

Technical Bulletin

Selective Robotic Conformal Coating Applications –The issues

A typical conformal coating selective robotic spray process consists of a programmable XYZ coordinate platform with a valve or valves attached to a controllable arm, depositing coating onto a printed circuit board (PCB) in areas specified by the programmers of the system.

This “selective” application genuinely offers in most cases a more cost-effective solution to batch coating. SCH Services currently offer both selective robotic spray coating (MACCS) from Advanced Coating Robotics Ltd and batch spray & dip coating in our coating service so understand both the advantages and issues selecting a suitable application process.

Advantages to be gained include:

- Masking and subsequent de-masking stages can often be minimised or completely eliminated.
- The process is infinitely repeatable. A far more controlled coating thickness can be achieved from board to board and from batch to batch.
- The process no longer requires a skilled operator to operate the machinery during application of the coating.
- Finishing is minimised after coating, as there is little or no masking to be removed, tears or lifting in the coating can be minimised.
- Less conformal coating material is used, since the system only sprays sufficient coating to cover the relevant areas of the board, offering another reduction in cost.

However, there are several issues that need to be considered before making the move. These include:

- Selective coating does not automatically remove the requirement for masking. There can be several reasons for masking a board during selective spraying, including the requirement to coat extremely close to connectors, which can “wick” coating into the connector
- Misaligned components on the PCB can potentially damage the spray heads which are moving along a set pattern on the board and the components themselves be damaged by the heads as they travel.
- Complete board edge coverage can be tricky using a selective spray robot, although it is achievable on some systems.



- Coating of large 3D components is difficult in most cases due to the nature of the heads operating in a vertical plane.
- The edges of a PCB need to be solid enough to be held by the rails of the machine jig, otherwise the board will not be held horizontally.
- In all cases, there is an initial one-off “set up” cost for programming which needs to be amortised over the length of the project.

Therefore, these issues need to be carefully considered and addressed to ensure a smooth transition from batch to selective coating.

SCH Technologies offer

- Conformal coating subcontract services
- Conformal coating application equipment
- Conformal coatings and masking materials
- Training courses, consultation & troubleshooting

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www.conformalcoating.co.uk