

Milorad Papić

Curriculum Vitae
1978–2020

Current Position

Independent Engineering Consultant since April 2020.

Professional Expertise

Dr. Papic, Life Fellow IEEE, has over 40 years of experience in teaching, research & development, planning and reliability assessments of bulk electric systems.

He has developed and employed several concepts and methods to improve power system planning, operation and reliability. Prior to joining Idaho Power, he was Associate Professor at University of Sarajevo, Bosnia and Herzegovina.

He published more than 100 technical papers in Refereed Journals and Conference Proceedings in various areas of power system planning, operation and cascading.

Milorad has been a speaker, invited presenter, and a panelist at many IEEE PES conferences and panels presenting topics on reliability and cascading of power systems.

He has been a leader within North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) industry groups to analyze transmission outage data to determine trends and support the application of probabilistic methods to transmission planning and prevent cascading in bulk power systems.

He was a General Chair of the International Conference on Probabilistic Methods Applied to Power Systems (PMAPS) successfully organized in Boise, Idaho in 2018.

Education

D. Sc. Electrical Engineering
University of Sarajevo, 1980.

M. Sc. Electrical Engineering
University of Zagreb, 1977.

Dipl. Ing. Electrical Engineering
University of Sarajevo, 1972.

Honors & Awards

- IEEE Fellow. 2019.
- IEEE PES Outstanding Engineer Award (OEA). October 2017.
- IEEE-PES Technical Committee Working Group Recognition Award to the WG on Understanding, Prediction, Mitigation and Restoration of Cascading Failures (Chair: M. Papic). August 2015.
- IEEE AMPS Committee Recognition Award. Chicago. July 2017.
- International Conference on Large H.V. Electric Systems – CIGRE, Paris. Award for the best paper submitted by U. S. National Committee. 2006.
- Minority Small Business Advocate of the Year Award. Chamber of Commerce, Twin Falls, ID. 1995.
- Research Fellowship at UMIST. Financial support by British Council, US DOE and UK Royal Society. 1993.
- CIGRE – Yugoslav Committee Paper Recognition Award, YU CIGRE General Session. 1989 .
- Post-Doctoral Fellowship at UMIST. Funded by EC DG-XII Brussels. 1989–1990.
- Doctoral Fellowship (advisor: Professor V. A. Venikov), Russia, Moscow Power Institute. 1978–1979 academic year.

- IEEE Power Engineering Society, Transactions on Power Systems, U.S.A.
- IEEE Power Engineering Society, Transactions on Smart Grid, U.S.A.
- IEEE Power Engineering Society, General Meeting, U.S.A.
- International Conference on Probabilistic Methods Applied to Power Systems (PMAPS), Canada.
- Industry Advisor on joint INL and NREL Project *High Performance Computing-based Dynamically Adaptive Protection Schemes for Electric Grid*. 2017–2019.
- Industry Advisor: PSERC Project S-75, *Reliability Evaluation of Renewable Generation Integrated Power Grid including Adequacy and Dynamic Security Assessment*. (PI C. Singh). July 2017–August 2019.
- Industry Participant on Texas A&M University Project, *Timing Intrusion Management Ensuring Resiliency*. No. DE-FOA-0001441CEDS Research (PI: M. Kezunovic). October 2017–October 2020.
- Industry Advisor on PNNL Project, *Developing the Dynamic Contingency Analysis Tool (DCAT) for Cascading Outage Analysis for the Western Interconnection using GE PSLF*. 2016–present.
- Industry Advisor on GMLC Project *Extreme Events Modeling*. (Project Participants: ANL, BNL, LANL, LLNL, NREL, PNNL, SNL). 2016–2018.
- Industry Advisor on PNNL Project *Stochastic Operations and Planning/* September 2017–present.
- Industry Advisor on PSERC Project T-53 *Reliability Assessment and Modeling of Cyber Enabled Power Systems with Renewable Sources and Energy*. (PI C. Singh). November 2016.
- Industry Advisor on EPRI Project for National Association of Regulatory Utility Commissioners (NARUC) and Eastern Interconnection States' Planning Council (EISPC), *Incorporating Risk Analysis into Transmission Planning Processes*. 2014.
- Industry Advisor on PNNL Project *Extreme Events Research*, Phases 1-3, (PI: Jeff Dagle). Project funded by CEC. April 2010–2012.
- Member of Editorial Board for Journal *Elektrotehnika*. Zagreb. 1983–1988.

Professional Activities

- General Chair of 15th Int. Conference on Probabilistic Methods Applied to Power Systems (PMAPS), Boise, ID. June 24–28, 2018.
- Member of WECC Standard Drafting Team “Transmission System Planning Performance WECC Regional Criterion TPL-001-WECC-CRT-3.” 2014–2016.
- Co-Chair of IEEE RRPA Composite Reliability Task Force. 2018–present.
- Chair of IEEE Risk, Reliability and Probability Applications (RRPA) Subcommittee. 2014–2018.
- Member of Working Group on IEEE Standard 762: Standard Definitions for Use in Reporting Electric Generating Unit Reliability, Availability, and Productivity. 2015–present.
- Member of Working Group on IEEE Std. 859: Standard Terms for Reporting and Analyzing Occurrences and Outage States of Electrical Transmission Facilities. 2015–present.
- Member of Task Force on Reliability Considerations in Emerging Cyber-Physical Energy Systems. 2015–present.
- Member of Task Force on writing a history of the APM/RRPA Subcommittee. 2014–2015.
- Member of Task Force on Update of IEEE RTS-96 Test Case. 2016–2018.
- Member of NERC Synchronized Measurement Subcommittee (SMS). 2015–present.
- Director and member of the PMAPS IS Board. 2016–present.

Professional Activities (cont.)

- Member of North American Synchro Phasor Initiative (NASPI). 2014–present.
- Chair of WECC Reliability Assessment Working Group (RAWG). 2014–2017.
- Member of IEEE Working Group on LOLE Best Practices. 2012–present.
- Member of WECC Wide System Model (WSM) Task Force. 2005–2006.
- Member of WECC Joint Synchronized Information Subcommittee (JSIS). 2011–present.
- Chair of IEEE PES CAMS Working Group on Understanding, Prediction, Mitigation and Restoration of Cascading Failures. 2010–2020.
- Member of NERC Transmission Availability Data System Working Group (TADSWG). 2010–present.
- Chair of IEEE Working Group on Probability Application for Common Mode and dependent Events in Electric Power Systems (PACME). 2010–present.
- Member of NERC Generation and Transmission Reliability Planning Models Task Force (GTRPMTF). 2008–2010.
- Member of Working Group on “Distribution Systems Reliability.” 1994–present.
- Member of WECC Reliability Subcommittee (RS). 2007–2017.
- Chair of WECC Reliability Performance Evaluation Working Group (RPEWG). 2011–2014.
- Member of EPRI Working Group on Transmission Reliability Impact Metrics. 2006–2008.
- Chair of EPRI TRELSS User Group. 1998–2003.
- Member of Technical Advisory Board of International Conference on Probabilistic Methods Applied to Power Systems (PMAPS). 1988–2004 and 2017–present.

