

Curriculum Vitae prof. Maurizio Delfanti

Maurizio Delfanti was born in Castel San Giovanni (PC) on 10 September 1968.

EDUCATION AND TRAINING AND ACADEMIC CAREER

In 1994 he graduated in Electrical Engineering with 110/110 at the University of Pavia. After a collaboration with CESI (1995), since 1996 he deals with the analysis and control of electric systems; he cooperated with the Politecnico di Milano and the University of Pavia, where in 1999 he obtained a PhD degree in Electrical Engineering with a thesis on ancillary services in the deregulated electricity market. From 2001 until 2010 he was Assistant Professor Department of Electrical Engineering at the Politecnico di Milano; in 2008 he joined the Department of Energy, Politecnico di Milano. Since 2010 he is Associate Professor Department of Energy at the Politecnico di Milano.

TECHNICAL SKILLS AND RESEARCH INTEREST

The research activity of Maurizio Delfanti has evolved along three main conceptual axes.

- a) An initial phase of research was focused on planning and operation of electric transmission systems, with particular regard for voltage security and for network congestions. Since 1999 (the establishment of the electricity market in Italy, Bersani Decree), the same issues were studied in the framework of liberalized systems, with greater emphasis on economic aspects in general (power exchange, day ahead market), and ancillary services pricing in particular.
- b) Since 2005, following the evolution of the liberalized environment, the research has focused on the need to ensure appropriate levels of service quality to the end user. This assurance was given, under the monopoly, by the presence of the public sector; nowadays, appropriate rules (applied to Distribution System Operators) are needed in order to avoid the negative consequences of the price mechanism.
- c) Since 2008, the interest for distribution networks has been polarized by the presence of an increasing number of Dispersed Generators (DG), and by a strong pressure towards energy efficiency involving final customers. In this perspective, the research has focused on the impact of DG on the existing distribution infrastructures (hosting capacity approach), investigated on extended samples of real life networks. Furthermore, the need for accommodating higher quantities of DG is fostering the evolution of MV and LV distribution systems, from the current state, to active distribution networks, in the perspective of Smart Grids, with a suitable integration of ICT.

MEMBERSHIPS AND RESPONSIBILITIES

The skills acquired in the research allowed Maurizio Delfanti to participate in both standardization and regulatory activities, at a national and international level.

As for national involvements, since 2006 he is member of CT8/28 of CEI (system aspects of electricity supply).

Since September 2008, he serves as Secretary of TC8X/WG1 "Physical Characteristics of electric energy", that has in charge the EN 50160 "Voltage characteristics of electricity supplied by public distribution networks". Standardization activities were conducted following an initial cooperation with CEER (Council of European Energy Regulators), as demonstrated by the Third Benchmarking Report, published in December 2005 by the same CEER.

He is member of the Italian Electrotechnical Committee (CEI), in which he participates in Technical Committee 3 "Structures of the information, documentation and graphic signs", from 2001 until 2010 as secretary of the technical area, since 2010 as Technical Committee President.

Since 2005, he serves as secretary of the Working Group 136, committed by the Italian Authority for electricity and gas of drafting the technical regulations for connection of active and passive users to public distribution networks (HV and MV). The technical rule has been implemented (Resolution ARG / elt 33/08) and is now the unified technical regulation on a national basis for connecting users to HV and MV distribution networks.

Since October 2008, he acts as Secretary of the Working Group 136 for LV networks, that is currently drafting the technical regulations for the connection of active and passive users to low voltage distribution networks (Standard CEI 0-21, the most innovative regulatory framework for DG in LV networks).

Since 2012, he acts as President of the Technical Committee 316 for the connection of active and passive users to public distribution networks (HV, MV and LV).

Since 2005, he consults for the Italian Authority for Electricity and Gas on regulatory activities related to power quality, in close coordination with the CEER (Council of European Energy Regulators), as demonstrated by the Third Benchmarking Report, published by the same CEER in December 2005, and for activities related to smart grids and connection rules.

At a European level, he was appointed by the CEI to participate in the CENELEC TC8X; since 2007, he is convenor of an international task force charged with reviewing the standard EN 50160 on the specific issue of voltage dips.

Since September 2008, he serves as Secretary of TC8X/WG1 "Physical Characteristics of electric energy", that is in charge of the whole EN 50160 standard.

Since 2011, he is Liaison officer TC8X/WG1 "Physical Characteristics of electric energy" – TC8X/WG3 "Requirements for connection of generators to distribution networks".

TEACHING ASSIGNMENTS

The courses taught in Politecnico di Milano over his academic carrier by Maurizio Delfanti are listed below.

