

## **Silvia Meniconi curriculum vitae**

### **Primary areas of research**

- 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;
- Pressure control by PRVs;
- Monitoring of microbiological quality and presence of Legionella in water distribution systems;
- Techniques of delineation of wellhead protection areas.

The main research activity is the analysis of transients in pressure pipe systems: 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. Within such a research activity, with attention focused on the techniques for generating save pressure waves, the Portable Pressure Wave Maker (PPWM) device has been refined.

A harmonic analysis technique, the wavelet transform, is used to interpret the pressure signal in order to detect defects in the system. Recently the importance of unsteady friction is analysed in details in elastic pipes, along with the viscoelasticity in plastic pipes.

Research activities comprise management, design of the experiments, and use of the Water Engineering Laboratory of University of Perugia (UNIPG).

### **Professional experience**

- Associate Professor in Hydraulics – from 1/11/2016 – qualified for Full Professorship Department of Civil and Environmental Engineering (DICA) - UNIPG;
- 2007 – 2016 – Assistant Professor in Hydraulics, DICA;
- 2006 - 2007 Research Fellow in the project “Diagnosis of pressure pipe systems by means of transients” – DICA;
- 2019 - International Doctoral Program in Civil and Environmental Engineering, UNIPG
- 2014-2019 Member of the board of the International PhD Course in “Civil and Environmental Engineering” (University of Florence, UNIPG, University of Pisa, and Technical University of Braunschweig);
- 2013-2014 Member of the board of the PhD Course in “Ingegneria Civile e Materiali Innovativi” (UNIPG);
- 2014 - Member of the board of the Committee of DICA that deals with the evaluation of the quality of the research in the VQR, ANVUR.

### **Academic Education**

- 2007 PhD in Civil Engineering (XIX ciclo) – UNIPG
- 2004 - 2005 Marie Curie fellowship – Department of Mathematics and Computer Science - Eindhoven University of Technology TU/e (NL)
- 2003 MSc in Environmental Engineering – UNIPG

### **Scientific Record**

- 86 peer reviewed international journal contributions (72 papers, 8 discussions, 5 special issues' editorials, 1 expanded summary), 21 Italian journal papers, 57 refereed conferences papers (27 Italian and 30 international), 3 book chapters, 2 books, 6 Italian conference proceedings' editorials
- Co-chair of the IAHR Transient Flows Working Group (<https://www.iahr.org/index/committe/115>)
- Associate Editor, J. Water Supply

- Guest editor of 7 Special Issues in peer reviewed international journals (Water 2017-2018, J. Hydroinformatics 2016 and 2015 , Procedia Environmental Sciences 2015, Journal of Water Supply: Research and Technology – AQUA 2015, Procedia Engineering 2013, Drinking Water Engineering and Science 2014)
- Member of the organizing committee of the following international conferences:
  - **2018:** 13th International Conference on Hydroinformatics (HIC2018), Palermo
  - **2015:** 7th Groundwater Symposium of the International Association for Hydro-Environment Engineering and Research (IAHR2015) Perugia
  - **2014:** 15th Water Distribution System Analysis (WDSA2014), Bari
  - **2013:** 12th International Conference on Computing and control for the water industry (CCWI2013), Perugia
- Member of the scientific committee of the 8 conferences, among which WDSA2014, CCWI2013, IDRA08 - 31° Convegno Nazionale di Idraulica e Costruzioni Idrauliche, Perugia.
- Chairperson at the following international conferences:
  - HIC2018
  - 38th IAHR World Congress, Panama City, 2019, Panama (IAHR2019). During this conference she organized a special session on "Transients in pipes" with M. Louati.
  - 37th IAHR World Congress, Kuala Lumpur, 2017, Malaysia (IAHR2017). During this conference she organized a special session on "Transients in pipes" with A. Leon, P. Lee, S.H. Kim and M. Louati.
  - 2nd EWaS International Conference: Efficient & Sustainable Water Systems Management toward Worth Living Development, 2016 (EWAS2), Creta, GR. During this conference she organized a special session on "Advanced and sustainable management of water distribution systems: leakages and energy" with M. Franchini.
  - WDSA2014. During this conference she organized a special session on "Transients in pipe systems" with A. Zecchin.
  - CCWI2013
  - WaterLossEurope2012 (IWA), 2012, Ferrara
- Speakers at 22 Italian conferences and 15 international conferences
- Technical reviewer of 14 International Journals (J. Hydraulic Engineering, J. Water Resources, Planning and Management, ASCE, Journal of Hydraulic Research, IAHR, Journal of Hydroinformatics, Water Science and Technology, Water Science and Technology: Water Supply, Journal of Water Supply: Research and Technology – AQUA, IWA Publishing, Water Resources Research, Journal of Applied Water Engineering and Research, Urban Water Journal, Taylor & Francis, Biomechanics and Modeling in Mechanobiology, Environmental Fluid Mechanics, Springer, Procedia Engineering, Procedia Environmental Sciences, Elsevier)
- Reviewer of 3 research projects "Scientific Independence of young Researchers" (SIR), 2014, funded by MIUR – Italian Ministry of Education, University and Research
- Reviewer in the following international conferences: HIC2018, IAHR2017, EWAS2, CCWI2013.
- Member of the executive board of Centro Studi Sistemi Idrici (CSSI), the International Association for Hydraulic Research (IAHR), Gruppo Italiano Idraulica (GII), Ordine degli Ingegneri di Perugia.

### **Awards for scientific activity**

2016. Sustainability Award at the International Water Exhibition, H2O 2016 for the Portable Pressure Wave Maker device for the diagnosis of pressure pipe systems.