Selected Technical Publications

- S. Ekisheva, M. Papic, M. G. Lauby, B. D. Till. (2020). *Underground AC Circuits in North America: Inventory Attributes and Sustained Outages*. PMAPS 2020. [submitted]
- M. Papic, J. Ellsworth, A. Valdapena Delgado, E. Schellenberg, G. Travis, G. Preston. (2020). *Adequacy Assessment of the Idaho Power Generation System with Integrated Variable Energy Source*. PMAPS 2020. [submitted]
- S. Ekisheva, M. Papic, M. J. Pakeltis, M. X. Bocovich, G. Brantley Tillis, M. McClure, D. J. King. (2020). *Assessment of North American Transmission Outages by Fault Type*. PESGM 2020.
- S. Ekisheva, M. Papic, M. Lauby, M. Elkins. (2020). *Assessment of Impact of AC Circuit Attributes to Outage Frequency in the WECC System*. Submitted for publication in IEEE Transaction on Power Delivery.
- M. Sinha, R. Kadavil, M. Panwar, T. Hussain, S., M. Papic. (2020). *Benchmarking Closed-Loop Load Shedding Algorithms for Mitigating Cascading Failures in Power Grids in a DRTS-HPC Environment*. ISGT 2020. Washington DC. [submitted]
- M. Sinha, R. Kadavil, M. Panwar, T. Hussain, S., M. Papic. (2020). *An Integrated Real-time Simulation and High-performance Computing Environment for Benchmarking Closed-Loop Control Algorithms for Mitigating Cascading Failures in Electric Grids*. ISGT 2020. Washington DC. [submitted]
- E. Ciapessoni, D. Cirio, E. Hilberg, J. Jacobs, C. Kumar, C. Mak, D. Mindham, M. Panteli, M. Papic, A. Pitto, S. Skarvelis-Kazakos, A. Srivastava, M. Van Harte. (2019). *Power System Resilience Definition*. CIGRE WG C4.47.
- M. Sinhay, M. Panwary, R. Kadavily, T. Hussain, S. Suryanarayanan, M. Papic. (June 2019). *Optimal Load Shedding for Mitigation of Cascading Failures in Power Grids*. Proceedings of the Tenth ACM International Conference on Future Energy.
- M. Papic, S. Ekisheva, J. Robinson, B. Cummings. (2019). *Multiple Outage Challenges to Transmission Grid Resilience*. 2019 IEEE Power & Energy Society General Meeting (PESGM). Atlanta, GA. pp. 1–5.
ieeexplore.ieee.org/document/8973606

Selected Technical Publications (cont.)

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- M. Vaiman et al. (2018). *Using Synchrophasors to Improve Bulk Power System Reliability in North America*. 2018 IEEE Power & Energy Society General Meeting (PESGM). Portland, OR. pp. 1–5. ieeexplore.ieee.org/document/8586560
- M. Papic. (2018). *Probabilistic Reliability Planning at Idaho Power: 75-Year Buildout Transmission Strategies*. 2018 International Conference on Probabilistic Methods Applied to Power Systems (PMAPS). Boise, ID. ieeexplore.ieee.org/document/8440274
- M. Papic, M. Clemons, S. Ekisheva, D. Gent, J. Norris, M. Pakeltis, M. Peacock, D. Till. (2018). *Performance Analysis of North American AC Circuits on Common Structures using TADS and CEA Outage Statistics*. 2018 International Conference on Probabilistic Methods Applied to Power Systems (PMAPS). Boise, ID. ieeexplore.ieee.org/document/8440546
- Prepared by Task Force on Reliability Consideration for Emerging Cyber-Physical Energy Systems. (2018). *Reliability Modelling Considerations for Emerging Cyber – Physical Power Systems*. 2018 International Conference on Probabilistic Methods Applied to Power Systems (PMAPS). Boise, ID. ieeexplore.ieee.org/document/8440331
- M. Papic, B. Efaw, D. Angel, P. Van Patten. (2018). *Historical Performance Analysis of Transmission Lines Using the Idaho Power Outage Database GTORS*. 2018 International Conference on Probabilistic Methods Applied to Power Systems (PMAPS). Boise, ID. ieeexplore.ieee.org/document/8440561
- Prepared by IEEE Working Group on Understanding, Prediction, Mitigation and Restoration of Cascading Failures. (2018). *Benchmarking Quasi-Steady-State Cascading Outage Analysis Methodologies*. 2018 International Conference on Probabilistic Methods Applied to Power Systems (PMAPS). Boise, ID. (M. Papic, Chair of CFWG). ieeexplore.ieee.org/document/8440212
- M. Vaiman, R. Quint, A. Silverstein, M. Papic, D. Kosterev, N. Leitschuh, A. Faris, S. Yang, B. Blevins, S. Rajagopalan, P. Gravois, O. Ciniglio, S. Maslenikov, E. Litvinov, X. Luo, P. Etingov. (July 2017). *Using Synchrophasors to Improve Bulk Power System Reliability in North America*. IEEE PES General Meeting. Chicago, IL. ieeexplore.ieee.org/document/8586560
- R. Ramanathan, A. Papat, M. Papic, O. Ciniglio. (July 2017). *Idaho Power Experience of Implementing Cascade Analysis Study using the Node/Breaker Model*. IEEE PES General Meeting. Chicago, IL. ieeexplore.ieee.org/document/8273978
- R. Ramanathan, A. Papat, M. Papic, O. Ciniglio. (July 2017). *Lessons Learned from Implementing Path Operating Limit Computation using the State Estimator Node/Breaker Model*. Submitted to IEEE PES General Meeting. Chicago, IL. ieeexplore.ieee.org/document/8274165
- S. Ekisheva, M. S. Clemons, M. J. Pakeltis, M. Papic, R. Quest, Kurt Weisman. (July 2017). *Outage Statistics, Reliability and Availability of DC Circuits in North American Bulk Power System*. Submitted to IEEE PES General Meeting. Chicago, IL. ieeexplore.ieee.org/document/8274442
- O. Ciniglio, M. Papic, M. Y. Vaiman, M. M. Vaiman. (2017). *Optimal PMU Placement to Achieve Complete Observability of Idaho Power Co. System*. IEEE T & D Conference. ieeexplore.ieee.org/document/8085995
- J. Bialek, E. Ciapessoni, D. Cirio, E. Cotilla-Sanchez, C. Dent, I. Dobson, P. Hines, J. Jardim, S. Miller, M. Papic, A. Pitto, J. Quiros-Tortos, D. Wu. (2016). *Benchmarking and Validation of Cascading Failure Analysis Tools*. IEEE Transactions on Power Systems, Volume 31, Issue 6, pp. 4887–4900. ieeexplore.ieee.org/document/7404289
- M. Papic, M. Clemons, S. Ekisheva, J. Langthorn, T. Ly, M. Pakeltis, R. Quest, J. Schaller, D. Till, K. Weisman. (2016). *Transmission Availability Data System (TADS) reporting and data analysis*. 2016 International Conference on Probabilistic Methods Applied to Power Systems. Beijing, China. ieeexplore.ieee.org/document/7764059
- M. Papic, Ian Dobson. (2016). *Comparing a Transmission Planning Study of Cascading with Historical Line Outage Data*. 2016 International Conference on Probabilistic Methods Applied to Power Systems. Beijing, China. ieeexplore.ieee.org/document/7764070
- M. Papic, O. A. Ciniglio, S. K. Agarwal. (2016). *Reliability Assessment of Multiple Substations in Idaho System Using a Node-Breaker Model*. 2016 IEEE Power and Energy Society General Meeting. pp. 1–5. ieeexplore.ieee.org/document/7741757

Selected Technical Publications (cont.)

