FLEXITECH AVIA
PRINTED ELECTRONICS

COMPANY INTRODUCTION

"AME Prints New Era of Electronics“

Printing sensors and conductor layers on various substrates by means of thick-film and screen printing technologies

Your partner for Thick Film based products

April 2021

General description of the company

Flexitech Ltd. founded in April 1999 and three years period was operates under the auspices of “Yozmot HaEmek” Technological Incubator in Migdal HaEmek.

In 2015, Flexitech Ltd. became the property of Avia Ltd. and now Flexitech Avia Ltd. has moved to a new location from Tirat Carmel to Haifa.

Flexitech Avia technology

Core Technologies:

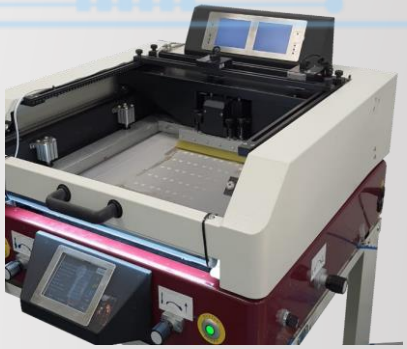
- Thick-film technology
- Special kinds of printing (screen printing)

Additional technological processes:

- Photolithographic processes
- Electroplating
- Selective metallization
- Etching
- Multilayer coatings
- Brazing

Flexitech Avia brief processes description

- Engineering (design product, jigs, BOM, manufacturing folder)
- Pre-printing processes: (screens, substrates, and paste/ink preparation)
- The actual layer-by-layer printing of the product
- Drying imprints in drying cabinets
- Firing in conveyor furnaces
- Final processing of products, assembly, soldering and packaging
- End-to-end quality control at all stages of production, from incoming inspection of all materials and accessories, control during production to functional testing of finished products before shipment.



Flexitech Avia-
Main printing types of pastes/inks

- For the printing of **conductive layers**, we use pastes/inks based on gold, silver, platinum, palladium, copper, graphite, graphene and nano silver.
- For printing **resistive layers**, we use pastes/inks based on silver, silver/palladium, ruthenium/ruthenium oxide and carbon.
- For printing **dielectric and protective layers**, pastes/inks based on metal oxides, various types of glasses, polymeric materials based on epoxy resins, polyurethanes, silicones, polyimides and numerous other materials are used.
- Pastes/inks are available in a wide range of curing temperatures: High-temperature to 850°C, Medium-temperature to 570°C, and Low-temperature to 25-300°C.

Company Products

We offer our clients a wide range of tailor-made advanced printing solutions:

TAILOR MADE SOLUTIONS

- High End Heating Elements
- Power Resistors
- Printed Sensors
- High Temp stainless steel core PCB
- Multilayer ceramic core PCB (up to 15 layers)
- Printed Antennas
- Special conductor coating – (flat wiring, EMI/RFI shielding, grounding, etc.

OFF-THE-SHELF innovative solutions and products

- Window/Optical Filter Defrosters
- Crystal Ovens (Uniform and Gradient heating)
- Flow instant heater

Flexitech Avia-Printing conductive layers

- Printing on a rigid, flexible and stretchable substrates including ceramics, glass-ceramics, stainless steel, aluminum alloys, PI, PET, elastomer parts made from polyurethane (PU) and silicone rubber, Nylon®, Lycra®, Kevlar®, etc. with size up to 500x500 mm.
- Double-sided printing and firing/curing/sintering.
- Multilayer printing on high precision.
- Printing resolution (line/space): 100 microns.
- Imprint thickness between 5-100 microns.