2010. Award for the edition of the handbook "Brunone, B., Ferrante, M., Meniconi, S., eds. Ricerca e controllo delle perdite nelle reti di condotte. Manuale per una moderna gestione degli acquedotti 1 ed. 2008, Città Studi Edizioni - De Agostini Scuola: Novara. 540", Ordine degli Ingegneri della Provincia di Perugia.

2006. Award for best presentation at the Third National Seminar on "La ricerca delle perdite e la gestione delle reti di acquedotto".

#### **Visibility of research (state: August 2020)**

- Google Scholar profile: <https://scholar.google.it/citations?user=YThfcIYAAAAJ&hl=it>  
Number of publications = 121, H-index =24, Number of citations = 1749
- Scopus profile: Number of publications = 94, H-index =21, Number of citations = 1367
- ISI Web of Science profile: Number of Publications = 83, H-index =20, Number of Citations = 1215
- OrcID: <https://orcid.org/0000-0001-7843-7147>

#### **Research grants**

- Principal investigator
  - 2019. CAP HOLDING S.p.A. - Milan, Italy "New technologies for leak detection and assessment of functioning performance of the transmission main Casc. Porro - HUB Comune di Aicurzio " 7.000 Euro
  - 2019. AceGasApsAmga S.p.A. (Hera S.p.A.), Padova, Italy "Check, monitoring and solving of problems due to transients and presence of air in the pressure pipe systems of Padova and Trieste" 80.000 Euro
  - 2019. ASA S.p.A., Livorno, Italy "Survey of the DN400 pipe between Migliarino and Fiume Morto" 4.500 Euro
  - 2019. NovaReti S.p.A. (Gruppo Dolomiti Energia), Rovereto, Italy "Check of the functionality of the DN500 transmission main between Galleria Serbatoio di Castel Dante and Solatrix reservoir" 14.500 Euro.
  - 2015. Flu.Project - Perugia, Italy "Fire network of the Doha underground: transient analysis and protection device design" 4.000 Euro
  - 2014. Fondazione Cassa Risparmio Perugia - Perugia "Hydraulic and microbiological combined approach towards water quality control" 11.000 Euro
  - 2012. MIUR – PRIN 2012 "Advanced analysis tools for the management of water losses in urban aqueducts" 151.179 Euro
- CO-Principal Investigator
  - 2017. University of Ferrara, Italy "Update of the hydraulic models and advancement of the solutions for the optimal management of the aqueducts of Padova and Trieste and the check of integrity of the submarine transmission main of Trieste" 15.000 Euro
  - 2017 Polytechnic University of Turin, Italy, "Study and design of fault detection methodology in the transmission main in Valle di Susa" 30.000 Euro
  - 2018. Umbra Acque S.p.A., Perugia, Italy "Management of pressure pipe systems". 27.000 Euro
  - 2018 Autorità Umbra Rifiuti e Idrico (AURI), Italy "Leak detection and reduction in pressure pipe system. 39.000 Euro
  - 2015 ASMM (Tolentino Water Company) - Tolentino, Italy "Tolentino water distribution system: drinking water balance and reservoir performance analysis" 10.000 Euro
  - 2012 Metropolitana Milanese SpA (Milan Water Company) - Milan "Anomaly pre-localization in elevatory transmission-distribution mains" 85.000 Euro
  - 2011 Spoleto Municipality - Spoleto, Italy "Risk analysis of Tessino and Maroggia streams" 25.000 Euro
  - other research projects funded by UNIPG for a total amount of 17600 Euro

- Member of research unit
- 2016 HK Research Grant Council (RGC)'s Theme-based Research Scheme - Hong Kong University of Science and Technology (HKUST) "Smart Urban Water Supply System (Smart UWSS)" 40.225.000 HK\$
- 2012 TEA Acque srl (Mantova Water Company) - Mantova "Optimal criteria for pumping system management" 35.000 Euro
- other 11 research projects from 2004 to 2011 for a total amount of 242.900 Euro.

### Main academic and teaching activities

- Scientific coordinator of the following Erasmus Plus agreement:
  - 2014-2021. UNIPG and Norwegian University of Science and Technology - NTNU (Trondheim, NO)
  - 2014-2021 UNIPG and University of Canterbury (Christchurch, NZ)
- Scientific coordinator of the following agreement for the exchange of students and research programs:
  - 2014 - UNIPG and University of Canterbury (Christchurch, NZ).
  - 2014 - UNIPG and Dolomiti Reti S.p.A. (Trento)
- Teaching at the UNIPG
  - 2011 - Hydraulics for Building and Architecture Engineers (Course grade: 10 % above the mean value of the course of Building and Architecture Engineering).
  - 2017 – Hydraulics for Civil Engineers
  - 2018 – Fluids mechanics for Designers
  - from 2003 Supervisor of 30 master and bachelor degree theses
- Teaching of 4 Short Courses on the optimal management of WDS and leakage reduction: in 2017 at the Hong Kong University of Science and Technology, in 2012 at the UNIPG, in 2011 at the University of Cassino, in 2008 at Torino within the 7th Program HYDROAID, Hydroaid 2008, ONU.
- Member of the organizing committee and supervisor of two master degree theses of Int. Master in Urban Water Engineering (UWE), 2006, funded by the Italian Ministry for Foreign Affairs (MAE) for Engineers from Subsaharan Africa
- Member of the organizing committee of the 5 courses for professional engineers on optimal management of WDS with the Italian Federation of Water and Gas Distribution Companies (Federutility) in 2005 and 2007.