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- M. Papić et al. (2017). *Research on Common-Mode and Dependent (CMD) Outage Events in Power Systems – A Review*. IEEE Transactions on Power Systems, Volume 32, Issue 2, pp. 1528–1536. ieeexplore.ieee.org/document/7508488
- M. Papić, O. Ciniglio, M. Vaiman. (July 2015). *Practical Experience in Assessing the Effects of Extreme Contingencies with Respect to Standards TPL-001-4 and CIP 014-1*. Paper 15PESGM0571, PES GM 2015. Denver, CO. ieeexplore.ieee.org/document/7285836
- M. Papić, G. Preston, R. Diffely, N. Dai, M. Elkins, M. Peacock, B. Heath. (July 2015). *Practical Experience in Evaluating the Adequacy of Generating Capacity in the Western Interconnection*. Paper 15PESGM1107, PES GM 2015. Denver, CO. ieeexplore.ieee.org/document/7286651
- M. Papić, O. Ciniglio. (2014). *Prediction and Prevention of Cascading Outages in Idaho Power Network*. Proceedings of PES General Meeting 2014. ieeexplore.ieee.org/document/6939101
- M. Papić et al. (2014). *Effects of Dependent and Common Mode Outages on the Reliability of Bulk Electric System — Part I: Basic Concepts*. 2014 IEEE PES General Meeting. pp. 1–5. ieeexplore.ieee.org/document/6938967
- M. Papić et al. (2014). *Effects of Dependent and Common Mode Outages on the Reliability of Bulk Electric System — Part II: Outage Data Analysis*. 2014 IEEE PES General Meeting. pp. 1–5. ieeexplore.ieee.org/document/6938968
- M. Papić, O. Ciniglio. (July 2013). *Prevention of NERC C3 Category Outages in Idaho Power's Network: Risk Based Methodology and Practical Application*. Proc. IEEE PES General Meeting. Vancouver, Canada. pp. 1–6. ieeexplore.ieee.org/document/6672893
- M. Vaiman, P. Hines, J. Jiang, S. Norris, M. Papić (Chair), A. Pitto, Y. Wang, G. Zweigle. (July 2013). *Mitigation and Prevention of Cascading Outages: Methodologies and Practical Applications*. Proc. IEEE PES General Meeting. Vancouver, Canada. pp. 1–6. ieeexplore.ieee.org/document/6672795
- M. Papić, J. Bian, S. Ekisheva. (July 2013). *A Novel Statistical-Based Analysis of WECC Bulk Transmission Reliability Data*. Proc. IEEE PES General Meeting. Vancouver, Canada. pp. 1–6. ieeexplore.ieee.org/document/6672728
- S. Kincic, M. Papić. (July 2013). *Impact of Series Compensation on Voltage Profile of Transmission Lines*. Proc. IEEE PES General Meeting. Vancouver, Canada. ieeexplore.ieee.org/document/6672105
- M. Papić et al. (2012). *Overview of Common Mode Outages in Power Systems*. 2012 IEEE Power and Energy Society General Meeting. pp. 1–8. ieeexplore.ieee.org/document/6345417
- B. Keel, M. Papić, D. Tucker. (July 2012). *Western Electricity Coordinating Council Experience in the Collection of Transmission Common-Mode and Dependent Outages*. Proc. IEEE PES General Meeting. San Diego, CA. pp. 1–6. ieeexplore.ieee.org/document/6344973
- M. Vaiman, K. Bell, Y. Chen, B. Chowdhury, I. Dobson, P. Hines, M. Papić, S. Miller, P. Zhang. (May 2012). *Risk Assessment of Cascading Outages: Methodologies and Challenges*. IEEE Transactions on Power Systems, Issue 2. pp. 631–641. ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6112807&isnumber=4374138
- M. Papić, P. Van Patten, T. Menten and L. Thomas, A. Ozdemir. (June 2012). *Idaho Power's Experience in the Collection of Transmission Lines Unavailability Data*. Proceedings of the Twelfth International Conference “Probabilistic Methods Applied to Power Systems,” 2012. Istanbul, Turkey.
- Papić, M., Bell, K., Yousu Chen, Dobson, I., Fonte, L., Haq, E., Hines, P., Kirschen, D., Xiaochuan Luo, Miller, S.S., Samaan, N., Vaiman, M., Varghese, M., Pei Zhang. (July 2011). *Survey of Tools for Risk Assessment of Cascading Outages*. Power and Energy Society General Meeting 2011. IEEE. pp. 1–9. doi: 10.1109/PES.2011.6039371 ieeexplore.ieee.org/document/6039371
- CIGRE Technical Brochure N 434. (Jan 2011). *Review of the Status and Techniques for Risk-Based and Probabilistic Planning in Power Systems*. Coauthor as an acting member of WG C4.601.
- Vaiman, M., Bell, K., Yousu Chen, Chowdhury, B., Dobson, I., Hines, P., Papić, M., Miller, S.S., Pei Zhang. (July 2011). *Risk Assessment of Cascading Outages: Part I — Overview of Methodologies*. Power and Energy Society General Meeting 2011. IEEE. pp. 1–10. doi: 10.1109/PES.2011.6039405 ieeexplore.ieee.org/document/6039405

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- Baldick, R., Chowdhury, B., Dobson, I., Zhaoyang Dong, Bei Gou, Hawkins, D., Zhenyu Huang, Manho Joung, Janghoon Kim, Kirschen, D., Lee, S., Fangxing Li, Juan Li, Zuyi Li, Chen-Ching Liu, Xiaochuan Luo, Mili, L., Miller, S., Nakayama, M., Papic, M., Podmore, R., Rossmair, J., Schneider, K., Hongbin Sun, Kai Sun, Wang, D., Zhigang Wu, Liangzhong Yao, Pei Zhang, Wenjie Zhang, Xiaoping Zhang. (March 2019). *Vulnerability Assessment for Cascading Failures in Electric Power Systems*. Power Systems Conference and Exposition 2009. IEEE/PES. pp. 1–9.
doi: 10.1109/PSCE.2009.4839939
ieeexplore.ieee.org/document/4839939
- Kincic, S., Papic, M. (July 2008). *Application and Implementation of State Estimator at Idaho Power Company*. Power and Energy Society General Meeting - Conversion and Delivery of Electrical Energy in the 21st Century. IEEE. pp. 1–5.
doi: 10.1109/PES.2008.4596145
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4596145&isnumber=4595968
- Rene Rosales, Mark Rice, Rafael Lopez, Lisa Beard, Tanya Mathur, Floyd Galvan, Vinit Gupta, James Lambert, James Graffy, Milorad Papic. (Aug 2008). *Impact of PMU Technology in State Estimation*. CIGRE. Paris, France.
- Kincic, S., Papic, M., Chandra, A. (July 2008). *Dynamic, Distribution Vars in Transmission System Planning*. Power and Energy Society General Meeting - Conversion and Delivery of Electrical Energy in the 21st Century. IEEE. pp. 1–6.
doi: 10.1109/PES.2008.4596009
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4596009&isnumber=4595968
- Papic, M., Vaiman, M.Y., Vaiman, M.M., Povolotskiy, M. (July 2007). *A New Approach to Constructing Seasonal Nomograms in Planning and Operations Environments at Idaho Power Co*. Power Tech 2007. IEEE Lausanne. pp. 1320–1325.
doi: 10.1109/PCT.2007.4538507
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4538507&isnumber=4538278
- E. Bajrektarevic, S. W. Kang, V. Kotecha, S. Kolluri, M. Nagle, S. Datta, M. Papic, J. Useldinger, P. C. Patro, L. Hopkins, D. Le, M.Y. Vaiman, M.M. Vaiman. (2006). *Identifying Optimal Remedial Actions for Mitigating Violations and Increasing Available Transfer Capability in Planning and Operations Environments*. CIGRE 2006.
- Kincic, S., Chandra, A., Lagace, P.J., Papic, M. (2006). *Dynamic Voltage Support of the Transmission Network From Distribution Level*. Power Engineering Society General Meeting 2006. IEEE. pp. 8.
doi: 10.1109/PES.2006.1709130
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1709130&isnumber=36065
- Papic, M., Vaiman, M.Y., Vaiman, M.M. (June 2005). *Determining a Secure Region of Operation for Idaho Power Company*. Power Engineering Society General Meeting 2005. IEEE. Vol. 3, pp. 3042–3047.
doi: 10.1109/PES.2005.1489685
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1489685&isnumber=32012
- Papic, M., Vaiman, M.Y., Vaiman, M.M. (June 2005). *A Novel Non-linear Security Based Approach to Assess Transfer Capability at Idaho Power Company*. Power Tech 2005. IEEE Russia. pp. 1–6.
doi: 10.1109/PTC.2005.4524590
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4524590&isnumber=4524335
- Lockwood, S., Navarro, R., Bajrektarevic, E., Burke, P., Kang, S., Ferron, P., Kotecha, V., Kolluri, S., Nagle, M., Lee, S., Zhang, P., Agarwal, S.K., Papic, M., Useldinger, J., Patro, P.C., Arnold, L., Osborn, D., Fan, L., Hopkins, L., Vaiman, M.Y., Vaiman, M.M. (Oct 2004). *Utility Experience Computing Physical and Operational Margins. Part II—Application to Power System Studies*. Power Systems Conference and Exposition 2004. IEEE PES. Vol. 3, pp. 1365–1371.
doi: 10.1109/PSCE.2004.1397679
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1397679&isnumber=30397
- Papic, M., Canderan, R.L. (Sept 2004). *Power System Predictive and Past Performance Reliability at Delivery Point Level*. Probabilistic Methods Applied to Power Systems, International Conference on, 2004. pp. 832–837.
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1378795&isnumber=30086
- Arjona, D., Papic, M., Agarwal, S.K. (Sept 2004). *A Probabilistic Process to Balance Reliability and Cost For a Station Design*. Probabilistic Methods Applied to Power Systems, International Conference on, 2004. pp. 475–480.
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1378734&isnumber=30086

