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*Bruno Brunone*  
*Curriculum Vitae et Studiorum*

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*Department of Civil and Environmental Engineering*

*University of Perugia*



*July 2019*

## **BRUNO BRUNONE**

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Web of Science Researcher ID: G-7545-2014

Born: April 30, 1958 — Napoli, Italy

Married, 2 children

Nationality: Italian

## Current position

*Professor at the Department of Civil and Environmental Engineering of the University of Perugia*

*Director of the Water Engineering Laboratory (WEL)*

*President of the Steering Committee of the Department of Excellence Project (2018-2022)*

*Deputy Rector for Security and Safety of Individuals and Structures*

*Director of the Climate and Climate Change Research Centre (CRC)*

*Member of the Committee of the International Doctoral Program in “Civil and Environmental Engineering” (University of Perugia, Department of Excellence 2018-2022)*

*Member of Associazione ARTES 4.0 - Advanced Robotics and Enabling Digital Technologies Systems 4.0*

*Member of the External Advisory Committee of the H2DOC Doctoral Program 2014-2022 (Istituto Superior Tecnico, Laboratório Nacional de Engenharia Civil, École Polytechnique Fédérale de Lausanne)*

## AREAS OF SPECIALIZATION

Transient test-based techniques for the analysis of pipe system performance throughout the urban environment (fault detection);

Modeling of transients in pressurized pipe systems: unsteady friction simulation, viscoelastic effects in polymeric pipes, 2-D models and local velocity measurement;

Devices for pressure wave generation and their use in real pipe systems;

Leak-law for leakage evaluation;

Pumping optimization;

Pressure control by Pressure Reducing Valves (PRV).

In two early representative works (Brunone et al, 1991a; 1991b), an unsteady friction (UF) model based on the idea that unsteady shear stress can be modeled using the mean local and convective accelerations of the fluid has been proposed. Such a model has been found to be superior to many other models and still to main-

tain simplicity from the computational point of view of the equations in which the unsteady friction is evaluated by means of uniform flow formulas (i.e., the steady-state approach). Such a model is the most representative within the so-called Instantaneous Acceleration Based (IAB) ones. It has been found to be a basis of much follow-on research as proven by the large number of citations of the papers where such an UF model was proposed (Brunone et al, 1991a; 1991b; 1995); it is worthy of noting that some papers refer to it even in their title (e.g., Li et al, 2011; Yao et al, 2014).

In another pioneering work (Brunone et al, 2000), the velocity profiles in an unsteady pipe flow using the ultrasonic technique have been measured. This work has provided some much required experimental evidence which is of great importance to the development of a better understanding of the unsteady pipe flow and its modeling.

Starting with the very pioneering work (Brunone, 1989) – at that time the use of transients for leak detection was very innovative – transient test-based techniques for pipe fault (e.g., leaks, partially closed in-line valves, and partial blockages) detection have been explored both in laboratory and real pipe systems. With the aim of generating save pressure waves, the Portable Pressure Wave Maker (PPWM) device has been refined at the Water Engineering Laboratory of the University of Perugia (Brunone et al, 2008). At the 2016 H<sub>2</sub>O Water International Exhibition of Bologna (Italy), the PPWM received the "sustainability award".

To confirm the role played in the field of pipe system management, Bruno Brunone (<https://www.youtube.com/watch?v=EVb27V7JXig>) is one of 47 respondents – engineers, modelers, researchers and practitioners – who have made significant contributions to the development of the field of the Water Distribution Systems Analysis (WDSA) within the WDSA History Project, sponsored by the Environmental and Water Resources Institute (EWRI).

The valuable results of the research in the four-year period 2011-2014 is proved by the fact that in the analysis of the research quality for such a period of time (VQR 2011-2014) executed by the Italian Ministry of Education, University and Research (MIUR), the Hydraulics team of the University of Perugia occupies the first place in Italy.

Bruno Brunone has been the President of the Organizing Committee of impor-

tant International Conferences: 2013 - *Computing and Control for the Water Industry - CCWI2013*, Perugia; 2014: *Water Distribution System Analysis - WDSA2014*, Bari; 2015: *7th Groundwater Symposium of the International Association for Hydro-Environment Engineering and Research (IAHR)*, Perugia. He is the founder and President of the Organizing Committee of the biennial Italian Conferences on *Pipe System Management* (eight editions; University of Perugia: 2003, 2005, 2007; the Second University of Napoli: 2009; Sapienza University of Roma, and ACEA: 2011; University of Trento: 2015; University of Cassino and Southern Lazio: 2017; University of Napoli Federico II: 2019).

Brunone is an Associate Editor of the *J. of Hydraulic Engineering* of the American Society of Civil Engineers ASCE, an Editor of *Water Supply* of the International Water Association IWA, a member of the Editorial Board of *Water, The Open Civil Engineering Journal*, and the Italian Journal *Servizi a Rete*.

Brunone, B. (1989). "A technique for leak detection in wastewater outfalls. Numerical experiments." Conf. on "Wastewater Outfalls", University of Naples, Naples, Italy, D.223-236 (in Italian).

Brunone, B., Golia, U.M., and Greco, M. (1991a). "Some remarks on the momentum equation for fast transients." Proc., Int. IAHR Meeting on "Hydraulic Transients and Water Column Separation", E. Cabrera and M.A. Fanelli (eds), Valencia (E), 201-209.

Brunone, B., Golia, U.M., and Greco, M. (1991b). "Modelling of fast transients by numerical methods." Proc., Int. IAHR Meeting on "Hydraulic Transients and Water Column Separation", E. Cabrera and M.A. Fanelli (eds), Valencia (E), 273-280.

Brunone, B., Golia, U.M., and Greco, M. (1995). "The effects of twodimensionality on pipe transients modeling." *J. of Hydraulic Engineering*, ASCE, 121(12), 906-912.

Brunone, B., Karney, B. W., Mecarelli, M., and Ferrante, M. (2000). "Velocity profiles and unsteady pipe friction in transient flow." *J. of Water Resources Planning and Management*, ASCE, 126(4), 236-244.

Brunone, B., Ferrante, M., and Meniconi, S. (2008). "Portable pressure wave-maker for leak detection and pipe system characterization.", *J. of American Water Works Association*, AWWA, 100(4):108-116.

Li, C., Liao, K., Jia, W., and Wu, X. (2011). "Waterhammer analysis of oil transportation pipeline using Brunone-Vitkovsky unsteady flow friction model.", Proc.,

Asia-Pacific Power and Energy Engineering Conference (APPEEC), in: "Asia-Pacific Power and Energy Engineering Conference" Book series.

Yao, E., Kember, G., and Hansen, D. (2014). "Analysis of water hammer attenuation in the Brunone model of unsteady friction." *Quart. Appl. Math.*, 72(2), 281-290.

