

# Curriculum Vitae

## GENERAL INFORMATION

Date of resumé: 23. July 2018  
Name: **Kuijper, James C. (Jim)**  
Profession: Senior consultant - Nuclear reactor physics expert  
Date of birth: 7. April 1961  
Nationality: The Netherlands  
Education level: Ph.D ("Dr.") (Applied Sciences/Nuclear Reactor Physics)  
E-mail: [kuijper@nucllc.nl](mailto:kuijper@nucllc.nl)  
LinkedIn: <https://www.linkedin.com/in/jimkuijper>  
Website: <https://www.nucllc.nl> (independent consultancy)  
Languages: Dutch (native speaker), English (full professional proficiency), German (working proficiency), French (elementary proficiency)



## PROFILE

Flexible mixture of experienced research scientist, reviewer, developer of calculation models and software, consultant, advisor, project leader, course lecturer and course developer in the field of nuclear energy technology, reactor physics and criticality safety. Experience with working in and leading of international project teams. "Oil in the machine" to help team and team members to achieve their goals. Quick and eager to acquire new knowledge and information and able to use that creatively and effectively to tackle new questions and problems. Looking forward to similar projects, activities and positions to make the difference for the peaceful use of nuclear technology in future energy systems. Currently active as independent consultant in **NUCLIC - Nuclear Innovation Consultancy**.



## EDUCATION

Institute: Interfaculty Reactor Institute - Delft University of Technology (Technische Universiteit Delft)  
Location: Delft, the Netherlands  
Period: January 1988 - May 1992  
Diploma/degree: PhD ("Dr.") (subject: Nuclear Reactor Physics)

Institute: Twente University of Technology (Technische Hogeschool Twente/Universiteit Twente)  
Location: Enschede, the Netherlands  
Period: August 1979 - March 1986  
Diploma/degree: MSc ("Ir.") in Applied Physics (subject: Optics/Biophysics)

## KEY QUALIFICATIONS

- 28 years of research and consultancy experience in (3-D) nuclear reactor physics and space-time reactor kinetics and dynamics analyses, nuclear criticality safety and computer code development for the core physics analysis of nuclear reactor systems (MTR, PWR, BWR, HTGR).
- 20 years of experience in project management, Work Package management and (more recently) Coordination of EU/Euratom Framework Projects.
- 20 years of experience as teacher/lecturer of reactor physics, reactor kinetics and nuclear criticality safety for scientific and reactor personnel from ECN/NRG (Petten, the Netherlands) and external companies.
- 20 years of experience as member (key fields: reactor physics and kinetics, criticality safety) of the joint **Reactor Safety Committee** of ECN, NRG and EC/JRC-IET (Petten, the Netherlands), which advises the managements of these organisations on all matters concerning the safety of nuclear installations (reactors, laboratories, criticality safety) at the Petten research site.

## PROFESSIONAL EXPERIENCE RECORD

Period: November 2014 – present  
Institute/company: **NUCLIC** – Nuclear Innovation Consultancy / Independent Consultant  
Location: Schagen, the Netherlands  
Position: Senior consultant - Nuclear reactor physics expert – Founder & owner  
Member of **Nuclear-21** (<https://nuclear-21.net>)

### Main duties and responsibilities:

- To provide independent review & advice, investigation, research & development and education, training & course development in the field of nuclear technology, with focus on nuclear innovation, nuclear reactor physics, fuel cycle and nuclear (criticality) safety;
- Marketing and acquisition for NUCLIC.

### Review & advice activities:

- Advisor on matters of criticality safety for COVRA (national nuclear waste processing and disposal facility of the Netherlands) [February 2017 - present]

- Euratom representative in the Generation IV International Forum VHTR Computational Methods Validation & Benchmarking Project Management Board [January 2018 - Present]
- Final reviewer of the EU Horizon 2020 project DEMOCRITOS (nuclear electric propulsion for spacecrafts) [April/May 2017]
- Member of IAEA Expert Missions to review the design and safety documents of an experimental power reactor ("RDE") in Serpong, Indonesia [November/December 2016 and October 2017]
- Author of chapter on "(V)HTR in detail – Design & safety approach" for a book on "Safety of Generation IV Reactors", to be published by JRC-IET (Euratom, Petten, the Netherlands), 2016 [October 2014 – May 2016];
- Member of PhD committee, Delft University of Technology, The Netherlands. Thesis title: "Core Physics of Pebble Bed High Temperature Nuclear Reactors" [December 2014].