Selected Technical Publications (cont.)

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- M. Papić, S. Agarwal, M. Patterson. (Sept 2000). *A Probabilistic Approach to Locust Station Design*. Proceedings of the Sixth International Conference Probabilistic Methods Applied to Power Systems. Funchal, Madeira, Portugal. pp. 823–828.
- Kincic, S., Papić, M. *Impact of Large Wind Penetration on Power System Operation*. Sustainable Energy, IEEE Transactions on. doi: 10.1109/TSTE.2011.2163952
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5977034&isnumber=5433168
- Papić, M., Allan, R.N. (Jul 1991). *Comparison of Alternative Techniques for the Reliability Assessment of Distribution Systems*. Probabilistic Methods Applied to Electric Power Systems, Third International Conference on. pp. 174–179.
ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=151843&isnumber=3982
- M. Papić, E. Cengic, N. Logic, H. Sehovic. (1991). *Reliability Assessment of Power Transmission and Distribution Systems* [in Serbian]. Proceedings of the Twentieth Yugoslav Conference CIGRE, Group 38, "PowerSystem Analysis." Neum, Bosnia. pp. 123–132.
- M. Papić, H. Sehovic. (1990). *Topological Reliability Analysis of Power Distribution Systems* [in Serbian]. Proceedings of the Second Yugoslav Symposium "Reliability and Security in Techniques." Dubrovnik, Croatia.
- M. Papić, Lj. Kojovic. (1990). *Quantitative Reliability Analysis of Back-to-Back Switching Stations* [in Serbian]. Proceedings of the Second Yugoslav Symposium "Reliability and Security in Techniques." Dubrovnik, Croatia.
- M. Papić, N. Logic, H. Sehovic. (1990). *A New Model for Reliability Evaluation of Power Distribution Systems* [in Serbian]. Proceedings of the Second Yugoslav Symposium "Reliability and Security in Techniques." Dubrovnik, Croatia.
- H. Sehovic, M. Papić. (1990). *Effect of Protection Systems to Power System Reliability* [in Serbian]. Proceedings of the Second Yugoslav Symposium "Reliability and Security in Techniques." Dubrovnik, Croatia.
- S. Sculetic, M. Papić. (1990). *Calculation of Complex System Reliability Indices* [in Serbian]. Proceedings of the Second Yugoslav Symposium "Reliability and Security in Techniques." Dubrovnik, Croatia.
- M. Papić, N. Logic, E. Cengic. (1990). *A Model for Deducing the Minimal Cut-Sets in Complex Power Systems*. Proceedings of the Second International Conference, "Computers in Techniques." Tuzla, Bosnia.
- M. Papić, N. Logic, H. Sehovic. (1989). *Power System Reliability Considering the Quality Effects*. Proceedings IASTED Int. Conference "Reliability and Quality Control." Lugano, Switzerland.
- M. Papić, N. Logic. (July 1989). *Effects of Overloads and Voltage Violations in the Reliability Assessment of Power System Networks*. Proceedings of the AMSE Conference "Signals and Systems." Brighton, UK. AMSE Press. Vol. 7, pp. 189–198.
- S. Skuletic, M. Papić. (July 1989). *Reliability Evaluation of Electrical Schemes with Various Combinations of Elements*. Proceedings of the AMSE Conference "Signals and Systems." Brighton, UK. AMSE Press.
- B. Zivanovic, M. Papić. (July 1989). *A Single Component Multi-state Reliability Model of a Circuit Breaker*. Proceedings of the AMSE Conference "Signals and Systems." Brighton, UK. AMSE Press.
- S. Skuletic, M. Papić. (1989). *Methods for Reliability Calculation of Power Systems* [in Serbian]. Proceedings of the First Yugoslav Symposium SIPT 1989 "Reliability and Security in Techniques." Cavtat, Croatia.
- H. Sehovic, M. Papić. (1989). *Reliability Modeling of Protection Systems* [in Serbian]. Proceedings of the Nineteenth CIGRE Conference, Group 35, "Protection Systems." Bled, Slovenia.
- H. Sehovic, M. Papić, B. Markovic. (1989). *Topological Approach to Reliability of Power Distribution Systems* [in Serbian]. The Nineteenth CIGRE Conference, Group 39, "Distribution Systems." Bled, Slovenia.
- M. Papić, H. Sehovic, M., Markovic. (1989). *Topological Reliability Analysis of Power Distribution Systems* [in Serbian]. Journal ELEKTRODISTRIBUCIJA, No. 1. pp. 1–6. Belgrade, Yugoslavia. (This paper has also been presented at the Nineteenth CIGRE Conference, Group 39, "Distribution Systems," Bled, Slovenia, 1989)

Selected Technical Publications (cont.)