## PROFESSIONAL POSITIONS HISTORY

- 2000 - University of Perugia: Professor
- 1997 - University of Perugia: Director of the Water Engineering Laboratory (WEL)
- 2011 - 2012 University of Perugia: Member of the Committee for the new constitution
- 2003 - 2013 University of Perugia: Deputy Director of the Department of Civil and Environmental Engineering
- 2003 - 2010 University of Perugia: Member of the Board of Directors
- 2001 - 2004 University for Foreigners of Perugia: Director of the Water Resources and Documentation Centre (WARREDOC)
- 1992 - 2000 University of Perugia: Associate Professor
- 1991 - 1992 University of Napoli Federico II: Assistant Professor
- 1989 - 1990 University of Napoli Federico II: Research Fellow
- 1988 University of Napoli Federico II: "Giuseppe Pistilli" scholarship
- 1986 - 1987 University of Napoli Federico II: Research Fellow
- 1983 - 1986 University of Napoli Federico II: PhD student

## Education

- 1983 MSc in Civil-Hydraulic Engineering (cum laude)—University of Napoli Federico II
- 1986 PhD in Hydraulic Engineering—University of Napoli Federico II and Sapienza Università di Roma

## AWARDS

- 2018 J. C. STEVENS AWARD FOR THE DISCUSSION OF "HYDRAULIC TRANSIENTS IN VISCOELASTIC BRANCHED PIPELINES," IN THE JOURNAL OF HYDRAULIC ENGINEERING

- (AUGUST 2016) — Environmental and Water Resources Institute (EWRI)
- 2016 SUSTAINABILITY AWARD FOR THE PORTABLE PRESSURE WAVE MAKER (PPWM) — H<sub>2</sub>O Bologna International Water Exhibition
- 1983 AWARD FOR THE RESEARCH ABOUT THE HISTORY OF THE HYDRAULIC WORKS IN THE VOLTURNO RIVER CATCHMENT — Accademia Pontaniana, Napoli

## International Conferences/Workshops - INVITED LECTURES

- 2019 *10th Global Leakage Summit, London, UK*
- 2018 *“International Workshop on Pipe Network Analysis & Leak Detection Technology in the Water Distribution System”, Sungkyunkwan University and K-water, Incheon, Republic of Korea*
- 2018 *“Symposium on The Latest Global Trend of Smart Water Grid (SWG). Technology and its Market. Korea International Water Week (KIWW 2018) - Water Partnership for Sustainable Development”, Sungkyunkwan University and National Smart Water Grid Research Group (NSWGRG), EXCO, Daegu, Republic of Korea*
- 2017 *“Symposium on Hydro-environment Research for Smart Cities. In honour of the 65th birthday of Prof. Joseph Hun-wei Lee”, The Hong Kong University of Science and Technology (HKUST), Hong Kong*
- 2017 *“37th IAHR World Congress” (Special Session on Transients), International Association for Hydro-Environment Engineering and Research (IAHR), Kuala Lumpur, Malaysia*
- 2016 *“WaterIdeas2016”, International Water Association (IWA), Bologna, Italy*
- 2015 *“PAVCO Chair’s 20th year anniv. celebration”, Universidad de los Andes, Bogotá, Colombia*
- 2015 *“Smart Urban Water Systems”, Hong Kong University of Science & Technology, Hong Kong*
- 2013 *6th Global Leakage Summit, London, UK*
- 2008 *International Expo Zaragoza “Water and Sustainable Development”, Zaragoza, Spain*
- 2004 *XXIX National Conference of Hydraulics and Hydraulic Works, Trento, Italy*

## PUBLICATIONS

Table 1: BIBLIOGRAPHIC INDICES (July 2019)

GOOGLE SCHOLAR: h-index: 33; number of citations: 3909
SCOPUS: h-index: 28; number of citations: 2240 (number of papers: 121)
ISI WEB OF SCIENCE: h-index: 27; number of citations = 1894 (number of papers: 112)

### INTERNATIONAL REFEREED JOURNAL PAPERS AND CONTRIBUTIONS

- 2019 Zouari, F., Louati, M., Meniconi, S., Blasten, E., Ghidaoui, M.S., and Brunone, B. "Experimental verification of the accuracy and robustness of area reconstruction method for pressurized water pipe system", *Journal of Hydraulic Engineering, ASCE*, accepted.
- 2019 Alexander, J.M., Lee, P.J., Davidson, M., Li, Z., Murch, R., Duan, H.-F., Meniconi, S., and Brunone, B. "Experimental and numerical investigation of the interaction of fluid transients with an in-line air blockage", *Journal of Hydraulic Engineering, ASCE*, accepted.
- 2019 Keramat, A., Wang, X., Louati, M., Meniconi, S., Brunone, B., and Ghidaoui, M.S. "Objective functions for transient based pipeline leakage detection in a noisy environment: least square and matched-filter", *Journal of Water Resources Planning and Management, ASCE*, accepted.  
doi: 10.1061/(ASCE)WR.1943-5452.0001108
- 2019 Alexander, J.M., Lee, P.J., Davidson, M., Duan, H.-F., Li, Z., Murch, R., Meniconi, S., and Brunone, B. "Experimental validation of existing numerical models for the interaction of fluid transients with in-line air pockets", *Journal of Fluids Engineering, ASME*, accepted.  
doi: 10.1115/1.4043776
- 2019 Wang, X., Lin, J., Keramat, A., Ghidaoui, M.S., Meniconi, S., and Brunone, B. "Matched-field processing for leak localization in a viscoelastic pipe: An experimental study", *Mechanical Systems and Signal Processing*, 124, 459-478.  
doi: 10.1016/j.ymssp.2019.02.004
- 2019 Brunone, B., Meniconi, S., and Capponi, C. "Numerical analysis of the transient pressure damping in a single polymeric pipe with a leak", *Urban Water Journal*, 15(8), 760-768.



- doi: 10.1080/1573062X.2018.1547772
- 2018 Jing, L., Li, Z., Wang, W., Dubey, A., Lee, P., Meniconi, S., Brunone, B., and Murch, R. D. "An approximate inverse scattering technique for reconstructing blockage profiles in water pipelines using acoustic transients", *The Journal of the Acoustical Society of America Express Letters JASA*, 143(5), EL322.  
doi: 10.1121/1.5036957
- 2018 Che, T.-C., Duan, H.-F., Lee, P. J., Meniconi, S., Pan, B., Brunone, B., and Ghidaoui, M. S. "Radial pressure wave behavior in transient laminar pipe flows under different flow perturbations", *J. of Fluids Engineering, ASME*, 140(10), 101203.  
doi: 10.1115/1.4039711
- 2018 Meniconi, S., Brunone, B., and Frisinghelli, M. "On the role of minor branches, energy dissipation, and small defects in the transient response of transmission mains", *Water*, 10(2), 187.  
doi: 10.3390/w10020187
- 2018 Louati, M., Ghidaoui, M.S., Meniconi, and Brunone, B. "Bragg-type resonance in blocked pipe system and its effect on the eigenfrequency shift", *J. of Hydraulic Engineering, ASCE*, 144(1), 04017056.  
doi: 10.1061/(ASCE)HY.1943-7900.0001383
- 2018 Martins, N.C., Brunone, B., Meniconi, S., Ramos, H.M., and Covas, I.D. "CFD and 1D approaches for the unsteady friction analysis of low Reynolds number turbulent flows", *J. of Fluids Engineering, ASME*, 140(1), 011102.  
doi: 10.1115/1.4037504
- 2018 Meniconi, S., Brunone, B., Mazzetti, E., Laucelli, D.B., and Borta, G. "Hydraulic characterization and transient response of Pressure Reducing Valves. Laboratory experiments", *J. of Hydroinformatics, IWA*, 19(6), 798 - 810.  
doi: 10.2166/hydro.2017.158
- 2017 Martins, N.M.C., Brunone, B., Meniconi, S., Ramos, H.M., and Covas, D.I.C. "Efficient CFD model for transient laminar flow modeling: pressure wave propagation and velocity profile changes", *J. of Hydraulic Engineering, ASCE*, 143(12), 04017050.  
doi: 10.1061/(ASCE)HY.1943-7900.0001372
- 2017 Federici, E., Meniconi, S., Ceci, E., Mazzetti, E., Casagrande, C., Montalbani, E., Businelli, S., Mariani, T., Mugnaioli, P., Cenci, G., and Brunone, B. "Legionella survey in the plumbing system of a sparse academic campus: a case study at the University of Perugia", *Water*, 9, 662.

