

Gabriele Vigne

Msc MAst MSFPE



Profession

Fire Safety Engineer and Scientist

Current position

Director

Nationality

Italian

Qualifications

MAst – Fire Modelling, Universidad de Jaén, Spain

MEng - Mechanical Engineering

Università degli studi di Padova, Italy

Additional Qualifications

Simulation of Fires in Enclosures 2008 - Lund University (Sweden). January-June 2008 (MSc course)

Computational modelling course for fire engineers (Curso de simulación computacional y modelado en la ingeniería contra incendios) COIIM-GIDAI, Madrid (Spain) July 2007

Professional associations

Associate member of the Association of the Institution of Italian Engineers.

Associate member of APICI (Spanish association of Fire Safety Engineers)

Professional member of the SFPE (Society of Fire Protection Engineers)

Member of the SFPE ECCG (European Coordination Group)

Member of the IAFSS (International Association for Fire Safety Science)

Publications

Review and Validation of the Current Smoke Plume Entrainment Models for Large-Volume Buildings - Gabriele Vigne, Cándido Gutierrez-Montes, Alexis Cantizano, Wojciech Węgrzyński, Guillermo Rein - Fire Technology May 2019, Volume 55, Issue 3, pp 789–816 [https://doi.org/10.1007/s10694-018-0801-4]

Is a Code Compliant Design Sufficient to Ensure Adequate Safety Levels When

Gabriele Vigne is Fire Safety Engineer and Scientist, currently Director with JVVA in Madrid, Spain.

Gabriele has worked on a wide range of multidisciplinary projects providing fire engineering solutions, including general fire strategy designs and computational fluid dynamics modelling, in commercial buildings, airports, underground infrastructures, rail and road tunnels, high rise and super high rise buildings.

He has been involved as a Project Manager in numerous International multidisciplinary projects which predominantly involved Advanced Modelling.

Prior to lead JVVA, Gabriele worked for Arup Fire in different offices (Madrid, Amsterdam and London), being the European representative of Fire and Smoke Modelling and the European Representative for Mass Motion.

Gabriele held a Master degree in Mechanical Engineering and a Master of Advanced Studies in Fire Engineering. He worked in projects worldwide and lived in Spain, Italy, UK and the Netherlands. Gabriele is currently undertaking a PhD on computational methods for fire and smoke modelling at the University of Jaén (Spain) with the partnership of the Imperial College of London (UK).

Gabriele has a particular experience in Fire Dynamics, Smoke dynamics, Fluid Dynamics, Fire and Smoke modeling, Evacuation modeling and Tunnel Ventilation. He is the Spanish and Italian NIST international resource for FDS and Smokeview.

He is authorized International Instructor for FDS (Fire Dynamics Simulator).

Gabriele is lecturer in Human Behaviour and Evacuation Modelling at the University of Comillas (ICAI) and in the Universidad Europea (UEM) in Madrid.

He is part of the Board of Directors of the SFPE Spanish Chapter.

He is reviewer for the Fire Safety Journal, the International Journal of Heat and Mass Transfer, Fire Technology, Fire and Materials and the Bulletin of the Polish Academy of Sciences: Technical Sciences.

Since 2012, he is member of the European SFPE (Society of Fire Protection Engineers) coordination group (ECCG). Since 2016 he is member of the SFPE Subcommittee for Standards Oversight (SCSO), Committee in charged with identifying, developing, and overseeing SFPE's technical products and research work, reviewing new innovations, and helping to establish the research agenda for the fire safety engineering profession and he is member of the SFPE Subcommittee for Handbook Subcommittee (SCHD). He is also member of the SFPE Long-Range Planning Working Group.

Member of the Editorial Advisory Board of the SFPE Europe Magazine.

He has been appointed as Expert Witness for the London's Grenfell Tower Fire in order to understand the causes of the fire and how it could be prevented.

Selected Project Experience

Jaylo, Tudela — Navarra, Spain

Performance Based Fire Safety analysis, with the objective of optimizing the smoke control system and the compartmentation for the industrial building Jaylo in Tudela, Navarra.

Amazon Sevilla SVQ1 — Sevilla, Spain

Performance Based Fire Safety analysis with the objective of optimizing the smoke control system and the safety of people in the new industrial building of Amazon Robotics on Dos Hermanas, Sevilla.

