

Curriculum

ALBERTO BORGHETTI was born in Cesena, Italy, in 1967. He graduated (with honors) in Electrical Engineering (5 years) from the University of Bologna, Italy, in 1992. Since then he has been working with the power system group at the same University, where he was appointed University Researcher in Electric Power Systems in 1994. As a faculty member, he has been teaching an annual course on "Electric power stations" since 1999 and a semester course on "Distributed generation" since 2001.

In 2001 and 2002, he was scientific responsible of two research contracts, between CESI and University of Bologna, in the framework of a research project on distributed generation, supported by the Italian Ministry of Industry.

In September 2001, he has obtained an Associate Professorship Habilitation in a comparative appraisal procedure at the University of Cagliari, Italy.

In June 2003, he was an instructor at the EES-UETP Course on "Power Systems simulation using Matlab: Theory and applications to realistic cases" (Organised by the University of Bologna and University of Wisconsin, Coordinators: Dr. Willis Long, Dr. Carlo Alberto Nucci, Bologna, June 30 - July 3, 2003).

He has been promoted Associate Professor of Electric power systems by the Faculty of Engineering of the University of Bologna, in July 2003.

His RESEARCH INTERESTS concern:

- the application of lagrangian relaxation techniques for the solution of unit commitment problems;
- the modeling of the electrical auxiliaries of power plants for training simulators;
- the control of thermoelectric power plants for the definition of power system restoration procedures;
- the modeling of aggregate loads for voltage stability studies;
- the assessment of lightning impact on power distribution systems;
- and the study of power components including low voltage capacitors and traction batteries.

He is co-author of about 50 scientific papers presented at international conferences or published on reviewed journals. The paper "The black-startup simulation of a repowered thermoelectric unit" (by A. Borghetti, G. Migliavacca, C.A. Nucci, S. Spelta) has been awarded as the best paper presented at the IFAC Symposium on Control of Power Plants and Power Systems, Brussels, 26-29 April 2000.

PUBLICATIONS

Journal publications:

- A. Borghetti, C.A. Nucci, G. Pasini, S. Pirani, M. Rinaldi, "*Tests on self-healing metallized polypropylene capacitors for power applications*", presented at CIGRE WG

- 15/03, paper 05/93, Hakone, Japan, 30 August 1993 and at the IEEE PES Summer Meeting, S. Francisco, CA, July 1994. Published enlarged on IEEE Transactions on Power Delivery, vol. 10, no. 1, pp. 556-561, 1995.
- A. Borghetti, R. Caldon, A. Mari, C.A. Nucci, "*On Dynamic Load Models for Voltage Stability Studies*", presented at the IEEE Power Engineering Society Winter Meeting, 21-25 January 1996, Baltimore, MD, 1996. Published on IEEE Transactions on Power Systems, Vol. 12, No. 1, pp. 293-303, 1997.
 - A. Borghetti, G. Migliavacca, C.A. Nucci, S. Spelta, "*The black-startup simulation of a repowered thermoelectric unit*", Proceedings of IFAC Symposium on Control of Power Plants and Power Systems, Brussels, 26-29 April 2000. The paper has been awarded as the best paper presented at the Conference and published, enlarged, in the IFAC Journal "Control Engineering Practice", 2001.
 - A. Borghetti, R. Caldon, C.A. Nucci, "*Generic dynamic load models in long-term voltage stability studies*", International Journal of Electrical Power & Energy Systems, vol. 22, n. 4, pp. 291-301, 2000.
 - A. Borghetti, A. Frangioni, F. Lacalandra, C.A. Nucci, "Lagrangian heuristics based on disaggregated Bundle methods for hydrothermal unit commitment", IEEE Transactions on Power Systems, Vol. 18 No. 1, Feb. 2003, pp. 313 –323.
 - A. Borghetti, C.A. Nucci, M. Paolone, "Effect of tall instrumented towers on the statistical distributions of lightning current parameters and its influence on the power system lightning performance assessment", Proc. PMAPS 2002, Probabilistic methods applied to power systems, Naples, September 22-26, 2002. Accepted for publication in the European Transactions on Electrical Power - ETEP.
 - A. Borghetti, J.A. Gutierrez R, C.A. Nucci, M. Paolone, E. Petrache, F. Rachidi, "Lightning-induced voltages on complex distribution systems: models, advanced software tools and experimental validation", Accepted for publication in "Journal of Electrostatics".
 - A. Borghetti, C. A. Nucci, M. Paolone, "Estimation of the statistical distributions of lightning current parameters at ground level from the data recorded by instrumented towers", Accepted for publication in the IEEE Transactions on Power Delivery.

