

Small Volume Solder Paste Dispensing for Aerospace and Defense

Case Study

A repeat customer specializing in high-technology interconnect, sensor, and antenna solutions, partnered with us to dispense small volumes of solder paste (Indium 10.1 SAC305 T6SG 78% μ m) onto backplane connectors – gold pads 0.175mm x 0.225mm. We performed a test requiring 0.200mm diameter or smaller dots to demonstrate the dispensing capability required.

Recommended Dispensing Process:

A precision dispensing system, MAX Series was utilized for this testing. The MAX automated dispense system was equipped with standard features including automatic vision alignment, contact surface sensor (laser is an alternative), automatic nozzle calibration and nozzle cleaning. The application specialist recommended the Precision Auger dispensing pump coupled with fluid pressure control (FPC). The .062 diameter / 32Pitch auger along with 32G precision needle (0.1016mm ID) was chosen for the dispensing of small volume solder paste onto backplane connectors.

The precision auger pump coupled with fluid pressure control (FPC) kept the dispensing in an optimal zone. The FPC monitored and adjusted the pressure of fluid entering the pump. Real time control in milliseconds compensated for variations in fluid volume as the syringe level decreased.

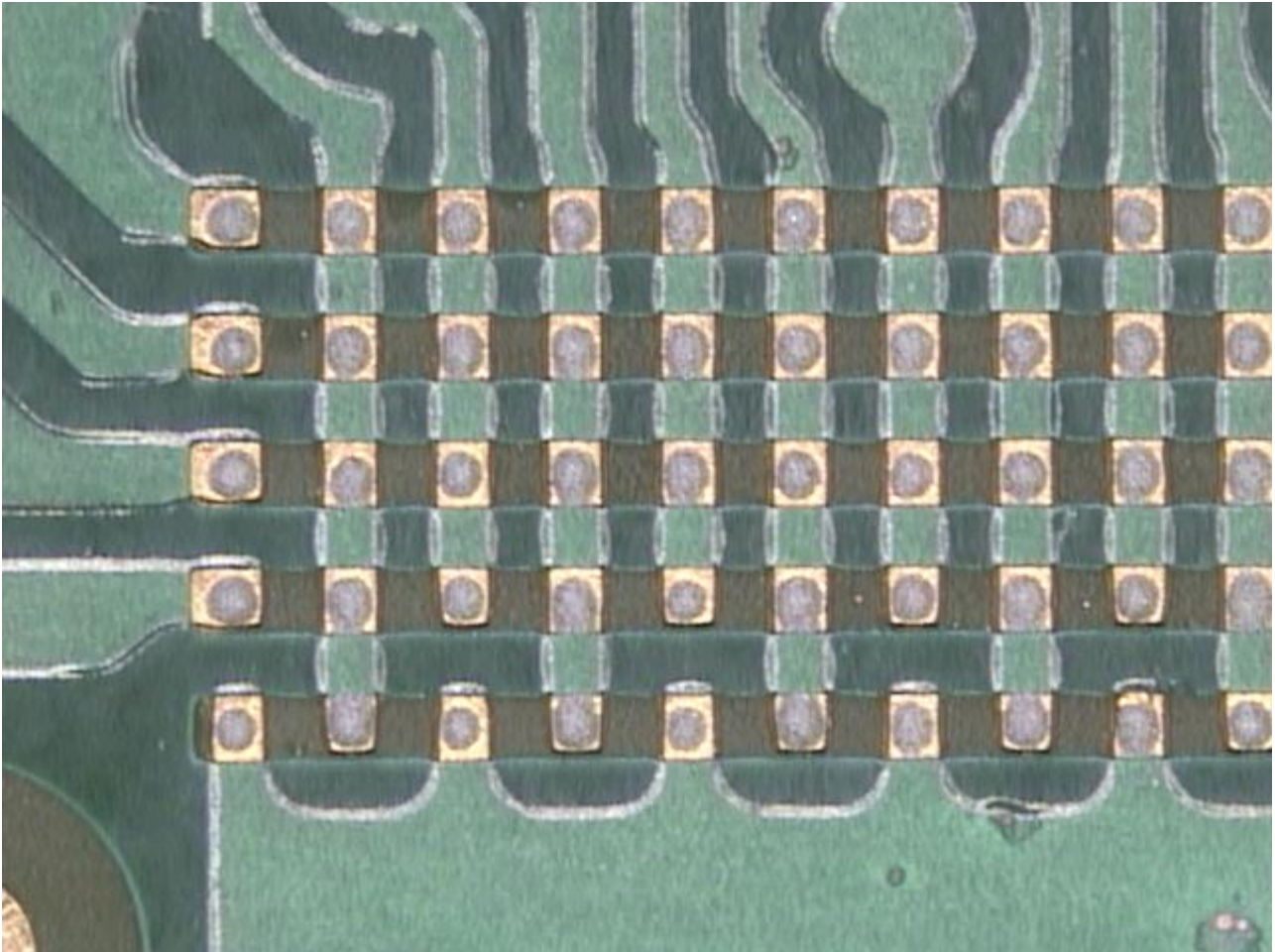
Dispense Parameters:

The information table below displays the key process parameters utilized for capability testing.

Pump:	Precision Auger
Auger:	.062 Diameter / 32Pitch Auger
Needle:	32G Metal Precision (0.1016mm ID)
Syringe Pressure:	10psi
Dispense Height (Z):	0.003in / 0.0762mm
Pump Speed:	5,000cts/sec
Pump Steps for Dot Size:	125cts
Pre Snap Delay:	0.25sec

Conclusions: Small Volume Solder Paste Dispensing for Aerospace and Defense

As shown in the example below, the results were consistent and achieved the desired cycle time and size, average dot diameter $0.180\text{mm} \pm 0.018\text{mm}$.



Final Dispensing Equipment Recommendations:

Dispense System	MAX Series System with auto vision, contact surface sensor, automatic nozzle calibration and automatic nozzle cleaning.
Dispense Pump	Precision Auger with Fluid Pressure Control (FPC)
Material	Indium Solder Paste 10.1 SAC305 T6SG 78%
Needle Size and Type	32G Metal Precision (0.1016mm ID)

GPD Global offers [dispensing system](#) customization and [in-house application evaluations](#). Call 1.970.245.0408 or email request@gpd-global.com.

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