Professional Profile

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Dr. Eric W. Scharpf

Partner, exida.com

Fields of Expertise

Process Safety Management
Quantitative Risk Analysis
Process Hazards Analysis / Hazard Identification
HAZOP and Fault Tree Safety Analysis
International Safety Standards
Gas Processing Systems
Steam Methane Reformer & Furnace Systems
Heat Pump Drying Systems
Cooling Tower Systems
Process Efficiency, Optimisation and Reliability
Engineering Research & Development
Project Execution
Operations and Manufacturing

Experience Summary

Dr. Scharpf has twenty years of professional experience and is widely recognized as an expert in chemical process safety, efficiency analysis and optimisation. He has led many safety lifecycle projects in chemical processing, energy and machine automation applications. He has developed and teaches several of the *exida.com* safety and reliability analysis courses and leads the consulting business in Australasia. He has published numerous reviewed journal articles as well as the leading textbook on SIL selection. He developed several of the cryogenic gas processing, combustion, and separation techniques currently used for hydrogen, synthesis gas, and power generation. He was formerly a Process Chemical Engineer with a Fortune 200 gas and chemical processing company. His principal work responsibilities have included research and development, project execution, and operations / manufacturing efficiency, safety, and reliability improvements in the bulk gas and specialty chemicals industry. He previously conducted research and development for an international oil production and processing corporation. He also teaches several process, energy, and safety related courses at the University of Otago in Dunedin, New Zealand. He has authored more than 15 US and international patents. Dr. Scharpf has a B.Ch.E. from the University of Delaware and a Ph.D. in Chemical Engineering from Princeton University, both in the United States.

Credentials

B.Ch.E., With Distinction, Summa cum Laude,
University of Delaware, 1985.
Ph.D., Chemical Engineering, Princeton University, 1991.
Certified Functional Safety Expert, Process Applications
Since 2003

Key Assignments

Director of the CFSE Governance Board, a global organisation responsible for establishing the competency of process and manufacturing safety engineers.

Wrote best-selling textbook on SIL selection methodology for process industry applications. Published by Instrument Society of America.

Developed on-line and instructor led training programs for process safety engineers seeking the Certified Functional Safety Expert and Certified Functional Safety Professional qualification.

Led ammonia, nitric acid and ammonium nitrate safety improvement projects for two world-scale plants covering the entire safety lifecycle. Insured methodology and system recommendations were in compliance with relevant national and international standards.

Executed and provided expert review of numerous SIL target selection, risk assessment, procedure development and standards compliance projects worldwide in both process and machinery applications.

Developed improved combustion heat recovery system for series of gas-fired steam methane reformer hydrogen plants. Work included burner control, radiant heat transfer, and convection heat transfer systems.

Developed new combustion control, turbine coolant, and heat recovery integration processes to improve gas turbine power system efficiency and effectiveness.

Invented more efficient, operable, and flexible technology for carbon monoxide and syngas production with >US$10 million benefits in first application. Two patents issued on technology improvements. Led implementation of technology through project execution and into production.

Key Assignments (continued)

Collaborated in creating New Zealand's National Energy Research Institute (NERI), linking the major New Zealand energy research facilities. NERI coordinates joint research efforts and collaborations within New Zealand's energy research community at the national and international levels.

Identified and implemented millions of dollars worth of savings and efficiency improvements in operation, reliability, and maintenance functions in specialty chemical, gas production and industrial drying facilities. These improvements were identified across the range of production functions, including production instrumentation and control, utilities use analysis, reliability improvement, maintenance systems, processing equipment optimisation, and transportation improvements.

Led process engineering functions on several multi-million-dollar gas and specialty chemical retrofit and new production facility projects, achieving key cost and schedule goals.

Teaches safety, control, process optimisation, thermodynamics, unit operations, and energy efficiency techniques at University of Otago, Dunedin, New Zealand.

Led research lab group in maintaining and improving reaction characterisation instrumentation. Developed new fast-response computer-controlled data collection, process control, and instrumentation systems.

Affiliations

Certified Functional Safety Expert Governance Board, Member of Board of Directors and Process Applications Certificate holder

Institute of Professional Engineers New Zealand, Member

Awards and Honours

Thomas Fisher ISA Textbook Author's Award

US National Science Foundation Ph.D. Fellowship

Amoco Ph.D. Fellowship

E. I. DuPont Fellowship

Numerous internal corporate quality and innovation awards

Selected Patents and Publications

"Personnel Competency Requirements and Certifications" presented at SCS Sydney, Australia October 2008.

"Safety Instrumented Systems – Working Though the Hype" *What's New In Process Technology*, Vol. 21 No. 6 (2007) pp6-8.

"Linking Consumer Energy Efficiency with Security of Supply Energy Policy" *Journal of Energy Policy* Vol. 35 No. 5 (2007) pp3025-3035 with C.G. Carrington and J.P. Rutherford.

"Dehumidifier Drier for Pastes, Liquors and Aggregate Materials" PCT Patent PCT/NZ2004/000133. 24 June 2004 with C.G. Carrington

"Dehumidifier Drier with Reversible Airflow" Int. Patent PCT/NZ2004/000039. 1 March 2004. With C.G. Carrington and Z. Sun.

"Cryogenic Hydrogen and Carbon Monoxide Production with Membrane Permeate Expander" US Patent 6,568,206 B2. 27 May 2003.

Safety Integrity Level Selection: Systematic Methods with Layer of Protection Analysis. ISA Publishing, 2002. With Ed Marszal.

"Mechanical Safety and Process Safety." Workshop presented at ICEX 2001, Melbourne, Australia, May 2001.

"Integrated Cryogenic and Non-Cryogenic Gas Mixture Separation" US Patent 6,161,397. 19 December 2000. With B.A. McNeil and D.G. Winter.

"Implementing IEC61508 in the Process Industries." Presented at SCS2000, Melbourne, Australia, November 2000. With W. M. Goble.

"Separation of Carbon Monoxide from Nitrogen-Contaminated Gaseous Mixtures also Containing Hydrogen and Methane." US Patent 6,073,461. 13 June 2000. With B. A. McNeil.

"Gasification Combined Cycle Power Generation Process with Heat-Integrated Chemical Production." US Patent 5,865,023. 2 February 1999. With J. Sorenson.

"Heat Recovery and Power Generation from Industrial Process Streams." US Patent 5,842,345. 1 December 1998.

"Cryogenic Adjustment of Hydrogen and Carbon Monoxide Content of Syngas." US Patent 5,832,747. 10 November 1998. With B. A. McNeil and J. D. Bassett.

"Gasification Combined Cycle Power Generation Process with Heat-Integrated Chemical Production." US Patent 5,666,800. 16 September 1997. With J. Sorenson.

"Integrated Air Separation Gas Turbine Electrical Generation Process." US Patent 5,406,786. 18 April 1995. With A. R. Smith.

"Adsorption Process to Recover Hydrogen from Low Pressure Feeds." US Patent 5,294,247. 15 March 1994. With R. Kumar.