- Since 2012, he teaches "Distribuzione dell'energia elettrica" for the Degree in Electrical Engineering.
- Since 2011, he teaches "Smart Grids and regulation for renewable energy sources" for the Master of Science degree in Energy Engineering for an Environmental Sustainable World.
- Since 2002, he teaches "Power Systems Fundamentals" for the Bachelor of Science degree in Energy Engineering.
- From 2002 to 2010 he taught "Electric Power Systems" for the Master of Science degree in Electrical Engineering.

The masters taught in Politecnico di Milano over his academic carrier by Maurizio Delfanti are listed below.

- Since 2008 he is a lecturer at the master "RIDEF Energia per Kyoto" organized by Politecnico di Milano, Energy Department.
- From 2003 to 2005 is a lecturer at the master "Ingegneria e Gestione dei Sistemi Elettrici di Potenza (MISP)", Electrical Department.

Since 2010 he teaches "Protecting transmission and distribution networks: a focus on protective schemes for generators on medium and low voltage" for the PhD course in Electrical Engineering.

Finally, since 2008 he is a coordinator of the courses “Teaching a course on “Connessione di Utenti attivi e passivi alle reti MT ed AT delle imprese distributrici di energia”, and “Sistemi di protezione e interfacciamento con impianti utente delle reti elettriche di distribuzione in MT” organized by Italian Electrotechnical Committee (CEI).

MOST IMPORTANT PUBLICATIONS

- [1] P. Marannino, P. Bresesti, **M. Delfanti**, G. Granelli, M. Montagna: “Voltage collapse proximity indicators for very short term security assessment”, Proc. of the seminar “Bulk Power System Voltage Phenomena III – Voltage stability and security”, Davos – Switzerland, agosto 94, pp. 421-429.
- [2] A. Berizzi, G. Demartini, **M. Delfanti**, P. Marannino, L. Rizzi: “Security constrained OPF for optimal transaction scheduling in an open access environment”, Proc. of the XIII PSCC, Trondheim, giugno 1999, pp.1214-1219.
- [3] **M. Delfanti**, G. Granelli, P. Marannino, M. Montagna “Optimal capacitor placement using deterministic and genetic algorithms”, IEEE Trans. on Power Systems, August 2000, Vol. 15, N° 3, pp. 1041-1046.
- [4] **M. Delfanti**, G. Pratesi: “Sistemi di protezione”, capitolo M10, sezione M della 84^a edizione del Manuale dell’Ingegnere, Editrice Hoepli, 2003, pp. 318-388.
- [5] C. Bovo, **M. Delfanti**, M.S. Pasquadibisceglie, M. Pozzi, E. Zio, “Indirect Monte Carlo approach to evaluate reliability and availability indices of distribution networks”, 18th International Conference on Electricity Distribution CIRED 2005, Turin, 6-9 June 2005, pp. 1-5.
- [6] A. Berizzi, **M. Delfanti**, P. Marannino, M.S. Pasquadibisceglie, A. Silvestri: "Enhanced security-constrained OPF with FACTS devices", IEEE Trans. on Power Systems, August 2005, Vol. 20, N° 3, pp. 1597-1605.
- [7] **M. Delfanti**, M. Sforna: “Overview of the events and causes of the 2003 Italian blackout” IEEE Power System Conference and exhibition 2006, Atlanta, October 28 - November 1st , 2006, pp. 301-308. Invited paper.
- [8] A. Berizzi; C. Bovo; **M. Delfanti**; M. Merlo; M. S. Pasquadibisceglie: “A Monte Carlo Approach for TTC Evaluation”, IEEE Trans. on Power Systems, May 2007, pp.735-743.
- [9] V. Allegranza, A. Ardito, E. De Berardinis, **M. Delfanti**; L. Lo Schiavo: “Assessment of short-circuit power level in HV and MV networks with respect to Power Quality”, CIRED 19th Conference on Electricity Distribution, Vienna 21-24 May 2007, pp 1-5.
- [10] A. Berizzi, C. Bovo, **M. Delfanti**, M. Merlo, “Security optimization of bulk power systems in the market environment”, Chapter 8 of the book “Optimization Advances in Electric Power Systems”, ISBN: 978-1-60456-999-5.
- [11] **M. Delfanti**, E. Fumagalli, P. Garrone, L. Grilli, L. Lo Schiavo: “Toward Voltage-Quality Regulation in Italy”, IEEE TRANSACTIONS ON POWER DELIVERY, vol. 25, no. 2, April 2010, pp. 1124 – 1132.
- [12] **M. Delfanti**, A. Silvestri: “Smart Grid. Le reti elettriche di domani”, Energy Lab – Laboratorio Smart Grid, Gieedizioni, 2011, ISBN 978-88-97342-04-5
- [13] **M. Delfanti**, E. Fumagalli, L. Lo Schiavo, V. Olivieri: “Changing the regulation for regulating the change. Innovation-driven regulatory developments in Italy: smart grids, smart metering and e-mobility” Working Paper Series - ISSN 1973-0381