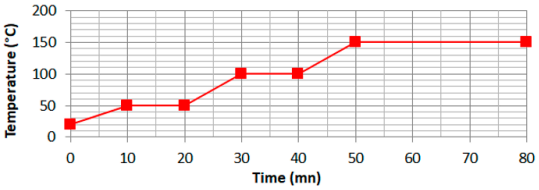
EXAMPLES
OF DEVELOPMENT

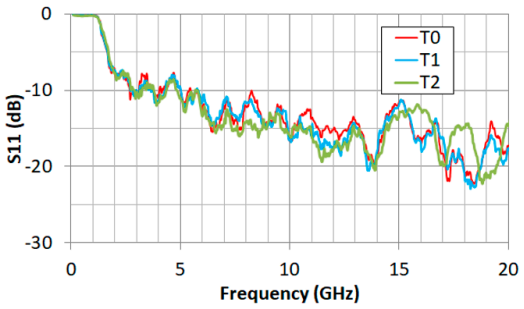
ULTRA-LIGHT ANTENNA

• Double ridged horn antenna of only 76g, manufactured using high temperature resin.

• Radiation pattern remains unchange by the weight reduction and the return loss stay stable up to 150°C

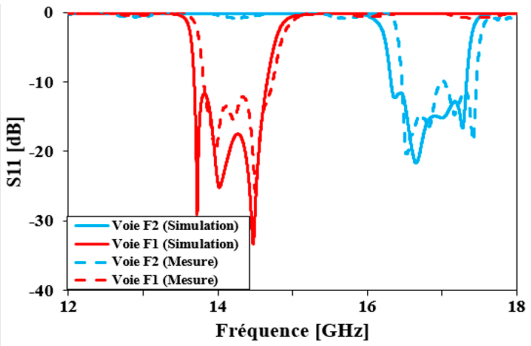


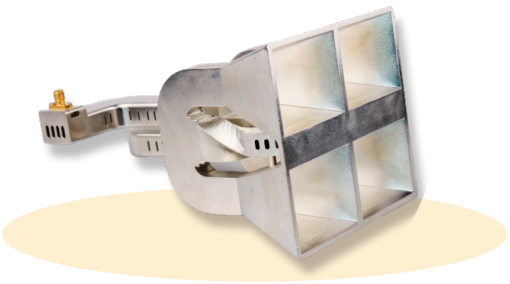




FRONT-END

• Front-end comprised of 2x2 horn array, its waveguide feed and a diplexer. The front-end is printed in a single plastic piece and plated with copper and tin.

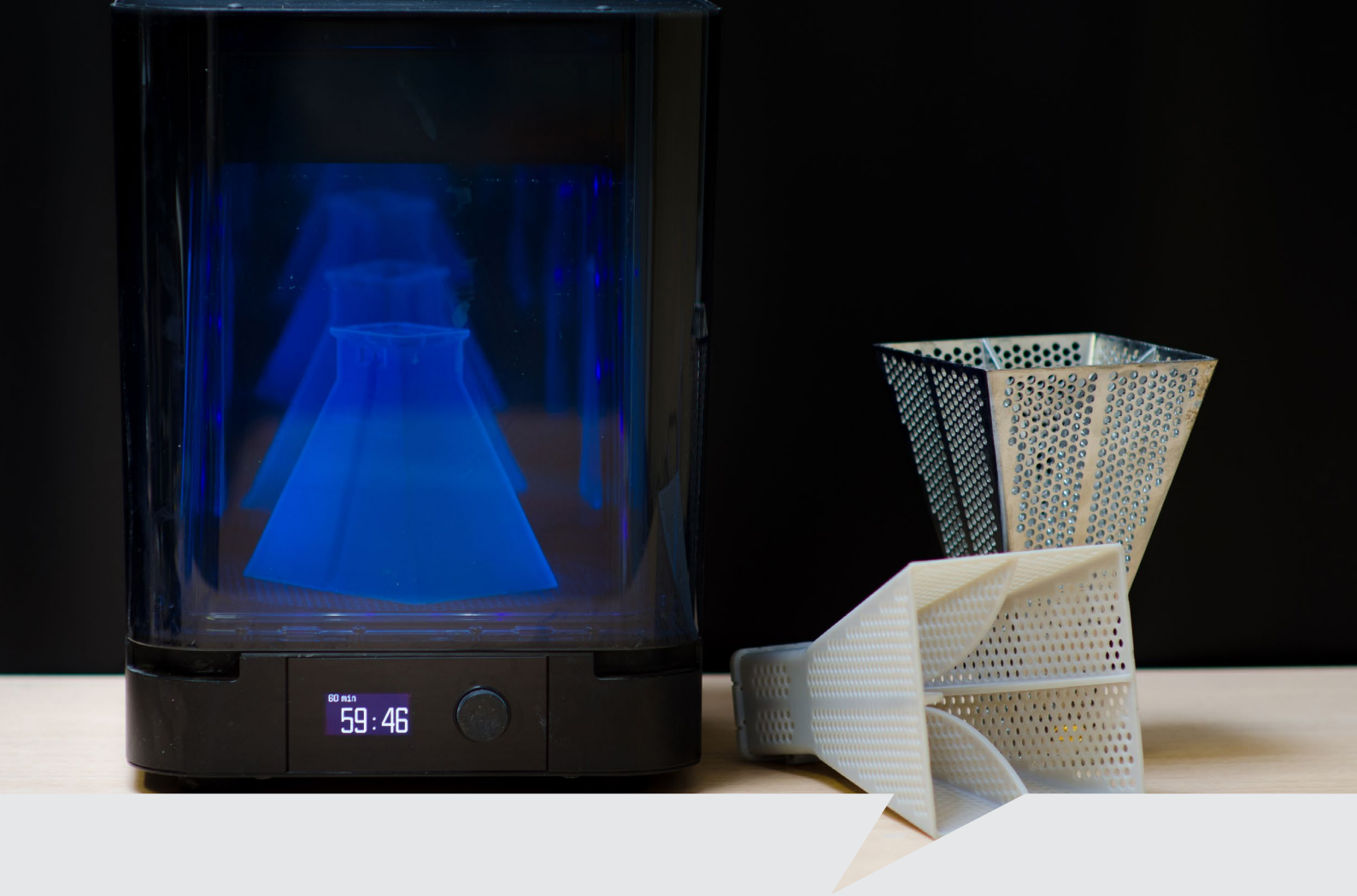




COVID 19

Thanks to its expertise in 3D printing, Elliptika has contributed to the response against the Covid-19 crisis by taking part in the Pneumask project along Stanford university and many other partners.

Elliptika manufactured the pneumask adapter prototype using biocompatible 3D printing technology.



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