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- 2017 Louati, M., Meniconi, S., Brunone, B., and Ghidaoui, M.S. "Experimental study of the eigenfrequency shift mechanism in a blocked pipe system", *Journal of Hydraulic Engineering, ASCE* 143(10), 04017044.  
doi:10.1061/(ASCE)HY.1943-7900.0001347
- 2017 Duan, H.F., Meniconi, S., Lee, P.J., Brunone, B., and Ghidaoui, M.S., "Local and integral energy based evaluation for the unsteady friction relevance in transient pipe flows", *Journal of Hydraulic Engineering, ASCE* 143(7): 04017015.  
doi:10.1061/(ASCE)HY.1943-7900.0001304
- 2017 Meniconi, S., Brunone, B., van Zyl, K., and Mazzetti, E., "Aqualibrium competition: laboratory data and EPAnet simulations", *Procedia Engineering, Elsevier* 186: 522-529.  
doi:10.1016/j.proeng.2017.03.265
- 2017 Cerlini Bongioannini P., Meniconi, S., and Brunone, B., "Groundwater supply and climate change management by means of global atmospheric datasets. Preliminary results", *Procedia Engineering, Elsevier* 186: 420-427.  
doi:10.1016/j.proeng.2017.03.245
- 2017 Meniconi, S., Brunone, B., Frisinghelli, M. Mazzetti, E., Larentis, M., and Costisella, C., "Safe transients for pipe survey in a real transmission main by means of a portable device: the case study of the Trento (I) supply system", *Procedia Engineering, Elsevier* 186: 228-235.  
doi:10.1016/j.proeng.2017.03.232
- 2016 Pezzinga, G., Brunone, B., and Meniconi, S. "On the relevance of pipe period on Kelvin-Voigt viscoelastic parameters: 1-D and 2-D inverse transient analysis", *Journal of Hydraulic Engineering, ASCE* 142(12): 04016063.  
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- 2016 Meniconi, S., Brunone, B., Mazzetti, E., Laucelli, D.B., and Borta, G. "Pressure reducing valve characterization for pipe system management", *Procedia Engineering, Elsevier* 162: 455-462 .  
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- 2016 Brunone, B., Discussion of "Hydraulic transients in viscoelastic branched pipelines by S. Evangelista, A. Leopardi, R. Pignatelli, and G. de Marinis", *Journal of Hydraulic Engineering, ASCE* 142(8): 07016005.  
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- 2016 Franchini, M., and Brunone, B. "Editorial: Innovative and sustainable methodologies for smart water network management", *Civil Engineering and Environmental Systems* 33(1):1-2.  
doi: 10.1080/10286608.2016.1148144
- 2016 Ferrante, M., Capponi, C., Collins, R., Edwards, J., Brunone, B., and Meniconi, S. "Numerical and transient analysis of random leakage in time and frequency domain", *Civil Engineering and Environmental Systems* 33(1):70-84.  
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- 2016 Meniconi, S., Brunone, B., Ferrante, M., and Capponi, C., "Mechanism of interaction of pressure waves at a discrete partial blockage", *J. of Fluids and Structures* 62: 33-45  
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doi: 10.2166/hydro.2015.000
- 2015 Meniconi, S., Brunone, B., Ferrante, M., Capponi, C., Carrettini, C.A., Chiesa, C., Segalini, D., and Lanfranchi, E.A., "Anomaly pre-localization in distribution-transmission mains. Preliminary field tests in the Milan pipe system", *J. of Hydroinformatics, IWA* 17(3): 377-389.  
doi:10.2166/hydro.2014.038
- 2015 B. Brunone, M. Ferrante, S. Meniconi, and L. Berardi, "Water quality and fault assessment in pipe systems - Editorial", *J. of Water Supply: Research and Technology – AQUA, IWA* 64(5):493-495.  
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- 2015 Massari, C., Yeh, J. T.-C, Ferrante, M., Brunone, B., and Meniconi, S., "A stochastic approach for extended partial blockage detection in viscoelastic pipelines: numerical and laboratory experiments", *J. of Water Supply: Research and Technology – AQUA, IWA* 64(5): 583-595.  
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- 2015 Guadagnini, A., Sanchez-Vila, X., and Brunone, B., "Preface", *Procedia Environmental Sciences, Elsevier* 25:1-3.  
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- 2015 Ferrante, M., Mazzetti, E., Fiori, A., Burini, M., Fioriti, B., Mazzoni, A., Schirò, G.,

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- 2015 Ferrante, M., Mazzetti, E., Fiori, A., Burini, M., Fioriti, B., Mazzoni, A., Schirò, G., Vacca, G., Brunone, B., Meniconi, S., and Capponi, C., "Delineation of wellhead protection areas in the Umbria region. 2. Validation of the proposed procedure", *Procedia Environmental Sciences, Elsevier* 25: 96-103.  
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- 2015 Brunone, B., Meniconi, S., Capponi, C., and Ferrante, M., "Leak-induced pressure decay during transients in viscoelastic pipes. Preliminary results", *Procedia Engineering, Elsevier* 119:243-252.  
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- 2015 Meniconi, S., Brunone, B., Ferrante, M., Mazzetti, E., Laucelli, D.B., and Borta, G., "Transient effects of self-adjustment of pressure reducing valves", *Procedia Engineering, Elsevier* 119:1030-1038.  
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- 2015 Brunone, B., Ferrante, M., and Meniconi, S., Discussion of "Single-event leak detection in pipeline using first three resonant responses by J. Gong, M.F. Lambert, A.R. Simpson, and A.C. Zecchin", *J. of Hydraulic Engineering, ASCE* 141(2):07014019-1/2.  
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- 2014 Meniconi, S., Brunone, B., Ferrante, M., and Massari, C., "Energy dissipation and pressure decay during transients in viscoelastic pipes with an in-line valve", *J. of Fluids and Structures* 45:235-249.  
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- 2014 Massari, C., Yeh, T.-C.J., Ferrante, M., Brunone, B., and Meniconi, S., "Detection and sizing of extended partial blockages in pipelines by means of a stochastic successive linear estimator", *J. of Hydroinformatics, IWA* 16(2):248-258.

