Wolfram Jahn v.A.

PhD

Pontificia Universidad Católica de Chile
Depto. de Ing. Mecánica y Metalúrgica
Av. Vicũna Mackenna 4860, Santiago
📟 *+56-9-51595524*
☎ *+56-2-23545853*
✉ *wjahn@ing.puc.cl*

PERSONAL INFORMATION

Date of Birth	10th of October, 1979
Nationality	Chilean/German
Marital Status	Married

EDUCATION

Sept 2006 – April 2010 **PhD in Engineering**, *The University of Edinburgh*, Edinburgh, UK.

THESIS

Inverse Modelling to Forecast Enclosure Fire Dynamics

In my thesis I address the problem of parameter estimation in a CFD fire model by assimilating measurements using gradient optimisation. The gradient of the CFD code is obtained by tangent linear approximation.

SUPERVISORS

Dr Guillermo Rein and Professor José Luis Torero

2004 – 2005 **MSc Mechanical Engineering**, *Pontificia Universidad Católica de Chile*, Santiago de Chile.

MASTER THESIS

Radiation Modelling in a Particle Cloud using Spherical Harmonics and Finite Volume Method

SUPERVISOR

Professor Juan de Dios Rivera

1998 – 2004 **Mechanical Engineering**, *Pontificia Universidad Católica de Chile*, Santiago de Chile.

1996 – 1997 ***Colegio Alemán de Santiago (Deutsche Schule Santiago)***, *Santiago de Chile.*

1990 – 1996 ***Kurfürst Friedrich Gymnasium***, *Heidelberg, Germany.*

1986 – 1990 ***Neuberg Grundschule***, *Dossenheim, Germany.*

Professional Activities

Employments

Jul 2014 – present **Lecturer (Assistant Professor)**, *Department of Mechanical Engineering*, Pontificia Universidad Católica de Chile.

Sep 2013 – Jul 2014 **Regional Manager**, *Raindance Science Inc.*, Santiago, Chile–Coral Springs, USA.
Smoke modelling; Egress modelling; Fire Safety Engineering

Feb 2012 – Aug 2013 **Research Engineer**, *ChapmanBDSP, Consulting Engineers*, London, UK.
CFD simulations for the built environment (Pedestrian comfort studies; Natural ventilation studies; Smoke management modelling); Daylight simulation with Radiance (Bash scripting); Software development (inhouse thermal model for buildings and masterplanning).

2010 – 2012 **Research Fellow**, *Queen Mary, University of London*, London, UK.
CFD based Shape Optimisation using parametric CAD representation. We combine CFD solvers and their adjoint sensitivities with surface sensitivities obtained from a CAD system, integrating both in an optimisation loop.

2005 – 2006 **Revenue Control Analyst**, *LAN Airlines S.A.*, Santiago de Chile.
I was part of a team that tested and implemented a new revenue accounting system for LAN Airlines passenger services. My duties involved developing and analysing test cases, assessing advantages and disadvantages and suggesting improvements to the developers. Additionally I was in charge of identifying inefficiencies in data analysis procedures, and of proposing solutions (mostly Excel-VB based).

Summer 2004 **Professional Internship**, *Ministerio de Obras Públicas (Chilean Department for Infrastructure)*, Santiago de Chile.
Elaboration of software for displacement calculation of a floating jetty for the port facilities of a small costal town (numerical solution of a system of PDEs).

Consultancy work

2015 **Consultancy**, *for Raindance Science Inc.*, Lima, Perú.
Dust explosion risk analysis in a carmine manufacturing plant.

2016 **Consultancy**, *for Autopista El Maule*, Santiago, Chile.
Analysis of fire risk in the Chacabuco tunnel.

2015 **Consultancy**, *for Raindance Science Inc.*, Santiago, Chile.
Analysis of fire risk in Chilean buildings.

2013 **Consultancy**, *for Raindance Science Inc.*, Santiago, Chile.
CFD simulations to assess the fire safety performance of the newly built mall Los Dominicos (Santiago).

2012 **Consultancy**, *for Raindance Science Inc.*, Buenos Aires, Argentina.
CFD simulations to model the interaction of smoke with the ventilation system in the atrium of the Torre Macro building (Buenos Aires).

2011 **Consultancy**, *for DICTUC S.A.*, Santiago, Chile.
Forensic analysis of a fire in a national prison facility – CFD simulations to model smoke movement.

2010	**Consultancy**, *for I-RiSC – International Risk and Safety Consultants*, Bonn, Germany.
	Fire Safety Surveys for Insurance purposes (on behalf of RSE insurance group).
2009	**Consultancy**, *for International Fire Investigators and Consultants*, Glasgow, UK.
	Computational simulation of time to sprinkler activation in the 2005 Magna Park Warehouse Fire.
2008	**Consultancy**, *for Rushbrook Consultants – Fire, Safety & Risk Engineers*, Edinburgh, UK.
	Assessment on the fire safety of a LG manufacturing plant.
2007 – 2008	**Consultancy**, *Dartford Tunnel*, London, UK.
	Study of viability of a water mist system in the Dartford Tunnel.
2005	**Consultancy**, *DICTUC S.A.*, Santiago, Chile.
	Design calculations for supersonic air injectors for copper melting furnaces.