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- M. Papic, H. Sehovic, S. Skuletic. (July 1988). *Loss of Quality in the Reliability Analysis of Complex Electrical Systems*. Proceedings Intern. AMSE Conference “Modeling and Simulation.” Istanbul, Turkey. AMSE Press, Vol. 2D, pp. 215–225.
- H. Sehovic, M. Papic. (June 1988). *Protection System Reliability Analysis Considering Dependent Failure Effects*. Proceedings Intern. AMSE Conference “Modeling and Simulation.” Istanbul, Turkey. AMSE Press, Vol. 2D, pp. 225–231.
- M. Papic, H. Sehovic. (March 1988). *Analysis of Component Effects and Switching Actions on Distribution System Reliability*. Proceedings of the Third IASTED Int. Symposium “High Technology in the Power Industry.” Phoenix, AZ. pp. 276–279.
- M. Bozic, M., Papic, H. Sehovic. (June 1987). *Reliability Assessment of Distribution Systems with Respect to Control and Protection Systems*. Proceedings of the 2nd IASTED Intl. Symposium “High Technology in the Power Industry.” Lugano, Switzerland.
- M. Papic, H. Sehovic. (Feb 1987). *Reliability Modeling and Evaluation of Distribution Systems by Respecting Failures of Protection and Automatic Systems*. Proceedings Intl. AMSE Conference “Modeling and Simulation.” Cairo, Egypt. AMSE Press.
- M. Papic, M. Bozic. (April 1987). *Reliability Evaluation of a Distribution System with Respect to Component Maintenance Outages* [in Serbian]. Proceedings of the Eighteenth CIGRE Conference, Group 31, “Transmission Systems Planning.” Budva, Montenegro. pp. 207–215.
- M. Papic, T. D. Long, D. Hao. (April 1987). *Application of Graph Theory to a Power System Reliability Evaluation* [in Serbian]. Proceedings of the Eighteenth CIGRE Conference, Group 31, “Transmission Systems Planning.” Budva, Montenegro. pp. 195–201.
- M. Papic. (Sept 1986). *Modeling and Evaluation of Load Point Reliability in Complex Power Systems*. Proceedings Intl. AMSE Conference “Modeling and Simulation.” Sorrento, Italy. Vol. 2–4, pp. 71–80.
- M. Papic, D. Uzunovic. (May 1986). *Reliability Evaluation of Gas Power Systems* [in Serbian]. Proceedings of the Yugoslav Symposium, “Gas Distribution Systems.” Opatija, Croatia.
- M. Papic. (1985). *Application of Redundancy Efficiency in Power Distribution Systems* [in Serbian]. Proceedings of the Seventh International Symposium, “Numerical Methods in Technique - CAD/CAM.” Zagreb, Croatia.
- M. Papic, M., S. Milojkovic. (1985). *A Topological-Structural Method for Reliability Analysis of Load Points in Power System* [in Serbian]. Proceedings of the Twenty-Ninth Yugoslav Conference “ETAN.” Nis, Yugoslavia.
- M. Papic, H. Sehovic. (May 1985). *Techno-Economical Model for Reliability Assessment of Industrial Load Points* [in Serbian]. Proceedings of the Seventeenth CIGRE Conference, Group 23, “Substations.” Struga, Macedonia. pp. 43–52.
- M. Papic, E. Hot. (1984). *Reliability Evaluation of Load Points in Composite Power System* [in Serbian]. Energoinvest Journal Technique-Science-Engineering, No. 22. Sarajevo, Bosnia.
- M. Papic, S. Milojkovic. (May 1983). *A Probability-Structural Method for Reliability Evaluation of Substations* [in Serbian]. Proceedings of the Sixteenth CIGRE Conference, Group 23 “Substations.” Opatija, Croatia. pp. 1–5.
- M. Papic. (1983). *Functional Reliability Estimation of a Distribution Network* [in Serbian]. Journal Elektrotehnika, No. 3. Zagreb, Croatia. pp. 153–157.
- M. Papic. (1982). *A Design of Industrial Networks Based on Reliability Criteria* [in Serbian]. Journal Elektrotehnika, No. 3. Zagreb, Croatia.
- M. Papic, E. Hot. (1982). *A Topological Method for Reliability Evaluation of a Power System and Its Load Points* [in Serbian]. Journal Elektrotehnika, No. 1–2. Zagreb, Croatia.
- M. Papic. (1982). *Reliability Calculations of Industrial Power Systems Including Maintenance* [in Serbian]. Proceedings of the Sixth Bosnia and Herzegovina Symposium “Informatic 82.” Jahorina, Bosnia.
- M. Papic, S. Milojkovic. (April 1981). *Deficit Power and Energy in Power System as a Measure of Reliability and Quality* [in Serbian]. Proceedings of the Fifteenth CIGRE Conference, Group 31, “Power System Planning.” Belgrade, Yugoslavia. pp. 417–431.

Selected Technical Publications (cont.)

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- M. Papic. (1980). *Quantitative Reliability Assessment of Cable Networks* [in Serbian]. Proceedings of the Fifteenth CIGRE Conference, Group 37, "Cables." Belgrade, Yugoslavia. (This paper was reprinted from proceedings of Seventh Yugoslav Symposium CIGRE, Novi Sad, Yugoslavia, 1980)
- M. Papic. (1981). *Topological-Analytical Method for Reliability Evaluation of Electric Power Networks* [in Serbian]. Proceedings of the Third International Symposium "Numerical Methods in Technique – CAD/CAM." Zagreb, Croatia.
- M. Papic. (Feb 1981). *An Approach for Power System Reliability Evaluation* [in Serbian]. Proceedings of the Fifth Bosnia and Herzegovina Symposium, "Informatic 81." Jahorina, Bosnia.
- M. Papic. (Feb 1981). *A Topological Method for Calculating the Complex Reliability Indices* [in Serbian]. Proceedings of the Fifth Bosnia and Herzegovina Symposium, "Informatic 81." Jahorina, Bosnia.
- M. Papic. (June 1980). *Topological Modeling Method for Reliability Calculation of Networks* [in Serbian]. Proceedings of the Twenty-Fourth Yugoslav Conference "Etan." Pristina, Yugoslavia. pp. III.67–III.73.
- M. Papic. (March 1980). *Graph Theory Application to Power System Reliability* [in Serbian]. Proceedings of the Fourth Bosnia and Herzegovina Symposium, "Informatic 80." Jahorina, Bosnia.
- M. Papic. (March 1980). *A Computer Program for Reliability Calculations of Power Systems* [in Serbian]. Proceedings of the Fourth Bosnia and Herzegovina Symposium, "Informatic 80." Jahorina, Bosnia.
- M. Papic, P. Hemon. (May 1979). *Static Characteristics of Load Points in Electric Power System* [in Serbian]. Proceedings of the Fourteenth CIGRE Conference, Group 32, "Planning and Operation of Electrical Networks." Sarajevo, Bosnia. pp. 193–208.
- M. Papic, B. Krstajic. (June 1979). *A Method to Reduce Use of Electric Energy in Industrial Plants* [in Serbian]. Proceedings of the First Yugoslav Symposium "Rationalization Use of Energy." Sarajevo, Bosnia.
- M. Papic, S. Milojkovic. (March 1979). *Static and Dynamic Characteristics of Load Points in Electric Power Systems* [in Serbian]. Proceedings of the Third Bosnia and Herzegovina Symposium, "Informatic 79." Jahorina, Bosnia.
- M. Papic. (June 1979). *Topological-Probabilistic Method for Reliability Evaluation of Power Systems* [Russian]. School of Electrical Engineering, Moscow Power Institute. Moscow, Russia.
- M. Papic, S. Milojkovic. (March 1978). *Numerical-Experimental Approach in Analysis of Static Characteristics of Load Points in Electric Power Systems* [in Serbian]. Proceedings of the Jahorina Annual Symposia 78. Jahorina, Bosnia.

Conferences & Workshops

- Keynote Speaker on NERC Probabilistic Assessment Forum. Atlanta, GA. December 11–13, 2019.
- Co-Organizer of Panel Session "Current Practices and Future Challenges to Power Grid Resilience." IEEE PES GM, Atlanta, GA. August 8, 2019.
- Speaker on Panel "Current Practices and Future Challenges to Power Grid Resilience", with talk "Assessing Grid Resilience from a Utility Perspective." IEEE PES GM, Atlanta, GA. August 8, 2019.
- Co-Organizer of Panel Session "Industrial Applications of Composite System Reliability Assessment: Challenges and Prospects." IEEE PES GM, Atlanta, GA. August 7, 2019.
- Speaker on Panel, "Industrial Applications of Composite System Reliability Assessment: Challenges and Prospects" with talk "Composite Power System Reliability Evaluation: Industry Perspective." IEEE PES GM, Atlanta, GA. August 7, 2019.

