

GRAY, BILLY J

Department of Engineering Technology
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EDUCATION

University of Texas at Arlington
Ph.D. in Industrial Engineering **2015**

Dissertation: Embedding Integrated RFID Sensors into Fiber Reinforced Plastics during the Manufacturing Process

Abstract:

During composite manufacturing there are many problems that can occur with the material and bonding. Mechanical testing only occurs on sample parts and will not indicate problems that occur with the materials during a part’s useful life. One possible solution is embedding sensors that monitor the health of the structure’s integrity. This paper sets the groundwork of embedding sensors by evaluating the impact of an RFID embedded between the layers of the reinforcement materials. The expected results are that though the tag behaves as a foreign body, its impact on the material is negligible.

Texas Tech University, Lubbock, TX
M.S. Systems and Engineering Management **2006**

Tarleton State University, Stephenville, TX
B.S. Manufacturing Engineering Technology **2001**

TEACHING EXPERIENCE – Various courses since 2010

- ENGT 1306 Intro to mechanics
- ENGR 2303/3303 Engineering Economy
- ENGT 3303 Materials
- ENGT 3320 Industrial Safety
- ENGT 3324 Thermoplastics
- ENGT 3325 Thermoset Plastics
- ENGT 3336 Industrial Controls
- ENGT 3345 Industrial Design
- ENGT 3375 Continuous Improvement
- ENGT 4326 Linear Programming and spreadsheet applications
- ENGT 4356 Advanced Controls
- ENGT 4386 Problems Course (Continuous Improvement)
- ENGT 5303 Engineering Economics
- ENGT 5346 Manufacturing Management
- ENGT 5385 Project Management
- CNST 3301 Building Mechanical and Electrical Systems
- CNST 3309 Commercial Construction and Industrial Subsystems
- CNST 4395 Construction Capstone

RELATED EXPERIENCE

Tarleton State University, Stephenville, TX
Department Head and Associate Professor **January 2017 – Current**

Responsible for Engineering Technology programs and Construction Science program

Earn accreditation for programs

Direct assessment of programs

Teach coursework as assigned

Perform research in fields of interest

Interface with industrial partners to provide university and industrial services

Tarleton State University, Stephenville, TX
Assistant Professor **August 2011 – December 2016**

Responsible for Manufacturing Engineering Technology program

Teach coursework as assigned

Perform research in fields of interest

Interface with industrial partners to provide university and industrial services

Cobham Avionics, Mineral Wells, TX

Director of Operations

May 2008 – August 2011

Responsible for ~\$32M of shipments

Direct supervision of 3 managers, 1 supervisor, and 5 engineers

Ensure that the efforts of the Operations group are consistent with and supportive of the company goals

Responsible for integrating all products from secondary facilities into the Mineral Wells facility

Responsible for budgetary requirements of the Operations group

Responsible for supply chain initiatives and vendor negotiations

Responsible for FAA repair station. Increased throughput of the repair station by 20% and brought group into compliance with FAA standards.

Responsible for performing functions from previous positions

Cobham Avionics, Mineral Wells, TX

Director of Autopilot Engineering

September 2009 – January 2010

Responsible for sustaining engineering activities including mechanical and electrical engineering disciplines

Transferred engineering activities from sister sites to Mineral Wells

Cobham Avionics, Mineral Wells, TX

Manufacturing Manager

May 2007 – May 2008

Responsible for ~\$29M of shipments

Direct supervision of 10 engineers and 3 supervisors

Helped develop Operations scorecard

Responsible for all material activities including procurement, planning, and shipping

Responsible for development of autopilot test equipment

Meggitt Avionics, Mineral Wells, TX

Manufacturing Engineering Supervisor

January 2004 – May 2007

Supervised a team of 5 engineers and 4 sheet metal and paint shop employees

Provided insight of manufacturability of products to engineering disciplines

Identified and implemented metrics to better monitor quality, costs, and delivery on production lines