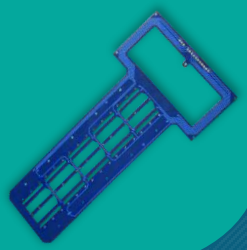
Flexitech Avia
Products variety

STAINLESS STEEL AND CERAMIC HEATER

01

Stainless steel core heater for plastic soldering iron
20x300 mm

02

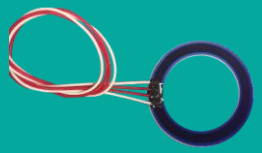


Stainless steel core heating element to thermal probes with 10 areas of heating,
150X300 mm

03

Ceramic core heater for optical system, (15 mm) in Airborne systems

04

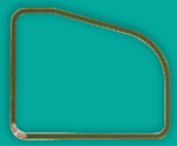


Defroster for optical window in Autonomous car systems

05

Ceramic core heater for laser system, 3D shaped

06



Ceramic defroster for sapphire window (85x95 mm), in Airborne systems

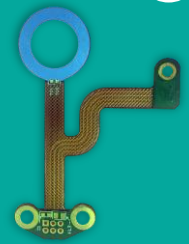
FLEXITECH AVIA
PRINTED ELECTRONICS

Flexitech Avia
Products variety

FLEXIBLE HEATERS AND POWER RESISTORS

- High power
- Heat sinkable
- Low profile
- Range of resistance values
- Featuring excellent pulse handling capabilities
- Non-flammable
- Universal connection varieties

01

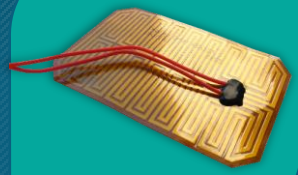


Thick film heater on flex rigid pcb up to 120C

02

Polyimide heater up to 180oC

03



Polyimide heater up to 180oC

04

05

The power resistors are all custom designed regarding the shape, size, core and have high resistance to extreme power peaks and temperatures

Flexitech Avia-Printed Sensors

For the manufacture of various printed sensors, we use a wide range of inks, which, under the influence of various types of force or energy (pressure, heat, humidity, light, etc.), significantly change their properties: conductivity, resistance, generate electricity, etc.

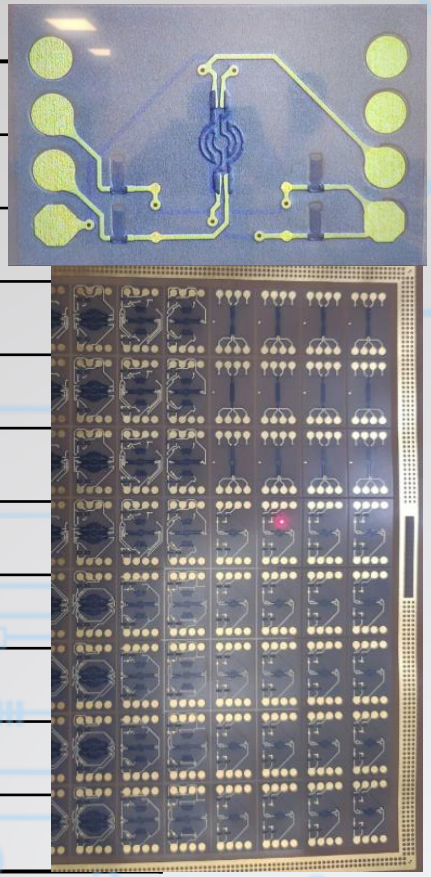
Among them:

- Conductive gold, silver, carbon, and silver chloride inks
- Special resistive pastes which under the various external influences are able to change their resistance in a wide range.
- Piezo-resistive inks (based on carbon, graphene, silver, etc.)
- Piezo-electric inks (based on PZT (lead zirconate titanate) inks, PVDF(Polyvinylidene Fluoride) based ink, etc.

Flexitech Avia-Printed Sensors, cont.

