



YVONNE OLIJ-KENYON MSc PhD

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DATE OF BIRTH 05-09-1971

PROFILE

With over 15 years' experience as a fire safety engineer specialising in computational fluid dynamics and software development, I am now looking to further my career in (scientific) software engineering. Using a novel approach to problem solving, I am enthusiastic about projects where an unconventional approach is required. While I am driven to produce work with a high level of accuracy, I am also able to balance effectiveness with efficiency in order to complete projects within time and financial constraints. As part of my continuing professional development I am currently training for JAVA SE 8 Programmer OCA and OCP certification, and I am enrolled on a part-time Computer Science BSc degree course. I have recently achieved PSM-I certification.

HIGHEST ACHIEVED QUALIFICATION

PhD Physics (Computational Fluid Dynamics & Fire Engineering)

University of Central Lancashire, Preston, England (Completed 2003)

RECENT PROFESSIONAL EXPERIENCE

Fire Safety Engineer & Software Developer

Efectis, Bleiswijk (2006 – Dec 2015) & TNO, Rijswijk (2001 – 2006)

Formerly the TNO Centre for Fire Safety, Efectis is an international fire safety consultancy and fire testing laboratory. At Efectis, I undertook computer simulations, developed software modelling tools, and carried out fire safety related calculations based on a diverse range of scientific and engineering fields.

KEY SKILLS

Java 8, Computational Fluid Dynamics (CFD); Scientific software development; Simulations; Computer modelling; Zone modelling; Building physics; C#; Visual Studio; FORTRAN; Delphi; VBA; HTML5; CSS; Smoke movement; Fire engineering; FLUENT; FDS; PHOENICS; STAR-CD; GAMBIT; FAST; OZONE; TNO Vultijdenmodel; BRANZFIRE; Pintegraal; BricsCAD; Tunnels; Carparks; Infrastructure; Ventilation

PROFESSIONAL EXPERIENCE

Fire Safety Engineer & Software Developer *Efectis, Bleiswijk (2006 – Dec 2015) & TNO, Rijswijk (2001 – 2006)*

My role at Efectis involved:

- Developing software tools based on empirical and algebraic physical models, and creating user interfaces for the software.
- Solving fire safety problems in the built environment involving a diverse range of scientific and engineering fields, including combustion, ventilation, heat transfer, flow through porous barriers and plume modelling.
- Undertaking steady-state and transient computational fluid dynamics (CFD) simulations of buoyant flows; definition of initial and boundary conditions, source terms, physical properties and sub-models; meshing; analysis; post-processing and reporting.
- Building structured, un-structured and multi-block CFD meshes of large and complex buildings.
- Modelling fire spread using radiation modelling tools.
- Modelling smoke-filling using two-zone smoke models.
- Acting as a project leader: writing offers, planning and managing budgets and client contact.
- Developing the use of data analytics within the field of fire safety.
- Website design and building.

Fire Safety Engineer *Atkins, Leatherhead, England (1999 – 2001)*

Atkins is a global design, engineering and project management consultancy with over 18,000 employees. My main role at Atkins was to carry out CFD modelling of dense gas dispersion, for example explosive gas mixtures in ventilated gas turbine enclosures and dense gas spills in tunnels.

Research Assistant *University of Central Lancashire, Preston, England (1995 – 1999)*

I developed CFD models of particulate smoke and added these to an in-house CFD code (low Mach number non-dimensional RANS, $k-\epsilon$ turbulence model, FORTRAN). Using non-dimensional quantities to analyse the results, I showed that under certain conditions the standard passive approach to smoke modelling is unsuitable. Additionally, I prepared and presented undergraduate lectures on fire safety engineering.

EDUCATION

PhD Physics (CFD modelling of two-phase flows) *University of Central Lancashire, Preston, UK (2003)*

This study was undertaken as a part of my research assistantship and covered topics such as dispersed phase flows, buoyant flow dynamics and non-dimensional analysis. A PhD was awarded in 2003.

MSc Weather, Climate and Numerical Modelling *University of Reading, Reading, UK (1994)*

This course covered the physics of the atmosphere, atmospheric chemistry, fluid dynamics and numerical modelling (finite difference techniques for partial differential equations). Coding assignments concentrated on stability and the nature of errors. During a placement at the University of Wageningen, I undertook research into the characteristics of turbulent heat fluxes at ground level.

BSc Physics *Imperial College, University of London, London, UK (1993)*

The course covered theoretical physics with emphasis on mathematics and geophysics.

