Simone Castellan si è laureato in Ingegneria Elettrica ed ha conseguito il dottorato di ricerca in Elettrotecnica presso l'Università di Padova. In seguito è stato assunto come ricercatore all'Università di Trieste, dove attualmente è professore associato del settore Convertitori, Macchine e Azionamenti Elettrici presso il dipartimento di Ingegneria ed Architettura, titolare dei corsi di Elettronica di Potenza e di Azionamenti Elettrici per la laurea magistrale in Ingegneria dell'Energia Elettrica e dei Sistemi.
I suoi ambiti di ricerca sono soprattutto nel campo dei convertitori statici applicati ai sistemi attivi per il miglioramento della "power quality" ed in particolare la compensazione di potenza reattiva, armoniche e flicker ed "electric spring", agli azionamenti elettrici "fault-tolerant", agli azionamenti elettrici di elevata potenza, alle fonti di energia rinnovabili, ai sistemi elettrici a corrente continua in media tensione e ai sistemi per la mobilità sostenibile.

Simone Castellan received the Master and Ph.D. degrees in electrical engineering from the University of Padova (Padova, Italy). After that, he was hired as a researcher at the University of Trieste (Trieste, Italy), where he is currently employed at the Department of Engineering and Architecture, as associate professor in the scientific area of power converters, machines, and drives. He teaches Power Electronics and Electrical Drives for the Master Degree course in Electric Energy and System Engineering.
His main research interests are in the field of power converters employed for active power line conditioning (mainly reactive power, harmonic and flicker compensation and electric spring), fault-tolerant drives, high power drives, renewable energy sources, distribution systems of medium voltage DC grids and systems for sustainable mobility.

List of publications on conference proceedings

[1] G. Buja, S. Castellan, M. Loggini and G. Zucchelli, "Actual trend in flicker mitigation", Proc. of IEEE International Conference on Power Industrial Applications, pp.212-217, 1999.

[2] M. Bertoluzzo, G. Buja, S. Castellan and P. Fiorentin, "Neural network technique for the joint time-frequency analysis of power system quantities", Proc. of IEEE International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives, pp.579-584, 2001.

[3] G. Buja and S. Castellan, "Sizing and control of a three-phase PWM rectifier with reduced switch count", Proc. of International Conference on Electrical Drives and Power Electronics, pp.194-199, 2001.

[4] G. Buja, S. Castellan and D. Szabo, "A novel control technique for multilevel converters with limited output voltage range", Proc. of International Power Electronics and Motion Control Conference, cd rom, paper TI-054, 2002.

[5] S. Castellan, "Shunt active power line conditioners controlled by the instantaneous power theory", Proc. of International Congress on Mechanical and Electrical Engineering and Technology, Vol.1, pp.253-260, 2002.

[6] M. Bertoluzzo, G. Buja, S. Castellan and P. Fiorentin, "Real-time estimation of power system frequency by neural network", Proc. of IEEE International

Symposium on Diagnostics for Electric Machines, Power Electronics and Drives, pp.87-92, 2003.

[7] G. Buja and S. Castellan, "Active filter for high-power medium-voltage diode rectifiers", Proc. of European Conference on Power Electronics and Applications, cd rom, paper 915, 2003.

[8] G. Buja and S. Castellan, "Compensation strategy for an active flicker compensator", Proc. of IEEE Power Electronics Specialists Conference, cd rom, pp.1090-1094, 2004.

[9] M. Bertoluzzo, P. Bolognesi, O. Bruno, G. Buja, S. Castellan, V. Isastia, R. Menis and S. Meo, "Research project of national interest: analysis and development of advances solutions for drive-by-wire systems and their experimentation on a goods handling vehicle", Proc. of International Conference on Integrated Chassis Control, cd rom, paper 04A6030, 2004.

[10] G. Buja, S. Castellan, R. Menis and A. Zuccollo, "Dependability of safety-critical systems", Proc. of IEEE International Conference on Industrial Technology, cd rom, paper 2686, 2004.

[11] S. Castellan, R. Menis and G. Sulligoi, "Emtdc-based simulation of harmonic pollution in an all-electric cruise liner: analytical approach and experimental validation", Proc. of International Conference on Ship Propulsion and Railway Traction Systems, cd rom, pp.156-161, Bologna 2005.

[12] S. Castellan, R. Menis and G. Sulligoi, "Medium voltage active power filters for all-electric ships", Proc. of International Symposium on Civil or Military All-Electric Ship, cd rom, paper B1-2, Paris, October 2005.

