

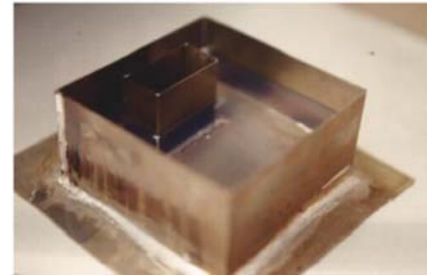


Tired of Masking? Try Selective Dip Coating

When conventional coating methods such as hand spray, total dipping or robotic selective coating don't provide the protection required, there is always selective dip coating.

What is selective dip conformal coating?

Selective dip coating is a process whereby the substrate rather than globally immersed in the coating, is discretely coated in desired locales. The technique in one form or another, has been around for over 25 years and is used with both classic solvent-based coatings and 100% UV cure conformal coatings.



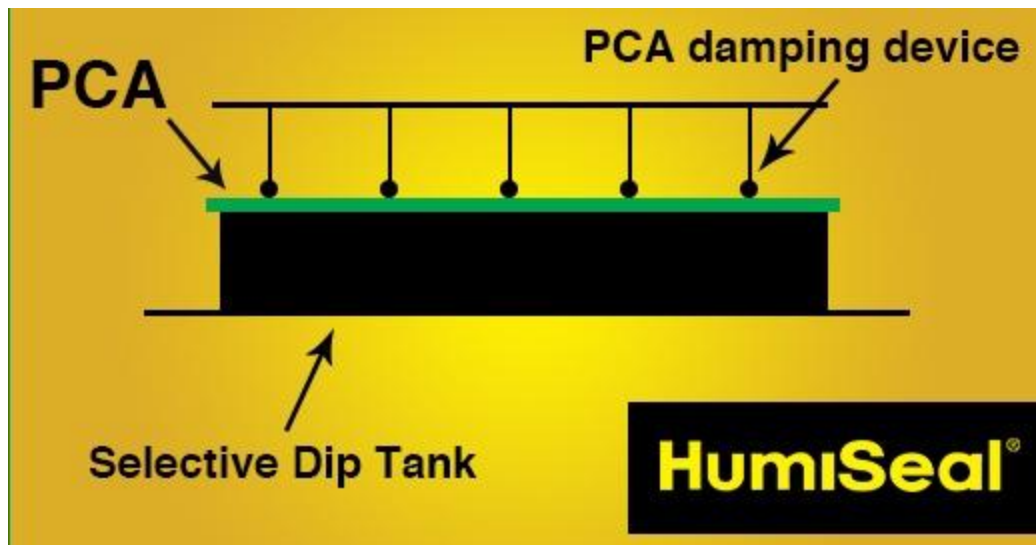
Selective dip coating gives you the benefit of selective coating but with the total protection under and around components that total dip coating provides. This method of coating is ideal for high volume production of one board type.

Benefits

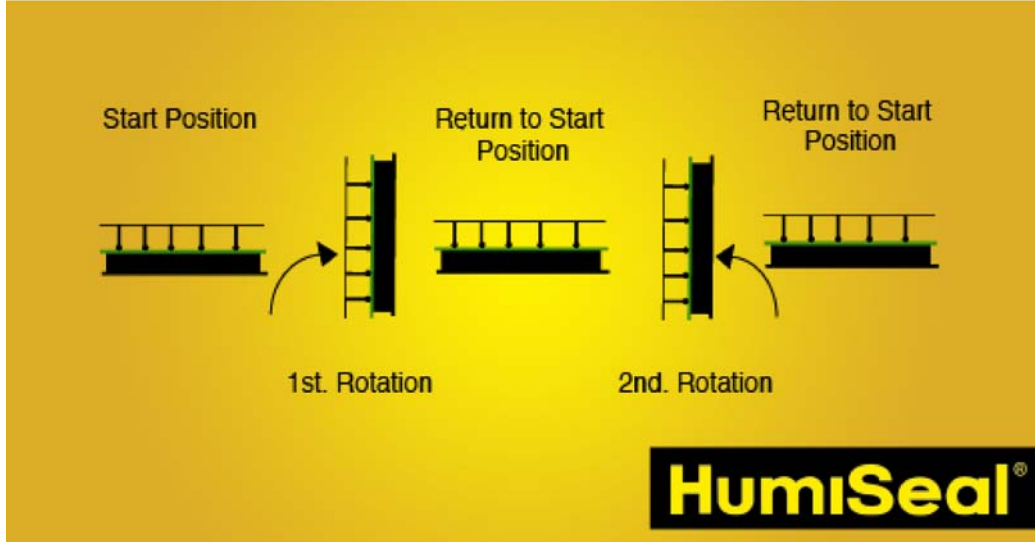
- Lower cost than a robotic coating
- The coverage of components is equivalent to full dip coating without manual masking.
- Modern selective dip coating systems can handle UV cure materials.

How does the original selective dip system work?

1. This system uses handmade dip tanks based on the chimney principle to exclude coating from the keep out areas as shown in the picture.



2. The tank is filled to a predefined level with the required conformal coating. The board to be coated is placed on the top of the tank using tooling pins attached to the tank if required. A clamp holds the board in position.
3. The complete unit of the tank, PCA (printed circuit assembly) and clamp are rotated 90° multiple times to be returned to its original position.



This process ensures that the PCA is fully coated, including components underneath but not in the keep-out areas.

The original system looks very much like a cartwheel without the outer rim. A tank and clamp system are mounted at the end of each spoke, with an operator loading and unloading.

When a board is loaded and clamped, the wheel is turned and the next spoke is in front of the operator, ready for loading. The already loaded spoke starts to rotate as described above, and the wheel is turned to coat the board.

On completion of one full cycle of the wheel, with the first board fully coated, the operator unloads the board to proceed to cure. This procedure is repeated for the bottom side of the board.

This concept was then developed into a standalone totally enclosed automatic desktop system as per the photo below. This system had automatic clamping and rotation interlocked to the access door to provide a safe working environment. It also allowed for a quick change over of the dip tanks to move between top/bottom coating and different board types.



A new version of the selective dip system

With the advent of 100% solids and solvent-free UV curing conformal coatings, a new version of the selective dip coater was developed by another German equipment company. Three areas had to be addressed: dip tank design and manufacturing, exposure to stray UV light, and high humidity.

The original concept of a dip tank made from tin plate was replaced by a dip tank machined out of solid material. This change provided far more accurate keep-out areas and control of the coating material.

In this new version, the coating material is retained in a totally enclosed storage tank and pumped into the dip tank to a precise depth using optical level sensing. The material in the storage tank is maintained at a constant temperature -above room temperature- providing a known viscosity for dipping. Additionally, it is protected from high humidity.

This type of system allows high volume selective coating of panelised boards and is also used for solvent-based coatings.

Over the last 25 years a number of HumiSeal clients have been using both selective dip systems successfully with our Conformal Coatings in production environments, replacing both hand spray and conventional dipping processes.
