

ENGINEERING RELIABILITY IN ELECTRONICS

### History:

GEN3 SYSTEMS (formerly Concoat) began manufacturing coating equipment in 1982. Our customers include: Motorola, Delphi, VDO, Ericsson, Celestica, Centra, BAE Systems and many others.

We specialise in the manufacture of customised in-line machines to suit a wide variety of coatings, especially conformal coatings used in the electronics industry.

In 1987 we were the first in the world to build in-line dip coating and curing systems to handle UV Curable coating material.

In 2002 we were the first in the world to build in-line dip coating and curing systems to handle water based coatings.

### General Description

The DC3000 Series of in-line dip coating and curing systems are designed for the automatic application of conformal coating onto printed circuit assemblies at high production volumes of 350-700 per hour.

These are "Custom Built" systems capable of handling any type of conformal coating including both new Water-Based and UV curable types.

Available in 2 principal versions:

#### DC3000 - Continuous running conveyor

(Low Capital Cost - Moderate Coating Consumption)

#### DC3005 - Indexing conveyor

(Higher Capital Cost - Low Coating Consumption)

The DC3005 system typically reduces coating consumption by more than 30% compared to continuous running conveyor systems.

They are specifically designed to handle highly flammable coating materials and incorporate all of the intrinsic safety features demanded to comply with Health & Safety requirements.

They comprise a variable speed indexing conveyor with cross rods to which are attached suitable jigs or fixtures carrying the assemblies. The indexing conveyor automatically stops above the dip tank which is then raised and lowered at the pre-set immersion, dwell and withdrawal rates preselected for the substrate/material requirements.

The dip tank has standard dimensions of 1000mm (39") x 242mm (9 1/2") x 250mm (10") and is equipped with a constant recirculating pump system which will provide both repeatable uniform coating results and constant level precision dipping control. An inert gas (argon/nitrogen) manifold is fitted inside the top of the tank to provide a barrier above the liquid to minimise solvent release and help maintain viscosity.

A convection/IR oven zone is incorporated within the machine so that the coated boards are cured to a handling cured condition on return to the load/unload station.

**The DC3005 system typically reduces coating consumption by more than 30% compared to continuous running conveyor systems**



Model DC3005 (Courtesy of TRW Transportation Electronics, England)

The DC3000 basic system incorporates a continuous running, but variable speed conveyor. This system is fitted with a static tank measuring approximately 1000mm (39") x 650mm (26") x 250mm (10") and the assemblies are conveyerised through the dip tank and curing zone. This tank size is required to control the withdrawal speed by "rate-of-rise" that demands increased tank surface area.

### In-Line Dip Coating and Curing Systems

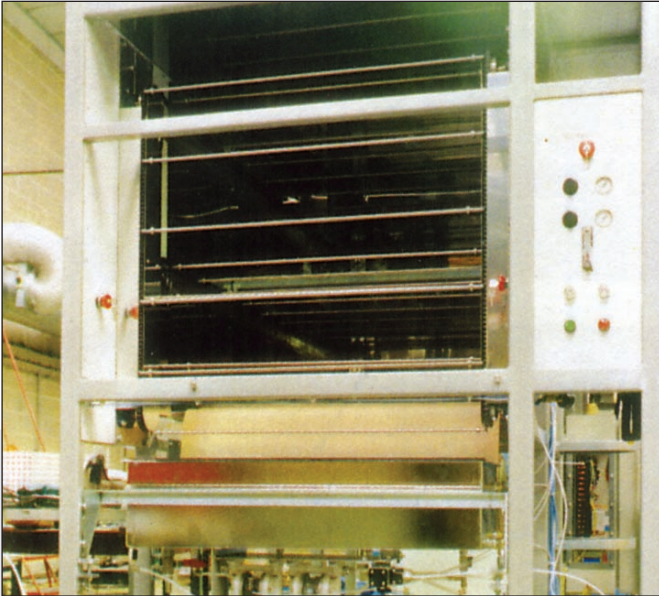
All DC3000 systems are constructed using a robust box section steel frame painted in stoved epoxy for complete protection against solvents. All process work areas and the dip tank are of 16 gauge stainless steel fabrication. Hang-on panels are provided for ease of inspection and are constructed of formed coated steel. All electrical pre-set controls are provided in an independent electrical control console which is linked to the pneumatic override on/off controls fitted to the right of the load/unload station.