### Publications

#### International Journal Papers

1. Ferrante, M., Brunone, B., and Meniconi, S. (2007). *Wavelets for the analysis of transient pressure signals for leak detection*. J. of Hydraulic Engineering, ASCE, 133(11), 1274-1282.
2. 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.
3. Brunone, B., Ferrante, M., and Meniconi, S. (2008). *A portable device for leak detection in pipes*. Water Engineering, Tel Aviv (IL), 34-36 (in ebraico).
4. Ferrante, M., Brunone, B., and Meniconi, S. (2009). *Leak detection in branched pipe systems coupling wavelet analysis and a Lagrangian model*. J. of Water Supply: Research and Technology – AQUA, IWA, 58(2), 95-106.
5. Ferrante, M., Brunone, B., and Meniconi, S. (2009). *Leak-edge detection*, J. of Hydraulic Research, IAHR, 47(2), 233-241.

6. Meniconi, S., Brunone, B., Ferrante, M., and Massari, C. (2011). *Small amplitude sharp pressure waves to diagnose pipe systems*. Water Resources Management, EWRA, 25(1), 79-96 (online 02/07/2010, doi: 10.1007/s11269-010-9688-7).
7. Meniconi, S., Brunone, B., Ferrante, M. and Massari, C. (2011). *Potential of transient tests to diagnose real supply pipe systems: what can be done with a single extemporary test*. J. of Water Resources Planning and Management, ASCE, 137(2), 238-241 (online 24/06/2010, doi:10.1061/(ASCE)WR.1943-5452.0000098).
8. Meniconi, S., Brunone, B., Ferrante, M., and Massari, C. (2011). *Transient tests for locating and sizing illegal branches in pipe systems*. J. of Hydroinformatics, IWA, 13(3), 334-345 (online 04/02/2011, doi:10.2166/hydro.2010.012).
9. Meniconi, S., Brunone, B., and Ferrante, M. (2011). *In-line pipe device checking by short period analysis of transient tests*. J. of Hydraulic Engineering, ASCE, 137(7), 713-722 (online 20/08/2010, doi:10.1061/(ASCE)HY.1943-7900.0000309).
10. Ferrante, M., Massari, C., Brunone, B., and Meniconi, S. (2011). *Experimental evidence of hysteresis in the head-discharge relationship for a leak in a polyethylene pipe*. J. of Hydraulic Engineering, ASCE, 137(7), 775-780 (online 10/11/2010, doi:10.1061/(ASCE)HY.1943-7900.0000360).
11. Ferrante, M., Todini, E., Massari, C., Brunone, B., and Meniconi, S. (2012). *Equivalent hydraulic resistance to simulate pipes subject to diffuse outflows*. J. of Hydroinformatics, IWA 14(1), 65-74 (online 12/04/2011, doi:10.2166/hydro.2011.043).
12. Collins, R.P., Boxall, J.B., Karney, B.W., Brunone, B., and Meniconi, S. (2012). *How severe can transients be after a sudden depressurization?* J. of American Water Works Association, AWWA, 104(4), E243-E251 (doi: org/10.5942/jawwa.2012.104.0055).
13. Meniconi, S., Brunone, B., Ferrante, M., and Massari, C. (2012). *Transient hydrodynamics of in-line valves in viscoelastic pressurised pipes. Long period analysis*. Experiments in Fluids, 53(1), 265-275 (online 14/03/2012, doi: 10.1007/s00348-012-1287-3).
14. Massari, C., Ferrante, M., Brunone, B., and Meniconi, S. (2012). *Is the leak head-discharge relationship in polyethylene pipes a bijective function?* J. of Hydraulic Research, IAHR, 50(4), 409-417 (online: 24/07/2012, doi:10.1080/00221686.2012.696558).
15. Meniconi, S., Brunone, B., and Ferrante, M. (2012). *Water hammer pressure waves interaction at cross-section changes in series in viscoelastic pipes*. J. of Fluids and Structures, 33, 44-58 (online: 22/06/2012, doi: 10.1016/j.jfluidstructs.2012.05.007).
16. Ferrante, M., Massari, C., Todini, E., Brunone, B., and Meniconi, S. (2013). *Experimental investigation of leak hydraulics*. J. of Hydroinformatics, IWA, 15(3), 666-675 (online: 23/11/2012; doi: 10.2166/hydro.2012.034).
17. Massari, C., Yeh, T.-C.J., Ferrante, M., Brunone, B., and Meniconi, S. (2013). *Diagnosis of pipe systems by means of a stochastic successive linear estimator*. Water Resources Management, EWRA, 27(13), 4637-4654 (online: 27/08/2013,doi: 10.1007/s11269-013-0433-x).
18. Meniconi, S., Duan, H.-F., Lee, P.J., Brunone, B., Ghidaoui, M., and Ferrante, M. (2013). *Experimental investigation of coupled frequency- and time-domain transient test-based techniques for partial blockage detection in pipelines*. J. of Hydraulic Engineering, ASCE, 139 (10), 1033-1040 (online: 23/04/2013; doi: 10.1061/(ASCE)HY.1943-7900.0000768).
19. Brunone, B., Ferrante, M., Meniconi, S., and Massari, C. (2013). *Effectiveness assessment of pipe systems by means of transient test-based techniques*. Proc., Int. Conf. on “Four Decades of Progress in Monitoring and Modeling of Processes in the Soil-Plant-Atmosphere System: Applications and Challenges”, Napoli, Procedia Environmental Sciences, Elsevier, 9, 814-822 (<http://dx.doi.org/10.1016/j.proenv.2013.06.090>).
20. Massari, C., Yeh, T.-C. J., Ferrante, M., Brunone, B., and Meniconi, S. (2013). *Diagnosis of pipe systems by the SLE: first results*. Water Science & Technology: Water Supply, IWA, 13(4), 958-965 (doi: 10.2166/ws.2013.051).