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- 2014 Meniconi, S., Duan, H.F., Brunone, B., Ghidaoui, M.S., Lee, P.J., and Ferrante, M., "Further developments in rapidly decelerating turbulent pipe flow modeling", *J. of Hydraulic Engineering, ASCE* 140(7):04014028-1/9.  
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- 2014 Pezzinga, G., Brunone, B., Cannizzaro, D., Ferrante, M., Meniconi, S., and Berni, A., "Two dimensional features of viscoelastic models of pipe transients", *J. of Hydraulic Engineering, ASCE* 140(8):0401403-1/9.  
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- 2014 Ferrante, M., Meniconi, S., and Brunone, B., "Local and global leak laws. The relationship between pressure and leakage for a single leak and for a district with leaks", *Water Resources Management, EWRA* 28(11):3761-3782.  
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- 2014 Brunone, B., and Giustolisi, O., "Preface", *Procedia Engineering, Elsevier* 70:1-3.  
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- 2014 Brunone, B., Meniconi, S., Ferrante, M., Carrettini, C.A. , Chiesa, C., Capponi, C., and Segalini, D., "The characterization of Milan WDS by pumping switching off: field test assesment", *Procedia Engineering, Elsevier* 70:201-208.  
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- 2014 Capponi, C., Ferrante, M., Pedroni, M., Brunone, B., Meniconi, S., Zaghini, M., and Leoni, F., "Real data analysis and efficiency of the TEA Mantova Casale (Italy) variable-speed pumping station", *Procedia Engineering, Elsevier* 70:248-255.  
doi: 10.1016/j.proeng.2014.02.028
- 2014 Ferrante, M., Brunone, B., Meniconi, S., Capponi, C., and Massari, C., "The leak law: from local to global scale", *Procedia Engineering, Elsevier* 70:651-659.  
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- 2014 Massari, C., Yeh, T.-C.J., Ferrante, M., Brunone, B., and Meniconi, S., "A stochastic tool for determining the presence of partial blockages in viscoelastic pipelines: first experimental results", *Procedia Engineering, Elsevier* 70:1112-1120.  
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- 2014 Meniconi, S., Brunone, B., Ferrante, M., Carrettini, C.A., Chiesa, C., Capponi, C., and Segalini, D., "The skeletonization of Milan WDS on transients due to pumping switching off: preliminary results", *Procedia Engineering, Elsevier* 70:1131-1136.  
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- 2014 Giustolisi, O., and Brunone, B., "Preface", *Procedia Engineering, Elsevier* 89:1-3.  
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- 2014 Giustolisi, O., Berardi, L., Laucelli, D., Savic, D., Walski, T., and Brunone, B., "Battle of background leakage assessment for water networks (BBLAWN) at WDSA Conference 2014", *Procedia Engineering, Elsevier* 89:4-12.  
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- 2014 Ferrante, M., Capponi, C., Collins, R., Edwards, J., Brunone, B., and Meniconi, S., "Effect of uncertainty demand location on transient behavior of WDS", *Procedia Engineering, Elsevier* 89:1321-1328.  
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- 2014 Meniconi, S., Brunone, B., Ferrante, M., Capponi, C., Pedroni, M., Zaghini, M., and Leoni, F., "Transmission main survey by transient tests: the case of Villanova plan in Mantova (I)", *Procedia Engineering, Elsevier* 89:1343-1349.  
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- 2014 Brunone, B., Ferrante, M., Meniconi, S., and Berardi, L., "Preface: CCWI2013", *Drinking Water Engineering and Science, DUT* 7:99-100.  
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- 2013 Ferrante, M., Massari, C., Todini, E., Brunone, B., and Meniconi, S., "Experimental investigation of leak hydraulics", *J. of Hydroinformatics, IWA* 15(3):666-675.  
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- 2013

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- Ferrante, M., Brunone, B, e Pasqualoni, M., "La diagnosi dei sistemi di condotte mediante analisi armonica", *Atti, XXVIII Convegno di Idraulica e Costruzioni Idrauliche* V.A. Copertino et al (eds), Potenza, I:29-36.
- 2002 Cannizzaro, D., Pezzinga, G., Brunone, B., e Ferrante, M., "Dissipazioni nei transitori in condotte viscoelastiche", *Atti, XXVIII Convegno di Idraulica e Costruzioni Idrauliche* V.A. Copertino et al (eds), Potenza, I:93-100.
- 2002 Brunone, B., Ferrante, M. e Ubertini, L. (2002). Un dispositivo per la ricerca perdite nelle condotte in pressione", *Atti, "Ecosistemi urbani" - Convegno nell'ambito della Conferenza annuale della ricerca Accademia Nazionale dei Lincei*, M. Caputo (ed), Roma, 393-401.
- 2000 Brunone, B. Ferrante, M., e Rossetti, A.G., "Le onde di pressione quale strumento per la ricerca perdite nelle condotte", *Atti, XXVII Convegno di Idraulica e Costruzioni Idrauliche* G. Scarsi et al (eds), Genova, III:253-261.
- 1998 Tomasicchio, G.R., e Brunone, B., "Cinematica di modelli tipo-Boussinesq per onde propagantisi in profondità intermedie", *Atti, XXVI Convegno di Idraulica e Costruzioni Idrauliche* G. Rossi et al (eds), Catania, I:211-221.
- 1997 Ferrante, M., Brunone, B., e Tomasicchio, G.R., "Sui processi di ricarica di una falda superficiale", *Atti, Conferenza in onore del professor Edoardo Orabona nel centenario della nascita* A. Damiani et al (eds), Bari, 453-465.
- 1996 Brunone, B., Ferrante, M., e Romano, N., "Un confronto fra tecniche di integrazione dell'equazione di Richards per suoli con modesti valori di umidità", *Atti, Giornate di Studio in onore di Mario Ippolito* E. Benassai et al (eds), Napoli, I:77-85.
- 1996 Brunone, B., e Morelli, L., "Regolazione di un sistema idrico interconnesso mediante valvole automatiche. Verifica su impianto di un modello per la previsione dei transitori", *Atti, XXV Convegno di Idraulica e Costruzioni Idrauliche* G. Pezzoli et al (eds), Torino, II:1-12.
- 1996 Brunone, B., e Tomasicchio, G.R., "Un modello del secondo ordine per la cinematica di un'onda regolare su una scogliera", *Atti, XXV Convegno di Idraulica e Costruzioni Idrauliche* G. Pezzoli et al. (eds), Torino, II:182-193.
- 1995 Brunone, B., e Tomasicchio, G.R., "Sui caratteri di bidimensionalità del campo di moto prodotto da un'onda regolare su una diga a gettata", *Atti, "Giornate Italiane di Ingegneria Costiera", II Ed.* U. Tomasicchio et al (eds), Ravenna, 253-265.
- 1995

- Bellin, A., Brunone, B., e Barigelli, M., "Sulla possibilità di definizione della zona di rispetto di un campo-pozzi con riferimento agli effettivi scenari di utilizzo", *Atti, Seminario su "Sistemi Idropotabili Integrati"* L. Tagliatela (ed), Bologna, 80-91.
- 1995 Brunone, B. Barigelli, M., e Morelli, L., "Effetti del grado di interconnessione sulle condizioni di funzionamento a regime di un sistema di distribuzione in pressione", *Atti, Seminario su "Sistemi Idropotabili Integrati"* L. Tagliatela (ed), Bologna, 236-247.
- 1994 Brunone, B., e Romano, N., "Simulazione dei processi di moto in suoli stratificati. 1. Proposta di un modello numerico", *Atti, Incontro su "Moto dei fluidi negli ammassi filtranti"* G. Scarpi (ed), Bologna, 59-69.
- 1994 Romano, N., e Brunone, B., "Simulazione dei processi di moto in suoli stratificati. 2. Verifica del modello numerico", *Atti, Incontro su "Moto dei fluidi negli ammassi filtranti"*, G. Scarpi (ed) Bologna, 71-81.
- 1994 Brunone, B., e Tomasicchio, G.R., "Rilievo sperimentale dei caratteri cinematici del campo di moto determinato da una perturbazione ondosa su una scogliera", *Atti, XXIV Convegno di Idraulica e Costruzioni Idrauliche* Napoli, III:S2/107-116.
- 1992 Brunone, B., De Marinis, G., e Golia, U.M., "Sulla caratterizzazione di un organo di regolazione mediante l'esecuzione di prove in moto vario", *Atti, Giornate di Studio su "La misura nella gestione delle infrastrutture idrauliche"* L. Tagliatela (ed), Università di Napoli Federico II, Caserta-Napoli, 47-59.
- 1990 Brunone, B., e Greco, M., "Un modello per la ricostruzione di fenomeni di colpo d'ariete anche in presenza di cavitazione. Riscontro sperimentale", *Atti, XXII Convegno di Idraulica e Costruzioni Idrauliche* C. Frega (ed), Cosenza (I), Editoriale BIOS, 4:147-160.
- 1990 Brunone, B., e Carravetta, A., "Su alcuni transitori nelle reti irrigue a domanda. Analisi interpretativa di interventi di riparazione effettuati nell'impianto del Nord Fortore", *Atti, XXII Convegno di Idraulica e Costruzioni Idrauliche* C. Frega (ed), Cosenza (I), Editoriale BIOS, 5:329-341.
- 1989 Brunone, B., "Una tecnica per la verifica dell'integrità di emissari sottomarini", *Atti, Convegno Associazione Idrotecnica Italiana AII su "Immissione di acque reflue in mare"* G. De Martino (ed), Ischia (NA), D/223-236.
- 1988 Brunone, B., e Romano, N., "Vene in espansione a valle di un diaframma. Studio mediante tachimetro laser", *Atti, II Simposio su "l'Anemometria laser Doppler nella Sperimentazione Idraulica"* Napoli, 221-231.

