



## **SCM: Our references in the field of energy**

Updated : January 2024

They concern the optimization of systems (search for energy efficiency), risk analysis (especially in the nuclear field) and improvement of information (quality of available data).

1. EdF (Chatou), 1997-2000: Signal processing in non-destructive control; reconstruction of strongly attenuated signals (thesis in co-direction with EdF R&D)
2. Elf (Pau), 1998-2000: Numerical simulation of two-phase problems
3. Agency for the Environment and Energy Management (ADEME), 2001-2002: Analysis and expertise of the European tool for predicting road traffic emissions; estimation of uncertainties linked to its use
4. EdF, 2002: Development and supply of sensitivity and uncertainty analysis tools for digital codes
5. IRSN, 2003: Improvement in the use of measurement results for nuclear materials (Uranium and Plutonium). Application to discrepancy reporting
6. Framatome-ANP, 2003-2004: Application of statistical methods in thermo-hydraulic analyzes of accident studies on nuclear reactors
7. IRSN, 2004: Improvement of the methodology for taking into account enrichment measurements (Uranium and Plutonium)
8. EdF, 2005: Production management; optimization under probabilistic constraints
9. Directorate General for Energy and Raw Materials, 2006: Probabilistic study concerning the security of gas supplies for France
10. National Agency for Radioactive Waste Management (ANDRA), 2007: Probabilistic analysis of radionuclide transfer models
11. IRSN, 2007: Probabilistic methods for the analysis of uncertainties linked to the safety of nuclear reactors (applications of Probabilistic Hypersurface)

12. EdF, CIDEN, 2007: Probabilistic methods for analyzing the radioactivity of nuclear power plants under decommissioning
13. Directorate General for Energy and Raw Materials, 2007-2008: Analysis of software relating to CO2 emissions forecasts
14. Delegation for Nuclear Safety and radiation protection for activities and installations of interest to Defense, 2007-2008: Methodological framework for probabilistic safety studies
15. Electricity Transmission Network, 2008: The RTE network in the Flers region; probabilistic methodology relating to an investment decision. Vulnerability Analysis
16. Electricity Transmission Network, 2009: Critical analysis of epidemiological studies
17. National Agency for Radioactive Waste, 2009: Mathematical models for the propagation of radionuclides in the soil
18. AXA Private Equity, 2009: Prospective studies relating to the development of certain energy sectors
19. Areva, 2010: Probabilistic methods for the study of a radioactive waste repository
20. IRSN, 2010: Reactor safety and incomplete information
21. IRSN, 2010: Mathematical analysis of monitoring devices within a nuclear reactor
22. EDF, 2010: Modeling the flow of the Doubs river
23. Nuclear Energy Agency (OECD), 2010: Detection of outliers in databases
24. ANDRA, 2011: Improvements to radionuclide transfer software
25. IRSN, 2011: Probabilistic studies concerning the safety of reactors, taking into account aging
26. Nuclear Energy Agency (OECD), 2011-2012: Detection of outliers in databases
27. Total Group, 2011-2012: Decision support algorithms
28. Electricity Transmission Network, 2012: Comparison between a mesh network and an island network
29. ANDRA, 2012: Improvement of a multilayer transfer model for radionuclides
30. IRSN, 2012: Software tool to support Nuclear Material Inspections
31. IRSN, 2012: Calculation of economic indicators linked to serious accidents

32. GDF SUEZ, 2012: Assessment of uncertainties in gas accounting
33. Electricity Transmission Network, 2012-2013: Construction of an electricity price anticipation tool
34. IRSN, 2012: Statistical analysis of radioactivity data in the environment (tritium in rainwater)
35. DCNS, 2012: Presentation of the “Flexblue” project to investors (small submerged nuclear reactor project)
36. Electricity Transmission Network, 2013: Critical analysis of the “GEOCAP” study
37. IRSN, 2013: Methodological Support for the Evaluation of Nuclear Material Balance Gaps
38. IRSN, 2013-2014: Analysis of the sizing of the TELERAY network
39. IRSN, 2014-2015: Comparisons of Probabilistic Hypersurface (EPH) and kriging
40. Poste Immo, 2014: Decision support tools for energy savings
41. Nuclear Energy Agency, 2014: Detection of aberrant data in databases
42. IRSN, 2014-2015: Creation of a software tool to help with the accounting of nuclear materials
43. IRSN, 2014: The “residual risk” in nuclear safety
44. ERDF, 2015: Robust models for the organization of intervention tours
45. EDF SEPTEN, 2015: Studies relating to nuclear safety
46. IRSN, 2015: Supplements relating to the Probabilistic Hypersurface
47. SNF Company, 2015: Analysis of correlations between raw material prices
48. Nuclear Energy Agency, 2015: Verification of the EXFOR and ENDF databases
49. IRSN, 2015: Operation simulation of the TELERAY network
50. IRSN, 2015-2017: Malfunctions in sensor networks
51. Nuclear Energy Agency, 2016 and 2017: Mathematical methods for database verification
52. ANDRA, 2016-2017-2018: Optimization of the placement of sensors for monitoring a radioactive waste storage site
53. Electricity Transmission Network, 2017-2018: Analysis of preventive maintenance

54. Framatome, 2018: Critical analysis of a safety demonstration
55. Framatome, 2020: Safety demonstration for a control card
56. Investor, 2020: Critical analysis of the “biogas” sector
57. Air Liquide, 2021: analysis of the lifespan of certain components
58. Financial institution, 2021-2022: Tool for anticipating Brent prices
59. SNCF, 2021-2022: Safety File for “Hydrogen Trains”
60. Bouygues Energies & Services, 2022: Methodological support for the design of a “Malfunctions and Maintenance” information system
61. Léon Grosse, 2022-2023: Analysis of “hail” risk for photovoltaic panels
62. Neext Engineering, 2023: Critical analysis of a Small Modular Reactor project