TECHNICAL EXPERTISE

Example software projects:

- *Filling a compartment with smoke due to fire (FORTRAN):*
The standard model recommended by the Dutch building regulations for smoke-filling is restrictive and gives little freedom to explore alternative solutions. My company required an in-house code with extra capabilities and a high level of flexibility. Based on an existing theoretical methodology, I translated algebraic models into code, resulting in a comprehensive and versatile tool. I was also responsible for testing, debugging, validating and documenting this software.
- *Upgrading software - reporting module (Delphi):*
Since the reporting of results from numerous simulations can be laborious and prone to errors, I was asked to add a reporting module to existing software in order to enable the automatic generation of reports. I coded procedures to automate the dumping of text and results (graphics, charts, tables) into a document, the form of which was specified by the client. The result is a tailor-made error-free report that requires no further modification by the client.
- *Upgrading heat transfer software - multiple simulations (Delphi):*
In order to allow a user to run several simulations at the same time, I upgraded the GUI of a heat transfer code by adding a new tab for each additional variant case. I created a post-processing module to automatically compare, summarise and report the results of the multiple simulations. In addition, I modified the GUI to accommodate a greater range of materials and more complex geometries. The software now enables an “at-a-glance” assessment of the effect of changing individual variables.
- *Heat transfer software - user interface (C#):*
I upgraded an in-house heat transfer code (FORTRAN) for which data entry took place via a text file and visualisation of the results was non-automated. In order to expedite the use of this software, I designed and programmed a GUI in Visual Studio (C#) and linked it to the existing FORTRAN solver. The GUI has a high level of flexibility and is designed to accommodate future updates to the solver.
- *Analysis and reporting of fire test results (Visual Basic for Applications):*
In order to determine whether a fire test is successful, variables measured during the test, such as temperature and pressure, are analysed according to prescribed standards. I developed a GUI driven Add-in for Excel allowing the user to carry out this analysis and to visualize the results. The software reduces the amount of time spent on post-processing, guarantees accuracy and ensures that results are presented in a standardized form.
- *Second opinion on ventilation software (C++, FORTRAN):*
Due to suspected errors in a road traffic tunnel ventilation code, my company was commissioned to provide a second opinion on the implementation of the physical models in the code. My role was to verify a set of C++ procedures, which I did by building similar subroutines in FORTRAN and cross-checking the results.
- *Website development (Joomla, HTML5, CSS):*
Building on a professional template, I designed and created a website for manufacturers of fire safety doors. The aim of the website was to allow customers to compare the level of fire safety of different products.

Example Computational Fluid Dynamics modelling projects:

- Numerous projects investigating smoke movement in road and rail tunnels, for example the tram tunnel in The Hague, the Sluiskiltunnel, the Tweede Beneluxtunnel and Eurotunnel.
 - Several smoke movement projects in underground and semi-open carparks, for example Benfica football stadium carpark; multiple carparks in Rotterdam.
 - Use of CFD to optimize ventilation systems in tunnels, for example the Koningstunnel in The Hague, and the Groene Hart and Dordtsche Kil High Speed Line tunnels.
 - Coupled CFD and FEA simulations to predict the behaviour of tunnel walls that are exposed to heating, for example the Holmesdale tunnel (M25 motorway London), the Port of Miami tunnel and the “verdiepte ligging A4”.
 - Studies of smoke movement in Rotterdam Central train station to predict thermal loads on the glass roof and wooden panelling.
 - Diverse CFD studies, for example modelling smoke flow through porous barriers in the Leyweg town hall in The Hague; coupled zone modelling and CFD to predict smoke filling in the corridors of an apartment block; CFD modelling of smoke extraction hoods.
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PROFESSIONAL DEVELOPMENT

Oracle Certified Associate Java SE 8 Programmer, *ITPH Academy (2016 - current)*

BSc Computer Science *Open University, the Netherlands (2016 - current)*

Part-time computer science BSc course covering subjects such as databases, algorithms, object orientated programming, UML, artificial intelligence, security and the internet.

Professional Scrum Master I, *Scrum.org (2016)*

C# Intermediate: Classes, Interfaces and OOP, *Udemy.com (2016)*

C# Basics for Beginners: Learn C# Fundamentals by Coding, *Udemy.com (2016)*

Foundations of Programming: Code Efficiency, *Lynda.com (2015)*

Foundations of Programming: Fundamentals, *Lynda.com (2015)*

LANGUAGES

Dutch: Advanced (reading, writing, listening); Upper Intermediate (speaking)

English: Fluent (native language)

PUBLICATIONS

- Data Analytics en Brandveiligheid. *Jaarboek Beveiliging Totaal 2016 (2015)*
 - Data Analytics en Brandveiligheid. *Brandveilig.com magazine (2015)*
 - Large Scale Fire Tests in the Second Benelux Tunnel. *Fire Technology (2006)*
 - A coupled CFD-FEA study of a tunnel structure exposed to fire. *Interflam (2004)*
 - Two-phase flow accompanying fires in enclosures. *Ph.D. Thesis (2003)*
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INTERESTS

Much of my spare time is occupied with home interior design projects. Further, I am interested in philosophy, in particular metaphysics. I enjoy the abstract nature of philosophy as a diversion from the “pure science” of my day to day work.