Evacuating a Hospital? A Spanish Research -
Olaf Pérez Salgueiro, Jimmy Jönsson,
Gabriele Vigne - SFPE Europe Conference,
Rotterdam, The Netherlands 3-8, 2018

Drawbacks when using a Prescriptive
Approach for Evacuation design of Intensive
Care Units - Olaf Pérez Salgueiro, Jimmy
Jönsson, Gabriele Vigne, Amaya Osacar
Crespo and Juan B. Echeverría - Research
and Advanced Technology in Fire Safety –
FIRE SAFETY 2017, Santander 2017 ("Best
poster" award)

Advanced Simulations For Building Design –
Best Practice and Future Developments -
Gabriele Vigne, Jimmy Jönsson - Fire and
Evacuation Modelling Technical Conference
2016 - Malaga, November 16-18, 2016

Experimental and numerical evaluation of the
influence of the soot yield on the visibility in
smoke in CFD analysis - Wojciech Węgrzyński,
Gabriele Vigne - Fire Safety Journal
[<http://doi.org/10.1016/j.firesaf.2017.03.053>].

Experimental and Numerical Analysis of the
Influence of the Soot Yield when Conducting
CFD Analysis for the Estimation of the
Available Safe Evacuation Time - Gabriele
Vigne, JVVVA Fire and Risk, Spain, W
Węgrzyński, ITB, Poland – Interflam 2016, 4-
6th July 2016, Fire Science & Engineering
Conference, Royal Holloway College,
University of London, UK [ISBN 978-0-
9933933-2-7]

Novel Full-Scale Atrium Experiments and
Numerical Validation Under Steady and
Transient Venting Conditions – P.Ayala,
A.Cantizano, G.Rein, G.Vigne, C.Gutierrez-
Montes– Interflam 2016, 4-6th July 2016, Fire
Science & Engineering Conference, Royal
Holloway College, University of London, UK
[ISBN 978-0-9933933-2-7]

Contaminantes del aire en los túneles de
carretera y límites admisibles - G.Vigne,
J.Jönsson, F. Hacar - Revista Argentina de
Ingeniería - Publicación del Consejo Federal
de Decanos de Ingeniería de la República
Argentina Año 4 - Volumen 7 - Mayo de 2016
[ISSN 2314-0925]

Influence of Variability of Soot Yield Parameter
in assessing the safe conditions in Advanced
Modelling Analysis. Results of Physical and
Numerical Modelling Comparison - 11th SFPE
Conference on Performance-Based Codes and
Fire Safety Design Methods, Warsaw -
G.Vigne, W. Węgrzynski, May 25, 2016 [ISBN
978-83-938077-5-8]

Design and Safety Issues in Lay-Bys of Road
Tunnels – Obras y Proyectos no.18
Concepción dic. 2015, F.Hacar, J.Jonsson,
G.Vigne [ISSN 0718-2813]

Tunnels with Rough Walls and Cavities –
G.Vigne, J.Jönsson, F. Hacar, Revista

Grenfell Tower Enquiry – London, United Kindom

Advising Expert for the Association of Victims of the Grenfell Tower in London.

Renault – Palencia, Spain.

Responsible for the smoke ventilation strategy, CFD modelling, means of egress of the Renault Factory in Palencia, Spain.

BmE Research Hub, Imperial College of London – London, United Kindom

Thermal analysis to demonstrate the vertical compartmentalization of a tall building under construction inb London.

DHL (Barajas) – Madrid, Spain

Advanced modelling (Fire and smoke, evacuation & Structural) undertaken to justify the design for this new logistics center situated at Barajas Airport. We specifically justified the evacuation from the higher levels (middle floors), the smoke control system and also the structural capacity of the middle floor (steel structure).

H16 Tunnel, Jerusalem, Israel

Tunnel ventilation analysis including 1D and CFD 3D modelling of the H16 Tunnel to be built in Jerusalem.

Americo Vespucio Oriente (AVO II), Chile

Two 10 km long road tunnels situated in the municipality of Santiago, Chile. Ventilation includes 1D SES modelling and 3D CFD modelling.

Denver Great Hall Airport - Denver, Colorado

Fire and Smoke modelling and Evacuation modelling for the Great Hall Airport in Denver, the most iconic and large airport in Colorado with a singular roof representing the Rocking Mountains.

LOGISTA – Madrid, Spain

Existing plant consisting of a number of different industrial areas, all of them connected due to the required activity (Silo, packaging, production, storage). We justified that the existing smoke control systems were adequate to provide safe evacuation from the plant, we also justified extended travel distances in some part of the plant. All of this with the use of a performance based design approached and advanced simulations.

Edificio España – Madrid, Spain

Edificio España is the 8th tallest building in Madrid, Spain, and one of the city's most iconic buildings. The building is under a major refurbishment. The project consisted in undertaking a full risk assessment of the building including advanced evacuation analysis and fire and smoke modelling.

Riyadh Downtown and Western station – Riyadh, Saudi Arabia

Responsible for the smoke ventilation strategy, CFD modelling, means of egress of the most complex stations of the new Riyadh metro system.

