



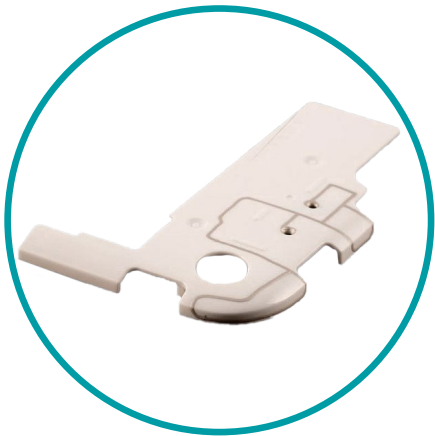
FLUIDANT PRODUCT OVERVIEW

FluidANT is full 3D capable printing technology designed to create printed electronics directly on 3D surfaces using modern software controlled digital process.

With **FluidWRITER** you can print prototypes quickly for your own R&D and produce products in-house with simple logistics and low cost.

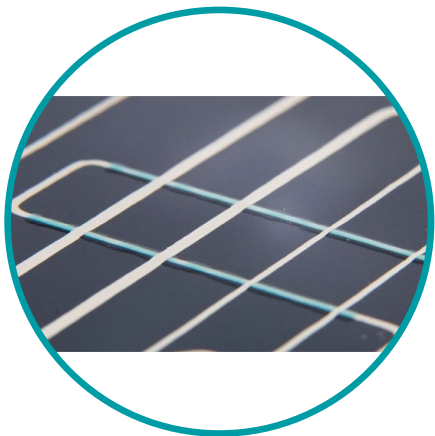
- Exploit new product design and structure options
- Use normal plastic with good mechanical properties and wide color range or even as transparent
- Benefit from low cost micron particle silver ink
- Print prototypes quickly in your own R&D
- Produce in-house with simple logistics

2021



Antennas and Sensors

Printed Electronics

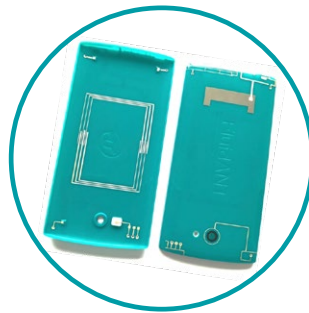


Multilayer Structures

FluidANT Examples



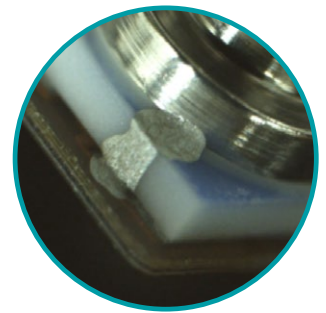
Antenna printed in a very extreme location.



Print between different materials; coloured plastic, metal, ceramic and metal.



Print to connect.



Connect to ground by printing between different materials.



FluidWRITER FW PL4100

Tabletop model with one rotation axis

Designed to provide affordable entry option to printing and printed product development. The same capability to print on 3D surfaces as in production model but with limited max printing speed and only one rotation axis for fixtures to hold the parts to be printed on.

o Print work area:

- 300 x 140 x 140 mm (one rotation axis)
- 500 x 350 x 190 mm (open table)

o Max printing speed 50 mm/s

o Printer weight 200 kg



FluidWRITER FW PL4200

Production model with two rotation axis

Designed for high speed and high precision production operation with capability to print on 3D surfaces. PrintHEAD is on linear XYZ motion system and PrintHEAD operation is real time synchronized to actual motion which makes system capable to very precise dosing in high speeds. Printed line width and thickness remain stable in all situations. Unique digital 3D offset setting together with advanced control SW enables accurate printing on rotary three dimensional surface. Two rotation axis for fixtures to hold the parts to be printed on.