Main types of sensors

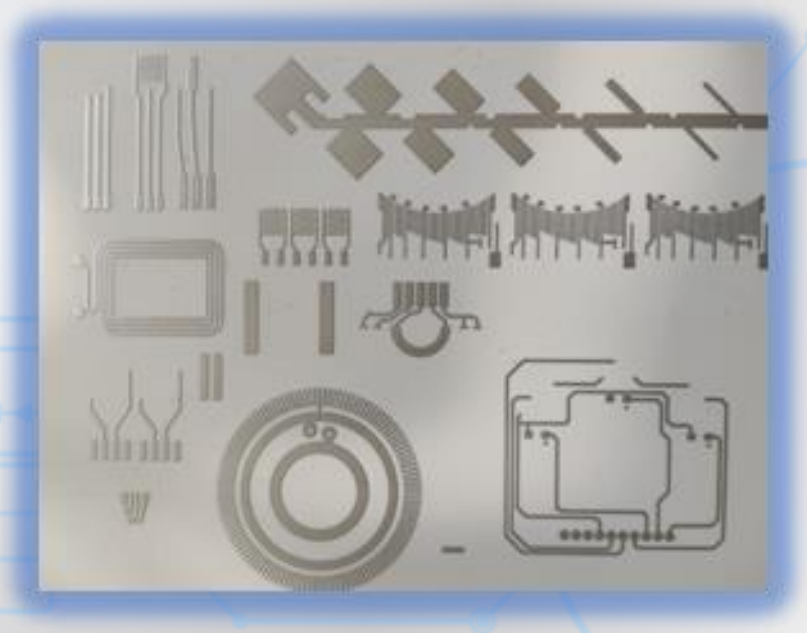
Accelerometer	Light Sensor
Alcohol Sensor	Optical Sensors
Biosensors	Piezoelectric Sensors
Capacitive Sensors	Piezoresistive Sensors
Color Sensor	Pressure Sensor
Flow Sensor	Proximity Sensor
Gas Sensors	Smoke Sensor
Humidity Sensor	Temperature Sensor
Inductivity Sensor	Tilt Sensor
IR Sensor (Infrared Sensor)	Touch Sensor
Level Sensors	Ultrasonic Sensor



Flexitech Avia- Printed Antennas

Different types of printed antennas have many different shapes and dimensions and can be classified into four subtypes:

- Microstrip Patch Antennas (MPA)
- Microstrip Dipole Antennas
- Printed Slot Antennas
- Microstrip Traveling-Wave Antennas



Printed Antenna samples on Reinforced PTFE, with DK 2.2

Flexitech Avia- Printed Antennas, cont.

Printed Planar Antennas enable the wireless communication and power transmission required for many applications across many industries and on a multitude of materials, including:

- **Rigid substrates**

Glass, glass-ceramic, ceramics, steel, FR-4

- **Flexible substrates**

Various Papers and Fabrics, Poly acrylic (PAcr), polycarbonate (PC) Lexan/Palsun, polyether ether ketone (PEEK), poly ether sulfone (PES) Ultrason/Victrex/Udel, polyethylene

- **Stretchable substrates**

Elastomer films made from polyurethane (PU) and silicone rubber, Nylon®, Lycra®, Kevlar®

One of the most important properties of printed antennas is the dielectric constant and loss tangent, and Flexitech has the advantage of being able to print antennas on a wide range of substrates with an almost complete range of dielectric constant, used for various applications.

Flexitech Avia
Products variety

SENSORS, ANTENNAS, CERAMIC- AND METAL CORE

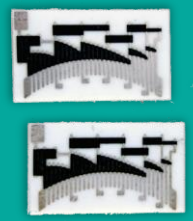
01

Sensor with Heater for biological application

02

Ceramic Sensor for study of biological materials

03

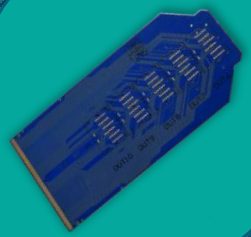


Ceramic core PCB

04

Golden and Silver Plated PCB

05



Stainless steel core PCB operating at temperature up to 350 oC
150X350 mm

06

Ceramic core PCB, 15 layers, dia 15 mm

07

Speical coating- Stainless steel core electrode/anode, operating at 80 kV, diameter 50 mm

08

Travelling Wave Antenna on Alumina substrates

09

Gold both sides printed loop antenna on 3d Cordierite substrate

FLEXITECH AVIA
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Vision

To establish a world-class **Thick Film Products House** with fully automatic facilities that provide to **Developers** and **Manufacturers** access to a family of printed comprehensive high-end and ability edge solutions in the field of heaters, sensors, microstrip antennas, metal- and ceramic core PCB, high-resolution printing electronics on the flexible, and stretchable polymers, and crystal ovens.

Your Technical vision – our Mission

FLEXITECH AVIA
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THANK YOU!

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