- 1988 Brunone, B., Golia, U.M., e Greco, M., "Applicazione del metodo della colonna rigida ad una rete a maglie chiuse", *Atti, Congresso Nazionale Associazione Idrotecnica Italiana AII sul "Controllo dei grandi impianti idrici per un migliore utilizzo delle acque"* Taormina (ME), 260-270.
- 1988 Brunone, B., "Manovre di riempimento nelle reti irrigue minori", *Atti, Congresso Nazionale Associazione Idrotecnica Italiana AII sul "Controllo dei grandi impianti idrici per un migliore utilizzo delle acque"* Taormina (ME), 271-285.
- 1986 Brunone, B., "Alcune considerazioni sull'inizio del moto del materiale di fondo per azione di un'onda di gravità progressiva", *Atti, XX Convegno di Idraulica e Costruzioni Idrauliche* Padova, 151-164.
- 1986 Greco, M., Brunone, B., e Golia, U.M., "Sull'impiego di curve di efflusso di valvole ricavate da prove di moto vario", *Atti, XX Convegno di Idraulica e Costruzioni Idrauliche*, Padova, 859-871.

ITALIAN CONFERENCE PROCEEDINGS EDITED

- 2015 Brunone, B., Bertola, P., Ferrante, M., Meniconi, S., e Righetti, M., Raccolta dei sommari del Sesto Seminario Nazionale *Efficienza e risparmio energetico dei sistemi idrici* Trento, 8-9 luglio 2015 ([http:// www.tecneditazioni.it/IT/ editoria-pubblicazioni.aspx](http://www.tecneditazioni.it/IT/editoria-pubblicazioni.aspx)).
- 2012 Brunone, B., Guercio, R., Ferrante, M., Magini, R., e Meniconi, S., *Atti del Quinto Seminario La diagnosi e la gestione dei sistemi idrici* Roma, 16-17 giugno 2011 (L'Acqua, AII, Suppl. al n. 4, pp. vi + 377, CD ROM).
- 2010 Brunone, B., Di Natale, M., Ferrante, M., Gisonni, C., e Meniconi, S., *Atti del Quarto Seminario La ricerca delle perdite e la gestione delle reti di acquedotto* Aversa (CE), 18-19 settembre 2009 (L'Acqua, AII, Suppl. al n. 2, pp. iv + 188).
- 2008 Brunone, B., Ferrante, M., e Meniconi, S., *Atti del Terzo Seminario La ricerca delle perdite e la gestione delle reti di acquedotto* Perugia, 20-21 settembre 2007 (pp. iv + 406).
- 2008 Corradini, C., Brunone, B., Manciola, P., Mannocchi, F., Casadei, S., Ferrante, M., Morbidelli, R., Saltalippi, C., Flammini, A., e Meniconi, S., *Atti del XXXI Convegno Nazionale di Idraulica e Costruzioni Idrauliche* Morlacchi, Perugia, 9-12 settembre 2008 (pp. 294 e CD ROM).
- 2006 Brunone, B., Ferrante, M., e Meniconi, S., *Atti del Secondo Seminario La ricerca*

*delle perdite e la gestione delle reti di acquedotto* Perugia, 22 settembre 2005 (pp. iii + 342).

2004 Brunone, B., e Ferrante, M., Atti del Seminario *La ricerca delle perdite e la gestione delle reti di acquedotto* Perugia, 26 settembre 2003 (pp. x + 300).

#### BOOKS (IN ITALIAN)

2008 Brunone, B., Ferrante, M., e Meniconi, S., "Ricerca e controllo delle perdite nelle reti di condotte. Manuale per una moderna gestione degli acquedotti, *CittàStudi Edizioni* Novara (pp. XXIII + 540).

2006 Brunone, B., Ferrante, M., Meniconi, S., e Almandori, C., "Esercizi di Idraulica – parte II, *Morlacchi Editore* Perugia (pp. 167).

2003 Brunone, B., Ferrante, M., e Berni, A., "Esercizi di Idraulica – parte I, *Morlacchi Editore, Perugia* (pp. ii + 163).

## INTERNATIONAL CONFERENCE COMMITTEES

*Computing and Control for the Water Industry - CCWI (Universities of Exeter, De Montfort, Sheffield and Imperial College):*

1999 Exeter, UK

2001 Leicester, UK

2003 London, UK

2005 Exeter, UK

2007 Leicester, UK

2009 Sheffield, UK

2011 Exeter, UK

2013 Perugia, I (**President of the Organizing Committee**)

2015 Leicester, UK

2017 Sheffield, UK

2019 Exeter, UK

*Water Distribution System Analysis - WDSA:*

2006 Cincinnati, USA

2010 Tucson, USA

2012 Adelaide, AUS

2014 Bari, I (**President of the Organizing Committee**)

2016 Cartagena, COL  
*Joint WDSA-CCWI:*

2018 Kingston, CDN  
*International Hydroinformatics Conference - HIC:*

2018 Palermo, I  
*Pressure Surges (British Hydromechanics Research Group Limited - bHr Group):*

2000 The Hague, NL

2004 Chester, UK

2008 Edinburgh, UK

2011 Lisboa, PL

2015 Dublin, IRL

2018 Bordeaux, F  
*International Electronic Conference on Water Sciences*

2016 1st, co-chairman

2019 4th, (**chairman**)

2015 7th Groundwater Symposium of the International Association for Hydro-Environment Engineering and Research (IAHR) Perugia, I (**President of the Organizing Committee**)

2012 *Leakage Technology Conference (International Water Association IWA) Ferrara, I*

2012 *WaterLossEurope2012 (International Water Association IWA) Ferrara, I*

2014 *WaterIdeas (International Water Association IWA)*

2014 Bologna, I

2016 Bologna, I  
*Water Pipeline Systems (British Hydromechanics Research Group Limited - bHr Group):*

1994 Edinburgh, UK

1997 The Hague, NL

2001 York, UK

2005 *Water and Wastewater Pumping Stations (British Hydromechanics Research Group Limited - bHr Group) Cranfield, UK*

2003 *Pumps, Electromechanical Devices and Systems Applied to Urban Water Management PEDS 2003 (Universidad Politecnica de Valencia, IWA and IAHR ) Valencia, E*

2003

*First Annual Water Distribution Modelling Symposium (Haestad Methods) Perugia, I (President of the Organizing Committee)*

1988 *Asian and Pacific Division (APD) of the International Association for Hydro-Environment Engineering and Research (IAHR) Kyoto, Japan*

## NATIONAL CONFERENCES on PIPE SYSTEM MANAGEMENT

Bruno Brunone is the founder and president of the Organizing Committee of the following biennial Italian Conferences on pipe system management:

2019 *Innovative Technologies and Tools for Water Works - TESI (The University of Perugia, and the University of Napoli Federico II, Napoli)*

2017 *Management and Rehabilitation of Pipe Systems (The University of Perugia, and the University of Cassino and Southern Lazio, Gaeta)*

2015 *Efficiency and Energy Saving in Pipe Systems (The University of Perugia, and the University of Trento, Trento)*

2011 *Pipe System Fault Detection and Management (The University of Perugia, Sapienza University of Rome, and ACEA, Roma)*

2009 *Leak Detection and Pipe System Management (The University of Perugia, and the Second University of Napoli, Aversa)*

2007 *Leak Detection and Pipe System Management (The University of Perugia), Perugia*

2005 *Leak Detection and Pipe System Management (The University of Perugia), Perugia*

2003 *Leak Detection and Pipe System Management (The University of Perugia), Perugia*

The above cycle of Conferences has been launched by the University of Perugia who organized the first three editions. Since 2009 it has been hosted by other Italian Universities but with the University of Perugia being strongly involved in the organization.