Investigation, research & development activities:

- Partner of the Euratom Horizon 2020 project GEMINI+, responsible for core neutronics design [September 2017 - August 2020]
- Contribution to final report of the RECREATE project of the EU 7th Framework Program. Topic: Assessment of the feasibility of a cruiser aircraft with nuclear propulsion in a new cruiser-feeder system of air transport [October 2014 – January 2015].

Education, training & course development activities:

- Lecturer in IAEA Training Course on High Temperature Gas-cooled Reactor Technology, Serpong, Indonesia. Topics: "Design and safety approach of HTGRs", "Software for HTGR – A high-level perspective" and "EU/Euratom projects on HTGR". (19-23 October 2015);
- Course lecturer for nuclear reactor kinetics in training courses of NRG, Petten, the Netherlands [per 19. May 2016].

Period: February 2006 - October 2014  
 Institute/company: NRG, Physics & Metrology team  
 Location: Petten, the Netherlands  
 Position: Senior consultant – Nuclear Reactor Physics

Main duties and responsibilities:

- Responsible for review & advice, investigation, research & development, project coordination & project management and education, training & course development in the field of nuclear reactor physics & fuel cycle, nuclear safety and criticality safety;
- Acquisition of new projects (e.g. within the Euratom Framework Program).

Review & advice activities:

- Member of the Staff Council ("Ondernemingsraad") of NRG. Main topics: strategy, finance, safety, health, well-being, environment. Heavily involved (advice and consent to the general manager) in the re-structuring process of NRG in 2014 [January 2008 – October 2014];
- Liaison Officer for the Netherlands of the IAEA International Nuclear Information System (INIS) (see <http://www.iaea.org/inis/>), responsible for the flow of information concerning "nuclear" documents between the Netherlands and the INIS database [August 2008 – October 2014];
- Member of the Reactor Safety Committee of the Petten (NLD) research site, as expert in nuclear reactor physics and space-time kinetics as well as nuclear criticality safety. This Reactor Safety Committee advises the managements of NRG, ECN and the Institute for Energy and Transport (IET) of the Joint Research Centre (JRC) of the Commission of the European Communities (CEC) in all matters concerning (nuclear) safety of the nuclear installations at the Petten research site, including (experiments in) the High Flux Reactor (HFR), the Hot Cell Laboratories (HCL), the Molybdenum Production Facility (MPF) and the Waste Storage Facility (WSF). Assessment of many design and safety reports related to these matters [January 1994 – August 2014];
- Preparation of an overview presentation on plutonium and minor actinide management in thermal HTRs for the IAEA Technical Meeting on Development of "Deep-burn" Concepts using High Temperature Gas Cooled Reactor (HTGR) coated Particle Fuel for Incineration of Nuclear Waste, Surplus Fissile Materials and Plutonium without Recourse to Multiple Processing, IAEA Headquarters, Vienna, 5-7 August 2013 (see [http://www.iaea.org/NuclearPower/Downloadable/Meetings/2013/2013-08-05-08-07-TM-NPTD/meeting\\_report.pdf](http://www.iaea.org/NuclearPower/Downloadable/Meetings/2013/2013-08-05-08-07-TM-NPTD/meeting_report.pdf)) [July 2013];
- Euratom representative in Generation IV International Forum (GIF) Very High Temperature Reactor (VHTR) Computational Methods Validation & Benchmarking (CMVB) (provisional) Project Management Board (GIF/VHTR/CMVB PMB);
- Euratom FP7 ARCHER (HTR) project: monitoring and supporting the upgrade project of the ASTRA critical facility of the Kurchatov Institute, Moscow (ISTC project #685.2);
- Review of criticality safety assessment for internal transport of LFR (Petten Low Flux Reactor) fuel elements [October – December 2011];
- Coaching and supporting colleagues and guest scientists in the use of reactor physics simulation code systems (e.g. WIMS, DRAGON and PANTHER) and understanding of underlying theory and methodologies;
- Providing general nuclear reactor physics and criticality safety advice within NRG for a wide variety of specific topics and projects.

