Stephan Biller

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EXPERTISE

Product Management | Innovation | Strategy | Strategic Partner Development
Global Organizational & Cultural Change Leadership | Innovation Leadership | Design Thinking
Analytics | Artificial Intelligence | Internet of Things | Industry 4.0 | Smart Manufacturing| Digital Twin

PROFESSIONAL EXPERIENCE

PURDUE UNIVERSITY, West Lafayette, IN   **2022 – present**

Harold T. Amrine Distinguished Professor of Industrial Engineering & Mitchell E. Daniels School of Business, Director of Dauch Center for the Management of Manufacturing Enterprises, co-Director of Purdue national initiative in eXcellence in Manufacturing and Operations (XMO)

- Lead Digital-Industrial Manufacturing & Operations research across Purdue's schools and colleges.
- Build a national Manufacturing & Operations innovation ecosystem.
- Teach undergraduate, graduate, professionals, and executives.

ADVANCED MANUFACTURING INTERNATIONAL Inc., Clearwater, FL   **2020 – 2022**

CEO & Chief Strategy Officer

Drive digital transformation for Small and Medium Manufacturers (SMMs). Create the world's foremost manufacturing innovation ecosystem for SMMs. Direct 50 people, $100M revenue.

- Developed strategy and business plan and received $4M in funding. Hired key personnel for technology, product management, sales, and innovation ecosystem. Received two DOE grants.
- Develop a national strategy for AI and Manufacturing for the National Science & Technology Council.

INTERNATIONAL BUSINESS MACHINES CORPORATION, Durham, NC   **2017 – 2020**

Vice President Product Management for AI Applications & Watson IoT

Led Watson AI & IoT software products (IBM Maximo, TRIRIGA), directing 500 people and $400MM P&L responsibility. Drove differentiation through commercialization of innovation to enable clients' Industry 4.0 and Digital Twin solutions using Hybrid Multi-Cloud, Edge, IoT, AI & Analytics. Extended innovation portfolio commercialization to Industry Verticals.

Key Accomplishments

- Increased revenue by 17% while the main market grew by 4% (2019 IBM earnings call). Achieved "Leaders of Leaders" rating in Gartner Magic Quadrant by establishing market, execution, and strategic leadership of core software products differentiation through analytics and AI.
- Commercialized innovation and reduced time to market. Installed CTO to drive architectural design consistency and reuse. Aligned innovation pipeline with IBM Research, Development, and Design.
- Created digital transformation blueprint, asset performance management, and operations optimization strategy.
- Consolidated product portfolio eliminating non-profitable offerings and duplication. Launched new SaaS offerings, including 4 AI/AR solutions for technician productivity, unplanned downtime, throughput maximization, and on-time delivery. Devised Go-to-Market strategy, sales plays, and playbooks for new innovative offerings.
- Designed acquisition and partner strategy. Created strategic alliance with major PLM vendor; created Service Lifecyle Management and Digital Twin offerings for manufacturing engineering and operations.

GENERAL ELECTRIC CORPORATION, Niskayuna, NY   **2012 – 2017**

GE Manufacturing Chief Scientist and Technology Director[1]

Founder and leader for GE-wide Brilliant Factory initiative using industrial analytics and cross-functional real-time data to increase productivity and speed of GE's industrial assets and processes. Directly managed a global team of 100 scientists and engineers. Formed cross-organizational teams; established matrixed technology leaders. Hired and indirectly managed the corporate Brilliant Factory Executive team, which grew to 500+ employees.

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[1] Highest technical role at GE. There are only 18 Chief Scientists out of 3000 researchers.

Key Accomplishments
- Created transformational GE-wide Brilliant Factory initiative. Developed scalable, reusable technologies in showcase factories in US, Europe, India, China. Built facility to demonstrate Brilliant Factory technologies for 1000+ visitors per year (including investors, board members, Chairman, CEOs, press & TV). Established product pipeline to scale technology.
- Supported digital-physical transformation through teaching Brilliant Factory courses (corporate leadership programs, Women in Science & Technology, GE volunteer conferences, keynotes at SME, IRI, National Academy of Science, MIT EmTech).
- Successfully lobbied US Government for Smart Manufacturing Institute. Testified before congressional committee for Science, Space and Technology, House Manufacturing Caucus. Shaped winning proposal for National Manufacturing Institute on Digital Manufacturing and Design Innovation. Served as Chairman of Executive Committee.

