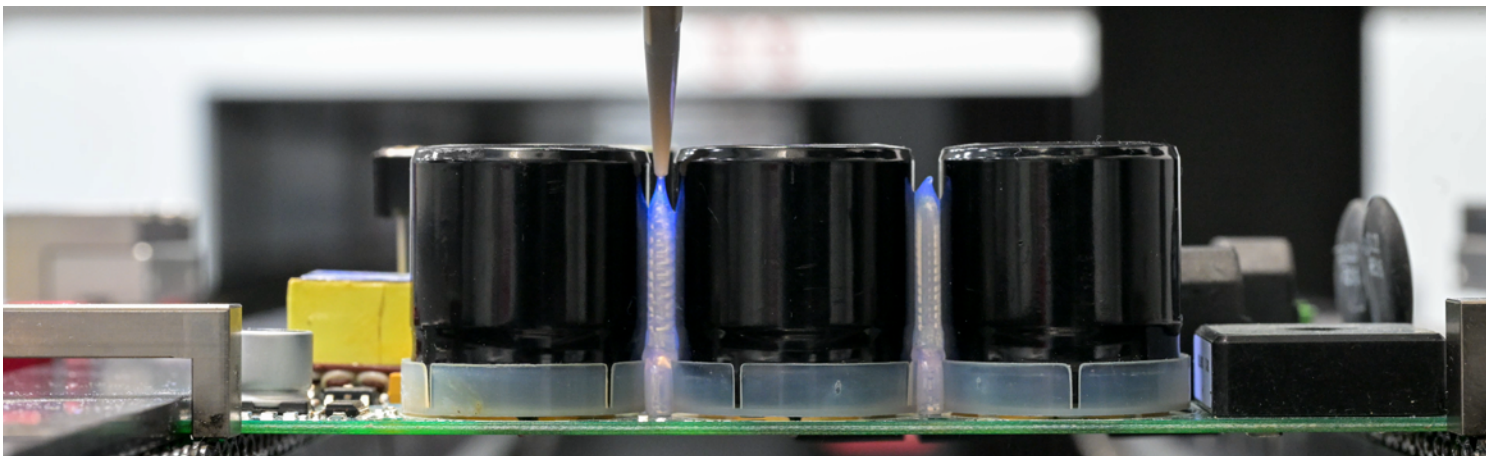




INNOVATION. **PRECISION.** EXCELLENCE.