Torre Intesa Sanpaolo, Turin, Italy

Intesa Sanpaolo is a 40+ levels tower which will be built in Turin. Responsible for coordination of the multidisciplinary modeling analysis which included Fire and Smoke modelling and Evacuation modelling. Gabriele also provided advice regarding best practices of fire engineering approach based on NFPA, IBC, BS and BCA. Designed by Renzo Piano

City Life, Milan, Italy

The project includes 3 skyscrapers and a common “slab” which include metro station, garden, etc. Responsible for the General Strategy (for the entire city life site) regarding: Pedestrian Planning / Evacuation Movement / Emergency Response. Also responsible for the overall fire strategy of the Contemporary art museum (part of the City life project). Project designed by the architects Arata Isozaki, Daniel Libeskind and Zaha Hadid

Ingeniería, Investigación y Desarrollo,
Universidad Pedagógica y Tecnológica de
Colombia, July 2015 [ISSN 2422-4324]

Origini della Fire Safety Engineering e
prospettive nella prevenzione incendi odierna
anche alla luce del Codice 2015 - XVI SFPE
Italian Congress on Fire Safety Engineering,
April 15, 2016

Fire Experiments and Simulations in a Full-
Scale Atrium Under Transient and Asymmetric
Venting Conditions – P.Ayala, A.Cantizano,
G.Vigne, C.Gutiérrez-Montes - Fire
Technology, Special Issue on Fire Model
Validation, January 2016 [10694 – ISSN 0015-
2684, 52(1)1-284(2016)]

To What Extent Can We Rely Upon the
Results Obtained From Advanced Smoke
Modelling – the Influence of Critical
Parameters on the Visibility When Conducting
an Advanced Smoke Modelling Analysis, G.
Vigne, M.Alonso, J.Jönsson, 1st SFPE
European Conference, June 2015
Copenhagen (Denmark)

Intercambiadores. Los beneficios de utilizar un
enfoque basado en prestaciones. Interchange
stations.the benefits of using a performance
based approach - 8th International Congress
on Performance Based Fire Safety, Madrid
(Spain) February 13, 2015

The complexity of smoke control design,
theory and practice - G.Vigne, SFPE Europe
Magazine, Q1 2015, Issue n.1

Full Scale Fire Tests In Atria And The Use
FSE Methods To Predict The Smoke Layer
Interface, G.Vigne - Eurofire 2013, Basel
(Switzerland) 9th and 10th of October

Modelización de Humos / Smoke Modeling,
G.Vigne - 7º congreso internacional de
ingeniería de seguridad contra incendios,
Madrid 20,21,22 of February 2013, Madrid
(Spain)

Uncertainty of Smoke Filling Calculations in a
Large Atrium through Comparison to
Experimental Results, G.Vigne, C.Gutiérrez-
Montes, G.Rein - 9th International Conference
on Performance-Based Codes and Fire Safety
Design to be held 20-22 June 2012 at the
Excelsior, Hong Kong [ISBN 978-1-6227691-8-
6]

Assessment of Smoke Modelling techniques
through Experimental Research and Numerical
Analysis in Tunnels and Large Enclosures,
MAst Thesis, Univeristy of Jaén, Spain, 8th of
March 2012

The Use of Advanced Evacuation Modelling
For Building Design, G.Vigne, F.Herrera,
J.Jönsson, D.O'Donnell, Advanced Research

Americo Vespucio Oriente (AVO I), Chile

Two 6 km long road tunnels situated in the municipality of Santiago, Chile.
Development of the Fire Safety strategy for the tunnel system and the design of the
ventilation system including comfort and emergency. The analysis includes 1D SES
modelling and 3D CFD modelling.

Adolfo Suarez Madrid Barajas Airport – Madrid, Spain

Development of the overall fire safety strategy for the airport. Advanced analysis was a
key aspect of the project, the analysis was specifically oriented at advanced fire safety
modelling (smoke movement and people movement) for all public areas at the airport.

Schiphol Airport – Amsterdam, Netherlands

Development of advanced fire safety solutions for the public area called 'Schiphol
Plaza'. This area includes part of the airport terminals, the shopping centre, the public
transport hub (including an underground train station) and parking facilities. Gabriele
was responsible for the Fire and Smoke modelling team, involving several CFD
experts fully dedicated to the project for approximately 1 year.

Sabiha Gökçen International Airport – Istanbul, Turkey

As part of the MEP team, Gabriele lead the tunnel ventilation analysis for three road
tunnels (one highway, two services) of 1km each under the 2nd runway Istanbul's
Airport.

Bilbao Airport – Bilbao, Spain

Responsible for advanced fire analysis related to the refurbishment of the new arrival
area of the Bilbao Airport.

Baku Airport – Azerbaijan

Responsible for the advanced modelling analysis required to develop the fire
engineering solutions (Performance Based Design) on the project. This was necessary
to make the design viable.