GENERAL MOTORS CORPORATION, Warren, MI,   **1997 – 2012**

General Motors Technology Fellow[2] for Sustainable Manufacturing Systems (2009 – 2012)

Key Accomplishments
- Developed corporate manufacturing strategy for batteries (Chevy Volt) & sustainable manufacturing. Integrated corporate product, manufacturing, & remanufacturing / recycling strategies.
- Developed cross-functional real-time Overall Equipment Efficiency (OEE) constraint identification system for throughput, tool changes, and quality. System integrated into standard work processes yielding 15% throughput and 12% quality improvements leading to 18% energy and CO_2 reduction. Implemented in 26 plants.
- Mentored and collaborated with researchers and engineers in industry, academia, and government labs. Led collaborations with collaborative research labs (Stanford, MIT, Michigan), Engineering Research Center for Reconfigurable Manufacturing Systems, and NSF I/UCRC on Intelligent Maintenance.

Group Manager for Plant Floor Systems and Controls (2005 – 2008)

Key Accomplishments
- Optimized maintenance labor and material handling by using state-of-the-art simulation, innovative, real-time throughput models, & wireless technology.
- Achieved a 9% throughput increase, 14% quality improvement, and 12% preventive maintenance cost decrease through an industry-first real-time plant floor system. System implemented in 18 powertrain & assembly plants with more than 1,000 users.
- Reduced plant automation launch time from three weeks to four hours through math-based control validation. Enabled 100% testing of potential plant floor fault conditions, eliminating 100+ errors in logic, conveyor, and HMI design.

Various Research and Management Positions (1997 – 2005)

Key Accomplishments
- Developed software for real-time product portfolio planning. Reduced P&E through demand risk mitigation strategy, optimizing global manufacturing capacity flexibility.
- Redesigned outbound supply chain to reduce outbound lead-times from 70+ to 18 days.
- Optimized product portfolio profitability while complying with fuel economy law (CAFÉ).

EDUCATION

Ph.D., Industrial Engineering and Management Sciences (1996)
NORTHWESTERN UNIVERSITY – McCormick School of Engineering, Evanston, IL
Thesis: Redesigning decentralized complex supply chains to reduce customer lead-time.

M.B.A., Finance and Strategy (2002), *High Distinction*
UNIVERSITY OF MICHIGAN, Ann Arbor, MI
Diplom-Ingenieur, Electrical Engineering (1991)
RWTH AACHEN – College of Engineering, Aachen, Germany

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[2] Highest technical role at GM.

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AWARDS & HONORS

- James E Greene Outstanding Graduate Educator Award, Purdue University (2023).
- Most influential academic influencer of Industry 4.0, Onalytica (2023).
- Member of the National Academy of Engineering for "Leadership and advancement of manufacturing technologies and innovations based on the Internet of Things and digital data" (2020).
- IEEE Fellow for "Leadership in the applications of Internet of Things & Artificial Intelligence in manufacturing industry" (2021),
- Distinguished IEMS Alumni Award, Northwestern University (2021).
- Recognized by Society of Manufacturing Engineers as one of 30 visionaries for manufacturing (2016).
- Numerous keynotes (National Academies of Engineering & Sciences, MIT EmTech, ASME, IEEE, SME, IRI, ARC, CTO Forum, DEMO, PivotCon, Big M).
- Six Sigma Master Black Belt (2014).
- Five Boss Kettering Awards, highest GM innovation award[3].
- Four Charles McCuen Research Awards, highest GM research award.
- 12 patents, 23 trade secrets, 100+ publications in books, scholarly journals & refereed proceedings.
- Plenary Speaker, NAE Indo-American Frontiers of Engineering Symposium, Los Angeles, CA (2008).
- Invitee, National Academy of Engineering Frontiers of Engineering, Dearborn, MI (2006).
- Co-principal investigator on three NSF GOALI Grants (2001, 2001, 2008).
- Full PhD Fellowship Cincinnati Milacron (1993/94) and US Can Company (1994/95).