## REVIEWER

INTERNATIONAL JOURNALS

*Journal of Hydraulic Engineering, ASCE*



*Journal of Water Resources, Planning and Management, ASCE*  
*Journal of Hydraulic Research, IAHR*  
*Journal of Fluids Engineering, ASME*  
*Journal of Engineering Mechanics, ASCE*  
*Water Management*  
*Water Resources Management*  
*Journal of Fluids and Structures*  
*Journal of Hydroinformatics*  
*Urban Water Journal*  
*Computers and Fluids*  
*Acta Mechanica*  
*Structural Health Monitoring*  
*Inverse Problems in Science & Engineering*  
*Transport in Porous Media*  
*Estonian Academy of Sciences*  
*Journal of Zhejiang University - Science A*  
*Advances in Engineering Software*  
*Civil Engineering and Environmental Systems*  
*Automation in Construction*  
*Materials*  
*Journal of Irrigation and Drainage Engineering, ASCE*  
*Proceedings of the iMechE, Part C: Journal of Mechanical Engineering Science*  
*Water*  
*Energies*  
*Strojniški vestnik - Journal of Mechanical Engineering*  
*Journal of Water Supply: Research and Technology - AQUA*  
*Journal of Hydrodynamics, Ser. B*  
*Engineering Structures*  
*Mathematical Problems in Engineering*  
*International Journal of Distributed Sensor Networks*  
*Measurement*  
*Sustainability*  
*Applied Mathematical Modelling*  
*Plos One*

## ORGANIZATIONS, UNIVERSITIES, AND AGENCIES

- 2018 *Mitacs Accelerate (Canada)*
- 2018 *Technical University of Torino (Italy)*
- 2018 *South Africa's National Research Foundation (NRF)*
- 2018 *Swiss National Science Foundation (SNSF)*
- 2017 *University of Canterbury (New Zealand)*
- 2016 *Research Grant Council (RGC) of Hong Kong*
- 2015 *University of Canterbury (New Zealand)*
- 2015 *Imperial College London*
- 2015 *Mitacs Elevate (Canada)*
- 2015 *Research Grant Council (RGC) of Hong Kong*
- 2014 *University of Catania (Italy)*
- 2014 *Research Grant Council (RGC) of Hong Kong*
- 2013 *University of Padova (Italy)*
- 2013 *Research Grant Council (RGC) of Hong Kong*
- 2013 *Natural Sciences and Engineering Research Council of Canada (NSERC)*
- 2012 *Estonia Research Council*
- 2012 *Natural Sciences and Engineering Research Council of Canada (NSERC)*
- 2011 *Marsden Fund (New Zealand)*
- 2004 *Portuguese Research Funding Agency*

## INTERNATIONAL PHD OPPONENT/EXTERNAL EXAMINER/PROGRAMME SUPERVISOR

- 2019 *Universitat Politècnica de Valencia - candidate: O. E. Coronado Hernandez*
- 2014-2018 *Instituto Superior Técnico (IST), École Polytechnique Fédérale de Lausanne (EPFL), Laboratório Nacional de Engenharia Civil (LNEC) and CEHIDRO, Centre for Hydro-Systems Studies of IST - "H2Doc - Environmental Hydraulics and Hydrology" Doctoral Programme, Supervisor*
- 2016 *Universidade de Lisboa - Instituto Superior Técnico - candidate: N. M. da Conceição Martins*
- 2014 *University of Sheffield - candidate: W. J. Hampson*
- 2013 *University of Adelaide - candidate: J. Gong*

- 2011 *Tallinn University of Technology* - candidate: I. Annus  
 2010 *Universidad Politecnica de Valencia* - candidate: M.A. Pardo Picazo  
 2010 *Norwegian University of Science and Technology (NTNU)* - candidate: Pal-Tore Storli

## Italian University Committees

### FULL PROFESSOR POSITION

- 2018 *Professor of Hydraulic Works, University of Campania L. Vanvitelli*  
 2018 *Professor of Hydraulics, University of Palermo*  
 2016 *Professor of Hydraulics, University of Ferrara*

### ASSOCIATE PROFESSOR POSITION

- 2019 *Associate Professor of Hydraulics, University of Padova*  
 2018 *Associate Professor of Hydraulics, Technical University of Torino*  
 2016 *Associate Professor of Hydraulics, University of Perugia*  
 2016 *Associate Professor of Hydraulic Works, University of Ferrara*  
 2015 *Associate Professor of Hydraulic Works, Technical University of Bari*  
 2014 *Associate Professor of Hydraulics, La Sapienza University of Roma*  
 2014 *Associate Professor of Hydraulic Works, Second University of Napoli*

### ASSISTANT PROFESSOR POSITION

- 2018 *Assistant Professor of Hydraulics, Technical University of Torino*  
 2016 *Assistant Professor of Hydraulic Works, University of Cassino e Lazio Meridionale*  
 2016 *Assistant Professor of Hydraulics, University of Bologna*  
 2014 *Assistant Professor of Hydraulics, Technical University of Milano*  
 2012 *Assistant Professor of Hydraulics, University of Bologna*  
 2012 *Assistant Professor of Hydraulics, University of Napoli Federico II*  
 2012 *Assistant Professor of Hydraulics, Technical University of Torino*  
 2011 *Assistant Professor of Hydraulics, Technical University of Bari*  
 2011 *Assistant Professor of Hydraulics, University of Catania*  
 2010 *Assistant Professor of Hydraulics, University of Enna "KORE"*

## PHD DEFENCE (IN ITALY)

- 2012 *Ingegneria Idraulica e Ambientale* (XXIV ciclo), University of Palermo
- 2012 *Scienze dell'Ingegneria - Ingegneria Civile* (XXVI ciclo), University of Ferrara
- 2011 *Ingegneria Idraulica* (XXII ciclo), Technical University of Milan
- 2011 *Ingegneria Civile* (XXII ciclo), University of Cassino
- 2011 *Ingegneria Idraulica per l'Ambiente e il Territorio* (XXII ciclo), University of Calabria
- 2008 *Ingegneria e Modellistica Fisico-Matematica* (XVIII ciclo), University of L'Aquila
- 2008 *Idrodinamica e Modellistica Ambientale* (XVII ciclo), University of Padova