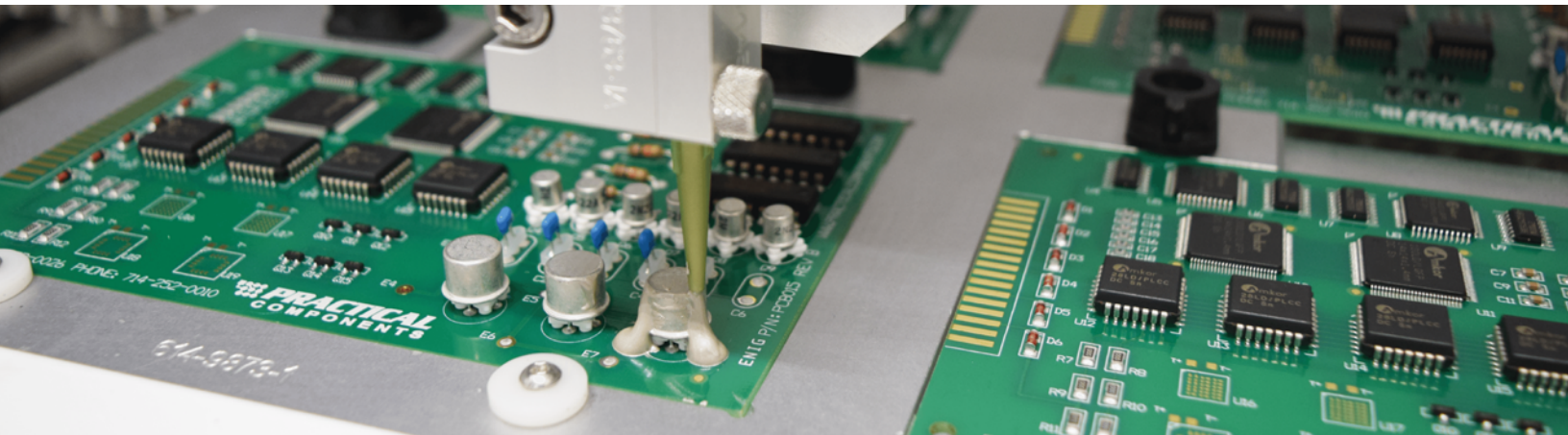
# PRECISION PACKAGE: STAKING



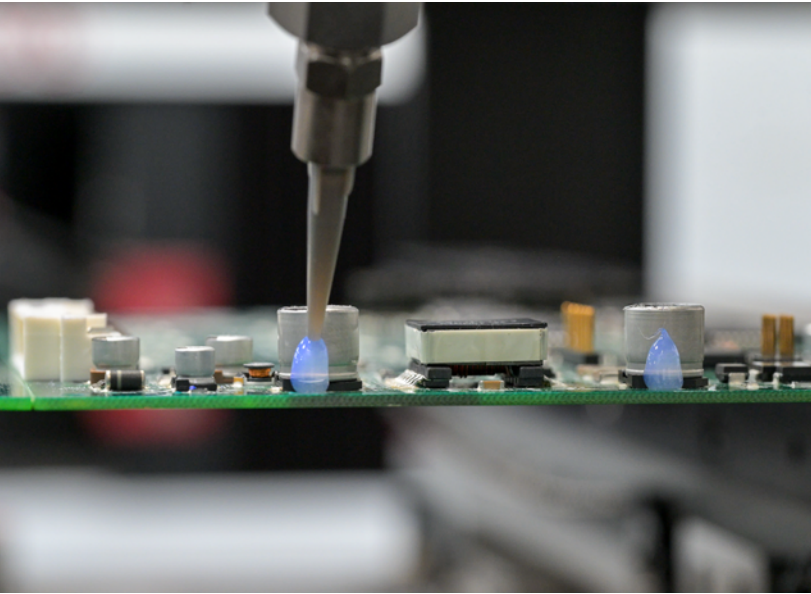


# TABLE OF CONTENTS

Staking Applications .....	4
Staking Methods .....	5
Defining Your Solution .....	6
Choosing Your Application Method .....	7-8
Defining Your Automation .....	9-10



## STAKING APPLICATIONS



**Staking** components on circuit boards prevents fractures in solder joints due to excessive shock, vibration, or thermal stress. This is achieved by dispensing a dot or bead of adhesive that bridges between the component and the board surface to create an anchor.

Staking can be performed on small surface mount components up to large, heavy through hole

components. A range of adhesives can be used such as epoxy, silicone, and urethane.

Contact us for more information on equipment selection and options.

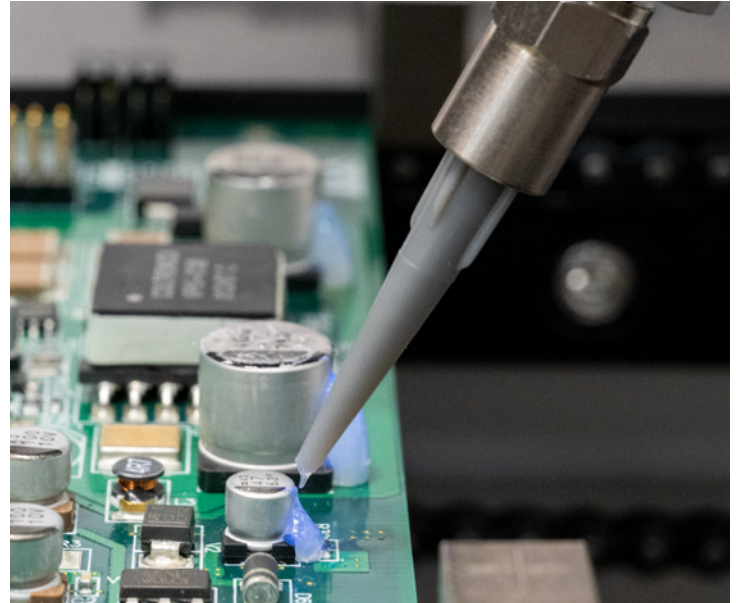
### KEY INDUSTRIES

- Aerospace
- Automotive
- Energy
- Industrial Coating Systems
- Telecommunications
- White Goods