SERVICE

- Co-chair for "Excellence in Manufacturing and Operations at the Crossroads of America." National Academy of Engineering (NAE) Regional Meeting and Symposium, Purdue University, West Lafayette, IN (2024).
- Member, National Academy of Engineering Industrial, Manufacturing & Operational Systems Engineering Peer Committee (2023 – present).
- Member, Vice-Chair, Chair, National Academy of Engineering Industrial, Manufacturing & Operational Systems Engineering Search Committee (2021 – present, 2023, 2024).
- Member, National Academy of Engineering Nominating Committee (2023 -- present).
- Member, National Science Foundation Engineering Advisory Committee (2023 – present).
- Member, ASME/SME Awards Committee, Eugene Merchant Manufacturing Medal (2021 – present).
- Co-chair Purdue Engineering Initiative on eXcellence in Manufacturing and Operations, Purdue University (2023 – present).
- Member, Steering Committee for Institute for Physical AI (IPAI), Purdue University (2023 – present).
- Member, Dean's Awards Committee, College of Engineering, Purdue University (2022 – present).
- Member, Engineering Named Professor Committee, Purdue University (2023 – present).
- Member, various Industrial Engineering committees, Purdue University (2022 – present).
- Co-Chair NSF- and NIST-sponsored three-workshop Symposium entitled "Strategy for Resilient Manufacturing Ecosystems Through Artificial Intelligence (AI)" to seek input from industry, academia, and government experts (2020-2022).
- Member Board of Trustees: MTConnect (2018 -- present).
- Reviewer, Department of Energy and Advanced Materials & Manufacturing Technology Office, National ManufacturingUSA Institute for the Circular Economy (REMADE) (2023).
- Testified before the House of Representatives Committee on Science, Space, and Technology (2013).
- Founding board member of Smart Manufacturing Leadership Coalition.
- Co-editor, IEEE Trans. Automation, Science, Engineering. Automation in Green Manufacturing (2013).
- Chair / Member, INFORMS Dantzig committee for best dissertation in Operations Research (2011/12).
- Associated Editor, IEEE CASE for Green Automation (2010).
- Associated Editor, Journal of Manufacturing Systems (2008-2013).
- Senior Editor, Production and Operations Management (2003-2008).

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[3] The Boss Kettering award is GM's highest corporate innovation prize. It requires filed and implemented patents or trade secrets and substantial certified impact. Only 50 out of 50,000 engineers receive this award annually. Five Boss Kettering awards are an all-time record at General Motors.

- Executive committees of National Manufacturing Institutes: Digital Manufacturing and Design Innovation Institute (Chair), America Makes, and the National Center for Manufacturing Science.
- Executive Advisory Boards: Georgia Tech Manufacturing Institute, Rensselaer Polytechnic Institute Center for Automation Technology & Systems, Cambridge University.
- MathCounts Volunteer (1999-2012).

PUBLICATIONS

Book
1. Li Jingshan, Bengt Lennartson, Ying Tang, Stephan Biller, Andrea Matta (2017). *Sustainable Production Automation,* Momentum Press.

Publication in Books
2. Biller, Stephan and Bahar Biller (2022). "Integrated Framework for Financial Risk Management, Operational Modeling, and IoT-Driven Execution." *Innovative Technology at the Interface of Finance and Operations: Volume II*, pp.131-145. Springer International Publishing.
3. Corman, Gregory, Ram Upadhyay, Shatil Sinha, Sean Sweeney, Shanshan Wang, Stephan Biller, and Krishan Luthra (2016). "General Electric: Selected applications of ceramics and composite materials." *Materials Research for Manufacturing*, pp. 59-91. Springer International Publishing.
4. Chang, Qing, Yang Li, Stephan Biller, and Guoxian Xiao (2016). "Event-based modeling for battery manufacturing systems using sensor data." *Advances in Battery Manufacturing, Service, and Management Systems,* pp. 57-78. John Wiley & Sons.
5. Johnson, Chris, Bahar Biller, Shanshan Wang, and Stephan Biller (2016). "An analytics approach for incorporating market demand into production design and operations optimization." *Advances in Battery Manufacturing, Service, and Management Systems*, pp. 99-126. John Wiley & Sons.
6. Ju, Feng, Jingshan Li, Guoxian Xiao, Ningjian Huang, Jorge Arinez, Stephan Biller, and Weiwen Deng (2016). "Improving battery manufacturing through quality and productivity bottleneck indicators." *Advances in Battery Manufacturing, Service, and Management Systems*, pp. 29-56. John Wiley & Sons.
7. McKinstry, Katherine C., Jorge Arinez, Stephan Biller, and David Dornfeld. (2012). "Decision-making methodology to reduce energy in automobile manufacturing." *Leveraging Technology for a Sustainable World*, pp. 67-71. Springer.
8. Biller, Stephan, Ana Muriel, and Ebru Bish (2002). "Managing flexible capacity in a make-to-order environment." *Supply Chain Structures,* pp. 73-118. Springer.