Sidra Medical Centre – Qatar

This is the first academic medical center to be built in Qatar based on North American
hospitals. Gabriele was responsible for the Fire and Smoke modelling.

Fehmarn Belt Tunnel – Denmark

Managing the coordination of the advanced modeling, Fire/Smoke & Evacuation, for
the fire safety concept for a 19 km long immersed tunnel between Denmark and
Germany. Road and Rail.

Palahockey di Torino – Turin, Italy (2008)

Responsible for the Fire and Smoke modeling analysis, justification of the legacy use,
for the Palahockey stadium that was built for the 2006 Winter Olympics. Designed by
Arata Isozaki.

Ministry of Industry – Madrid, Spain

This project includes the development of the overall fire safety strategy for the Ministry
of Industry building in the center of Madrid. It is an existing building consisting of three
interconnected buildings and a fourth freestanding building, with an overall population
of 4000+ people. The project includes advanced fire and smoke modeling analysis.

Amazon Logistics / Distribution Centre – Madrid, Spain

For this project we performed an advanced smoke movement analysis to justify and
alternative design of mezzanine levels, to make the operational procedures viable i.e.
so that Amazon can maintain a high level of functionality of the distribution center. An
advanced ASET vs RSET analysis, to justify extended evacuation distances, was also
part of the scope for this project.

Crossrail Woolwich station – London, UK

Responsible for the evacuation study of the station, including the development of fire
scenarios and the advanced fire and smoke modeling analysis.

Workshop "Evacuation and Human Behavior in Emergency Situations", Santander (Spain), 21st of October 2011[ISBN 978-84-86116-46-0]

Conceptos básicos sobre control de humo en grandes recintos , G.Vigne, C.Gutiérrez-Montes, G.Rein - to be published in the Spanish magazine Prevención de Incendios, Numero 52, 2011[ISSN 1575-8915]

Estudio y evaluación de la eficiencia de las protecciones contra incendios en construcciones tipo atrio – A.Cantizano, P.Ayala, C.Gutiérrez-Montes,G.Rein – Ayuda a la Investigación Fundación Mapfre 2011

Modelización de Incendios - ventajas y riesgos, G.Vigne, G.Rein, published in the Spanish magazine Prevención de Incendios, n.48 – 2010

Fire and smoke modelling, the importance of using a suitable tool, G. Vigne, P. Boroweic, J. Jönsson, Combustion and Fire Dynamics, International Congress, October 2010, Santander (Spain) [ISBN 978-84-86116-23-1]

Experimental Research - Large-Scale Tunnel Fire Tests and the use of CFD modelling to predict Heat Flux and Thermal Behavior ,G. Vigne, J. Jönsson, Fire Protection and Life Safety in Buildings and Transportation Systems, International Congress, October 2009, Santander (Spain) [ISBN: 978-84-8102-559-0]

Ingeniería de Túneles, Centro para la formación e investigación en situaciones de emergencia en espacios subterráneos" Co-Author chapter 25 – U.D. Proyectos 2009 [ISBN 978-84-96140-32-5]

Full Scale Fire Tests in Tunnels and the Use of Advanced CFD modelling to Predict Fire and Smoke Behavior ,G. Vigne, J. Jönsson – Arup Research Review 2008

The Use of CFD Modelling to Predict Smoke Movement in Tunnels, G.Vigne, S. Winter, J. Jönsson; J. Stern-Gottfried. - International Congress Smoke Control in Buildings and Tunnels, Santander (Spain), 15-17 October 2007 [ISBN 978-84-8102-516-3]

Languages

Italian (mother tongue)

English

Spanish

French (basic)

Medisch Spectrum Twente – Netherlands

Responsible for the Fire and Smoke modeling analysis for the integration of a 30m high atrium in the new hospital in Enschede.

Birmingham new street station – London, UK

Birmingham New Street is the largest and busiest of the three main railway stations in the Birmingham City Centre, England. The work include Evacuation study for fire scenarios including advanced fire and smoke modelling analysis.

Committees and Boards

- Member of the European SFPE (Society of Fire Protection Engineers) coordination group (ECCG).
- Member of the SFPE Subcommittee for Standards Oversight (SCSO).
- Member of the SFPE Long-Range Planning Working Group.
- Member of the Editorial Advisory Board of the SFPE Europe Magazine.
- SFPE Conference Portugal 2018 (Scientific Committee)
- SFPE Europe Conference Rotterdam 2018 (Scientific Committee, Program Committee)
- SFPE International Conference Warsaw 2016 (Scientific Committee)
- SFPE Europe Conference Copenhagen 2015 (Scientific Committee)
- SFPE Spain Board of Directors
- Editorial Advisory Board of the SFPE Europe Magazine