[13] G. Buja and S. Castellan, "Active flicker compensation in medium-voltage lines using multilevel converters", Proc. of International Conference on Power Electronics and Intelligent Control for Energy Conservation, cd rom, paper 200, Warsaw 2005.

[14] S. Castellan, S. Quaia, P. Scialla and G. Sulligoi, "All-electric mega-yachts: integrated power system operation and its interaction with propulsion converters", Proc. of International Symposium on Power Electronics, Electrical Drives, Automation and Motion, Sec.S40, pp.34-39, Taormina (Italy), May 2006.

[15] V. Arcidiacono, S. Castellan, R. Menis and G. Sulligoi, "Integrated voltage and reactive power control for all electric ship power systems", Proc. of Int. Symposium on Power Electronics, Electrical Drives, Automation and Motion, Sec.S31, pp.61-65, Taormina (Italy), May 2006.

[16] S. Castellan e G. Sulligoi, "Mega-yacht a propulsione elettrica: vantaggi operativi ed aspetti progettuali di un impianto elettrico integrato", atti del convegno SEA-MED (Structural Engineering Analysis – Marine Development Design), Messina, 21 luglio 2006.

[17] S. Castellan, R. Menis, M. Pigani, G. Sulligoi and A. Tessarolo, "Modeling and simulation of electric propulsion systems for all-electric cruise liners", Proc. of IEEE Electric Ship Technologies Symposium, Sec.T1, pp.60-64, Arlington (VA), 21-23 May 2007.

[18] A. Massi Pavan, S. Castellan, S. Quaia, S. Roitti and G. Sulligoi, "Power electronic conditioning systems for industrial photovoltaic fields: centralized or

string inverters?", Proc. of International Conference on Clean Electrical Power, paper A314, pp.208-214, Capri – Italy, 21-23 May 2007.
[19] V. Bucci, A. Marinò, S. Castellan and G. Sulligoi, "Innovative design concepts for the yachting market: expedition yachts and electric propulsion", Proc. of the 5th International Congress on Maritime Technological Innovation and Research, Barcelona, 21-23 Nov. 2007.
[20] S. Castellan, M. Favot, R. Menis and A. Tessarolo, "A simple fault-tolerant induction motor drive for dependable electrical auxiliary equipment of railway locomotives", Proc. of Int. Symposium on Power Electronics, Electrical Drives, Automation and Motion, Ischia (Italy), Sec.FA1, pp.1175-1179, 11-13 June 2008.
[21] S. Castellan, G. Sulligoi and A. Tessarolo, "Comparative performance analysis of VSI and CSI supply solutions for high power multi-phase synchronous motor drives", Proc. of Int. Symposium on Power Electronics, Electrical Drives, Automation and Motion, Ischia (Italy), Sec.TB3, pp.854-859, 11-13 June 2008.
[22] A. Tessarolo, S. Castellan and R. Menis, "Feasibility and performance analysis of a high power drive based on four synchro-converters supplying a twelve-phase synchronous motor", Proc. of IEEE Power Electronics Specialists Conference, 15-19 June 2008.
[23] A. Tessarolo and S. Castellan, "Analytical and circuital modelling of commutation transients in phase-split synchronous motors supplied by multiple load commutated inverters", Proc. of International Conference on Electrical Machines, Vilamoura (Portugal), 6-9 Sept. 2008.
[24] A. Qualizza, T. Perini, S. Michetti, M. Ratto, G. Sulligoi, S. Castellan and R. Menis, "Integrated power systems in cruise ships and naval vessels", Proc. of Electric Ship Design Symposium, Sec.2, National Harbour (MD), 12-13 February 2009.
[25] V. Bucci, A. Marinò, S. Castellan and G. Sulligoi, "Electric vs. conventional propulsion: comparative analyses for luxury yachts different in size", Proc. of Electric Ship Design Symposium, Sec.2, National Harbour (MD), 12-13 February 2009.
[26] A. Massi Pavan, S. Castellan and G. Sulligoi, "An innovative photovoltaic field simulator for hardware-in-the-loop test of power conditioning units", Proc. of International Conference on Clean Electrical Power, Capri (Italy), 9-11 June 2009.
[27] S. Castellan, M. Della Valentina, A. Tessarolo and G. Viciguerra, "Stand-alone DC power plant supplied by an alternative energy integrated modular system", Proc. of European Conference on Power Electronics and Applications, Barcelona (Spain), 8-10 Sept. 2009.
[28] A. Tessarolo, S. Castellan and R. Menis, "Analysis and simulation of a novel load-commutated inverter drive based on a symmetrical five-phase synchronous motor", Proc. of European Conference on Power Electronics and Applications, Barcelona (Spain), 8-10 Sept. 2009.
[29] S. Castellan and A. Tessarolo, "High-power electric drives for all-electric ships", Proc. of International conference on Ecological Vehicles and Renewable Energies, Montecarlo, Monaco, CD paper no. 340, 25-28 March 2010.