Publications in Scholarly Journals
9. Biller, Bahar, Jinxin Yi, and Stephan Biller (2023), "A Practitioner's Guide to Digital Twin Development." T*utorials in Operations Research: Advancing the Frontiers of OR/MS: From Methodologies to Applications*, pp.198-227.
10. Biller, Bahar and Stephan Biller (2023). "Implementing Digital Twins that learn: AI and simulation are at the core. *Machines 2023, 11, 425*. https://doi.org/10.3390/machines11040425.
11. Saghafian, Sorous, Brian Tomlin, and Stephan Biller (2022). "The Internet of Things and Information Fusion: Who Talks to Who?" *Manufacturing & Service Operations Management,* 24,(1), pp.333-351.
12. Annunziata, Marco and Stephan Biller (2015). "The Industrial Internet and the future of work." *Mechanical Engineering*,137(9), pp. 30-35.
13. Li, Yang, Qing Chang, Michael P. Brundage, Stephan Biller, Jorge Arinez, and Guoxian Xiao (2015). "Market demand-oriented data-driven modeling for dynamic manufacturing system control." *IEEE Transactions on Systems, Man, and Cybernetics: Systems* 45(1), pp. 109-121.
14. Ju, Feng, Jingshan Li, Guoxian Xiao, Ningjian Huang, and Stephan Biller (2014). "A quality flow model in battery manufacturing systems for electric vehicles." *IEEE Transactions on Automation Science and Engineering*, 11(1), pp. 230-244.
15. Li, Yang, Qing Chang, Stephan Biller, and Guoxian Xiao (2014). "Event-based modeling of distributed sensor networks in battery manufacturing." *International Journal of Production Research* 52(14), pp. 4239-4252.

16. Chen, Guorong, Liang Zhang, Jorge Arinez, and Stephan Biller (2013). "Energy-efficient production systems through schedule-based operations." *IEEE Transactions on Automation Science and Engineering*, 10(1), pp. 27-37.

17. Chang, Qing, Guoxian Xiao, Stephan Biller, and Lin Li (2013). "Energy saving opportunity analysis of automotive serial production systems (March 2012)." *IEEE Transactions on Automation Science and Engineering*, 10(2), pp. 334-342.

18. Zhang, Liang, Chuanfeng Wang, Jorge Arinez, and Stephan Biller (2013). "Transient analysis of Bernoulli serial lines: Performance evaluation and system-theoretic properties." *IIE Transactions,* 45(5), pp. 528-543.

19. Biller, Stephan, Semyon M. Meerkov, and Chao-Bo Yan (2013). "Raw material release rates to ensure desired production lead time in Bernoulli serial lines." *International Journal of Production Research,* 51(14), pp. 4349-4364.

20. Wang, Junwen, Jingshan Li, Jorge Arinez, and Stephan Biller (2013). "Quality bottleneck transitions in flexible manufacturing systems with batch productions." *IIE Transactions*, 45(2), pp. 190-205.

21. Ju, Feng, Junwen Wang, Jingshan Li, Guoxian Xiao, and Stephan Biller (2013). 'Virtual battery: A battery simulation framework for electric vehicles." *IEEE Transactions on Automation Science and Engineering*, 10(1), pp. 5-15.

22. Chang, Qing, Chaoye Pan, Guoxian Xiao, and Stephan Biller (2013). "Integrated modeling of automotive assembly line with material handling." *Journal of Manufacturing Science and Engineering,* 135(1), pp. 011018.

23. Li, Yang, Qing Chang, Michael P. Brundage, Guoxian Xiao, and Stephan Biller (2013). "Stand-alone throughput analysis on the wave propagation of disturbances in production sub-systems." *Journal of Manufacturing Science and Engineering*, 135(5), pp. 051001.

24. Vergnano, Alberto, Carl Thorstensson, Bengt Lennartson, Petter Falkman, Marcello Pellicciari, Francesco Leali, and Stephan Biller (2012). "Modeling and optimization of energy consumption in cooperative multi-robot systems." *IEEE Transactions on Automation Science and Engineering*, 9(2), pp. 423-428.

