

ABSTRACT

Thermo-structurally Stable Hot Melt Coating Die

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Oral Presentation

A presentation of the design considerations for producing a hot melt coating die which is capable of maintaining the flatness of the die coating lips (coating bead film forming tooling) to within the tolerances expected for unheated dies is described. Lip face flatness measured on currently commercially available coating dies indicate that though they are machined to much better than 0.001" flatness cold, they can distort several times this when heated (i.e. to 160-180 Deg. C). A brief description of currently utilized strategies to overcome this issue in current technology is described. Patented considerations for designing an intrinsically stable heated coating die using FEM simulations are presented. Such a die is flat to within precision tolerances at room temperature as well as at operating temperatures. Such designs are insensitive to heat transfer changes encountered as a result of flow of adhesive. The bending state can be manipulated for purposes of modifying the coating gap (between lips and substrate) if desired. The result is a precision hot melt coating process. Such designs have been realized and are in service within Avery Dennison Corporation.