- Invited Speaker on Panel “*Reliability of Cyber-Physical Power Systems (CPPS) and Standard Enhancement*”, with talk “*Standards Enhancement for CPPS.*” IEEE PES GM, Atlanta, GA. August 7, 2019.
- Invited Speaker, Panel: Operational Reliability Challenges with High Penetration Inverter-Based Generation Resources, “*Maintaining Stability and Security of the BPS Through Comprehensive Cascading Analysis and Perspectives.*” Portland, OR. August 7, 2018.
- Invited Speaker, Supersession: Emergency Response “*Cascading Challenges from Industry Perspectives.*” Portland, OR. August 9, 2018.
- Invited Speaker, Panel “*Advancement in Power System Analysis Test Cases.*” IEEE PES GM, Portland, OR. August 2018.
- Invited Speaker at PNW Probabilistic Planning Workshop, “*Probabilistic Planning at IPC.*” Portland, OR. April 11, 2018.
- Invited Speaker at PNW Probabilistic Planning Workshop, “*WSCC Probabilistic Based Reliability Criteria (PBRC).*” Portland, OR. April 11, 2018.
- Invited Speaker at EPRI Probabilistic Workshop, “*Risk-Based Planning at IPC.*” Dallas, TX. March 1–2, 2018.
- Invited Speaker at EPRI Probabilistic Workshop, “*Probabilistic Methods Applied to Power Systems (PMAPS).*” Dallas, TX. March 1–2, 2018.
- Invited Speaker at EPRI Probabilistic Workshop, “*Working Group on Understanding, Prediction, Mitigation and Restoration of Cascading Outages – Present & Future Activities.*” Dallas, TX. March 1–2, 2018.
- Invited Speaker, “*IEEE RRP Subcommittees Activities and IEEE Standards 762 and 859 Update*” at NERC Probabilistic Fundamentals Workshop. Atlanta, GA. December 13–15, 2017.
- Co-Organizer and Instructor on Tutorial “*Industry Best Practices, Needs, and Challenges in Cascading Analysis: Tutorial and Training.*” IEEE PES GM, Chicago, IL. July 2017.
- Chair and Panelist – “*Industry Practices in Cascading Failures.*” IEEE PES GM, Chicago, IL. July 2017.
- Chair and Panelist – “*Reliability Modeling and Evaluation of Dependent Cyber-Physical Systems.*” IEEE PES GM, Chicago, IL. July 2017.
- Panelist – “*Probabilistic Reliability Assessment for Grid with Increasing Uncertainty from Renewable.*” IEEE PES GM, Chicago, IL. July 2017.
- Presenter “*An almost exact approach of LOLE Calculation.*” All Planning Meeting, Idaho Power, Boise, ID. March 2017.
- Invited Speaker on “Probabilistic Applications in the US Western Utilities” at Panel Session “*Probabilistic Applications in Utilities.*” PMAPS 2016, Beijing, China. October 2016.
- Panelist – “*Reliability Modeling for Cyber-Physical Power Systems.*” IEEE PES GM, Boston, MA. July 2016.
- Co-Organizer of Tutorial “*Understanding Cascading Phenomenon: Methodologies and Industry Practice for Analysis of Cascading Failures.*” General Meeting 2015, Denver, CO.
- Instructor on Tutorial “*Understanding Cascading Phenomenon: Methodologies and Industry Practice for Analysis of Cascading Failures,*” topic “*NERC Standards Applicable to Analysis of Cascading Outages.*” M. Papic, IEEE PES General Meeting 2015, Denver, CO.
- Instructor on Tutorial “*Understanding Cascading Phenomenon: Methodologies and Industry Practice for Analysis of Cascading failures,*” topic “*Industry Tools for Analysis of Cascading Failures.*” M. Papic and M. Vaiman, IEEE PES General Meeting 2015, Denver, CO.
- Chair of the Panel “*Cascading Failures: Advanced Methodologies, Restoration and Industry Perspectives.*” IEEE PES General Meeting 2015, Denver, CO.
- Speaker on the Panel “*Cascading Failures: Advanced Methodologies, Restoration and Industry Perspectives,*” presentation “*Current Industry Practice with Cascading Outage Events.*” 15PESGM1073, IEEE PES General Meeting 2015, Denver, CO.

- Speaker on the Panel on “*Probabilistic System Planning*,” presentation “*Outage Data and Application of Probabilistic Indicators in System Planning*.” 15PESGM0732, General Meeting 2015, Denver, CO.
ieeexplore.ieee.org/document/7285894
- Speaker on the Panel “*Industrial resource adequacy studies: current practices and research needs*,” presentation “*Practical Experience of LOLE Calculation in the Western Interconnection*.” 15PESGM3065, IEEE PES General Meeting 2015, Denver, CO.
- Chair of the Panel Session “*Prevention and Mitigation of Cascading Outages: Methodologies and Practical Applications*.” M. Papic and P. Hines, IEEE PES General Meeting 2013, Vancouver, Canada. July, 2013.
- Speaker on the Panel Session “*Prevention and Mitigation of Cascading Outages: Methodologies and Practical Applications*,” presentation “*Pacific Southwest Blackout on September 8, 2011 at 15:27*.” IEEE PES General Meeting 2013, Vancouver, Canada. July, 2013.
- Speaker “*BES Probabilistic Reliability Planning - An Overview of Basic Concepts*.” NERC TADS WG Meeting, Boise, Idaho. August 2013.
- Invited Speaker “*Past and Present Probabilistic Planning Efforts in WECC*,” at BPA Workshop “*Grid Transformation*.” Portland, OR. March 20, 2013.
- Chair of the Panel Session “*Practical Aspects of Probability Applications for Common Mode and Dependent Outage Events in Electric Power Systems*.” IEEE PES General Meeting 2012, San Diego, CA. July 2012.
- Invited Speaker on “*Pacific Southwest Blackout on September 8, 2011*.” IEEE Boise Section, Boise PES Chapter, Boise, ID. November 16, 2012.
- Speaker on Panel Session “*Practical Aspects of Probability Applications for Common Mode and Dependent Outage Events in Electric Power Systems*,” presentation “*Western Electricity Coordinating Council Experience in the Collection of Transmission Common-Mode and Dependent Outages*.” IEEE PES General Meeting 2012, San Diego, CA. July 2012.
- Speaker “*NERC 2012 State of Reliability Report*.” WECC-RPEWG Meeting, Salt Lake City, UT. May 2012.
- Invited Speaker “*POM Tools at IPC*.” POM User Group Meeting, Santa Monica, CA. April 2012.
- Presenter “*Methodologies and Tools for Risk Assessment of Cascading Outages*.” WECC Reliability Subcommittee Meeting, Salt Lake City, UT. January 2011.
- Speaker on Panel Session “*Cascading Failures*,” presentation “*Survey of Tools for Risk Assessment of Cascading Outages*.” IEEE PES General Meeting 2011, Detroit, MI. July 2011.
- Speaker on Panel Session “*Application and Implementation of State Estimator at Idaho Power Company*.” IEEE PES General Meeting 2008, Pittsburgh, PA. July 2008.
- Presenter on “*EMS vs. Planning Model at IPC*.” WECC-DMWG, Rosemead, CA. November 2008.
- Invited Speaker “*State Estimation and Synchrophasor Project at IPC*.” AREVA User Group Meeting, Seattle, WA. June 2007.
- *Translating EMS Model into Planning Model at IPC*. WSMITF, Portland, OR. June 2007.
- *SE & Advanced Security Applications*. EPRI Workshop, Vancouver, Canada. March 2007.
- *Calculating Path Capability Index from PI Historian Data*. EPRI Workshop, Vancouver, Canada. March 2007.
- *Delivery Points Performance Measures*. AM Group Meeting, Boise, ID. April 5, 2007.
- Invited Speaker “*Bulk Power System Reliability at IPC*.” SGS Conference, Tucson, AZ. May 2007.
- Invited Speaker “*Industry Challenges and POM Role at IPC*.” POM User Group Meeting, Santa Monica, CA. March 2007.
- Invited Speaker on “*Advanced Applications for Security and Reliability Enhancements at IPC*.” IEEE Boise Section, Boise, ID. October 4, 2006.

