Robert S Balog

List of Publications by Year
in descending order

140 papers	4,615 citations	186209 28 h-index	289141 40 g-index
140 all docs	140 docs citations	140 times ranked	3534 citing authors

#	Article	IF	Citations
1	Minimum Energy and Capacitance Requirements for Single-Phase Inverters and Rectifiers Using a Ripple Port. IEEE Transactions on Power Electronics, 2012, 27, 4690-4698.	5.4	440
2	Control and Circuit Techniques to Mitigate Partial Shading Effects in Photovoltaic Arrays. IEEE Journal of Photovoltaics, 2012, 2, 532-546.	1.5	414
3	Reliability of Candidate Photovoltaic Module-Integrated-Inverter (PV-MII) Topologies—A Usage Model Approach. IEEE Transactions on Power Electronics, 2013, 28, 3019-3027.	5.4	296
4	Model Predictive Control of PV Sources in a Smart DC Distribution System: Maximum Power Point Tracking and Droop Control. IEEE Transactions on Energy Conversion, 2014, 29, 913-921.	3.7	240
5	Multi-Objective Optimization and Design of Photovoltaic-Wind Hybrid System for Community Smart DC Microgrid. IEEE Transactions on Smart Grid, 2014, 5, 2635-2643.	6.2	213
6	Model Predictive Control of a Voltage-Source Inverter With Seamless Transition Between Islanded and Grid-Connected Operations. IEEE Transactions on Industrial Electronics, 2017, 64, 7906-7918.	5.2	169
7	Cost-Effective Hundred-Year Life for Single-Phase Inverters and Rectifiers in Solar and LED Lighting Applications Based on Minimum Capacitance Requirements and a Ripple Power Port. , 2009, , .		155
8	The Load as an Energy Asset in a Distributed DC SmartGrid Architecture. IEEE Transactions on Smart Grid, 2012, 3, 253-260.	6.2	138
9	MPPT of Photovoltaic Systems Using Sensorless Current-Based Model Predictive Control. IEEE Transactions on Industry Applications, 2017, 53, 1157-1167.	3.3	135
10	Arc Fault and Flash Signal Analysis in DC Distribution Systems Using Wavelet Transformation. IEEE Transactions on Smart Grid, 2015, 6, 1955-1963.	6.2	123
11	Model Predictive Control of Quasi-Z-Source Four-Leg Inverter. IEEE Transactions on Industrial Electronics, 2016, 63, 4506-4516.	5.2	96
12	Bus Selection in Multibus DC Microgrids. IEEE Transactions on Power Electronics, 2011, 26, 860-867.	5.4	88
13	Current Ripple Damping Control to Minimize Impedance Network for Single-Phase Quasi-Z Source Inverter System. IEEE Transactions on Industrial Informatics, 2016, 12, 1043-1054.	7.2	86
14	A System Design Approach for Unattended Solar Energy Harvesting Supply. IEEE Transactions on Power Electronics, 2009, 24, 952-962.	5.4	78
15	Microinverter and string inverter grid-connected photovoltaic system — A comprehensive study. , 2013, , .		75
16	High-Performance Predictive Control of Quasi-Impedance Source Inverter. IEEE Transactions on Power Electronics, 2017, 32, 3251-3262.	5.4	74
17	D-STATCOM for harmonic mitigation in low voltage distribution network with high penetration of nonlinear loads. Renewable Energy, 2020, 145, 1449-1464.	4.3	71
18	Autotuning Technique for the Cost Function Weight Factors in Model Predictive Control for Power Electronic Interfaces. IEEE Journal of Emerging and Selected Topics in Power Electronics, 2019, 7, 1408-1420.	3.7	68