## TEACHING

### AT THE UNIVERSITY OF PERUGIA

- 2017 - *Fluid Mechanics* for Designers
- 1995 - *Hydraulics* for Civil and Environmental Engineers
- 1992 - 2015 *Fluid Mechanics* for Mechanical Engineers
- 1995 - 2000 *Water Resources System Modelling* for Civil and Environmental Engineers
- 2007 Director of the International Master in *Urban Water Engineering (UWE)* funded by the Italian Ministry for Foreign Affairs (MAE) for Engineers from Subsaharian Africa
- 2002 Director of the International Master in *Integrated Water Resources Management (IWRM)*, funded by the Italian Ministry for Foreign Affairs (MAE) for Engineers from Subsaharian Africa

### SHORT COURSES

- 2018 *Theory of Hydraulic Models*, within the course on "Coastal Engineering", The Hong Kong University of Science and Technology (HKUST), Hong Kong
- 2008 *Management of water supply and water distribution systems*, within the Int. Master on "Management and governance of the integrated water service cycle" 7th Program HYDROAID, Hydroaid 2008, ONU, Torino
- 2007 *Characteristics and criticality of pressurised pipe systems*, within the Int. Master on "Governance of water systems and services" 6th Program HYDROAID, Hydroaid 2007, ONU, Torino
- 2007

- Characteristics and criticality of pressurised pipe systems*, 6th Program HYDROAID, Hydroaid 2007, ONU, Torino
- 2007 *Monitoring of groundwater*, Scuola Edile, Perugia
- 2007 Director course for professional engineers on *Prelocalization and location of leaks in pipe systems* with the Italian Federation of Water and Gas Distribution Companies (Federutility)
- 2007 Director course for professional engineers on *Energy management of pipe systems* with the Italian Federation of Water and Gas Distribution Companies (Federutility) for professional engineers
- 2006 Director course for professional engineers on *Monitoring and management of well-fields* with the Italian Federation of Water and Gas Distribution Companies (Federutility)
- 2005 Director course for professional engineers on *Monitoring and rehabilitation of pipe systems* with the Italian Federation of Water and Gas Distribution Companies (Federutility)
- 2005 Director course for professional engineers on *Numerical models and GIS for pipe system management* with the Italian Federation of Water and Gas Distribution Companies (Federutility)
- 2003 Director course on *Pressure transients and leakage control in water pipe networks*, XXX IAHR Congress, Thessaloniki (GR)
- 2003 Director course for professional engineers on *Leak detection in pipe systems* with the Italian Federation of Water and Gas Distribution Companies (Federutility)

## National Meetings - INVITED LECTURES

- 2019 *Università della Calabria, Guardia Piemontese (CS)* - 40th Edition of Italian Conference on "Integrated River Basin Management" - "Tecniche per la Difesa del Suolo e dall'Inquinamento"
- 2019 *University "G. d'Annunzio", Pescara* - Workshop on "Innovazione Tecnico-Scientifica a supporto dell'Ingegneria"
- 2019 *labelab, Ravenna* - Scuola di Alta Formazione sulla Gestione dei Sistemi Idrici
- 2018 *labelab, Ravenna* - Scuola di Alta Formazione sulla Gestione dei Sistemi Idrici
- 2012 *Perugia Green Days, Perugia* - Seminario su "Le buone pratiche nella gestione di acqua e rifiuti: riduzione degli sprechi e cultura del riciclo"

- 2011 *Perugia Green Days, Perugia* - Tecniche Innovative per la diagnosi dei sistemi di condotte
- 2010 *Università della Calabria, Guardia Piemontese (CS)* - 31° Corso di Aggiornamento in “Tecniche per la difesa dall’inquinamento”
- 2010 *Seconda giornata di studio Gruppo Italiano di Idraulica GII, Milano* - “La qualità della ricerca e della didattica nelle discipline idrauliche”
- 2009 *Giornata di studio su “Strategie per il miglioramento dell’efficacia del servizio idrico integrato”, Enna* - Ricerca e controllo delle perdite nelle reti di condotte
- 2008 *Progetto DISWIP - Development of an Integrated System for Water Infrastructures Protection against Intentional Attacks, Sorrento* - Transitori “buoni” e transitori “cattivi”. Diagnosi dei sistemi interconnessi di condotte
- 2008 *Leakage Technology Conference “ACCADUEO 2008”, Ferrara* - Presentazione delle attività di ricerca nel campo dei sistemi di condotte
- 2008 *Labelab (workshop G), Ravenna* - Ricerca e controllo delle perdite nelle reti di condotte. Manuale per una moderna gestione degli acquedotti
- 2008 *Lions Club di Assisi, Assisi* - Azioni per la tutela ed il rispetto dell’acqua
- 2008 *Regione Umbria, Perugia* - La ricerca scientifica per l’ottimizzazione delle reti acquedottistiche
- 2007 *University of L’Aquila* - La pianificazione di bacino. Metodologie, analisi e piani di intervento regionale sui corsi d’acqua
- 2007 *Regione Umbria, Terni* - Il Servizio Idrico Integrato e gli utenti
- 2006 *Fondazione AMGA, Genova* - Convegno su “Verso una gestione più efficace delle perdite nei sistemi idrici secondo l’approccio dell’International Water Association (IWA)”
- 1998 *Fondazione AMGA, Genova* - ADAPT – Adattamento della forza lavoro ai mutamenti industriali. “Scuola dell’Acqua” – Gestione delle reti tecnologiche dei servizi idrici integrati

## RESEARCH GRANTS

- 2018-2023 Italian Ministry of Education, University and Research (MIUR)  
“Department of Excellence Project” - President of the Steering Committee
- 2019-2021 AcegasApsAmga - Padova, Italy  
“Transient Monitoring and Control of Pipe Networks” - co-PI

- 2019-2020 ASA - Livorno, Italy  
 “Analysis of the Carrying Capacity of the Migliarino-Fiume Morto Pipe System” - co-PI
- 2019-2020 NovaReti SpA - Rovereto, Italy  
 “Leak detection in the Galleria Serbatoio di Castel Dante al serbatoio Solatrix Pipe System” - co-PI
- 2019-2020 CAP HOLDING SPA - Assago (MI), Italy  
 “Functioning Conditions of the Casc. Porro - Comune di Pozzuolo Martesana Pipe System” - co-PI
- 2019-2020 Water Authority of Umbria Region AURI - Perugia, Italy  
 “Appropriate Techniques for Pipe Systems Management in the Umbria Region” - co-PI
- 2018 Società Metropolitana Acque Torino (SMAT) SpA - Torino, Italy and Technical University of Turin  
 “Design of the fault detection procedure of the Valle di Susa pipeline” - co-PI
- 2018 Regione Umbria (PSR) - Perugia, Italy  
 “Sma@rt Meteo – Development of an Innovative Agrometeorological Monitoring Network” - co-PI
- 2017 AcegasApsAmga - Padova, Italy and University of Ferrara  
 “Fault detection of the Trieste submarine pipeline” - co-PI
- 2017 HK Research Grant Council (RGC)’s Theme-based Research Scheme - Hong Kong University of Science and Technology (HKUST), Hong Kong SAR  
 “Smart Urban Water Supply System (Smart UWSS)” - co-PI  
<https://sites.google.com/view/smartuwss>
- 2017 Fondazione Cassa Risparmio Perugia - Perugia, Italy  
 “Effects of the earthquake on water resources and water systems and possible remediations” - PI
- 2016 University of Perugia - Perugia, Italy  
 “Dynamic behavior of polymeric pipes” - co-PI
- 2015 ASMM (Tolentino Water Company) - Tolentino, Italy  
 “Tolentino water distribution system: drinking water balance and reservoir performance analysis” - co-PI
- 2015 Italian Ministry of Education, University and Research (MIUR) Project of Relevant National Interest (PRIN 2012)