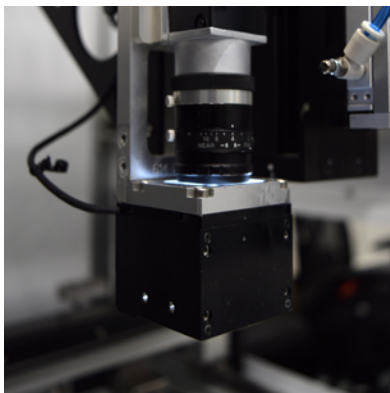
## STAKING METHODS

While a 3-axis robot with a dispense valve can easily apply dots or lines in 2D and 3D patterns, additional features may be required for more complex staking applications.

By adding four and five axis motion, the ability to use functions, such as tilt and rotate, can provide users easier access to areas that were previously in difficult to reach locations within their processes.



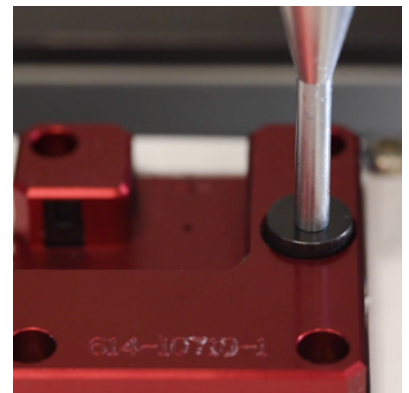
Adding process controls such as a fiducial camera, height sensor, flow monitoring, metered fluid delivery, and needle calibration can help further improve the reliability of your process.



*PVA-VISION  
fiducial camera*



*PVA-SMT-LHS  
laser height sensor*



*PVA-NC  
needle calibration sensor*

## DEFINING YOUR SOLUTION

With the wide range of staking chemistries and equipment options available, your application may seem hard to define. Having answers to the key points listed below will help start the process of creating a solution in a reasonable time frame.

### STEP 1: Understand the Adhesive

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If necessary, call the material manufacturer to obtain information and discuss properties such as:

- Base chemistry
- Compatibility with substrate
- Viscosity
- Pot life
- Curing requirements
- Shear strength
- How it will be supplied (syringe, cartridge, can, pail, etc.)



### STEP 2: What are the Staking Requirements

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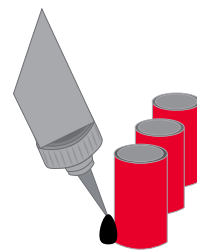
- Locations to dispense
- Bead or dot dimensions
- Keep out zones
- Throughput requirements
- Dispense tolerance



### STEP 3: Choose the Application Method

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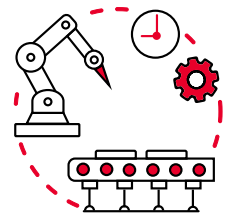
- Low or high volume processing
- Dispense pattern: dot, bead, stacked line



### STEP 4: Define the Automation Required

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- Size of substrate
- Handling - manual or conveyORIZED
- Number of robot axes required to reach all areas
- Curing method





## CHOOSING YOUR APPLICATION METHOD

Once your coating chemistry and requirements have been successfully defined, you will be able to choose your application method. Some of our most common valves and pumps for staking are shown below with optional features and additions where applicable.



### SD100

Provides clean dispense on/off control for dispensing low to high viscosity materials directly from syringes.

**Viscosity Range**  
1 cps - paste



### BP50

Controlled dispensing for 50 ml bi-pack cartridges for low to high viscosity fluids.

**Viscosity Range**  
1 cps - paste



### FC100-MC

Needle dispense valve that uses standard Luer Lock needles. Use for detail or hard to reach areas. Capable to use with high pressure for dispensing gels, masking, staking, and encapsulants.

**Viscosity Range**  
1 cps - paste



### SB300

High flow rate dispense valve with snuff back operation is used with high viscosity adhesives for large dot or bead applications. Available with luer lock outlet or 1/4" NPT connection for custom nozzles.

**Viscosity Range**  
50,000 cps - paste



### PC200

Ideal for any two component bead or dot project and compatible with standard bell inlet disposable mixers.

