

Abstract for 2016 AIMCAL Europe Technical Conference  
Topic: Roll to Roll Pattern Coating with Slot Die

Roll to roll slot die coating has become the industry standard for extremely thin and extremely accurate liquid film coatings. The attainable thickness accuracy for coating using a slot die is ~1-3%. Attributes that lead to this type of coating accuracy are:

- Precision Pre-metered Fluid delivery
- Extremely flat and straight die surfaces
- High precision backing roll
- Accurate and precise positioning of die to the substrate
- Vacuum box assembly

Areas of industry where slot die is becoming increasingly necessary:

- Micro-electronics
- Batteries and Capacitors
- Barrier films
- Solar photovoltaic
- Fuel cells
- Medical diagnostics
- Transdermal and oral pharmaceuticals

There are many applications where it is necessary to have discrete lanes of coating as opposed to full coverage of the substrate. A way to accomplish this is to apply distinct lanes or stripes of coating with areas of uncoated substrate between each stripe. This is easily done by slot die with a die body shim cut like a comb.

But what if you need two sides of exposed substrate such as the X/Y lead attachment for electronic devices? Or your product is die cut into specialty shapes and you wish to eliminate wasted material. With Slot die it is possible to make distinct rectangular patterns in Roll to Roll form.

By managing the fluid delivery to the die it is possible to stop flow from the die and restart flow to the die and still maintain continuous uniform pressure. You must also manage the coating fluid that resides between the lips of the die and the substrate. With the use of PLC control these two process elements can be managed to make virtually any length of coated "patch" and length of space between each "patch."

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