[30] M. Bertoluzzo, P. Bolognesi, O. Bruno, G. Buja, S. Castellan, V. Isastia, R. Menis, S. Meo, "A Distributed Driving and Steering System for Electric Vehicles Using Rotary-Linear Motors", Proc. of Int. Symposium on Power Electronics, Electrical Drives, Automation and Motion, Pisa (Italy), pp.1086-1093, 14-16 June 2010.

[31] M. Aizza, D. Bosich, S. Castellan, R. Menis, G. Sulligoi, A. Tessarolo, "Coordinated speed and voltage regulation of a dc power generation system based on a woundfield split-phase generator supplying multiple rectifiers", Proc. of the 6th IET International Conference on Power Electronics, Machines and Drives (PEMD 2012), Bristol (UK), 27-29 March 2012.

[32] G. Sulligoi, S. Castellan, M. Aizza, D. Bosich, L. Piva, G. Lipardi, "Active Front-End for Shaft Power Generation and Voltage Control in FREMM Frigates Integrated Power System: modeling and validation", Proc. of Int. Symposium on Power Electronics, Electrical Drives, Automation and Motion, pp. 452 - 457, Sorrento (Italy), 20 – 22 June 2012.

[33] A. Tessarolo, S. Castellan, R. Menis, G. Sulligoi, "Electric Generation Technologies for All-Electric Ships with Medium-Voltage DC Power Distribution Systems", Proc. of Electric Ship Technologies Symposium, pp. 275 - 281, Arlington (VA), 22 – 24 April 2013.

[34] S. Castellan, R. Menis, A. Tessarolo, "Power Electronics for All-Electric Ships with MVDC Power Distribution System: an Overview", in Proc. of International Conference on Ecological Vehicles and Renewable Energies, Montecarlo, Monaco, 25-27 March 2014.

[35] S. Castellan, A. Tessarolo, M. Bortolozzi, M. Mezzarobba, "Analysis of asymmetrical short circuits downstream of 12 pulse diode rectifier fed by double three phase synchronous machines", in Proc. of IET International Conference on Power Electronics, Machines and Drives, Manchester (UK), 8-10 April 2014.

[36] S. Mohmadian, M.H. Khanzade, S. Castellan, A. Tessarolo, "LCI-fed wound-field synchronous motors: A technology status review and new development trends", in Proc. of AEIT Annual Conference - From Research to Industry: The Need for a More Effective Technology Transfer (AEIT), Trieste, 18-19 September 2014.

[37] A. Tessarolo, S. Castellan, R. Menis, G. Sulligoi, "Fault tolerant electric generation systems for DC distribution network supply", in Proc. of AEIT Annual Conference - From Research to Industry: The Need for a More Effective Technology Transfer (AEIT), Trieste, 18-19 September 2014.

[38] A. Galassini, A. Costabeber, M. Degano, G. Gerada, A. Tessarolo, S. Castellan, "Distributed current control for multi-three phase synchronous machines in fault conditions", in Proc. of the International Conference on Electrical Machines (ICEM), pp. 1036 – 1042, Lausanne (Switzerland), 4-7 September 2016.

[39] S. Castellan, G. Buja, R. Menis, "Effective reactive power compensation in single-phase systems under distorted utility voltage", in Proc. of IEEE International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives (SDEMPED), paper P910, Tinos (Greece), 29 August – 1 September 2017.

[40] S. Castellan, N. Blasuttigh, R. Menis, A. M. Pavan, M. Mezzarobba, G. Buja, “Design and simulation of a vehicle-to-grid system”, in proc. of Int. Conf. on Electric Power and Energy Conversion Systems, Session F, Istanbul (on-line conference), 5-6 October 2020.

[41] M. Mezzarobba, A. Tessarolo, N. Blasuttigh, A. M. Pavan, S. Castellan, S. Pastore, “Technologies for electric vehicle utilization for electric power optimal management”, in proc. of AEIT Int. Conf. on Electrical and Electronic Technologies for Automotive (AEIT AUTOMOTIVE), Torino, 17-19 November 2021.

