AEROSOL JET® PRODUCTION PRINT ENGINE

For Production Scale Printed Electronics

The Aerosol Jet Print Engine is an advanced electronics manufacturing technology enabling cost effective and flexible high volume production of antennas, sensors and circuits used in consumer mobile devices, automotive and medical electronics. The scalable Print Engine consists of Process Controls and Closely Coupled Print Modules enabling simultaneous printing on up to four substrates in a single production system. The Print Engine’s open system architecture facilitates integration with custom or standard commercial production automation platforms. The Optomec open system approach extends to ink feedstocks enabling customers to purchase materials directly from suppliers to reduce costs and to establish multiple sources.

The Print Engine is optimized for printed electronics applications including 2D and 3D antennas for smartphones, tablets, and other mobile device. Turnkey high volume production systems are available through qualified Optomec partners. The Print Engine is also available as a standalone unit for integration with custom automation platforms.

APPLICATIONS

For Production Scale Printed Electronics

Aerosol Jet Closely Coupled Print Module

Quad Aerosol Jet Print Engine integrated with multi-axis automation platform.

Photo courtesy of Neotech AMT GmbH.

Available in single, dual and quad configurations to met production requirements

High volume production capacity ~ 2 Million printed antennas/machine/year

Print Modules with quick release ink cassettes for rapid changeover.

Integrated process controls for longer runs and consistent output.

Printed 2D and 3D Antennas for mobile devices

Automotive and Medical 2D/3D MID circuits and sensors

Selective and wide area coating applications.
Aerosol Jet Process

1. A liquid sample is atomized, creating a dense aerosol composed of droplets with diameters between approximately 1 and 5 microns.

2. The aerosol is transported to the deposition head using an inert carrier gas.

3. The aerosol is focused within the deposition head by an annular sheath gas. The resulting high-velocity material stream is deposited onto planar and 3D substrates, creating features ranging from 200 microns to millimeters in size.

Features

- Process Control: Supports up to four Marathon print modules
- Atomization Technology: Pneumatic series closely coupled
- Deposition Technology: Closely Coupled Print Module. Printing resolution 200 microns to one millimeter, ink dependent Interchangeable nozzles for selectable feature sizes Quick release ink cassettes for fast changeover
- Stand-off Height: Up to 8 mm from the substrate
- Scalability: Up to 4 Print Modules operating simultaneous
- Integration Method: Ethernet 802.3, 10/100 MB
- Material Output Rate: >10mg/min (Ag at 65% weight by volume)
- System Dimensions: Rack Mount 6U, 19” W x 24” D
- Power: 110 or 220V, 50/60Hz, 30 Amps (10 Amps at continuous operation, typical
- Gas Supply: 1-10 N l/min per print module, depending on mass-deposition rate and feature size

Aerosol Jet Printing Examples

- Smart Phone with 3D Printed Main Antenna
- MID with 3D Printed Thermal Sensor
- Dual Loop 2D Printed Antenna

ABOUT OPTOMEC

Optomec is the world leading provider of additive manufacturing systems for high-performance application in the Electronics, Biomedical, Photovoltaic, and Aerospace & Defense markets. These systems utilize Optomec’s patented Aerosol Jet Printed Electronics technology and LENS power-metal fabrication technology.