21. Ferrante, M., Massari, C., Brunone, B., and Meniconi, S. (2013). *Leak behaviour in pressurized PVC pipes*. Water Science & Technology: Water Supply, IWA, 13(4), 987-992 (doi: 10.2166/ws.2013.047).
22. Meniconi, S., Brunone, B., Ferrante, M., and Massari, C. (2013). *Numerical and experimental investigation of leaks in viscoelastic pressurized pipe flow*. Drinking Water Engineering and Science, 6, 11-16 (doi:10.5194/dwes-6-11-2013).
23. Meniconi, S., Brunone, B., Ferrante, M., and Massari, C. (2014). *Energy dissipation and pressure decay during transients in viscoelastic pipes with an in-line valve*. J. of Fluids and Structures, 45, 235-249 (on line: 28/01/2014; doi: 10.1016/j.jfluidstructs.2013.12.013).
24. Massari, C., Yeh, T.-C.J.:., Ferrante, M., Brunone, B., and Meniconi, S. (2014). *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 (on line: 04/04/2014; doi: 10.2166/hydro.2013.172).
25. Meniconi, S., Duan, H.F., Brunone, B., Ghidaoui, M.S., Lee, P.J., and Ferrante, M. (2014). *Further developments in rapidly decelerating turbulent pipe flow modeling*. J. of Hydraulic Engineering, ASCE, 140(7), 04014028 (online: 19/03/2014; doi: 10.1061/(ASCE)HY.1943-7900.0000880).
26. Pezzinga, G., Brunone, B., Cannizzaro, D., Ferrante, M., Meniconi, S., and Berni, A. (2014). *Two-dimensional features of viscoelastic models of pipe transients*. J. of Hydraulic Engineering, ASCE, 140(8), 0401403-1/9 (online: 23/04/2014; doi:10.1061/(ASCE)HY.1943-7900.0000891).
27. Ferrante, M., Meniconi, S., and Brunone, B. (2014). *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 (online: 14/06/2014; doi: 10.1007/s11269-014-0708-x).
28. Brunone, B., Meniconi, S., Ferrante, M., Carrettini, C.A., Chiesa, C., Capponi, C., and Segalini, D. (2014). *The characterization of Milan WDS by pumping switching off: field test assesment*. Proc., 12<sup>th</sup> Int. Conf. on "Computing and Control for the Water Industry - CCWI2013", Perugia, Procedia Engineering, Elsevier, 70, 201-208 (online: 23/04/2014; doi: 10.1016/j.proeng.2014.02.023).
29. Capponi, C., Ferrante, M., Pedroni, M., Brunone, B., Meniconi, S., Zaghini, M., and Leoni, F. (2014). *Real data analysis and efficiency of the TEA Mantova Casale (Italy) variable-speed pumping station*. Proc., 12<sup>th</sup> Int. Conf. on "Computing and Control for the Water Industry - CCWI2013", Perugia, Procedia Engineering, Elsevier, 70, 248-255 (online: 23/04/2014; doi: 10.1016/j.proeng.2014.02.028).
30. Ferrante, M., Brunone, B., Meniconi, S., Capponi, C., and Massari, C. (2014). *The leak law: from local to global scale*. Proc., 12<sup>th</sup> Int. Conf. on "Computing and Control for the Water Industry - CCWI2013", Perugia, Procedia Engineering, Elsevier, 70, 651-659 (online: 23/04/2014; doi: 10.1016/j.proeng.2014.02.071).
31. Massari, C., Yeh, T.-C.J., Ferrante, M., Brunone, B., and Meniconi, S. (2014). *A stochastic tool for determining the presence of partial blockages in viscoelastic pipelines: first experimental results*. Proc., 12<sup>th</sup> Int. Conf. on "Computing and Control for the Water Industry - CCWI2013", Perugia, Procedia Engineering, Elsevier, 70, 1112-1120 (online: 23/04/2014; doi: 10.1016/j.proeng.2014.02.123).
32. Meniconi, S., Brunone, B., Ferrante, M., Carrettini, C.A., Chiesa, C., Capponi, C., and Segalini, D. (2014). *The skeletonization of Milan WDS on transients due to pumping switching off: preliminary results*. Proc., 12<sup>th</sup> Int. Conf. on "Computing and Control for the Water Industry - CCWI2013", Perugia, Procedia Engineering, Elsevier, 70, 1131-1136 (online: 23/04/2014; doi: 10.1016/j.proeng.2014.02.125).
33. Ferrante, M., Brunone, B., Meniconi, S., Karney, B.W., and Massari, C. (2014). *Leaks size, detectability and test conditions in pressurized pipe systems. How leak size and system*

