Robert D. Smith-Gillespie
2790 Timberline Dr., Eugene, Oregon 97405
rsg.fpd@comcast.net
(541) 914-2586

Summary of Qualifications

Experienced display scientist and engineer focused on LCD technology development for speciality applications. Drawing on a diverse physics and engineering background, and utilizing a unique blend of analytical and hands-on design tools, developed technical solutions for ruggedized LCDs including NVIS lighting designs, novel EMI shielding components, dual-mode LED backlights and semi-custom optical filters. Roles have included project and team management and technical contributor positions in automotive, aviation and consumer product displays.

Roles and Responsibilities

Riverwood Solutions, Inc. ***Sr. Technical Specialist*** April 2013 - Present
Menlo Park, California
RWS provides electronic manufacturing services management for leading product development and sales companies worldwide. As Sr. Technical Specialist I report directly to the president providing technical expertise on materials, design process and technology for product applications including medical products, solar powered devices, LED lighting and luminaires, and electronic consumer products. Additional special assignments include leading client teams on product design methodologies including DFM&A, DFMEA, PFMEA & critical design reviews as well as competitive product analyses.

E3 Displays, LLC ***Chief Technologist*** Feb. 2011 - Apr2013
Phoenix, Arizona
E3 Displays is a designer and manufacturer of ruggedized LCD components for military, avionics, medical and specialty products. Current activities include basic materials development as well as supporting sales and design teams in developing technical solutions for display system optical, mechanical, electrical and lighting components.

- Developed of non-birefringent micro-mesh EMI filter and integration with circular polarized touch panel
- Designed novel, dual-mode night vision compatible backlight system using single LED rail and custom NVIS filters system (U.S. patent application pending submission)
- Lead materials and process development for optical bonding of filters and touch panels to LCDs including development of custom formulated adhesives and low-intensity flood and swept radiation cure processes
- Work with Asian suppliers on low-cost rugged LCD modules for high-volume, hand-held programs
- Designed vacuum lamination system for rigid-to-rigid lamination of touch panels on hand-held displays
- Lead the product design for ruggedized mono-chrome LCD including CCFL-to-LED conversion, integrated EMI filter/heater, and thermal and optical feedback control system

FPD Design & Consulting LLC ***President*** 2002 – Jan. 2011
Eugene, Oregon
Established display product design and development consulting company specializing in integration of commercial display components into customer specified products. Engineering work includes optical enhanced backlight systems including LED backlight design and analysis (optical/thermal) for OEM displays, design of camera system for police car applications, and expert witness on LCD mechanical and backlight litigation. Clients include:

- E3 Displays LLC [Display and materials technology R&D (8/07-Present)]
- Insight Media, Inc. [Authored *2008 LCD Backlight Report* (6/07-5/08)] [Application research silicone materials (6/06-4/08)]
- Dupont Display Solutions, Torrance, CA [Engineering design & consulting – displays (8/04-4/07)]
- Driven Technologies, Irvine, CA [LED backlight design for flight simulator LCD (1/05-8/07)]
- E3 Innovation, Inc., Phoenix, AZ [Engineering design & consulting – displays (8/04-8/07)]
- QSDM, Inc., Mississauga, Ontario, Canada [Product design-Avionics display assemblies ('02-Present)]
- White Electronic Designs, Beaverton, OR [Design of enhanced displays and tooling (5/03-6/04)]
- ELDIM, S.A. [North American sales engineer (2002 – 2005)]

Rosen Products LLC ***Technical Staff Engineer*** **1999 - 2002**
Eugene, Oregon
Member of senior technical staff reporting to V.P. of engineering. Responsible for management of LCD display technology, strategic planning and product benchmarking for automotive and aircraft entertainment systems.

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- Acted as Technology Champion for LCD flat panel displays and DVD source equipment. Worked closely with Korean, Taiwanese and Japanese LCD factories on new products.
- Developed and directed “Technology Platform Champion” team for coordinating and advancing knowledge base in product critical technology areas.
- Product engineering manager for business aviation Cabin Entertainment Display Systems.

Robert D. Smith-Gillespie

Three-Five Systems, Inc. ***Technical Specialist, Displays*** **1997 - 1999**
Tempe, Arizona
Cross-functional specialist working with LCD mechnical and electrical design teams integrating custom LCDs into consumer products. Developed Asian suppliers for injection molded mechanical parts poly-carbonate light guides. Technical contributor on product designs providing analyses of LCD module designs utilizing TN and STN displays, LED and CCFL backlights. Provided guidance for lighting design, photometry/colorimetry and optical films.