Helped develop Kan-Ban systems for production lines and material control locations

Meggitt Avionics, Mineral Wells, TX

Manufacturing Engineer

April 2002 – January 2004

Responsible for direct engineering support of production lines

Responsible for implementing process improvements in the operations area

Reduced production floor space by 40%

Doubled capacity of standard servo line

Helped develop method for identifying and tracking cost reductions

Developed standard work methods for assembly

Responsible for implementation of new products into production

PUBLICATIONS AND PAPERS

REFEREED JOURNAL ARTICLES IN-PRINT

Gray, B. (2016). Embedded Electronics and Their Effect on Wet Layup Substrates. *International Supply Chain Technology Journal*, 2(2).

Balasubramanian, S.; Jones, E.C.; Gray, B.; Armstrong, H.; Samdurkar, R. (2016). "Critical factors for Six Sigma success utilizing Statistical Process Control." *Strategic Management Quarterly*, 3(1), 49-70.

Jones, Erick C.; Weatherton, Yvette Pearson; Gray, Billy; Armstrong, Harrison. (2014). "A Framework for Detecting Hazardous Events Occurring in Transit with AutoID Technologies." *IEEE Sensors Journal*, 14 (9), 3124-3130.

Gray, B., Jones, E., Weatherton, Y., Sunarto-Bussey, R., & Armstrong, H. (2013). Utilizing Pipeline Quality and Facility Sustainability to Optimize Crude Oil Supply Chains. *International Journal of Supply Chain Management*, 2(2).

Gray, B., Jones, E., Alvarez, C., & Mulflur, W. (2013). The Impact on Inventory with the Implementation of RFID into SCOR based ERP Modules. *International Journal of Supply Chain Management*, 2(2).

REPORTS

Componation, P.J. and Gray, B. (2018). Final Report, NSF Workshop: Advanced Manufacturing Research for Aerospace, NSF 1650172.

BOOKS EDITED

Jones, E. C. Jones, and Armstrong, H.A.; Edited by Billy Gray "The Six Sigma Trap, What you should know about Six Sigma that your company is not telling you: The Official ISCEA CLSSYB Certification Book" PWD Group, May 2014 (Non-Academic Text).

BOOKS AUTHORED

Jones, E. C., Gray, B., Wijemanne, M., & Bolton, J. "Tracked, What You Should Know About RFID, Internet of Things, Big Data, and Data Security, The Official ISCEA RFID Book of Knowledge" PWD Group, 2015 (Non-Academic Text).

Jones, E. C., Gray, B., & Armstrong, H. "Tracked, What You Should Know About Invisible Inventory Monitoring and Security, The Official RFIDSCP Certification Handbook" PWD Group, June 2014 (Non-Academic Text).

CONFERENCE PRESENTATIONS

Componation, Paul; Gray, Billy; Clements, Eileen; Priest, John; Taylor, Robert. "Findings from the 2017 NSF Workshop on Advanced Manufacturing Research for Aerospace." ASEM Annual Conference 2018. October 17-20, Coeur d'Alene, ID.

Shaffer, Kelley; Gray, Billy. "'Illuminating" instructor to student interaction with the lightboard." Magna Teaching with Technology Conference 2018. October 5-7, St. Louis, MO.

Jones, Erick C.; Gray, Billy. "Using the Education of Engineering Economy to Impact the Reduction of Engineering Student Loan Debt." ASEE Annual Conference 2018. June 24-27, Salt Lake City, UT.

Burch, Jana J; Leach, Lesley; Gray, Billy; Reyes, Juanita. "Student Integration and Retention in STEM Disciplines: Influences of Participation in an Innovation Ecosystem." SERA Annual Conference 2018. February 13-15, New Orleans, LA.

Gray, Billy; Davis, Daren; Jones; Erick C.. "Integrating Costing into an Engineering Economics Course." ASEE Annual Conference 2017. June 25-28, Columbus, OH.