- “Tools and procedures for an advanced and sustainable management of water distribution systems” - co-PI
- 2015 Flu.Project - Perugia, Italy
- “Fire network of the Doha underground: transient analysis and protection device design” - co-PI
- 2015 Calzoni SpA
- ”Analysis of pipe bursts in the Montedoglio irrigation system” - PI
- 2015 University of Perugia - Perugia, Italy
- “Via del Giochetto campus: drainage system” - co-PI
- 2015 University of Perugia - Perugia, Italy
- “Transient test-based techniques for fault detection” - co-PI
- 2015 University of Perugia - Perugia, Italy
- “Design of the Health and Sport Centre of the University of Perugia” - co-PI
- 2014 Fondazione Cassa Risparmio Perugia - Perugia, Italy
- “Hydraulic and microbiological combined approach towards water quality control” - co-PI
- 2014 Umbra Acque SpA (Perugia Water Company) - Perugia, Italy
- “Research activity on the application of simplified protection area delineation models to minor resources at a regional scale” - co-PI
- 2012 Metropolitana Milanese SpA (Milan Water Company) - Milan, Italy
- “Anomaly pre-localization in elevatory transmission-distribution mains” - PI
- 2012 TEA Acque srl (Mantova Water Company) - Mantova, Italy
- “Optimal criteria for pumping system management” - PI
- 2012 Fondazione Cassa Risparmio Perugia - Perugia, Italy
- “Hydraulic characterization of innovative pipe materials” - co-PI
- 2012 Bassetti Building Workshop srl - Fabriano, Italy
- “Urban regeneration of Giano river in the historic city of Fabriano” - co-PI
- 2011 Spoleto Municipality - Spoleto, Italy
- “Risk analysis of Tessino and Marroggia streams” - co-PI
- 2011 Fondazione Cassa Risparmio Perugia - Perugia, Italy
- “Leaks and blockages detection techniques for reducing energy and natural resources wastage” - co-PI
- 2009 University of Perugia - Perugia, Italy
- “Innovative criteria for pipe system management” - PI



- 2008 Umbria Water Authority - Perugia, Italy  
 “Analysis of the management procedures of Umbra Acque SpA, Perugia” - PI
- 2008 IDRAo8 Committee - Perugia, Italy  
 “Transient test-based techniques for for pipe system management” - PI
- 2008 Fondazione Cassa Risparmio Perugia - Perugia, Italy  
 “Trasimeno lake water balance” - co-PI
- 2007 Marche Region - Ancona, Italy  
 “Potenza river monitoring (within Hydrocare EU project)” - PI
- 2007 Siciliacque SpA (Sicilia Water Company) - Palermo, Italy  
 “Leak detection in transmission mains by means of transient tests” - PI
- 2007 Federutility (Confederation of the Italian Water Companies) - Rome, Italy  
 “Energy and leakage management in pipe systems” - PI
- 2007 University of Perugia - Perugia, Italy  
 “Innovative criteria for pipe system management” - PI
- 2007 Italian Ministry of Education, University and Research (MIUR) Project of Relevant National Interest (PRIN 2007)  
 “Innovative techniques for the diagnosis of pressurised pipe systems” - PI
- 2006 Direzione del Genio Militare per la Marina (Italian Navy) - Roma, Italy  
 “Check of the moorings of the Italian Navy Club at Tiber river in Rome” - co-PI
- 2006 Federutility (Confederation of the Italian Water Companies) - Rome, Italy  
 “Management and monitoring of well-fields” - PI
- 2006 Federutility (Confederation of the Italian Water Companies) - Rome, Italy  
 “Numerical models and Geographic Information System (GIS) for pipe system management” and “Monitoring and rehabilitation of pipe networks” - PI
- 2005 ASTEA SpA (Osimo and Recanati Water Company) - Osimo, Italy  
 “Capture area of the Marolino (Potenza Picena) e Acquesalate (Montecassiano) well-fields: pumping tests and numerical models” - PI
- 2005 Sintagma Srl - Perugia, Italy  
 ”Interaction between Corno river and the state road S.S. no.320 “Di Cascia” - PI
- 2005 EIUT - Ente Irriguo Umbro-Toscano (Toscana and Umbria Irrigation Authority) - Arezzo, Italy  
 ”Bottom spillway of the Montedoglio dam: advanced numerical CFD model” - PI
- 2004 Spoleto Municipality - Spoleto, Italy  
 “Check of the landslide risk at Ancaiano” - co-PI

- 2004 Spoleto Municipality - Spoleto, Italy  
 “Analysis of the pipe system of Montemartano” - co-PI
- 2004 European Union  
 “AMMA - African Monsoon Multidisciplinary Analyses” - co-PI
- 2003 Italian Ministry of Education, University and Research (MIUR) Project of Relevant National Interest (PRIN 2003)  
 “Leakage detection in the management of water supply systems: innovative techniques and vulnerability analysis of the entry of uncontrolled liquid” - co-PI
- 2003 ASMM (Tolentino Water Company) - Tolentino, Italy  
 “Capture area of the Cisterna (Tolentino) well-field: pumping tests and numerical model” - PI
- 2002 Italian Ministry of Education, University and Research (MIUR) Project of Relevant National Interest (PRIN 2003)  
 “Transient test-based techniques for fault detection in pipe systems” - PI
- 2002 European Union  
 “Surge-net - Organizations involved in the prediction and analysis of fluid transients in pipe systems (GTC1-2001-43053)” - PI
- 2000 Perugia Consorzio Acquedotti (Perugia water supply company) - Perugia, Italy  
 “Extreme transient pressures in the Media Valle del Tevere transmission main” - PI
- 2000 Italian Ministry of Education, University and Research (MIUR) under the Project of Relevant National Interest (PRIN 2000)  
 “Transient local velocity field and energy dissipation in pressurized pipes” - PI
- 1999 Umbria Region Water Authority  
 “Criteria for the survey of pipe and drainage systems in the Umbria Region” - PI
- 1998 Italian Ministry of Education, University and Research (MIUR) under the Project of Relevant National Interest (PRIN 1998) “Wave breaking analysis” - PI
- 1998 De Lieto Costruzioni Generali SpA - Napoli, Italy  
 “Laboratory model of the emergency and bottom spillways of Chiascio dam” - PI
- 1997 Italian Ministry of Education, University and Research (MIUR) under the Project of Relevant National Interest (PRIN 1997)  
 “Hydrodynamic characterization of transients in hydro-systems with applications for the diagnosis of pressurised pipe networks” - PI
- 1997

European Union

- “Transient pressures in pressurized conduits for municipal water and sewage water transport (SMT<sub>4</sub>-CT<sub>97</sub>-2188)” - PI
- 1996 AST Recanati (Recanati Water Company) - Recanati, Italy)
- “Capture area of the Chiarino well-field: pumping tests and numerical model” - PI
- 1995 National Research Council of Italy (CNR)
- “Drinking water management: modeling of groundwater flow and pipe systems” - PI
- 1994 AST Recanati (Recanati Water Company) - Recanati, Italy)
- “Capture area of the Vallememoria well-field: pumping tests and numerical model” - PI
- 1994 Autorità Portuale di Genova (Genova Harbour Authority) - Genova, Italy)
- “The rehabilitation of the Duca di Galliera breakwater at Genoa port: laboratory model” - PI
- 1994 Italian Ministry of Education, University and Research (MIUR) under the Project of Relevant National Interest (PRIN 1994)
- “Pollutant transport phenomena in groundwater” - PI
- 1993 AST Recanati (Recanati Water Company) - Recanati, Italy)
- “Configuration and steady-state behavior of the Recanati pipe system” - PI