PUBLICATIONS (cited by 302 according to Google Scholar)

PEER REVIEWED JOURNAL ARTICLES (ISI)

2017 **Jahn, W.**, *Using suppression and detection devices to steer CFD fire forecast simulations*, Fire Safety Journal, in press.
doi:10.1016/j.firesaf.2017.03.062

2016 **Fehrmann, S.,Jahn, W., Rivera, J.**, *Permeability comparison of natural and artificial pinus radiata forest litters*, Fire Technology, Vol. 53(3).
doi:10.1007/s10694-016-0631-1

2015 **Jahn, W., González, O., Rivera, J., Torero, J.L.**, *Using Computational Fluid Dynamics in the forensic analysis of a prison fire*, Forensic Science International, Vol. 253.
doi:10.1016/j.forsciint.2015.06.003

2014 **Ríos, O., Jahn, W., Rein, G.**, *Forecasting Wind-Driven Wildfires Using An Inverse Modelling Approach*, Natural Hazards and Earth System Sciences, Vol. 14.
doi:10.5194/nhess-14-1491-2014

2013 **Xu, S., Jahn, W., Müller, J.-D.**, *CAD-based shape optimisation with CFD using a discrete adjoint*, International Journal for Numerical Methods in Fluids, Vol. 74(3).
doi:10.1002/fld.3844

2012 **Jahn, W., Rein, G., Torero, J.L.**, *Forecasting fire dynamics using inverse computational fluid dynamics and tangent linearisation*, Advances in Engineering Software, Vol. 47(1).
doi:10.1016/j.advengsoft.2011.12.005

2012 **Rivera, J., Davies, M., Jahn, W.**, *Flammability and the Heat of Combustion of Natural Fuels: a review*, Combustion Science and Technology, Vol. 184(2).
doi:10.1080/00102202.2011.630332

2011   **Jahn, W., Rein, G., Torero, J.L.**, *Forecasting Fire Growth using an Inverse Zone Modelling Approach*, Fire Safety Journal, Vol. 46(3).
doi:10.1016/j.firesaf.2010.10.001

2010   **Jahn, W., Rein, G., Torero, J.L.**, A Posteriori *Modelling of the growth phase of Dalmarnock Fire Test One*, Building and Environment, Vol 46, Issue 5.
doi:10.1016/j.buildenv.2010.11.001

2009   **Cowlard, A., <u>Jahn, W.</u>, Abecassis-Empis, C., Rein, G., Torero, J.L.**, *Sensor Assisted Fire Fighting*, Fire Technology, Vol. 35.
doi:10.1007/s10694-008-0069-1

2009   **Rein, G., Torero, J.L., <u>Jahn, W.</u>, Stern-Gottfried, J., Ryder, N., Desanghere, S., Lázaro, M., Mowrer, F., Coles, A., Joyeux , D., Alvear, D., Capote, J., Jowsey, A., Abecassis-Empis, C., Reszka, P.**, *Round-Robin Study of* a priori *Modelling Predictions of The Dalmarnock Fire Test One*, Fire Safety Journal, Vol. 44.
doi:10.1016/j.firesaf.2008.12.008

Relevant Conference Presentations

2011   **Jahn, W., Jens-D. Müller**, *Continuity in CAD integrated shape optimisation*, Eccomas 2011.
Antalya, Turkey

2011   **Jahn, W., Rein, G., Torero, J.L.**, *Forecasting Fire Growth using an Inverse CFD Modelling Approach in a Real-Scale Fire Test*, Fire Safety Science, Vol. 10, pp: 1349–1358, doi:10.3801/IAFSS.FSS.10-1349.
Presented at the International Association for Fire Safety Science at University of Maryland, USA

2008   **Jahn, W., Rein, G., Torero, J.L.**, *The Effect of Model Parameters on the Simulation of Fire Dynamics*, Fire Safety Science, Vol. 9, doi:10.3801/IAFSS.FSS.9-1341.
Presented at the International Association for Fire Safety Science at University of Karlsruhe, Germany

Regular Reviewer

2008 – present   **Fire Safety Journal**.

2009 – present   **Fire Technology**.

2008 – present   **International Association for Fire Safety Science**.

Research Projects

2015   **CONICYT**, *Fondecyt de Iniciación – Grant №11150757*.

2006 – 2010   **Technology Strategy Board, UK**, *FireGrid: A cross-disciplinary collaborative project to pursue fundamental research for developing real time emergency response systems using the Grid*, The University of Edinburgh.
www.firegrid.org

2010 – 2012 **Seventh Framework Programme, EU**, *FlowHead: Fluid Optimisation Workflows for Highly Effective Automotive Development Processes*, Queen Mary, University of London.
flowhead.sems.qmul.ac.uk

Teaching

2014 – present **Combustion**, *School of Engineering*, Pontificia Universidad Católica.

2014 – present **Energy Conversion**, *School of Engineering*, Pontificia Universidad Católica.

2014 – present **Fundamentals of CFD**, *School of Engineering*, Pontificia Universidad Católica.

Awards and Scholarships

2009 U.S. National Science Foundation – Travel expenses, accommodation and registration fees of the 8th Adjoint Workshop in PA, U.S.A.

2006 Alβan Programme High level Scholarship for Latin America – Grant Nº E06D100038CL

2006 UK Technology Strategy Board's Collaborative Research and Development Programme

IT skills

Languages	C/C++, Python, Fortran, Java, shell scripting (bash, ksh), Lisp	**Engineering**	CATIA, OpenFOAM, Fluent, Ansys CFX, FDS, Radiance
Platforms	GNU/Linux, Unix (BSD, Solaris, OS X), Windows	**Tools**	LaTeX, Emacs, git, awk, Qt

Languages

Spanish	**Fluent**	*Native language.*
German	**Fluent**	*Native language.*
English	**Fluent**	*Speaking, reading, and writing.*