Investigation, research & development activities:

- RECREATE project of the European 7th Framework Program: assessment of the feasibility of a cruiser aircraft with nuclear propulsion in a new cruiser-feeder system of air transport. [August 2011 – October 2014];
- Euratom FP7 project F-BRIDGE: assessment of the influence of the use of sphere-pac fuel on (E)SFR reactor behaviour (in conjunction with CP-ESFR) [March 2008 – February 2012];

- Assessment of criticality safety issues as part of the Complementary Safety Margin Assessment ("Stress Test") of the nuclear installations of the Petten (NLD) research site. [September 2011 – February 2012].

Coordination & management activities:

- Liaison officer for the Netherlands of the IAEA International Nuclear Information System (INIS) (see <https://www.iaea.org/inis/>). [August 2008 – October 2014];
- Euratom FP7 project CP-ESFR: task leader for study of impact of Minor Actinide fuel on transient behaviour of Sodium-cooled Fast Reactors (SFR); involved in the assessment of the influence of Minor Actinides on reactivity feedback coefficients, etc. (in conjunction with the F-BRIDGE project). [January 2009 – June 2013];
- Coordinator of the PUMA ("Plutonium and Minor Actinides Management in Thermal High-Temperature Reactors") project of the Euratom 6th Framework Program (EC contract no. FP6-036457; Total budget: M€ 3.7; 15 partners from the EU, 1 from the USA; see [https://ftp.cordis.europa.eu/pub/fp6-euratom/docs/20101105-puma-1006-d411g-publishable-final-activity-report-nrg-104869\\_en.pdf](https://ftp.cordis.europa.eu/pub/fp6-euratom/docs/20101105-puma-1006-d411g-publishable-final-activity-report-nrg-104869_en.pdf)) [January 2006 – December 2010].

Education, training & course development activities:

- Teacher of nuclear reactor physics and kinetics in courses on Nuclear Technology of NRG (for internal and external students), as well as in basic training courses for nuclear reactor operators for research reactors and nuclear power plants [January 1995 – October 2014];
- Teacher in a tailor-made course on criticality safety assessment for external companies. Co-developer of this course [2006/2007];
- Guest lecturer at the Madrid University of Technology (Spain) on combined Monte Carlo neutronics, inventory calculations and uncertainty propagation [July 2006].

Period: January 2001 – January 2006  
 Institute/company: NRG, Physics team  
 Location: Petten, the Netherlands  
 Position: Task Manager Reactor Physics

Main duties and responsibilities:

- As Task Manager responsible for the daily management and coordination of activities related to nuclear reactor physics within the Physics team (approx. 3 colleagues);
- As (Senior) consultant and project leader responsible for review & advice, investigation, research & development, project coordination & management and education, training & course development in the field of nuclear reactor physics & fuel cycle, nuclear safety and criticality safety;
- Acquisition of new projects (e.g. within the Euratom Framework Programs).

Review & advice activities:

- Member of the Reactor Safety Committee of the Petten (NLD) research site, as expert in nuclear reactor physics and space-time kinetics as well as nuclear criticality safety;
- Providing general nuclear reactor physics and criticality safety advice within NRG for a wide variety of specific topics and projects, e.g. for irradiation experiments in the Petten High Flux Reactor.

Investigation, research & development activities:

- Study of reactor physics aspects of the use of Th/Pu-MOX in LWRs, analysis of cross section uncertainty propagation in burn up calculations, and the use of Pu in pebble-bed HTGRs with continuous recycling. These activities were part of the THORIUM, VALMOX and HTR-N/N1 projects, respectively, of the Euratom Fifth Framework Program [2001 – 2004];
- Software development: involved in the development of a Monte-Carlo based code system (ELNINJO) to generate broad group cross sections to enable the calculation of reactor physics and reactor kinetics parameters in the framework of new licensing calculations for the Petten High Flux Reactor (HFR). Development of theoretical background for this method [2002 – 2003];
- Software development: involved in the modernization and modularization of the OCTOPUS code system, which has been developed at NRG to enable combined (Monte Carlo) neutronics and nuclide inventory evolution calculations [2002 - 2003].