#	Article	IF	Citations
19	Efficient maximum power point tracking using model predictive control for photovoltaic systems under dynamic weather condition. IET Renewable Power Generation, 2017, 11, 1401-1409.	1.7	67
20	Ripple-Port Module-Integrated Inverter for Grid-Connected PV Applications. IEEE Transactions on Industry Applications, 2013, 49, 2692-2698.	3.3	66
21	Coupled-Inductor Filter: A Basic Filter Building Block. IEEE Transactions on Power Electronics, 2013, 28, 537-546.	5.4	62
22	Capacitance, dc Voltage Utilizaton, and Current Stress: Comparison of Double-Line Frequency Ripple Power Decoupling for Single-Phase Systems. IEEE Industrial Electronics Magazine, 2017, 11, 37-49.	2.3	62
23	Charge It!. IEEE Power and Energy Magazine, 2011, 9, 54-64.	1.6	56
24	Model Predictive Control of a Capacitorless Matrix Converter-Based STATCOM. IEEE Journal of Emerging and Selected Topics in Power Electronics, 2017, 5, 796-808.	3.7	51
25	Decoupled Active and Reactive Power Predictive Control for PV Applications Using a Grid-Tied Quasi-Z-Source Inverter. IEEE Journal of Emerging and Selected Topics in Power Electronics, 2018, 6, 1769-1782.	3.7	45
26	Direct Instantaneous Ripple Power Predictive Control for Active Ripple Decoupling of Single-Phase Inverter. IEEE Transactions on Industrial Electronics, 2018, 65, 3165-3175.	5.2	44
27	An improved MPPT technique for high gain DC-DC converter using model predictive control for photovoltaic applications. , 2014, , .		40
28	Double-Line-Frequency Ripple Model, Analysis, and Impedance Design for Energy-Stored Single-Phase Quasi-Z-Source Photovoltaic System. IEEE Transactions on Industrial Electronics, 2018, 65, 3198-3209.	5.2	39
29	Modeling, Analysis, and Parameters Design of LC-Filter-Integrated Quasi-Z-Source Indirect Matrix Converter. IEEE Transactions on Power Electronics, 2016, 31, 7544-7555.	5.4	35
30	Single-phase PWM rectifier with power decoupling ripple-port for double-line-frequency ripple cancellation. , 2013, , .		34
31	A photovoltaic module thermal model using observed insolation and meteorological data to support a long life, highly reliable module-integrated inverter design by predicting expected operating temperature. , 2009, , .		32
32	Analysis and Design of Smart PV Modules. IEEE Journal of Emerging and Selected Topics in Power Electronics, 2014, 2, 451-459.	3.7	30
33	Information Theoretically Secure, Enhanced Johnson Noise Based Key Distribution over the Smart Grid with Switched Filters. PLoS ONE, 2013, 8, e70206.	1.1	30
34	Maximum Power Point Tracking using Model Predictive Control of a flyback converter for photovoltaic applications. , 2014, , .		29
35	Multiobjective Optimization and Topology Selection for a Module-Integrated Inverter. IEEE Transactions on Power Electronics, 2015, 30, 4219-4231.	5.4	29
36	Survey of modelling techniques used in optimisation of power electronic components. IET Power Electronics, 2014, 7, 1192-1203.	1.5	28

