ROBERT I. HIRSHBURG, Ph.D., P.E.
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Coating and Fluid Dynamics Expert *offering innovative, practical solutions based on in-depth fundamental understanding and extensive experience in process research and development, capital project implementation and production support.*

Specialties and Knowledge Base:

Precision Coating: Curtain, Slot and Slide Die Coating expertise including capable die design, multilayer applications, operating latitudes, precision coat weights, failure modes, rheological effects, and edge control. Well versed in allied processes including drying, coating liquid delivery, web dynamics and steering, film finishing.

Fluid Dynamics: including utilization of CFD (Galerkin FEA) to predict steady state flow states and their linear stability limits. Experimental investigations with statistical experimental design / data analysis and flow visualization. Knowledgeable of associated areas of heat transfer, phase-change phenomena, solid mechanics and dynamics.

Mechanical Design: 3D Solid Model CAD, design for precision fabrication and assemblies, coating-related equipment, and design/layout for frugal manufacturing facilities.

Experience:

Presently:

President, Die Coating Technologies, LLC (since 2/05) Providing capable coating dies with high value-to-cost ratio for all die coating processes (curtain, slide, slot and hybrids). and

Robert I. Hirshburg, Consulting Engineer (since 1/02) Providing solutions to coating-related production problems, innovative equipment designs and processes, coating technology training, and expert witness consultations.

5/02 – 2/05
North America Representative, TSE Troller Schweizer Engineering of Murgenthal, Switzerland. Symposium speaker and exhibitor, technical consultant and TSE representative for customer interactions including technical seminars and equipment specifications development for this highly-respected equipment provider to global manufacturers of coated films and other coated products.

6/80 - 12/01:
Principal Engineer – Agfa Corporation, previously Senior Research Associate, R&D Sterling Diagnostic Imaging (formerly DuPont Photo Products Department), Brevard, North Carolina. Extensive experience in a variety of functions including coating process development (departmental multi-site team leadership and contributor), interdepartmental coating consultation (DuPont), product-process interactions and problem solving, coater and facilities design, equipment specification, installation, and start-up.

Professional Affiliations & Honors:

Registered PE in NC, 30-year ASME member
Honorable Mention, "Best Paper", 2004 AIMCAL Fall Technical Conference
Conference Award ("Best Paper"), 20th National Heat Transfer Conf. (ASME+AIChE)
Title/level achieved at Sterling Diagnostic Imaging (1999) was above "career" level, achieved via recommendation by a corporate-level Professional Progression Committee.
Pi Tau Sigma (4.00/4.00 graduate school GPA).

Education:

1980 Arizona State University	PhD	Mechanical Engineering
1974 Auburn University	MS	Mechanical Engineering
1972 Auburn University	BS	Mechanical Engineering

PhD Dissertation research_ A prediction of wavy thin liquid film characteristics, the effect of waves on condensation and evaporation, and an experimental investigation of the two-phase closed themosyphon thermal characteristics.

Publications:

"Curtain Coating Edge Control", 2004 AIMCAL Fall Technical Conference.

"Multilayer Curtain Coating", 2004 Gorham International Conference on Curtain Coating, October, 2004, Orlando.

"Curtain Coating, A Pre-metered Coating Method", 2003 Gorham International Conference on Curtain Coating, October, 2003, Atlanta.

"Coatable Splice Process in Film Coating: A Fluid Mechanical Stability Problem", with Hackler et al., AIChE J., V43, No 12, 3133-3146, Dec 1997.

"Coatable Splice Process in Photographic Film: Theoretical Prediction and Experimental Investigation of Process Latitude", with Hackler et al., paper no. 2B, AIChE 1994 Spring National Meeting.

"Frequency Response of Coating Flows to Small Three-Dimensional Disturbances by Supercomputer-Aided Analysis", with Christodoulou et al, paper no. 43D, AIChE 1992 Spring National Meeting.

"Laminar Wavy-Film Flow: Part 1, Hydrodynamic Analysis" with Florshuetz, ASME J. Heat Transfer, V104, No. 3, 452-458, August, 1982.

"Laminar Wavy-Film Flow: Part 2, Condensation and Evaporation" with Florshuetz, ASME J. Heat Transfer, V104, No. 3, 459-464, August, 1982.

Patents:

US 5,332,440 "Coating Lip Geometry for Slide Bead Coating" 7/26/94
US 5,380,365 "Lip Surface Geometry for Slide Bead Coating" 1/10/95
US 5,458,925 "Dual Geometry for Slide-Bead Coating" with Christodoulou 10/17/95
US 4,443,504 "Coating Method" with Burket and Conaghan 4/17/84