25. Liu, Jianbo, Qing Chang, Guoxian Xiao, and Stephan Biller (2012). "The costs of downtime incidents in serial multistage manufacturing systems." *Journal of Manufacturing Science and Engineering*, 134(2), pp. 021016.

26. Wang, Junwen, Jingshan Li, Jorge Arinez, and Stephan Biller (2012). "Indicators for quality improvability and bottleneck sequence in flexible manufacturing systems with batch production." *International Journal of Production Research,* 50(22), pp. 6388-6402.

27. Arenas Guerrero, Claudia, Junwen Wang, Jingshan Li, Jorge Arinez, Stephan Biller, Ningjian Huang, and Guoxian Xiao (2011). "Production system design to achieve energy savings in automotive paint shops." *International Journal of Production Research,* 49(22), pp. 6769-6785.

28. Lei, Yong, Dragan Djurdjanovic, Leandro Barajas, Gary Workman, Stephan Biller, and Jun Ni (2011). "Network health monitoring for DeviceNet using physical layer parameters." *Journal of Intelligent Manufacturing*, 22(2), pp. 289-299.

29. Chang, Qing, Stephan Biller, and Guoxian Xiao (2010). "Transient analysis of downtimes and bottleneck dynamics in serial manufacturing systems." *Journal of Manufacturing Science and Engineering,* 132(5), pp. 51015-51024.

30. Langer, Rochak, Jingshan Li, Stephan Biller, Qing Chang, Ningjian Huang, and Guoxian Xiao (2010). "A simulation study on bottleneck-based dispatching policy for maintenance workforce." *International Journal of Production Research*, 48(6), pp.1745-1763.

31. Arinez, Jorge, Stephan Biller, Semyon Meerkov, and Liang Zhang (2010). "Quality/Quantity improvement in an automotive paint shop: A case study." *IEEE Transactions on Automation Science and Engineering,* 7(4), pp. 755-761.

32. Wang, Junwen, Jingshan Li, Jorge Arinez, and Stephan Biller (2010). "Product sequencing with respect to quality in flexible manufacturing systems with batch operations." *IEEE Transactions on Automation Science and Engineering*, 7(4), pp.776-790.

33. Wang, Junwen, Jingshan Li, Jorge Arinez, and Stephan Biller (2010). "Quality analysis in flexible manufacturing systems with batch productions." *IEEE Transactions on Automation Science and Engineering*, 7(3), pp. 671-676.

34. Biller, Stephan, Samuel Marin, Semyon Meerkov, and Liang Zhang (2010). "Bottlenecks in Bernoulli serial lines with rework." *IEEE Transactions on Automation Science and Engineering,* 7(2), pp. 208-217.

35. Biller, Stephan, Samuel Marin, Semyon Meerkov, and Liang Zhang (2009). "Closed Bernoulli production lines: Analysis, continuous improvement, and leanness." *IEEE Transactions on Automation Science and Engineering*, 6(1), pp. 168-180.

36. Li, Lin, Qing Chang, Jun Ni, and Stephan Biller (2009). "Real-time production improvement through bottleneck control." *International Journal of Production Research*, 47(21), pp. 6145-6158.

37. Chang, Qing, Jun Ni, Pulak Bandyopadhyay, Stephan Biller, and Guoxian Xiao (2007). "Supervisory factory control based on real-time production feedback." *Journal of Manufacturing Science and Engineering,* 129(3), pp. 653-660.

38. Chang, Qing, Jun Ni, Pulak Bandyopadhyay, Stephan Biller, and Guoxian Xiao (2007). "Maintenance opportunity planning system." *Journal of Manufacturing Science and Engineering,* 129(3), pp. 661-668.

39. Chang, Qing, Jun Ni, Pulak Bandyopadhyay, Stephan Biller, and Guoxian Xiao (2007). "Maintenance staffing management." *Journal of Intelligent Manufacturing,* 18(3), pp. 351-360.

40. Biller, Stephan, Ana Muriel, and Yongmei Zhang (2006). "Impact of price postponement on capacity and flexibility investment decisions." *Production and Operations Management,* 15(2), pp. 198-214.