Coordination & management activities:

- Daily management/coordination of activities (~3 colleagues) related to nuclear reactor physics within the Physics team;
- Software development lead: integration of the CASEMATE methodology for propagation of uncertainties in cross sections through burn-up calculations with the OCTOPUS system for combined Monte-Carlo neutronics (MCNP code) and detailed burn-up (ORIGEN or FISPACT code) [2005];
- Work Package manager in the HTR-N/N1 project (Euratom 5th Framework Program) for the Work Package on the analysis of several HTGR concepts with different fuel cycles [2000 – 2004].

Education, training & course development activities:

- Teacher of nuclear reactor physics and kinetics in courses on Nuclear Technology of NRG (for internal and external students), as well as in basic training courses for nuclear reactor operators for research reactors and nuclear power plants.

Period: October 1998 – January 2001  
 Institute/company: NRG, Physics team  
 Location: Petten, the Netherlands  
 Position: Research Scientist

Main duties and responsibilities:

- Responsible for investigation, research & development, review & advice, project management and education & training in the field of nuclear reactor physics and nuclear safety.

Review & advice activities:

- Coaching colleagues and guest employees of NRG in the use of the WIMS and PANTHER/PANTHERMIX codes for performing reactor physics calculations on several different reactor types (PWR and HTR) [1994 – 2001];
- Member of the Reactor Safety Committee of the Petten (NLD) research site, as expert in nuclear reactor physics and space-time kinetics as well as nuclear criticality safety;
- Mentor for a Ph.D-student from Delft University of Technology on the subject of HTR reactor dynamics. Member of the PhD examination committee [1996-2000];
- Editor of Proceeding of the Tenth International Conference on Emerging Nuclear Energy Systems (ICENES 2000) [September 2000].

Investigation, Research & Development activities:

- Core physics and system analyses/calculations for PWR and HTGR.

Coordination & management activities:

- Lead the development of the simulation code system PANTHERMIX for combined steady state, depletion and transient reactor physics and thermal-hydraulics analysis of High-Temperature Gas-Cooled Reactors (HTGR), e.g. an early version of the PBMR [1994 – 2001];
- Lead the development of a code system for uncertainty propagation in combined spectrum and burn up calculations (CSS1SMAT/CASEMATE) in the Euratom 4th Framework Program [1995 – 1999].

Education, Training & Course development activities:

- Teacher of nuclear reactor physics and kinetics in courses on Nuclear Technology of NRG (for internal and external students), as well as in basic training courses for nuclear reactor operators for research reactors and nuclear power plants.

Period: May 1992 – October 1998

Institute/company: ECN, Business Unit Nuclear Energy (May 1992 – October 1998)

Location: Petten, the Netherlands

Position: Research Scientist

Main duties and responsibilities:

- Responsible for investigation, research & development/review & advice/project management/education & training in the field of nuclear reactor physics and nuclear safety.

Review & advice activities:

- Coaching colleagues and guest employees of NRG in the use of the WIMS and PANTHER/PANTHERMIX codes for performing reactor physics calculations on several different reactor types (PWR and HTR) [1994 – 1998];
- Member of the Reactor Safety Committee of the Petten (NLD) research site, as expert in nuclear reactor physics and space-time kinetics [January 1994 – October 1998];
- Mentor for a Ph.D-student from Delft University of Technology on the subject of HTR reactor dynamics [1996-1998];
- Review of Acceptance Test Procedures (ATP) for the new simulator of the Borssele NPP with focus on reactivity aspects of the system behaviour [1996];
- Participation in the preparation of the Safety Report and the Safety Analysis Report for the Dodewaard BWR nuclear power plant (NLD) as co-author of the sections concerning reactivity transients [1994].

Investigation, research & development activities:

- Guest scientist at Berkeley Technology Centre of Nuclear Electric Plc., Berkeley, Gloucestershire, U.K. Re-analysis of the Callaway PWR cycle 1 and 2 physics measurements, using the LWRWIMS en PANTHER codes for steady-state, depletion and transient calculations [Summer 1995];
- Core physics analysis/calculations for HTGR and PWR.