Book chapter:

- A. Borghetti, G. Gross, C.A. Nucci, "Auctions with explicit demand-side bidding in competitive electricity markets", in "The next generation of unit commitment models" (B.F. Hobbs, M. Rothkopf, R.P. O'Neill e H.P. Chao eds.), pp. 53-74, Kluwer Academic Publishers (International series in operations research & management science), Boston, 2001

Selected Conference Papers

- A. Borghetti, C.A. Nucci, "Life-tests on tubular-plate lead-acid batteries for electric vehicles", Proc. Symposium on "Realities and prospects of the electric vehicle", pp. 130-133, La Rochelle, 15-19 novembre 1993.
- A. Borghetti, S. Guerrieri, C.A. Nucci, F. Rachidi, "*Modèles de calcul des surtensions induites par la foudre: analyse comparative*", Proceedings of 7^{ème} Colloque International

- et exposition sur la Compatibilité électromagnétique, Toulouse, 2-4 March 1994.
- S. Guerrieri, M. Ianoz, F. Rachidi, P. Zwiack, A. Borghetti, C.A. Nucci, "*Effet d'une impulsion électromagnétique sur des réseaux électriques à plusieurs branches. Modélisation et validation expérimentale*", Proceedings of 7^{ème} Colloque International et exposition sur la Compatibilité électromagnétique, Toulouse, 2-4 March 1994.
 - A. Borghetti, C.A. Nucci, P. Pagani, S. Spelta, V. Vannelli, D. Zanobetti, "*Model of the electrical auxiliaries system of a thermoelectric power station for a real-time training simulator*", Proceedings of IEEE-KTH Stockholm Power Tech, International Symposium on Electric Power Engineering, pp. 66-73, 18-22 June 1995.
 - A. Borghetti, R. Iorio, C.A. Nucci, P. Pelacchi, "*Calculation of voltages induced by nearby lightning on overhead lines terminated on distribution transformers*", Proceedings of IPST'95, International Conference on Power systems transients, pp. 311-316, Lisbon, 3-7 September 1995.
 - A. Borghetti, R. Caldon, A. Mari, C.A. Nucci, "*Voltage stability, the role of dynamic loads representation in dynamic analyses*", Proceedings of UPEC '95, 30th Universities Power Engineering Conference, University of Greenwich, London, Vol. 1, pp. 180-183, 5-7 September 1995.
 - A. Borghetti, C.A. Nucci, P. Pagani, S. Spelta, V. Vannelli, D. Zanobetti, "*Lego modelling of the power station electrical auxiliaries for a real time training simulation*", Proceedings of IEEE Melecon '96, 8th Mediterranean Electrotechnical Conference, pp. 1634-1637, Bari, 13-16 May 1996.
 - A. Borghetti, S. Guerrieri, M. Ianoz, C.A. Nucci, D. Orzan, F. Rachidi, "*Link of the field-to-transmission line coupling codes to the electromagnetic transients program*", Proceedings of EMC-97, III International Symposium on Electromagnetic Compatibility and Electromagnetic Ecology, San Petersburg, Russia, 23-27 June 1997.
 - A. Borghetti, C.A. Nucci, "*Estimation of probability distribution of lightning-induced voltages on an overhead line above an ideal and a lossy ground*", Proceedings of CIGRE SC 33 Colloquium, Toronto, 2-3 September 1997.
 - A. Borghetti, R. Caldon, A. Mari, C.A. Nucci, "*Modelling of generic dynamic loads for voltage collapse numerical simulations*", Proceedings of UPEC '97, 32nd Universities Power Engineering Conference, pp. 971-974, UMIST, Manchester, 10-12 September 1997.
 - A. Borghetti, C.A. Nucci, "*Estimation of the frequency distribution of lightning-induced voltages on an overhead line above a lossy ground: a sensitivity analysis*", Proceedings of ICLP '98, 24th International Conference on Lightning Protection, pp. 306-313, Birmingham, 14-18 September 1998.
 - C.A. Nucci, A. Borghetti, A. Piantini, J.M. Janiszewski, "*Lightning-induced voltages on distribution overhead lines: Comparison between experimental results from a reduced-scale model and most recent approaches*", Proceedings of ICLP '98, 24th International Conference on Lightning Protection, pp. 314-320, Birmingham, 14-18 September 1998.
 - A.P.S. Meliopoulos, J. Kennedy, C.A. Nucci, A. Borghetti, G. Contaxis, "*Power distribution practices in USA and Europe: Impact on power quality*", Proceedings of 8th IEEE ICHQP, International conference on harmonics and power quality, Athens, 14-16 October 1998.
 - A. Borghetti, C.A. Nucci, "*Frequency distribution of lightning-induced voltages on an*