- functioning conditions affect the effectiveness of leak detection techniques.* Water Resources Management, EWRA, 28(13), 4583-4598 (online: 09/07/2014; doi: 10.1007/s11269-014-0752-6).
34. Verde, D., Cima, E., Ferrante, M., Brunone, B., and Meniconi, S. (2014). *The dependence of district minimum night flow on pressure head: the case study of Lenola.* Proc., 16<sup>th</sup> Int. Conf. on "Water Distribution System Analysis - WDSA2014", Bari, Procedia Engineering, Elsevier, 89, 1224-1230 (online: 17/12/2014; doi: 10.1016/j.proeng.2014.11.424).
  35. Ferrante, M., Capponi, C., Collins, R., Edwards, J., Brunone, B., and Meniconi, S. (2014). *Effect of uncertainty demand location on transient behavior of WDS.* Proc., 16<sup>th</sup> Int. Conf. on "Water Distribution System Analysis - WDSA2014", Bari, Procedia Engineering, Elsevier, 89, 1321-1328 (online: 17/12/2014; doi: 10.1016/j.proeng.2014.11.447).
  36. Meniconi, S., Brunone, B., Ferrante, M., Capponi, C., Pedroni, M., Zagħini, M., and Leoni, F. (2014). *Transmission main survey by transient tests: the case of Villanova plan in Mantova (I).* Proc., 16<sup>th</sup> Int. Conf. on "Water Distribution System Analysis - WDSA2014", Bari, Procedia Engineering, Elsevier, 89, 1343-1349 (online: 17/12/2014; doi: 10.1016/j.proeng.2014.11.454).
  37. Capponi, C., Ferrante, M., Pedroni, M., Brunone, B., Meniconi, S., Zagħini, M., and Leoni, F. (2014). *Functioning conditions of the Casale pumping station in Mantova, Italy.* Drinking Water Engineering and Science, 7, 93-97 (online: 13/11/2014; doi: 10.5194/dwes-7-93-2014).
  38. Meniconi, S., Brunone, B., Ferrante, M., Capponi, C., Garrettini, C.A., Chiesa, C., Segalini, D., and Lanfranchi, E.A. (2015). *Anomaly pre-localization in distribution-transmission mains. Preliminary field tests in the Milan pipe system.* J. of Hydroinformatics, IWA, 17(3), 377-389 (online: 22/09/2014; doi: 10.2166/hydro.2014.038).
  39. Massari, C., Yeh, J. T.-C, Ferrante, M., Brunone, B., and Meniconi, S. (2015). *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 (on-line: 02/02/2015; doi:10.2166/aqua.2015.034).
  40. Ferrante, M., Mazzetti, E., Fiori, A., Burini, M., Fioriti, B., Mazzoni, A., Schirò, G., Vacca, G., Brunone, B., Meniconi, S., and Capponi, C. (2015). *Delineation of wellhead protection areas in the Umbria region. 1. A simplified procedure.* Proc., 7<sup>th</sup> Groundwater Symposium of the International Association for Hydro-Environment Engineering and Research (IAHR), Perugia, Procedia Environmental Sciences, Elsevier, 25, 90-95 (doi: 10.1016/j.proenv.2015.04.013).
  41. Ferrante, M., Mazzetti, E., Fiori, A., Burini, M., Fioriti, B., Mazzoni, A., Schirò, G., Vacca, G., Brunone, B., Meniconi, S., and Capponi, C. (2015). *Delineation of wellhead protection areas in the Umbria region. 2. Validation of the proposed procedure.* Proc., 7<sup>th</sup> Groundwater Symposium of the International Association for Hydro-Environment Engineering and Research (IAHR), Perugia, Procedia Environmental Sciences, Elsevier, 25, 96-103 (doi: 10.1016/j.proenv.2015.04.014).
  42. Brunone, B., Meniconi, S., Capponi, C., and Ferrante, M. (2015). *Leak-induced pressure decay during transients in viscoelastic pipes. Preliminary results.* Proc., 13<sup>th</sup> Int. Conf. on "Computer Control for Water Industry – CCWI2015", Leicester, Procedia Engineering, Elsevier, 119, 243-252 (doi: 10.1016/j.proeng.2015.08.882).
  43. Ferrante, M., Capponi, C., Brunone, B., and Meniconi, S. (2015). *Hydraulic characterization of PVC-O pipes by means of transient tests.* Proc., 13<sup>th</sup> Int. Conf. on "Computer Control for Water Industry – CCWI2015", Leicester, Procedia Engineering, Elsevier, 119, 263-269 (doi: 10.1016/j.proeng.2015.08.884).
  44. Meniconi, S., Brunone, B., Ferrante, M., Mazzetti, E., Laucelli, D.B., and Borta, G. (2015). *Transient effects of self-adjustment of pressure reducing valves.* Proc., 13<sup>th</sup> Int. Conf. on "Computer Control for Water Industry – CCWI2015", Leicester, Procedia Engineering,

- Elsevier, 119, 1030-1038 (doi: 10.1016/j.proeng.2015.08.999).
45. Laucelli, D.B., and Meniconi, S., (2015). Water distribution network analysis accounting for different background leakage models, Proc., 13<sup>th</sup> Int. Conf. on "Computer Control for Water Industry – CCWI2015", Leicester, Procedia Engineering, Elsevier, 119, 680-689 (doi:10.1016/j.proeng.2015.08.921).
  46. Meniconi, S., Brunone, B., Ferrante, M., and Capponi, C. (2016). *Mechanism of interaction of pressure waves at a discrete partial blockage*. J. of Fluids and Structures, 62, 33-45 (on line: 02/02/2016; doi:10.1016/j.jfluidstructs.2015.12.010).
  47. Ferrante, M., Capponi, C., Collins, R., Edwards, J., Brunone, B., and Meniconi, S. (2016). *Numerical and transient analysis of random leakage in time and frequency domain*. Civil Engineering and Environmental Systems, 33(1), 70-84 (online: 25/02/2016; doi: 10.1080/10286608.2016.1138941).
  48. Pezzinga, G., Brunone, B., and Meniconi, S. (2016). *On the relevance of pipe period on Kelvin-Voigt viscoelastic parameters: 1-D and 2-D inverse transient analysis*, J. of Hydraulic Engineering, ASCE, 142(12), 04016063 (online: 26/07/2016; doi: 10.1061/(ASCE)HY.1943-7900.0001216).
  49. Meniconi, S., Brunone, B., Mazzetti, E., Laucelli, D.B., and Borta, G. (2016). *Pressure reducing valve characterization for pipe system management*, Proc., Int. Conf. on "Efficient & Sustainable Water Systems Management toward Worth Living Development" (2nd EWaS 2016), Chania (GR), Procedia Engineering, Elsevier, 162, 455-462 (online: 09/11/2016; doi: 10.1016/j.proeng.2016.11.088).
  50. Duan, H.F., Meniconi, S., Lee, P.J., Brunone, B., and Ghidaoui, M.S. (2017). *Local and integral energy-based evaluation for the unsteady friction relevance in transient pipe flows*. J. of Hydraulic Engineering, ASCE, 143(7), 04017015 (on line: 24/02/2017; doi:10.1061/(ASCE)HY.1943-7900.0001304).
  51. Louati, M., Meniconi, S., Brunone, B., and Ghidaoui, M.S. (2017). *Experimental study of the eigenfrequency shift mechanism in a blocked pipe system*. J. of Hydraulic Engineering, ASCE, 143(10), 04017044 (on line: 04/08/2017; doi:10.1061/(ASCE)HY.1943-7900.0001347).
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### International Journal Contributions