41. Biller, Stephan and Julie Swann (2006). "Pricing for environmental compliance in the auto industry." *Interfaces,* 36(2), pp. 118-125.

42. Biller, Stephan, Lap Mui Ann Chan, Julie Swann, and David Simchi-Levi (2005). "Dynamic pricing and the direct-to-customer model in the automotive industry." *Electronic Commerce Research,* 5(2), pp. 309-334.

43. Bish, Ebru, Ana Muriel, and Stephan Biller (2005). "Managing flexible capacity in a make-to-order environment." *Management Science,* 51(2), pp. 167-180.

Publications in Refereed Proceedings

44. Akcay, Alp; Biller, Stephan; Gan, Boon Ping; Laroque, Christoph; Shao, Guodong (2023). "Maintenance and Operations of Manufacturing Digital Twins." *2023 IEEE Winter Simulation Conference* (WSC).

45. Davis, Jim, Stephan Biller, James A St Pierre, Said Jahanmir (2022). "Towards Resilient Manufacturing Ecosystems Through Artificial Intelligence." NIST Pubs on Advanced Manufacturing 100-47. https://doi.org/10.6028/NIST.AMS.100-47 . Gaithersburg, MD.

46. Biller, Bahar, Xi Jiang, Jinxin Yi, Paul Venditti, and Stephan Biller (2022). "Simulation: The Critical Technology in Digital Twin Development." *2022 IEEE Winter Simulation Conference* (WSC).

47. Biller, Stephan (2019). "The operational butterfly effect: How IoT data+ AI help deliver on the promise of the 4th industrial revolution (4IR)." *15th IEEE Conference on Automation Science and Engineering,* Vancouver, CA.

48. Biller, Bahar, Stephan Biller, Onur Dulgeroglu, Canan Corlu (2017). "The role of learning on industrial simulation design and analysis." *2017 IEEE Winter Simulation Conference* (WSC).

49. Jurek, Paul, Bert Bras, Tina Guldberg, Jim D'Arcy, Seog-Chan Oh, and Stephan Biller (2012). "Activity-based costing applied to automotive manufacturing." *IEEE Power and Energy Society General Meeting*, San Diego, CA.

50. Chen, Guorong, Liang Zhang, Jorge Arinez, and Stephan Biller (2012). "Real-time performance analysis of production lines: A system-theoretic approach." *IEEE International Conference on Automation Science and Engineering (CASE)*, Seoul, Korea.

51. Chen, Guorong, Liang Zhang, Jorge Arinez, and Stephan Biller (2012). "Scheduling of Machine Startup and Shutdown to Reduce Energy Consumption in Bernoulli Production Lines." *ASME International Manufacturing Science and Engineering Conference,* Notre Dame, IN.

52. Xiao, Guoxian, Xiaoning Jin, Qing Chang, Stephan Biller, Jun Ni, and S. Jack Hu (2012). "Performance Analysis and Optimization of Remanufacturing Systems with Stochastic Returns." *ASME International Manufacturing Science and Engineering Conference,* Notre Dame, IN.

53. Berglund, Jonatan, John Michaloski, Swee Leong, Guodong Shao, Frank Riddick, Jorge Arinez, and Stephan Biller (2011). "Energy efficiency analysis for a casting production system." *Proceedings of the 2011 Winter Simulation Conference*, Phoenix, AZ.

54. Lu, Lingbo, Yang Liu, Jingshan Li, Qing Chang, Stephan Biller, and Guoxian Xiao (2011). "A real-time maintenance scheduling policy in serial production lines." *Proceedings of the 8th World Congress on Intelligent Control and Automation*, Taipei, Taiwan.

55. Sun, Zeyi, Stephan Biller, Fangming Gu, and Lin Li (2011). "Energy consumption reduction for sustainable manufacturing systems considering machines with multiple-power states." *Proceedings of the 2011 ASME International Manufacturing Science and Engineering Conference,* Corvallis, OR.

56. Chang, Qing, Guoxian Xiao, Lin Li, and Stephan Biller (2011). "Energy management in manufacturing systems." *Proceedings of the 2011 ASME International Manufacturing Science and Engineering Conference*, Corvallis, OR.

57. Oh, Seog-Chan, James D'Arcy, Jorge Arinez, Stephan Biller, and Alfred Hildreth (2011). "Assessment of energy demand response options in smart grid utilizing the stochastic programming approach." *Proceedings of the IEEE Power and Energy Society General Meeting*, Detroit, MI.