Conferences & Workshops (cont.)

- Invited Speaker on “*BOR Seasonal Nomograms at IPC.*” POM/PRI User Group Meeting, Santa Monica, CA. February 2006.
- Speaker on “*2004 NERC Compliance Study at IPC.*” POM User Group Meeting, Coronado, CA. February 2005.
- Presenter on “*Operation and Planning Tools at IPC.*” EMS/Operation Meeting, Boise, ID. April 2004.
- Invited Speaker on “*Probabilistic Planning Study for Treasure Valley 2003-2023.*” PRI/POM User Group Meeting, Coronado, CA. February 2004.
- Invited Speaker on “*Utility Experience – Idaho Power.*” TRELSS User Group Meeting, Atlanta, GA. December 2002.
- Speaker on “*Probabilistic Planning at IPC.*” PRI/POM User Group Meeting, Phoenix, AZ. October 2002.
- Invited Speaker on “*Utility Experience – Idaho Power Company.*” EPRI – Probabilistic Reliability Assessment Workshop, San Diego, CA. February 28–29, 2001.
- Speaker on “*Reliability Study for Idaho System.*” TRELSS User Group Meeting, Boise, ID. September 1998.
- Speaker on “*Reliability Evaluation of adding a New Line into Idaho System.*” TRELSS User Group Meeting, Columbus, OH. November 1997.

Textbooks for Students

- M. Papic. (1990). *Power Systems Planning* [textbook for students]. ETF, University of Sarajevo. Sarajevo, Bosnia.
- M. Papic. (1990). *Power System Structure and Regimes* [textbook for students]. ETF, University of Sarajevo. Sarajevo, Bosnia.
- M. Papic. (1988). *Reliability Evaluation of Electric Power Systems* [monograph]. ETF, University of Sarajevo. Sarajevo, Bosnia.
- Papic, M. (1985). *Industrial Networks – Theory and Solving Problems* [textbook for students]. University of Sarajevo. Sarajevo, Bosnia.
- B. Krstajic, M. Papic, S. Milojkovic. (1978). *Electrical Circuits* [laboratory practicum]. University of Sarajevo. Sarajevo, Bosnia.

Areas of Expertise

Transmission Planning

- Static security, transient stability and voltage stability studies
- Probabilistic planning for transmission, generation and distribution systems
- Reliability assessments of composite systems, transmission, distribution and substations
- Analysis of vulnerabilities of power system including cascading
- Generation interconnected studies
- Transfer capability studies
- NERC compliance studies

Power System Operations

- State estimation
- Operation planning (seasonal and day ahead)
- Optimal mitigation measures
- Boundary of operating regions
- Outage data analysis
- Synchro-phasor applications

**Areas of Expertise
(cont.)**

- Performed several transmission and resource integration studies as well as generation interconnection studies and transmission feasibility analyses.
- As a member of the NERC GTRPM Task Force participated in the development of methodology for probabilistic assessment of BES.
- Performed load flow, post-transient and transient stability simulations for several major projects in WECC.
- Performed studies to determine simultaneous export and import capabilities from/to Idaho system and across other major paths in Idaho system
- Provided support to operations personnel through the development of operating procedures, nomograms and other supporting tools.
- Performed the interconnection studies for large and small generation projects at Idaho Power Company.
- Participated as a company and planning representative at EPRI, PSERC, SGS, IEEE, NERC, WECC various committees, working groups, and task forces.
- Provided support in developing transmission equipment outage data collection systems Idaho Power (GTORS), WECC (TRD) and NERC (TADS).
- Participated as a member of WECC WSM Task Force which made an influence to be later developed Wide System Operational Model in entire Western Interconnection
- Performed probabilistic studies for long-range transmission planning, selection of optimal station configuration and overall system reliability evaluation using reliability tools such as: TRELSS, CREAM, SUBREL and DISREL.
- Performed reliability based cost justification studies for several transmission capital projects for Idaho Power.

Significant Projects**Projects Completed at Idaho Power**

- Comparing the Idaho Power 2019 IRP Portfolios based on Adequacy LOLE Methodology, System Planning, September 2019
- Comparing the Idaho Power 2017 IRP Portfolios based on Adequacy LOLE Methodology, System Planning, June 2019
- Cascading Approach in Assessing the Impact of Transmission Projects on the Resilience of Idaho Power Grid, June 2019
- Gateway West Project, West of Midpoint Path, Phase I Rating Process, System Planning, IPC, September 2008
- Midpoint 345-IPCO System 200 MW System Impact Study, January 2007
- Implementing EMS Model and Advanced Applications into Operation at IPC, 2007
- Hemingway Substation Project (Tapping vs. Loop in Out) Midpoint – Burns 500 kV Line), 2007
- Comparing Reliability Results for delivery points in Idaho Power System with those served by BPA, 2002
- Reliability Measurement of Delivery Points Across Idaho Power Service Territory, Idaho Power, January 2002
- Comparative Reliability Study of the West of Eagle (WOE) Expansion Alternatives, Idaho Power, January 2002
- Total Transfer Capability Study across Idaho-Northwest Interface, Idaho Power, December 2001
- Probabilistic Analysis of Garnet 230 kV Station Alternatives, Idaho Power, May 2001
- Project on the Enhancing Present Outage Database DORS and converting it to new Generation and Transmission Outage Reliability (GTORS) system, 2001

Projects Completed at Idaho Power (cont.)

- Reliability Study of Future Treasure Valley System Alternatives – Treasure Valley 75 Year Build-Out Strategies-, Idaho Power, June 2000
- Probabilistic Approach in Selecting an Optimal Alternative for Ontario Substation, Idaho Power, February 2000
- Probabilistic Approach to Locust Substation Design Alternatives, Idaho Power, September 1999
- Reliability Analysis of Boise Bench 230 kV Substation Alternatives, Idaho Power, September 1998
- Reliability Study of Transmission Upgrade Projects in Boise Valley, System Planning, IPC, 1998
- Salmon Area Reliability Improvements, Idaho Power, September 1997
- Reliability Analysis of Adding Crystal Substation to the Navajo-McCullough 500 kV Line, Idaho Power, January 1997
- McCall Area Reliability Study, System Planning, IPC, 1997
- Brownlee-East 230 kV Capacity Upgrade Project, System Planning, IPC, September 1997
- Pingree-Blackfoot Area Reliability Study, System Planning, IPC, 1998
- Probabilistic Analysis of FMC Load Tripping, System Planning, IPC, August 1997
- Calculating of LOLE as Measure of Brownlee East Capacity Margin, System Planning, IPC, 1999
- Ontario Area Reliability Study, Reliability Seminar, January 9-11, 1998, Boise, Idaho Power Company
- Identification of Weak Places in Idaho System Using EPRI Program TRELSS, June 1998

Projects Completed as a Member of NERC
TADSWG, WECC Reliability Subcommittee
and RPEWG