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6. Brunone, B., and Meniconi, S. (2013). *Discussion of “Case studies of leak detection and location in water pipe systems by inverse transient analysis” by D. Covas and H. Ramos.* J. Water Resources Planning and Management, ASCE, 139(1), 126-127 (doi:10.1061/(ASCE)0733-9496(2010)136:2(248)).
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8. Brunone, B., Ferrante, M., and Meniconi, S. (2015). *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 (doi: 10.1061/(ASCE)HY.1943-7900.0000720).
9. Brunone, B., Ferrante, M., Meniconi, S., and Berardi, L. (2015). *Editorial (CCWI2013).* J. of Hydroinformatics, IWA, 17(3), 329-330 (doi: 10.2166/hydro.2015.000).
10. Brunone, B., Ferrante, M., Meniconi, S., and Berardi, L. (2015). *Water quality and fault assessment in pipe systems - Editorial.* J. of Water Supply: Research and Technology – AQUA, IWA, 64(5), 493-495(on-line: 04/06/2015; doi:10.2166/aqua.2015.000).
11. Meniconi, S., and Laucelli, D.B. (2016) *Editorial: Hydroinformatics for water distribution systems analysis and management”,* J. of Hydroinformatics, IWA, 18(1),1-3.
12. Herrera, M., Meniconi, S., Alvisi, S., Izquierdo, J. (2018) *Editorial: Advanced Hydroinformatic Techniques for the Simulation and Analysis of Water Supply and Distribution Systems.* Water 2018, 10, 440.
13. Capponi, C., Meniconi, S., and Brunone, B. (on print). Discussion of “Theoretical Investigation of Leak’s Impact on Normal Modes of a Water-Filled Pipe: Small to Large Leak Impedance”, by J. Lin, X. Wang, and M.S. Ghidaoui (J. of Hydraulic Engineering, 2019, 145(6), 04019017). *Journal of Hydraulic Engineering, ASCE.*
14. Capponi, C., Brunone, B., and Meniconi, S. (on print). Discussion of “Effect of Boundary on

Water Hammer Wave Attenuation and Shape”, by H. Cao, I. Nistor, and M. Mohareb (Journal of Hydraulic Engineering, ASCE, 2020, 146(3), 04020001). *Journal of Hydraulic Engineering*, ASCE.