The complete frame is mounted on castors and adjustable feet for ease of location/re-location.

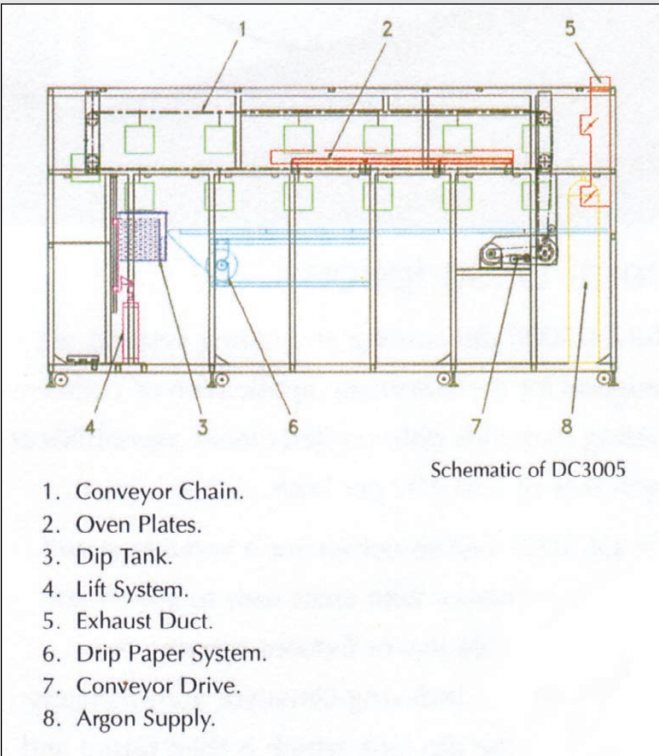
### Standard Features DC3000

- System can handle most circuit board configurations not exceeding 900mm (36") long with up to 300mm (12") immersion.
- Tank, 1000mm (39") x 650mm (9 1/2") x 250mm (10").
- Recirculating pump.
- Viscosity monitoring and control.
- Fixed speed conveyor drive, with variable speed setting.
- Computer control.





Model DC3000 (Courtesy of El Limerick, Ireland)



Schematic of DC3005

### Standard Features

#### DC3005

- System can handle most circuit board configurations not exceeding 900mm (36") long with up to 300mm (12") immersion.
- Tank, 1000mm (39") x 242mm (9 1/2") x 250mm (10").
- Viscosity monitoring and control.
- Three mode operation (auto dip cycle, manual dip cycle, conveyor run).
- Computer control.
- Index speed change (approx. 1m [3'] x per minute standard).
- Lower tank height limit option.
- Emergency stop at load/unload station.
- Tank gas blanket and flow meter.
- Dip and withdrawal rates are independently adjustable.
- Adjustable immersion dwell and drip dwell.
- Meets BS5501.

### Options

- Auto coating/solvent replenishment system.
- Coating/solvent weight scale management.
- Paper drip collector.
- Additional oven zones.
- Component jig/fixtures.
- Jig locking mechanism.
- Wider—deeper tanks.
- Teflon<sup>®</sup> coated tank.
- Additional cross rods.

### Facilities Required

- Electrical: 415V 3 phase 50Hz. Approx: 70 amp.
- Compressed air: 0.5m<sup>3</sup>/min at 5 bar (15 cfm at 80 psi).
- Argon/nitrogen: 0.1m<sup>3</sup>/per minute at 2.5 bar (3 cfm at 40 psi).
- Extraction at 0.35m<sup>3</sup>/s (800cfm).
- Overall size: 4.4m long, 1.7m wide, 2.4m high.



Model DC3005 (Courtesy of SOFREL Electronic Services SA, France)