**Viscosity Range**  
1 - 500,000 cps



### PCP

Featuring a machined rotor coupled with a rubberized seal to assure drip-free operation with a wide range of viscous chemistries.

**Viscosity Range**  
1 - 500,000+ cps



### SVX

Designed for processing micro volumes of material in precise, repeatable patterns.

**Viscosity Range**  
25,000 cps - paste



### JDX

High precision non-contact jet valve for fine dots and lines of coatings, adhesives, and encapsulants.

**Viscosity Range**  
1 - 400,000 cps



### Compatible Pump & Metering Options



### CP Series Pump

Ideal for dispensing medium to high viscosity materials in pre-packaged cartridges.



### Endurance

Bundles multiple dispensing and pumping technologies into one solution as a standalone or integrated option.

**Ratio**  
1:1 to 15:1



### PVA-5GPP

Five gallon pail pump ideal for transferring high viscosity fluids under high pressures to a dispense applicator or metering system.

## DEFINING YOUR AUTOMATION

With an application method chosen, a benchtop or inline/batch automation method can be selected to complete your process. Scan the corresponding QR code to learn more about each system.

### Benchtop Solutions



#### Sigma

Powerful benchtop robot with robust gantry. The Sigma allows for many of the same options available on our larger systems, but in a smaller footprint.



#### Work Area (1 Valve/Tool)

330 mm x 300 mm x 100 mm

#### Footprint

743 mm x 643 mm x 805 mm



#### PVA350

A compact 3 axis robot ideal for entry level automation of a variety of coating and dispensing applications.



#### Work Area (1 Valve/Tool)

365 mm x 378 mm x 101 mm

#### Footprint

944.3 mm x 831.8 mm x 793.7 mm

### Inline/Batch Solutions



#### Delta 8

Conceptualized for maximum flexibility, the Delta 8 features a robust overhead three-axis motion platform suitable for inline or batch operations.

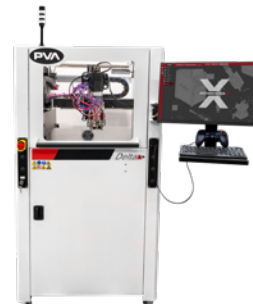


#### Work Area (1 Valve/Tool)

621 mm x 595 mm x 100 mm

#### Footprint

1270 mm x 973 mm x 2222.6 mm



#### Delta 6

Designed with improved structural and gantry rigidity for higher acceleration, robustness, and easier access.



#### Work Area (1 Valve/Tool)

521 mm x 485 mm x 100 mm

#### Footprint

854 mm x 1170 mm x 2105 mm



#### Flex Cell

Designed to meet your specific application requirements. Available in standard to very large work areas and can be highly customized.

#### Work Area

Various, from 500 mm<sup>2</sup> - 1200 mm<sup>2</sup>

#### Footprint

Varies upon workcell



### Inline/Batch Configuration Options

#### Number of Axes

3, 4, or 5\*

#### Valves

Needle  
Jet

#### Head Tooling

3-Axis, 2 head  
4-Axis - Up to 3 heads  
5-Axis - Up to 4 heads\*

#### Fluid Delivery

Syringe  
Cartridge  
Pail

#### Substrate Handling

Edge chain conveyor  
Pin chain conveyor  
Flex fixture  
Tooling plate  
Single drawer  
Dual drawer

#### Vision

Fiducial camera  
Programming camera

#### Software

Barcode  
MES  
Hermes  
CFX

#### Additional Options

Black light  
Needle calibration block  
Flow monitor  
Laser height sensor

\*Applicable if a Valve Tool Changer is added





# Leader in World Class Dispensing, Coating, and Custom Automation

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PVA is a world class innovator of high quality, repeatable dispensing and conformal coating systems. We manufacture turnkey solutions that help our customers improve their competitiveness. We do that through engineering robust processes that introduce repeatable results that reduce waste, increase throughput, and lower manufacturing costs. Our flexibility is unmatched as each solution is customized to optimize your manufacturing goals.


Headquartered in Upstate New York, with regional sites stationed throughout North America, Europe, and Asia, all PVA Systems are backed by a 24-hour global service network.

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