- overhead line above a lossy ground*”, Proceedings of IEEE V International Symposium on Lightning Protection, San Paulo, 17-21 May 1999.
- A. Borghetti, G. Migliavacca, C.A. Nucci, S. Spelta, F. Tarsia, “*Simulation of the load following capability of a repowered plant during the first phase of the system restoration*”, Proceedings of 14th World Congress of the International Federation of Automatic Control (IFAC), pp. 115-124, Beijing, 5-9 July 1999.
 - A. Borghetti, C.A. Nucci, M. Paolone, M. Bernardi, “*Effect of the lateral distance expression and of the presence of shielding wires on the evaluation of the number of lightning induced voltages*”, Proceedings of ICLP 2000, 25th International conference on lightning protection, Rhodes, 18-22 September 2000.
 - A. Borghetti, C.A. Nucci, M. Paolone, F. Rachidi, “*Characterization of the response of an overhead distribution line to lightning electromagnetic fields*”, Proceedings of ICLP 2000, 25th International conference on lightning protection, Rhodes, 18-22 September 2000.
 - A. Borghetti, C.A. Nucci, M. Paolone, “*Statistical methods for evaluating lightning induced effects on distribution lines*”, presented at the panel session “Statistics in Transient Analysis”, IEEE PES Summer Meeting, Seattle, Washington, USA, 16 – 20 July 2000.
 - A. Borghetti, A. Frangioni, F. Lacalandra, A. Lodi, S. Martello, C. A. Nucci, A. Trebbi, “*Lagrangian Relaxation and Tabu Search Approaches for the Unit Commitment Problem*”, Proc. IEEE Porto PowerTech'2001, September 10 – 13, 2001.
 - S. Barsali, A. Borghetti, B. Delfino, G.B. Denegri, R. Giglioli, M. Invernizzi, C.A. Nucci, “*Guidelines for ISO operator aid and training for power system restoration in open electricity markets*”, Proc. Bulk Power System Dynamics and Control V, August 26-31, 2001, Onomichi, Japan.
 - A. Borghetti, C.A. Nucci, M. Paolone, “*Lightning performances of distribution lines: sensitivity to computational methods and to data*”, IEEE PES WM 2001 Panel on Statistics, sensitivity and precision in transient analysis, Columbus (Ohio), Gennaio 2001.
 - A. Borghetti, C.A. Nucci and M. Paolone, “*Statistical Evaluation of Lightning Performances of Distribution Lines*”, Proc. 5th IPST, Int. Conf. on Power System Transients, Rio de Janeiro, June 2001.
 - J.A. Gutierrez R., M. Paolone, A. Borghetti, C.A. Nucci, E. Petrache, F. Rachidi, “*Lightning-Induced Overvoltage Calculation in Matlab Environment*”, Proc. International Symposium on Power Quality SICEL 2001, 28-30 Nov. 2001, Bogotá, Colombia.
 - A. Borghetti, J.A. Gutierrez R, C.A. Nucci, M. Paolone, E. Petrache, F. Rachidi, “*Software tools for the calculation of lightning-induced voltages on complex distribution systems*”, Proc. ICLP 2002, International Conference on Lightning Protection, Krakow, Poland, September 2-6, 2002
 - A. Borghetti, G. Celli, M. Paolone, F. Pilo, “*Effects of Line Grounding Electrodes Modeling on the Evaluation of Lightning-Induced Overvoltages in Overhead Power Distribution Lines*”, Proc. of 2003 IEEE Bologna PowerTech, Bologna, June 23-26, 2003.
 - A. Borghetti, R. Caldon, S. Guerrieri, F. Rossetto, “*Dispersed Generators Interfaced with Distribution Systems: Dynamic Response to Faults and Perturbations*”, Proc. of 2003 IEEE Bologna PowerTech, Bologna, June 23-26, 2003.

- A. Borghetti, A. Frangioni, F. Lacalandra, C.A. Nucci, P. Pelacchi, "Using of a cost-based Unit Commitment algorithm to assist bidding strategy decisions", Proc. of 2003 IEEE Bologna PowerTech, Bologna, June 23-26, 2003.
- A. Borghetti K. Maslo G. Migliavacca M. Paolone I. Petružela S. Spelta, "Steam unit and gas turbine power station reliable control for network black-start-up", Proc. of 2003 IEEE Bologna PowerTech, Bologna, June 23-26, 2003.

PROFESSIONAL SOCIETY ACTIVITIES:

- Paper reviewer, mostly for IEEE Power Engineering Society Transactions (Trans. on Power Systems, on Power Delivery, on Energy Conversions) and Conferences.
- Member of IEEE Power Engineering Society Working Group on Distributed Resources: Modeling and Analysis, 2001-present.
- Member of the organizing committee of the 2003 IEEE Bologna Power Tech Conference, June 23-26, 2003.
- Conference Proceedings Edited: A. Borghetti, C.A. Nucci, M. Paolone (eds.), Proceedings: 2003 IEEE Bologna Power Tech Conference, June 23-26, 2003.
- Member of IEEE, 1997. Senior member of IEEE, 2003.
- Member of AEI (Associazione Elettrotecnica ed Elettronica Italiana), 1990.
- Secretary of the AEI Bologna section, 2000 - present.