- Assessing the Cascading from NERC TADS system, A joint effort by members of NERC TADS Working Group, (M. Papic is a lead), Project is ongoing.
- 2006 Forced Outage Performance of 200 kV and above Transmission Lines, Cables, WECC RPEWG (member), June 2006
- First Annual WECC Transmission Reliability Data Report, WECC-RPEWG (member), October 2007
- Second Annual WECC Transmission Reliability Data Report, WECC-RPEWG (member), October 2008
- Third Annual WECC Transmission Reliability Data Report, WECC-RPEWG (member), October 2009
- Forth Annual WECC Transmission Reliability Data Report, WECC-RPEWG (member), July 2010
- Fifth Annual WECC Transmission Reliability Data Report, WECC-RPEWG (member), May 2011
- Phase I Probabilistic Based Reliability Criteria (PBRC) Implementation Procedure, RS, April 2010
- Statistical analysis of WECC TRD outage & inventory data, WECC-RPEWG (Chair), August 2012
- Updates and changes to NERC TADS (New process of Submitting data via WebTADS, Quarterly Reporting and Expanding Data Collection/Reporting on 100-199 kV facilities), RPEWG (Chair), August 2012
- An Update to Performance Category Upgrade Request (PCUR) Procedure including Guidelines on Robust Line Design and Seven Step Process, RPEWG (Chair), May 2014

Projects Completed in Ex-Yugoslavia

Principal Investigator responsible for all technical and budgetary management.

- Reliability Analysis of Montenegrin Network (part of feasibility study for new undersea HVDC interconnection between Italy and Montenegro). Realized for: Electricity Coordinating Center, Belgrade, Serbia. 2008.
- Reliability and Economic Assessment of Distribution Systems Containing Local Generation (funded by UK Royal Society). UMIST, Manchester, UK. May–September 1993.
- Reliability Evaluation of Power Transmission/Distribution Systems, New Electro-Technologies Consortium and Research Funding Agency of Bosnia & Herzegovina. Program 12/I. 1988–1992. [Work was unexpectedly interrupted in early 1992 when war in Sarajevo started]
- Development of Software for Reliability Evaluation of Distribution Systems (RELDS). Partially funded by Electric Utility of Bosnia & Herzegovina, ETF Sarajevo, 1990.
- Structural and Functional Reliability Evaluation of an Electric Supply System in Libya. (April–July 1989). Institute UNIS, Sarajevo.
- Reliability Modeling and Evaluation in Power Systems, JF 743 (Co-PIs A.D. Patton and C. Singh). (1987–1990). U.S. Department of Energy and U.S.-Yugoslavia Joint Board on Scientific and Technological Cooperation.
- Developing Models and Programs for Evaluating the Reliability of Power Substations. (1986–1988). Research Funding Agency of Bosnia and Herzegovina and Institute IRCE, Energoinvest Sarajevo.
- Quantitative Reliability Evaluation of Power Systems. (1981–1984). Research Funding Agency of Bosnia & Herzegovina and National Grid Company of Bosnia & Herzegovina, Sarajevo. October 1984.
- Calculation of Reliability Indices of Bulk Transmission System in Bosnia & Herzegovina. (1981–1982). National Grid Company of Bosnia & Herzegovina, Sarajevo. November 1982.

Projects Completed in Ex-Yugoslavia

Principal Investigator responsible for only part of the project.

- Quantitative Reliability Evaluation of HVDC Systems (part of “HVDC Systems” project). Realized for: Institute IRCE, Energoinvest, Sarajevo. 1988.
- Reliability and Efficiency Analysis of the Protection Systems (part of “System STZOP for Protection of Some Strategic Military Objects” project), Realized for: Military Institute, VTI, Belgrade, Yugoslavia. 1987.
- Reliability Evaluation of Industrial Power Systems (a part of “Industrial Power Systems” project, Realized for: Institute IRCE, Sarajevo. 1987–1988.
- Reliability Evaluation of Supply System for Urban Areas (a part of “Supply Systems of Urban Areas” project). Realized for: Institute IRCE, Energoinvest, Sarajevo. 1986–1987.
- Feasibility Studies for Rehabilitation of the Distribution System in Bosanski Brod Using Reliability Criteria (a part of “Feasibility Studies for Rehabilitation of the Distribution System in Bosanski Brod” project, Realized for: “Bosanski Brod” Refinery. 1984–1985.
- Security Analysis of the BIRAC Industrial System (a part of “Analysis of the Industrial System BIRAC” project). Realized for: “BIRAC” Company, Zvornik, Bosnia. 1981–1982.

Significant Projects (cont.)

Projects Completed in Ex-Yugoslavia

Investigator/Researcher

- Basic Methodology and Indices in Reliability Studies (acted as adviser). Realized for: National Grid Company of Bosnia and Herzegovina. PI: Mr. Alija Djeko, IRCE, Sarajevo. 1982
- Harmonics in Electric Power Systems, Realized for: Research Funding Agency for Bosnia and Herzegovina and Industrial Corporation “Zeljezara”, Zenica, PI: Dr. Hajro Mensur, IRCE, Sarajevo, 1987-1990
- Development of Model to Forecast Load Demand in Sarajevo Gas System Realized for: Research Funding Agency for Bosnia and Herzegovina PI: Mr. Hasan Peljto, 1980
- Analysis of the Operating Regimes in the Industrial System Alipasin Most Realized for: Company Energoinvest “Alipasin Most”, Sarajevo, PI: Prof. E. Hot, School of Electrical Engineering, Sarajevo, 1975-1977

Industrial/Academic Experience

- *System Planning Engineer*, Idaho Power Company. 1996–2020.
- *Adjunct Professor*, University of Idaho (Idaho). 1997–present.
- *Adjunct Professor*, Boise State University (Idaho). 1996–1997.
- *Founder and CEO*, Energy Technologies International (ETI). 1994–1996.
- *Visiting Researcher*, University of Manchester Institute of Science and Technology (UMIST). United Kingdom. 1993.
- *Chair of Graduate Studies*, University of Sarajevo, School of Electrical Engineering, Power Engineering Department. Sarajevo, Bosnia. 1989–1991.
- *Visiting Researcher*, University of Manchester Institute of Science and Technology (UMIST). United Kingdom. 1989–1990.
- *Associate Professor, Assistant Professor, Teaching Assistant*, University of Sarajevo, 1972–1993.
- *Consulting Engineer*, Energoinvest Company, 1980–1985.
- *Consulting Engineer*, Utility of Bosnia & Herzegovina, 1985–1989.
- *Visiting Researcher*, Moscow Power Institute (Russia), 1978–1979.
- *Adjunct Professor*, University of Tuzla, School of Electrical Engineering. Tuzla, Bosnia. 1977–1980.
- *Instructor*, Air Force Military Academy. Sarajevo, Bosnia, 1973–1978.

Scientific Missions

- (Jan. 1993–Dec. 1993). *University of Manchester Institute of Science and Technology (UMIST)*. Manchester, U.K. Research supported by: British Council, U.S. Department of Energy and U. K. Royal Society (Worked with Dr. R. N. Allan).
- (May 1988). *Texas A & M University*. College Station, Texas. A weeklong stay to discuss results on scientific project sponsored by US Department of Energy with co-investigators Professors A. D. Patton and C. Singh.
- (Sept. 1989–Sept. 1990). *University of Manchester Institute of Science and Technology (UMIST)*. Manchester, U.K. Research supported by: The European Communities, DG XII - G4 Society (Worked with Dr. R. N. Allan).
- (June 1982). *Kielce Polytechnic Institute*. Kielce, Poland. A weeklong stay to establish the collaboration in power system reliability with Professor J. Sozanski.