Honeywell, Air Transport Div. ***Principal Engineer*** **1992 - 1997**
Phoenix, Arizona
Responsible for mechanical/optical design of the primary displays Boeing 777 airplane. Worked with Boeing flight-deck engineers on aircraft integration and with lighting scientists to optimize display system performance. Directed supplier to improve backlight ageing performance. Performed sensitivity analyses with Japanese supplier to reduce LCD color variation. Led three company development of integrated switch panel for 737-700 MCP using high-luminance LCDs and sunlight readable LED annunciators.

Honeywell, Air Transport Div. ***Sr. Project Engineer*** **1989 - 1992**
Responsible for mechanical design and support of flight deck avionics equipment including mechanical packaging, FEA for chassis and CCA thermal analysis, stress analysis. Lead lighted product development and qualification testing. Worked closely with suppliers to implement product improvement and cost reduction initiatives on LCD modules, optical filters, and mechanical switch components.

Sperry Corp. (Honeywell ATSD) ***Manufacturing Engineer*** **1985 - 1989**
Phoenix, Arizona
Developed tooling and processes for flight controller manufacturing line including circuit card assembly process optimization, electro-mechanical troubleshooting and supplier quality development.

Eastern Arizona College ***Instructor, Math & Physics*** **1983 - 1985**
Thatcher, Arizona

Education

Arizona State University, *Tempe, Arizona* **May 1989**
BS Mechanical Engineering

State University of New York, *Plattsburgh, NY* **May 1981**
BA Physics

Continuing Education

Classical Optics (PHY 524) – University of Oregon physics department – Fall 2003.
Video Calibration for Entertainment Systems. Imaging Science Foundation. April 2001.
Liquid Crystal Institute – Kent State University. Short course on LCD physics and material. ’98.
Optical System Analysis with ASAP. Breault Reseach Organization. June ‘96.
Photometry and Colorimetry & Flat Panel Displays. UCLA Extension Short Course. ’93 / ‘94.

Professional memberships

Society for Information Display (SID) – Conference organizing committee (2001- 2004): Participate in planning annual display symposia including technical paper review and selection and session chair.

Society for Automotive Engineers (SAE) Automotive FDP Metrology Working Group (2000-2002).

Professional Ski Instructors of America (PSIA) – Certified Level III instructor.

Robert D. Smith-Gillespie

Patents, Publications and Awards

U.S. Patent 7,660,040 - Diffuse Reflective Article, Feb. 9, 2010**.** To E.I. DuPont de Nemours & Co., Wilmington, DE.

U.S. Patent Application 13/564,045 - *Dual Mode LCD Backlight* Filed 1 Aug. 2012. NVIS compatible, single rail LED backlight with optical device for improved uniformity in night mode.

2008 LCD Backlight Report: Including LCD-TV, Monitor & Notebook PC Displays, An Opportunity Analysis. Insight Media, Inc., Norwalk, CT. May 2008

Ruggedized flat panel displays using COTS components. **2008 SPIE Defense and Security Conference,** Paper #6956-17, Orlando, FL. March 2008

Advanced flat panel display backlighting techniques. **2008 SPIE Defense and Security Conference,** Paper #6956-21, Orlando, FL. March 2008

Design Considerations for LED Backlights. - SID Display Applications Conference. Oct. 2007

LCD Ruggedization in Diplays with Optically Bonded AR Coverglass. Americas Display Engineering Applications Conference (ADEAC) – Society for Information Display. Oct. 2006

Design Considerations for LED Backlights in Large Format LCDs. LEDs in Displays - SID Technical Symposium. Jan. 2006

Characterization of Reflective Properties of Displays using Optical Fourier Transform Photometry. Aerospace Lighting Institute, Feb. 2004

Design Requirements for Automotive Entertainment Displays. 8th Annual Symposium on Vehicle Displays, Soc. for Information Display, Oct. 2001.

Widescreen Formats – A Sharper Image. Discussion of entertainment video formats published in business aviation industry newsletter *Velocity*.- Nov. 2001.

Development of a High Luminance, High Contrast Fixed Format LCD. Aerospace Lighting Institute Advanced Symposium, Feb. 1996.

Fixed Format Liquid Crystal Display Readability in Bright Ambient Environments. IEEE 13th Digital Avionics Systems Conference, Nov. 1994.

777 LCD Backlight Life, SPIE Cockpit Displays Conference, April 1994.

LCD Backlight Design Tutorial, SID 2008 Symposium Applications Session**,** L.A., CA. May 2008

Display Technology Overview, National Association of Science Teachers annual meeting, Costa Mesa, CA. April 6, 2006.

Rapid Photo-goniometric Technique for LED Emission Characterization**,** Fourth International Conference on Solid State Lighting, Aug. 2004, Proc. of SPIE Vol. 5530.

Honeywell Technical Achievement Award. Awarded by Corporate Fellows Committee for outstanding technical contribution in the field of flat panel display backlighting. Feb. 1997.

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