[42] N. Blasuttigh, H. Beiranvand, T. Pereira, S. Castellan, M. Liserre, "Efficiency Trade-off-Oriented Analysis for the integration of DC-DC Converter and Battery Pack in V2G Applications," in proc. of IEEE Energy Conversion Congress and Exposition (ECCE), pp. 1-7, Detroit, MI, USA, 9-13 Oct. 2022.

List of journal publications

[1] M. Bertoluzzo, G.Buja, S. Castellan and P. Fiorentin, “Neural network technique for the joint-time frequency analysis of distorted signals”, *IEEE Transactions on Industrial Electronics*, Vol. 50, No. 6, pp. 1109-1115, December 2003.

[2] S. Quaia and S. Castellan, “Impact of limiting reactors for voltage sags mitigation in distribution utilities”, Electrotechnical Review, Vol. 71, No. 5, pp. 301-307, 2004.

[3] G. Buja and S. Castellan, “Design and comparison of two multilevel converters for flicker compensation”, *EPE Journal*, Vol. 17, No. 2, pp. 22-29, April, May, June 2007.

[4] S. Castellan, “Sistemi di conversione statica per la propulsione navale”, AEIT, pp. 20-25, Volume 96, Numero 3, marzo 2009.

[5] G.Buja and S.Castellan, “A flicker compensation strategy”, *IEEE Transactions on Power Electronics*, Vol. 24, No. 5, pp. 1243-1247, May 2009.

[6] A. Tessarolo, S. Castellan, R. Menis and G. Ferrari, “On the Modeling of Commutation Transients in Split-Phase Synchronous Motors Supplied by Multiple Load-Commutated Inverters”, *IEEE Transactions on Industrial Electronics*, Vol. 57, No. 1, pp. 35-43, January 2010.

[7] I. Celanovic, N. Celanovic, H. Jin, S. Castellan, “Rapidly Design, Prototype, and Test your DSP Controller with PSIM and Typhoon HIL”, *Bodo’s Power Systems*, No. 05-14, pp.90-93, May 2014.

[8] S. Mohamadian, S. Castellan, A. Tessarolo, G. Ferrari, A. Shoulaie, “An algebraic algorithm for motor voltage waveform prediction in dual-LCI drives with interconnected DC-links”, *IEEE Transactions on Energy Conversion*, Vol. 31, No. 2, pp. 506-519, June 2016.

[9] S. Mohamadian, A. Tessarolo, S. Castellan, A. Shoulaie, “Steady-state simulation of LCI-fed synchronous motor drives through a computationally-efficient algebraic method”, *IEEE Transactions on Power Electronics*, Vol. 32, No. 1, pp. 452 – 470, January 2017.

[10] S. Mohamadian, S. Castellan, A. Tessarolo, M. H. Khanzade, A. Shoulaie, “A Novel Thyristor-Based CSI Topology with Multilevel Current Waveform for Improved Drive Performance”, *IEEE Transactions on Power Electronics*, Vol. 33, No. 2, pp. 997-1006, February 2018.

[11] S. Castellan, R. Menis, A. Tessarolo, F. Luise, T. Mazzuca, “A review of power electronics equipment for all-electric ship MVDC power systems”, *ELSEVIER International Journal of Electrical Power & Energy Systems*, Vol. 96, pp. 306-323, March 2018.

[12] M. Mezzarobba, A. Tessarolo, N. Barbini, S. Castellan, B. Codan, M. Terconi, C. Bruzzese, A. Fusari, “Design, prototyping and testing of a rotating electrical machine with linear geometry for shipboard applications”, *IEEE Access*, Vol. 8, pp. 122884 - 122897, July 2020.

[13] S. Castellan, G. Buja, R. Menis, “Single-phase power line conditioning with unity power factor under distorted utility voltage”, *ELSEVIER International Journal of Electrical Power & Energy Systems*, Vol. 121, pp. 1-10, October 2020.

[14] G. Buja, S. Castellan, Q. Wang, “Sizing procedure of reactive electric spring”, *IEEE Open Journal of the Industrial Electronics Society*, Vol. 3, pp. 283-290, April 2022.

[15] N. Blasuttigh, H. Beiranvand, T. Pereira, S. Castellan, A. M. Pavan, M. Liserre, "η_{max}-Charging Strategy for Lithium-Ion Batteries: Theory, Design, and Validation," *IEEE Transactions on Power Electronics,* Vol. 39, No. 7, pp. 7890-7900, July 2024.