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Setting up a Conformal Coating Spray Facility

With over 50 years experience in conformal coating SCH Technologies can offer advice on setting up a turnkey spray room for companies planning on running their own in house conformal coating operation.

GENERAL REQUIREMENTS

The coating room area should be clean & dust free since PCBs are susceptible to particles sticking to the drying coating. The temperature range should be reasonably controlled within sensible limits since the viscosity of the coating will vary with temperature. However, a more critical point than temperature is the humidity which needs to be controlled to be above 35% (for ESD reasons) and <55% due to moisture issues which can effect the coating integrity and the application method.

Extraction will be required if atomised spraying. The grade of the extraction will depend on whether solvents are being used. If so, then bifurcated fans should be used to ensure that unnecessary explosions are avoided!

With regards to spraying solvents and electrical power in coating rooms, there are HSE rules and guidelines for spraying where the zone 1 area on the front of the booth must not have live power or switching within 2m.

SPRAY COATING EQUIPMENT

A basic coating facility could simply be an extracted area, a UV source and the coating. However, for setting up a Spray Coating Facility that can produce high quality results regularly there are several options that will aid the operator and ensure that the best results are achieved. A basic set up could include:

Spray booth	For even, repeat application of the coating(s) using a spray gun.
Curing Cabinet	For storage of drying PCBs after application to ensure minimal contamination from the atmosphere.
UV Inspection Booth	For inspection of the fluorescing coating under long wave UV to ensure coating coverage to IPC A 610 Class III standards or alternatives.
Solvent Exposure Alarm SEA 500	For monitoring the exposure of the operators during the process to ensure that they are alerted of any issues and a permanent record of the process is created.

SPRAY BOOTH

The spray booth should be primarily designed to extract the fumes efficiently whilst allowing coating to be applied easily and reliably.

Using a high quality spray gun is a must to give the best coating finishes repeatably over long time periods. Although, low cost guns work reasonably well, over time they wear and they are inferior to the finish achieved with a high quality gun.

During spraying, a UV light above the PCB aids the operator in visually ensuring good coating coverage. It also ensures that shadowing effects are avoided. A manual or automatic turntable also aids spraying again to help with 3D shadowing effects.

The system shown is the CB100 Spray booth.



CURING CABINET

Once coated the PCBs should be stored in a cabinet whilst the coating dries.

The curing cabinet has four main roles. These are to extract away the air around the PCBs to aid drying and remove dangerous fumes, ensure that the PCB is held still and the coating does not flow, the PCBs are not touched to damage the coating and that any particles in the atmosphere do not settle onto the PCBs and stick.

The system shown is the CC100 curing cabinet.



UV INSPECTION BOOTH

To inspect to IPC-A -610 standards the operator needs to use UV lighting.

Also, if there are any finishing requirements to take place such as hand touch up with coating and a brush, extraction will be required. The operator has a dark, enclosed area to study the PCB with the UV lighting intensity maximised using a UV-transmitting plastic window in the ceiling. Also, ESD points need to be attached to ensure correct handling of the PCBs.

The system shown is the IB100 single inspection booth.



SOLVENT EXPOSURE ALARMS (SEA)

The SEA range of solvent monitoring detectors allows operators to be aware of any breaches in exposure limits. Also, the SEA 500 will data log the results and ensure that the operators have a clear record of their exposure.

These easy to use systems give real time results without requiring timely analysis or delays.

The system shown is the SEA 500 measurement, alarm and data logging system.



For further advice on setting up a conformal coating spray room please contact us to discuss your requirements.