58. Ju, Feng, Junwen Wang, Jingshan Li, Stephan Biller, and Guoxian Xiao (2011). "Virtual battery: A simulation framework for batteries in electric vehicles." *Proceedings of the 7th IEEE Conference on Automation Science & Engineering*, Trieste, Italy.

59. Chen, Guorong, Liang Zhang, Jorge Arinez, and Stephan Biller (2011). "Feedback control of machine startup for energy-efficient manufacturing in Bernoulli serial lines." *Proceedings of the 7th IEEE Conference on Automation Science & Engineering*, Trieste, Italy.

60. Wang, Junwen, Jingshan Li, Jorge Arinez, and Stephan Biller (2011). "Improving quality in flexible manufacturing systems: a systems approach." *Proceeding of the 18th International Federation of Automatic Control (IFAC) World Congress*, Milano, Italy.

61. Ruangpattana, Suriya, Diego Klabjan, Jorge Arinez, and Stephan Biller (2011). "Optimization of on-site renewable energy generation for industrial sites." *Proceedings of the IEEE Power Systems Conference,* Phoenix, AZ.

62. Arinez, Jorge, Stephan Biller, Alexander Brodsky, Daniel Menasce, Guodong Shao, and Joao Sousa (2011). "Decision-guided self-architecting framework for integrated distribution and energy management." *Proceedings of the IEEE PES Conference on Innovative Smart Grid Technologies*, Anaheim, CA

63. Chang, Qing, Jianbo Liu, Stephan Biller, and Guoxian Xiao (2010). "Transient analysis of downtime event in manufacturing systems." *Proceedings of the 2010 ASME International Manufacturing Science and Engineering Conference,* Erie, PA.

64. Wang, Junwen, Jingshan Li, Jorge Arinez, and Stephan Biller (2010). "Improving quality in flexible manufacturing systems: A bottleneck transition approach." *Proceedings of the 6th IEEE Conference on Automation Science & Engineering*, Toronto, ON.

65. Vergnano, Alberto, Carl Thorstensson, Bengt Lennartson, Petter Falkman, Marcello Pellicciari, Chengyin Yuan, Stephan Biller, and Francesco Leali (2010). "Embedding detailed robot energy optimization into high-level scheduling." *Proceedings of the 6th IEEE Conference on Automation Science & Engineering*, Toronto, ON.

66. Barajas, Leandro, Stephan Biller, Fangming Gu, and Chengyin Yuan (2010). "Virtual launch & validation of manufacturing automation controls." *Proceedings of the 6th IEEE Conference on Automation Science & Engineering*, Toronto, ON.

67. Arenas Guerrero, Claudia, Jingshan Li, Stephan Biller, and Guoxian Xiao (2010). "Hybrid/Electric vehicle battery manufacturing: The state-of-the-art." *Proceedings of the 6th IEEE Conference on Automation Science & Engineering*, Toronto, ON.

68. Wang, Junwen, Jingshan Li, Jorge Arinez, and Stephan Biller (2010). "Quality bottleneck transitions in flexible manufacturing systems." *Proceedings of the 2010 IEEE International Conference on Robotics and Automation*, Anchorage, AK.

69. Arenas Guerrero, Claudia, Junwen Wang, Jingshan Li, Jorge Arinez, Stephan Biller, Ningjian Huang, and Guoxian Xiao (2010). "Production system design to achieve energy savings in automotive paint shops." *Proceedings of 2010 International Symposium on Flexible Automation,* Tokyo, Japan.

70. Arinez, Jorge and Stephan Biller (2010). "Integration requirements for manufacturing-based energy management systems." *Proceedings of the 2010 IEEE PES Innovative Smart Grid Technologies Conference*, Gaithersburg, MD.

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71. Meerkov, Semyon, Stephan Biller, and Liang Zhang (2009). "Transients in Bernoulli serial lines." *Proceedings of the 2009 NSF Grantees Conference*, Honolulu, HI.

72. Yang, Yingxia, Randolph Kirchain, Richard Roth, Jorge Arinez, Stephan Biller, and J. Patrick Spicer (2009). "Cost modeling of flexible assembly systems." *Proceedings of the 2009 ASME Design Engineering Technical Conference*, San Diego, CA.