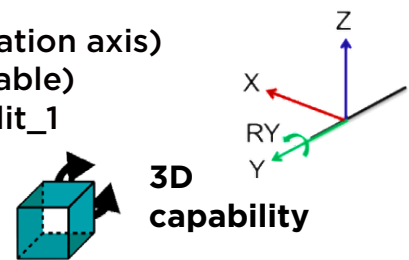
o Print work area:

- 300 x 160 x 160 mm (two rotation axis)
- 650 x 480 x 350 mm (open table)

o Max printing speed 200 mm/s

o Printer weight 1250 kg

o Print orientation freedom: 4D



One part fixing enables access to four sides of cube with fixed tool orientation.



SurfCAM with FluidANT customization

FluidWRITER FW PL4100 & PL4200 print work is designed with the well-known SURFCAM 2015 equipped with FluidANT user interface customization to serve print work designing purpose. Design tool utilizes easy to use FluidWRITER IV post-processor for toolpath data generation.

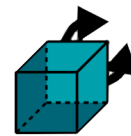


FluidWRITER FW PL3100

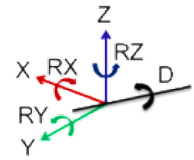
With two rotation axis

Designed for both prototyping and production use with ultimate 3D capability. PrintHEAD is on six axis industrial robot and two rotation axis with fixtures for parts to be printed on.

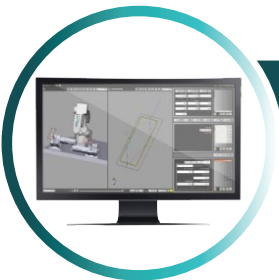
- o Print work area 260 x 150 x 150 mm
- o Max printing speed 100 mm/s
- o Printer weight 830 kg
- o Print orientation freedom: 7



3D
capability



One part fixing enables access to four sides of cube with fixed tool orientation.



FluidPATH

FluidWRITER FW PL3100 print work is designed with tailor-made FluidPATH CAM design software, which includes purpose developed advanced tools for pattern and circuit print programming, real printer environment based integrated simulation and build-in file transfer management.

What is FluidANT?

FluidANT is print technology which enables you to produce high performance antennas, sensors and electrical circuits on 3D surfaces using conductive ink. Process suits also to printing dielectric materials and to other applications in which the high speed, excellent accuracy and precise deposition rate are important.

FluidANT consists of the FluidWRITER printer and related CAM design software for the print work programming.

What are the biggest benefits of FluidANT?

With FluidANT you can print on 3D part made from commonly available material with good mechanical properties and wide choice of colors. The print system enables significant reduction in prototyping and versioning time. It also opens a new industrial design and integration options and the printing locate next to the device assembly without long process chain or complex logistics.

How does FluidANT compare to other printing technologies?

Other existing printing techniques, like screen and pad printing, are either limited to 2D applications or use, like inkjet or aerosol jet, high cost nanoparticle inks.

Unlike in traditional dispensing systems, in FluidWRITER printers the printhead operation is synchronized in real time to actual motion which makes it capable to very precise dosing in high speeds. Printed line width and thickness remain stable in all situations. Unique digital 3D offset setting together with advanced control SW enables accurate printing on rotary three dimensional surface.

What substrates can be used?

FluidANT can be applied on normal resins with good mechanical properties and wide choice of colors, resins do not need any additional additives. The most common are polycarbonate grades. Polyamide grades are used with care on molding parameters. Also wide range of other resins can be used.

What type of inks can be used?

In creating antenna patterns and conductive traces the FluidANT printing uses high viscosity micron particle silver inks. Benefits of micron particle inks are low cost and good conductivity. It is always recommended to verify in advance the compatibility of an ink and a substrate securing e.g. good adhesion.

What ink drying temperatures are used?

Higher ink drying temperature produces better conductivity, therefore the drying is typically set as high as possible for the used resin material. Typical drying temperature for polycarbonate is about 100C. Maximum drying temperature for polymer based inks is typically around 200C and minimum drying temperature around 70C. Lower conductivity due to low temperature drying can typically be compensated to some extent by longer drying time.