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Professional Profile

David Fournier, M.A.Sc., P.Eng, CFSE

Partner, exida.com

Fields of Competence

Nuclear Standards – IEC 61513, 62138, 61226; RCC-E
IEC Functional Safety – IEC 61508, IEC 61511
Real-Time Software Project Management
Control & Safety Systems – BWR, PWR, CANDU, EPR

Experience Summary

Mr. Fournier has over 30 years of experience and extensive knowledge in the nuclear field, primarily in the design of programmable control and safety systems, plus more than 7 years' experience applying IEC 61508 and 61511 for *exida* clients.

1973—2005, with Atomic Energy of Canada Ltd:

- lead designer of the CANDU-6 reactor protection systems, introducing computerized shutdown systems to CANDU nuclear power plants.
- product manager and lead designer for AECL's micro-computer-based control product (*PROTROL*[tm]) licensed in several US nuclear facilities
- design of BWR digital feedwater control systems (DFCS) in the United States (Peach Bottom, Oyster Creek) and the digital control system for the Penn State Breazeale reactor.
- principal engineer for the Cernavoda-2 DCC project (plant control computers)
- Bruce A Qualified Power Supply categorisation (introduced IEC 61508 SIL determination concepts to categorisation in Canada)

2005—present, partner with *exida*.

- Application of combination of Proven-in-Use and Reverse-Engineering to achieve IEC 61508 SIL 1 certification for supplier to OL3 NPP in Finland
- IEC 61513/62138 & RCC-E qualification for a control system for Flamanville 3 NPP
- Predictability analysis per RCC-E
- Conception & management of a reverse-engineering project following IEC 61513/62138
- Definition of End-User Safety Programs to 61511 & 62061, and subsequent coaching
- Developed VHDL Coding Guideline for FPGA development to 61508
- Development of 61508 SIL-3 Program for FPGA-based safety PLC
- Design of a graphic tool to select recommendations arising from large-scale Process Hazard Analysis

Key Assignments and Projects

- Mentoring manufacturers towards product certification to IEC 61508
- Training related to IEC 61508 & 61511
- Implementation of a Category B process for development of a control system to IEC 61513/62138 & RCC-E standards
- SIL determination: various plants: e.g. nuclear fuel manufacturing, jet engine testing
- Design and execution of an IEC 61513/62138 compliant reverse-engineering program
- Mentored re-design of a nuclear plant Class III and safety grade power systems to meet categorization requirements

Teaching

- Introduction to 61508 (2007, 2008, 2010)
- Introduction to 61511 (2010, 2012)
- Introduction to Process Safety – lecture as part of Engineering Ethics and Law course – scheduled guest lecture, February 2013

Standards Committees

- Canadian delegate to the IEC technical sub-committee SC45A "Instrumentation and Control of Nuclear Facilities"
- Project leader for 2009 revision to IEC 61838.
- Project leader for new IEC standard 62671:2013.

Recent Publications / Presentations

Educational column in *Canadian Process Equipment and Control News:* 2009/2010, covering technical issues related to SIL verification.

Credentials

- Certified Functional Safety Expert (CFSE), 2009
- Professional Engineer, 1973 Province of Ontario, Canada
- M.A.Sc. University of Toronto, 1971
- B.A.Sc. University of Toronto, 1969

Languages

English and French