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37	Power Electronics Needs for Achieving Grid-Parity Solar Energy Costs. , 2008, , .		27
38	Maximum power point tracking of grid connected photovoltaic system employing model predictive control. , 2015, , .		24
39	Analysis and mitigation of common mode voltages in photovoltaic power systems. , 2011, , .		23
40	An Adaptive Model Predictive Controller for Current Sensorless MPPT in PV Systems. IEEE Open Journal of Power Electronics, 2020, 1, 445-455.	4.0	23
41	Arc fault and flash detection in DC photovoltaic arrays using wavelets. , 2013, , .		22
42	Predicting Variability of High-Penetration Photovoltaic Systems in a Community Microgrid by Analyzing High-Temporal Rate Data. IEEE Transactions on Sustainable Energy, 2014, 5, 1434-1442.	5.9	22
43	Adaptive Model Predictive Controller to Reduce Switching Losses for a Capacitor-Less D-STATCOM. IEEE Open Journal of Power Electronics, 2020, 1, 300-311.	4.0	22
44	Predicting capacitor reliability in a module-integrated photovoltaic inverter using stress factors from an environmental usage model. , 2010, , .		21
45	Model predictive control of multi-string PV systems with battery back-up in a community dc microgrid. , 2017, , .		21
46	A finite-element analysis approach to determine the parasitic capacitances of high-frequency multiwinding transformers for photovoltaic inverters. , 2013, , .		20
47	Hybrid hysteresis current control and low€frequency current harmonics mitigation based on proportional resonant in dc/ac inverter. IET Power Electronics, 2018, 11, 2093-2101.	1.5	20
48	Reliability of candidate photovoltaic module-integrated-inverter topologies. , 2012, , .		18
49	Real time arc fault detection in PV systems using wavelet decomposition. , 2016, , .		18
50	AC-link, single-phase, photovoltaic Module Integrated Inverter. , 2013, , .		16
51	Resource Requirements and Speed versus Geometry of Unconditionally Secure Physical Key Exchanges. Entropy, 2015, 17, 2010-2024.	1.1	16
52	A Model Predictive Control technique for utility-scale grid connected battery systems using packed U cells multilevel inverter. , 2016, , .		16
53	Capacitor-less D-STATCOM for reactive power compensation. , 2018, , .		16
54	An active filter method to eliminate dc-side low-frequency power for single-phase quasi-Z source inverter. , 2015, , .		15

#	ARTICLE	IF	CITATIONS
55	High efficiency MPPT by model predictive control considering load disturbances for photovoltaic applications under dynamic weather condition. , 2015, , .		15
56	Auto-tuning the cost function weight factors in a model predictive controller for a matrix converter VAR compensator. , 2015, , .		15
57	Model predictive control of grid-tied photovoltaic systems: Maximum power point tracking and decoupled power control. , 2015, , .		15
58	Constrained decoupled power predictive controller for a single‐phase grid‐tied inverter. IET Renewable Power Generation, 2017, 11, 659-668.	1.7	15
59	Optimization of photovoltaic-wind hybrid system for apartment complexes and other community living environments by minimizing excess capacity. , 2012, , .		14
60	Experimental verification of energy harvest from non-planar photovoltaic surfaces. , 2013, , .		14
61	Loss analysis during dead time and thermal study of gallium nitride devices. , 2015, , .		13
62	Modeling, analysis, and impedance design of battery energy stored single-phase quasi-Z source photovoltaic inverter system. , 2016, , .		13
63	A five-level neutral-point-clamped/H-Bridge quasi-impedance source inverter for grid connected PV system. , 2016, , .		13
64	Model predictive decoupled power control for single-phase grid-tied inverter. , 2015, , .		12
65	Novel non-flat photovoltaic module geometries and implications to power conversion. , 2011, , .		11
66	Ripple-port integrated PFC rectifier with fast dynamic response. , 2014, , .		11
67	Minimized Quasi-Z source network for single-phase inverter. , 2015, , .		11
68	Comparison of GaN and SiC power devices in application to MW-scale quasi-Z-source cascaded multilevel inverters. , 2016, , .		11
69	D-STATCOM for a Distribution Network with Distributed PV Generation. , 2018, , .		11
70	Bus Selection in Multibus DC Power Systems. , 2007, , .		10
71	Multi-objective design optimization of renewable energy system inverters using a Descriptive language for the components. , 2011, , .		10
72	Determination of parasitic parameters in a high frequency magnetic to improve the manufacturability, performance, and efficiency of a PV inverter. , 2012, , .		10