Fragoso-Diaz, Margarita; Gray, Billy; Jones; Erick C.. "Enhancing Students' Learning Experience Using Case Studies." ASEE Annual Conference 2015. June 14-17, Seattle, WA.

Gray, Billy; and Jones, Erick C.. "Life Cycle Costs of Embedded Electronics in Composite Materials." International Systems Engineering Research Conference (ISERC) 2015, May 30-June 2, Nashville, TN.

Gray, Billy; Fragoso-Diaz, Margarita; and Jones, Erick. C.. "The Use of Videos as a Tool to Reinforce Engineering Economy Course Topics: Lessons Learned." ASEE Annual Conference 2014, June 14-16, Indianapolis, IN.

Gray, Billy; Mulflur, Walter; and Jones, Erick. C.. "Burden Vehicles for Engineering Projects." International Systems Engineering Research Conference (ISERC) 2014, May 30-June 3, Montreal, Canada.

EXTERNALLY FUNDED RESEARCH AWARDED

06/01/2017-05/31/2018, Texas A&M Engineering Extension Service, "RFID Enabled Strain Sensing in Embedded Medical Hardware and Bracketry." (PI Billy Gray, Co-PI Daren Davis, Co-PI Terry Creasy)
\$2,500

09/01/2016-08/31/2017, National Science Foundation – Department of Undergraduate Education (DUE), "NSF Workshop On Advanced Manufacturing Research Needs For The Aerospace Industry." 1650172 (Co-PI Billy Gray Sub-Award from UTA)
\$25,000 Submitted July 7, 2016

09/01/2016-08/31/2020, Simio LLC, "Simio Academic Software: Institution Grant." (PI Billy Gray)
\$12,000 Submitted July 7, 2016

EXTERNALLY FUNDED RESEARCH SUBMITTED

09/01/2017-08/31/2020, National Science Foundation, "Increasing STEM Engagement and Retention via the IB-STEM Program."
(Co-PI Dr. Billy Gray; Dr. Lesley Leach; Jana Burch)
\$297,122 Submitted November 2, 2016; Dr. Billy Gray PI

09/01/2017-08/31/2020, National Science Foundation, "IB-STEM Center." (Co-PI Dr. Billy Gray; Dr. Lesley Leach; Jana Burch)
\$1,087,529 Submission January 11, 2017; Dr. Billy Gray PI

EXTERNAL SERVICE TO PROFESSIONAL GROUPS

ISCEA Six Sigma Sub-Committee (2015-Current)
ISCEA SCM RFID Sub-Committee (2015-Current)
American Society of Engineering Educators – Past Chair (2018-2019)
American Society of Engineering Educators – Program Chair (2017-2018)
American Society of Engineering Educators – Treasurer (2016-2017)
American Society of Engineering Educators – Newsletter Editor (2015-2016)
National Science Foundation – ECR Panelist (2015)
National Science Foundation – ATE Panelist (2015 -2016)
National Science Foundation – Ad hoc Panelist (2016)
Grant Award Reviewer – ASEE Engineering Economy Division (2015-Current)
National Engineering Economy Teaching Excellence Award Selection Committee (2018, 2020)
Editor, International Supply Chain Technology Journal (2018-Current)

MEMBERSHIPS

American Society of Engineering Educators
Institute of Industrial Engineers
Southwest Educational Research Association
Society for the Advancement of Materials and Process Engineering

CERTIFICATIONS

Certified Lean Six Sigma Yellow Belt (CLSSYB) – 2013
Qualified Lean Six Sigma Master Black Belt (QLSSMBB) – 2014
Certified RFID Supply Chain Manager (RFID SCM) - 2014

AWARDS

Graduate Assistance in Areas of National Need (GAANN) Fellowship -2013/2015
Tarleton State University Distinguished Alumni Award 2010