Coordination & Management activities:

- Lead the development of the simulation code system PANTHERMIX for combined steady state, depletion and transient reactor physics and thermal-hydraulics analysis of High-Temperature Gas-Cooled Reactors (HTGR), e.g. an early version of the PBMR [1994 – 1998];
- Lead the development of a code system for uncertainty propagation in combined spectrum and burn up calculations (CSS1SMAT/CASEMATE) in the Euratom 4th Framework Program [1995 – 1998].

Education, Training & Course development activities:

- Co-organizer of a workshop on 3-D transient core codes, responsible for the practical exercises [December 1992/January 1993];
- Teacher of nuclear reactor physics and kinetics in courses on Nuclear Technology of ECN (for internal and external students), as well as in basic training courses for nuclear reactor operators for research reactors and nuclear power plants [January 1995 – October 1998].

Period: January 1988 – May 1992

Institute/company: Interfaculty Reactor Institute, Delft University of Technology

Location: Delft, the Netherlands

Position: Research Associate

Activities:

- Research (by computer modelling and simulations) on reactor physics and thermodynamics of gaseous core fission reactors and preparation of Ph.D thesis on this topic.

Period: March 1986 – August 1987  
Institute/company: Royal Netherlands Navy – Physics and Electronics Laboratory TNO  
Location: The Hague, the Netherlands  
Position: Navy lieutenant – Researcher

Activities:

- Fulfilment of military duty by research on and software development for passive towed-array sonar signal processing.

### *Additional qualifications & courses*

Courses:

Title/subject: Simulator training in “Basiskurs Reaktorkunde für das Kernkraftwerk Borssele” (Basic course reactor operation for the Borssele nuclear power plant) (4 days).

Period/date: 2013.

Institute: Gesellschaft für Simulatorschulung mbH, Essen, Germany.

Title/subject: Optriscursus Niveau 3 (Refresher course Radiation Protection level 3) (2 days).

Period/date: 2012.

Institute: NRG, Petten, the Netherlands.

Title/subject: “INIS Training Seminar 2011” (3 days).

Period/date: November 2011.

Institute: International Atomic Energy Agency, International Nuclear Information System (INIS), Vienna, Austria

Title/subject: “Reactor Physics, Criticality and Shielding Seminar”; annual 3 days/year seminar for specialists and users of ANSWERS software; contributions on the subjects, (i) PWR, (ii) HTR reactor physics, space-time kinetics and (iii) uncertainty propagation in burn up calculations.

Period/date: 1994 – 2006.

Institute: ANSWERS Software Service, AEA Technology, U.K./SERCO Assurance, U.K.

Title/subject: “DANESS” (system dynamics code for the holistic assessment of nuclear energy system strategies).

Period/date: 2004.

Institute: LISTO bvba/Argonne National Laboratory, Argonne, IL, USA; Luc Van Den Durpel.

Title/subject: Leiding geven voor technische specialisten (Managing technical professionals) (3 days)

Period/date: 1998.

Institute: Intermediair Management Training, Amsterdam, the Netherlands.

Title/subject: “OSCAR-3” (core physics & core design).

Period/date: March/April 2004.

Institute: NECSA, South Africa.

Title/subject: Project management (4 days).

Period/date: June 1995.

Institute: Kern Consult, Bussum, the Netherlands.

Title/subject: Radiation Protection level 3 (1 semester of lectures; 3 days of practical training).

Period/date: 1984.

Institute: Interfaculty Reactor Institute, Delft University of Technology, the Netherlands.

Software tools

General: Unix/Linux; C-shell; Bourne shell; scripting; Fortran; Windows; Office (Word, Excel, PowerPoint).

Reactor physics: WIMS (versions 5-9) (ANSWERS Software Service, UK); PANTHER (ANSWERS Software Service, UK); THERMIX-DIREKT (FZ Juelich, Germany); SCALE (Oak Ridge National Laboratory, USA); FISPACT (UK AEA); DRAGON (Ecole Polytechnique de Montreal, Canada), Scilab.

### *Auxiliary information*

Co-founder and volunteer of “Stichting Eline-de Cirkel is Rond” ( “Eline Foundation”; <https://www.stichting-eline.org>). This foundation supports the education of youth in secondary education (lower and higher middle school) by small scholarships, focussing on the countryside of Fuling District, Chongqing Municipality, P.R. China [2008 – present].