### International Conference full papers

1. Ferrante, M., Brunone, B., Meniconi, S., and Almadori, C. (2005). *Wavelet analysis of numerical pressure signals for leak monitoring*. Proc., 8<sup>th</sup> Int. Conf. on “Computing and Control for the Water Industry – Water Management for the 21<sup>st</sup> Century (CCWI2005)”, D. Savic, G. Walters, R. King and S-T. Khu (eds), Exeter (UK), 1, 329-334.
2. Meniconi, S., Brunone, B., and Ferrante, M. (2007). *Assessment of the efficiency of a pressure counduit system by means of transient tests: preliminary results*. Proc., Conference on “Efficient Management of Water Networks. Design and Rehabilitation Techniques”, Fondazione AMGA, P. Bertola and M. Franchini (eds), Ferrara, Franco Angeli Editore, 145-160.
3. Meniconi, S., Brunone, B. and Ferrante, M. (2009). *In-line partially closed valves: how to detect by transient tests*. Proc., World Environmental and Water Resources Congress 2009 (EWRI 2009), S. Starrett (ed), Kansas City (MO), 135-144.
4. Brunone, B., Karney, B.W., Ferrante, M., and Meniconi, S. (2009). *Experimental investigation of transients caused by rapid valve opening*. Proc., 33<sup>rd</sup> IAHR Congress “Water Engineering for a Sustainable Environment”, Vancouver (CA), 6545-6552.
5. Meniconi, S., Brunone, B., Ferrante, M., and Massari, C. (2009). *Detection of illegal branches in pipe systems: A fast and reliable method*. Proc., 10<sup>th</sup> Int. Conf. on Computing and Control for the Water Industry (CCWI 2009) – “Integrating Water Systems”, J. Boxall and C. Maksimovic (eds), Sheffield (UK), 79-82.
6. Ferrante, M., Massari, C., Todini, E., Brunone, B., and Meniconi, S. (2009). *Equivalence of pipes with distributed flow in pressurised pipe networks*. Proc., 10<sup>th</sup> Int. Conf. on Computing and Control for the Water Industry (CCWI 2009) – “Integrating Water Systems”, J. Boxall and C. Maksimovic (eds), Sheffield (UK), 203-208.
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8. Meniconi, S., Brunone, B., Ferrante, M., and Massari, C. (2010). *Fast transients as a tool for partial blockage detection in pipes: first experimental results*. Proc., 12<sup>th</sup> Annual Water Distribution Systems Analysis Conference (WDSA 2010), C. Choi, A. Ostfeld and I. Pepper (eds), Tucson (AZ), CD ROM.
9. Ferrante, M., Massari, C., Brunone, B., and Meniconi, S. (2010). *Leakage and pipe material*. Proc., 12<sup>th</sup> Annual Water Distribution Systems Analysis Conference (WDSA 2010), K. Lansey, C. Choi, A. Ostfeld and I. Pepper (eds), Tucson (AZ), CD ROM.
10. Ferrante, M., Todini, E., Massari, C., Brunone, B., and Meniconi, S. (2011). *Experimental investigation of the leak hydraulics*. Proc., 11<sup>th</sup> Int. Conf. on “Computing and Control for the Water Industry – CCWI2011 Urban Water in Management: Challanges and Opportunities”, D.A. Savic, Z. Kapelan, and D. Butler (eds), Exeter (UK), 2, 527-532.
11. Meniconi, S., Brunone, B., Ferrante, M., Neri, R., and Massari, C. (2011). *Long period analysis of transient pressure signals for in-line valve checking*. Proc., 11<sup>th</sup> Int. Conf. on “Computing and Control for the Water Industry – CCWI2011 Urban Water in Management: Challanges and Opportunities”, D.A. Savic, Z. Kapelan, and D. Butler (eds), Exeter (UK), 3, 787-792.
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  15. Massari, C., Yeh, T.-C.J., Ferrante, M., Brunone, B., and Meniconi, S. (2012). *First results on the use of a stochastic successive linear estimator to diagnose pipe systems*. Proc., Int. Conf. “WaterLossEurope2012”, Ferrara, CD ROM.
  16. Massari, C., Yeh, T.-C.J., Ferrante, M., Brunone, B., and Meniconi, S. (2012). *Detection of partial extended blockages by means of a stochastic successive linear estimator*. Proc., 10<sup>th</sup> Int. Conf. on “Hydroinformatics (HIC 2012)”, Hamburg (D), CD ROM.
  17. Ferrante, M., Massari, C., Brunone, B., and Meniconi, S. (2012). *Numerical simulation of leaks in pressurised pipes*. Proc., 10<sup>th</sup> Int. Conf. on “Hydroinformatics (HIC 2012)”, Hamburg (D), CD ROM.
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  19. Meniconi, S., Brunone, B., Frisinghelli, M., Capponi, C., and Mazzetti, E. (2017). *Fault detection in a real transmission main by the portable pressure wave maker (PPWM)*. Proc., 37<sup>th</sup> IAHR World Congress, Kuala Lumpur (MY), 5758-5764 [ISSN 1562-6865 (online) - ISSN 1063-7710 (print)].
  20. Meniconi, S., Brunone, B., and Capponi, C. (2017). *Effect of leak size on the transient behavior of a viscoelastic pipe*, Proc., 37<sup>th</sup> IAHR World Congress, Kuala Lumpur (MY), 5765-5769 [ISSN 1562-6865 (online) - ISSN 1063-7710 (print)].
  21. Liou, Jim C. P., Brunone, B., and Meniconi, S. (2017). *Dynamics of frictional water hammer – Theory and field tests*. Proc., 37<sup>th</sup> IAHR World Congress, Kuala Lumpur (MY), 5738-5746 [ISSN 1562-6865 (online) - ISSN 1063-7710 (print)].
  22. Meniconi, S. and Brunone, B., (2018). Pipe system characteristics vs. reliability of transient test-based techniques for fault detection. EPiC Series in Engineering, HIC 2018. 13th International Conference on Hydroinformatics (paper #343), XXX, 1–6.
  23. Bongioannini Cerlini, P., Meniconi, S., and Brunone, B. (2018). Performance of global atmospheric datasets towards groundwater management. EPiC Series in Engineering, HIC 2018. 13th International Conference on Hydroinformatics (paper #344), XXX, 1–5.
  24. Pan, B., Duan, H. F., Che, T. C., Meniconi, S., and Brunone, B. (2018). *A frequency-domain transient-based method for the analysis of viscoelastic parameters of plastic pipes*. Proc., 13th Int. Conf. on "Pressure Surges", 1, 325-338, A. S. Tijsseling (ed), Bordeaux (F).
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  26. Meniconi, S., Brunone, B., Cifrodelli, M., Capponi, C., Rubin, A., Tirello, L., and Lucato, P. (2019). *Initial functioning conditions vs. transient test-based technique performance for leak*

- detection.* Proc., 38th IAHR World Congress, Panama City, Panama, 3345-3350 (doi:10.3850/38WC092019-0243; ISSN 2521-716X).
27. Brunone, B., Meniconi, S., Capponi, C., and Cifrodelli, M. (2019). *Design of transient tests for the diagnosis of transmission mains.* Proc., 38th IAHR World Congress, Panama City, Panama, 3339-3344 (doi:10.3850/38WC092019-0193; ISSN 2521-716X).
  28. Ferreira, J., Buttarazzi, N., Brunone, B., Meniconi, S., and Covas, D. (2019). *Entrapped air influence in hydraulic transients.* Proc., 38th IAHR World Congress, Panama City, Panama, 3394-3401 (doi:10.3850/38WC092019-1732; ISSN 2521-716X).
  29. Marsili, V., Meniconi, S., Alvisi, S., Brunone, B., and Franchini, M. (2019). *Experimental analysis of the dynamic behaviour of a real water distribution system.* Proc., 38th IAHR World Congress, Panama City, Panama, 3430-3437 (doi:10.3850/38WC092019-1899; ISSN 2521-716X).
  30. Meniconi, S., Rubin, A., Tirello, L., Capponi, C., Cifrodelli, M., Lucato, P., and Brunone, B. (2019). *Checking procedure of the Trieste (Italy) subsea pipeline by transient tests. Preliminary results.* Proc., 4<sup>th</sup> International Electronic Conference in Water Sciences (ECWS-4), sciforum paper #027162, MDPI (doi: 10.3390/ECWS-4-06453).