73. Bengtsson, Kristofer, Bengt Lennartson, Chengyin Yuan, Petter Falkman, and Stephan Biller (2009). "Operation-oriented specification for integrated control logic development." *Proceedings of the 5th IEEE Conference on Automation Science & Engineering*, Bangalore, India.

74. Wang, Junwen, Jingshan Li, Jorge Arinez, Stephan Biller, and Ningjian Huang (2009). "Monotonicity of product quality in flexible manufacturing systems with batch operations." *Proceedings of the 5th IEEE Conference on Automation Science & Engineering,* Bangalore, India.

75. Arinez, Jorge and Stephan Biller (2009). "Innovations in energy measurement and control for manufacturing systems." *NIST Report on National Workshop on Challenges to Innovation in Advanced Manufacturing: Industry Drivers and R&D Needs*, Gaithersburg, MD.

76. Biller, Stephan, Samuel Marin, Semyon Meerkov, and Liang Zhang (2008). "Closed production line with arbitrary models of machine reliability." *Proceedings of 4th IEEE Conference on Automation Science and Engineering*, Washington, DC.

77. Liu, Jing, Chengyin Yuan, Fangming Gu, and Stephan Biller (2008). "Functional safety certification: Practice and issues." *Proceedings of the 4th IEEE Conference on Automation Science & Engineering*, Washington, DC.

78. Wang, Junwen, Jingshan Li, Jorge Arinez, Stephan Biller, and Ningjian Huang (2008). "Quality analysis in flexible manufacturing systems with batch productions." *Proceedings of the 4th IEEE Conference on Automation Science & Engineering*, Washington, DC.

79. Yuan, Chengyin, Stephan Biller, Fangming Gu, and Jerry Yen (2008). "Platform independent control logic programming: Current issues and future needs." *Proceedings of the 8th International Conference on Frontiers of Design and Manufacturing*, Tianjin, China.

80. Li, Lin, Qing Chang, Jun Ni, Guoxian Xiao, and Stephan Biller (2008). "Supervisory factory control for downtime reduction of manufacturing systems." *Proceedings of the 8th International Conference on Frontiers of Design and Manufacturing,* Tianjin, China.

81. Wang, Junfeng, Jie Yu, Shiqi Li, Guoxian Xiao, Qing Chang, and Stephan Biller (2008). "A data enabled operation-based simulation for automotive assembly." *Proceedings of the 2008 Asia Simulation Conference,* Beijing, China.

82. Yuan, Chengyin, Stephan Biller, Fangming Gu, and Jing Liu (2008). "Math-based control logic development for automotive industrial applications: Issues, challenges, and solutions." *Proceedings of the 2008 ASME International Mechanical Engineering Congress and Exposition*, Boston, MA.

83. Liu, Jianbo, Stephan Biller, Cindy Chang, and Guoxian Xiao (2008). "Cost modeling of quality loops in manufacturing systems." *Proceedings of the 2008 IIE Annual Conference*, Vancouver, BC.

84. Biller, Stephan, Jingshan Li, Samuel Marin, Semyon Meerkov, and Liang Zhang (2008). "Bottlenecks in production lines with rework: A systems approach." *Proceeding of the 17th International Federation of Automatic Control (IFAC) World Congress*, Seoul, Korea.

85. Chang, Qing, Jun Ni, Pulak Bandyopadhyay, Stephan Biller, and Guoxian Xiao (2007). "Short-term system throughput and bottleneck analysis." *Proceedings of the 2007 IEEE Conference on Assembly and Manufacturing*, Troy, MI.

86. Li, Lin, Stephan Biller, Cindy Chang, Jun Ni, and Guoxian Xiao (2007). "Bottleneck detection of manufacturing systems using data driven method." *Proceedings of the 2007 IEEE Conference on Assembly and Manufacturing*, Ann Arbor, MI.

87. Chang, Qing, Jun Ni, Pulak Bandyopadhyay, Stephan Biller, and Guoxian Xiao (2006). "Short-term system bottleneck identification." *Proceedings of the 7th International Conference on Frontiers of Design and Manufacturing,* Guangzhou, China.

88. Chang, Qing, Jun Ni, Pulak Bandyopadhyay, Stephan Biller, and Guoxian Xiao (2006). "Maintenance opportunity planning system." *Proceedings of 2006 International Symposium on Flexible Automation,* Osaka, Japan.