### International Conference Abstracts

1. Ferrante, M., Brunone, B., and Meniconi, S. (2004). *Wavelet analysis of transients in pressurised pipes and leak detection.* Proc., 13<sup>th</sup> European Conf. on "Mathematics for Industry (ECMI 2004)", H. van Duijn et al (eds), Eindhoven (NL), 225-226.
2. Meniconi, S., Brunone, B., van Zyl, K., and Mazzetti, E. (2016). *Aqualibrium competition: laboratory data and EPAnet simulations.* Proc., 18th Int. Conf. on "Water Distribution System Analysis - WDSA2016", Cartagena (CO), Conference Abstracts, 8.
3. Cerlini B. Paolina, Meniconi, S., and Brunone, B. (2016). *Groundwater supply and climate change management by means of global atmospheric datasets. Preliminary results.* Proc., 18th Int. Conf. on "Water Distribution System Analysis - WDSA2016", Cartagena (CO), Conference Abstracts, 18.
4. Meniconi, S., Brunone, B., Frisinghelli, M. Mazzetti, E., Larentis, M., Costisella, C. (2016). *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.* Proc., 18th Int. Conf. on "Water Distribution System Analysis - WDSA2016", Cartagena (CO), Conference Abstracts, 33.
5. Meniconi, S. (2017). *Transient behavior of pressure reducing valves.* Proc., Symposium on "Hydro-environment Research for Smart Cities. In honour of the 65<sup>th</sup> birthday of Prof. Joseph Hun-wei Lee". The Hong Kong University of Science and Technology (HKUST), Hong Kong, 46.
6. Capponi, C., Cartechini, M., Brunone, B., Meniconi, S., and Cifrodelli, M. (2019). *Vulnerability of water resources and systems: Central Italy earthquake case study.* 17th International Computing & Control for the Water Industry Conference (CCWI2019), Exeter (UK).
7. Louati, M., Ferras, D., Zouari, F., Meniconi, S., Ghidaoui, M.S., and Brunone, B. (2019). *Bragg resonance in pipe systems with discrete defects.* The 7th Int. Conf. on "Advances in Mechanical Engineering and Mechanics" (ICAMEM 2019), 85.

### International Conference Posters

1. Zouari, F., Louati, M., Blästen, E., Wang, X., Meniconi, S., Ghidaoui, M. S., Brunone, B. (2017). *Internal pipe area reconstruction using acoustic waves.* Workshop for the RGC on-site review visit (Smart UWSS project), HKUST.

2. Keramat, A., Waqar, M., Louati, M., Wang, X., Meniconi, S., Brunone, B., and Ghidaoui, M.S. (2017). *On the accuracy of time-domain based leak detection methods in pipe systems*. Workshop for the RGC on-site review visit (Smart UWSS project), HKUST.
3. B. Cerlini, P., Meniconi, S., and Brunone, B. (2017). *Evaluating groundwater resources by means of global datasets*, 5<sup>th</sup> International Conference on “Reanalysis (ICR5)”; Section #4 “Evaluation and intercomparisons of reanalyses”, Roma.
4. Zouari F., Louati, M., Blåsten, E., Nasraoui, S., Meniconi, S., Ghidaoui, M.S., and Brunone, B. (2019). *Defect detection – Damping compensation low frequency waves*. 2<sup>nd</sup> Workshop for the RGC on-site review visit (Smart UWSS project), The Hong Kong University of Science and Technology (HKUST), Hong Kong.
5. Wang, X., Ghidaoui, M. S., Lin, J., Keramat, A., Camino, G.A., Meniconi, S., and Brunone, B. (2019). *Matched-Field processing for leak localization in a viscoelastic pipe: an experimental study*. 2<sup>nd</sup> Workshop for the RGC on-site review visit (Smart UWSS project), The Hong Kong University of Science and Technology (HKUST), Hong Kong.

### **International Journal Guest Editor**

1. B. Brunone, O. Giustolisi, M. Ferrante, D. Laucelli, S. Meniconi, L. Berardi, and A. Campisano (Guest Editors) (2014). *Proceedings*, 12<sup>th</sup> Int. Conf. on "Computing and Control for the Water Industry - CCWI2013", Perugia, Procedia Engineering, Elsevier, 70, 1-1772.
2. B. Brunone, M. Ferrante, S. Meniconi, and L. Berardi (Guest Editors) (2014). *CCWI2013*, Drinking Water Engineering and Science (Special Issue), TDU, 7, 53 - 100.
3. Brunone, B., Ferrante, M., Meniconi, S., and Berardi, L. (Guest Editors) (2015). *Smart hydrotools for smart cities (CCWI2013 Special Issue)*. J. of Hydroinformatics, IWA, 17(3), 329 - 421.
4. Guadagnini, A., Sanchez-Vila, X., Brunone, B., Ferrante, M., and Meniconi, S. (Guest Editors) (2015). *Proceedings*, 7<sup>th</sup> Groundwater Symposium of the International Association for Hydro-Environment Engineering and Research (IAHR), Perugia, Procedia Environmental Sciences, Elsevier, 25, 1- 242 (on line: 28/05/2015).
5. B. Brunone, M. Ferrante, S. Meniconi, and L. Berardi (Guest Editors) (2015). *Water quality and fault assessment in pipe systems (CCWI2013 Special Issue)*. J. of Water Supply: Research and Technology – AQUA , IWA, 64(5), 493 - 639.
6. Meniconi, S., and Laucelli, D.B. (Guest Editors) (2016) *Hydroinformatics for water distribution systems analysis and management" (WDSA2014 Special Issue)*. J. of Hydroinformatics, IWA, 18(1),1-148.
7. Herrera, M., Meniconi, S., Alvisi, S., and Izquierdo, J. (Guest Editors) (2017-2018) *Special Issue: Advanced Hydroinformatic Techniques for the Simulation and Analysis of Water Supply and Distribution Systems*. Water 2018, 9-10.

### **Italian Journal Papers and Contributions (in Italian)**

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