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73	Maximum power point tracking of photovoltaic systems using sensorless current-based model predictive control. , 2015, , .		10
74	Model predictive control for PV maximum power point tracking of single-phase submultilevel inverter. , 2016, , .		10
75	Development of a Capacitor-less D-STATCOM for Power Quality Improvement in Low Voltage Network. , 2019, , .		10
76	Energy Harvest Potential of Flexible Photovoltaics on Curved Surfaces. , 2019, , .		10
77	Comparing Connection Topologies of PV Integrated Curved Roof Tile for Improved Performance. , 2020, , .		10
78	Capacitor-less VAR compensator based on matrix converter. , 2010, , .		9
79	Model predictive control of a matrix-converter based solid state transformer for utility grid interaction. , 2016, , .		9
80	Active power decoupling method based on dual buck circuit with model predictive control. , 2018, , .		9
81	Smart PV modules — Design considerations. , 2012, , .		8
82	Multiobjective Optimization of the DCâ€"DC Stage of a Module-Integrated Inverter Based on an Efficiency Usage Model. IEEE Journal of Photovoltaics, 2014, 4, 906-914.	1.5	8
83	A variable step-size MPPT for sensorless current model predictive control for photovoltaic systems. , 2016, , .		8
84	Sensorless current model predictive control for maximum power point tracking of single-phase subMultilevel inverter for photovoltaic systems. , 2016, , .		8
85	A modified symmetric and asymmetric multilevel power inverter with reduced number of power switches controlled by MPC. , 2017, , .		8
86	Design considerations for long-term remote photovoltaic-based power supply. IEEE Applied Power Electronics Conference and Exposition, 2008, , .	0.0	7
87	Multi-objective optimization of the energy capture and boost inductor mass in a module-integrated converter (MIC) photovoltaic energy system. , 2012, , .		7
88	Design considerations for long-term remote photovoltaic-based power supply using non-planar photovoltaic surfaces. , 2013, , .		7
89	Model predictive control of a capacitor-less VAR compensator based on a matrix converter. , 2014, , .		7
90	Sensitivity analysis to model parameter errors of MPPT by model predictive control for photovoltaic applications. , 2015, , .		7

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91	Reactive Power Compensation of Time-Varying Load Using Capacitor-less D-STATCOM. , 2019, , .		7
92	Fourier Transform and Short-Time Fourier Transform Decomposition for Photovoltaic Arc Fault Detection. , 2020, , .		7
93	Ripple-port module-integrated inverter for grid-connected PV applications. , 2012, , .		6
94	Photovoltaic hybrid power harvesting system for emergency applications. , 2013, , .		6
95	Analysis and design of smart PV modules. , 2013, , .		6
96	PWM methods for high frequency voltage link inverter commutation. , 2016, , .		6
97	Optimum number of cascaded multilevel inverters for high-voltage applications based on Pareto analysis. , 2017, , .		6
98	A parameter mismatch study on model predictive control based sensorless current mode. , 2018, , .		6
99	Mitigating variability of high penetration photovoltaic systems in a community smart microgrid using non-flat photovoltaic modules. , 2013, , .		5
100	Comparison of SiC and GaN devices for front-end isolation of quasi-Z-source cascaded multilevel photovoltaic inverter. , 2016, , .		5
101	Dual buck based power decoupling circuit for single phase inverter/rectifier. , 2016, , .		5
102	Comparison between operating modes of distributed generation on voltage profile and stability of distribution systems. , 2018, , .		5
103	Analysis of the Capacitor-Less D-STATCOM for Voltage Profile Improvement in Distribution Network With High PV Penetration. IEEE Open Journal of Power Electronics, 2022, 3, 255-270.	4.0	5
104	Unconditional security for the smart power grids and star networks. , 2015, , .		4
105	Commutation technique for high frequency link inverter without operational limitations and dead time. , 2016, , .		4
106	Model predictive control for maximum power point tracking of quasi-Z-source inverter based grid-tied photovoltaic power system. , 2017, , .		4
107	Optimal sizing of photovoltaic-wind hybrid system for community living environment and smart grid interaction. , 2017, , .		4
108	Mechatronics Arc Generator for Photovoltaic Arc Fault Detector Testing. , 2019, , .		4

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109	Fault-Tolerant D-STATCOM based Matrix Converter. , 2019, , .		4
110	A PWM Method for Single-Phase Current-Sourced High Frequency AC Link Inverter. , 2020, , .		4
111	Reliability of a PV-module integrated inverter (PV-MII): A usage model approach. , 2012, , .		3
112	FEA tool approach for determination of parasitic capacitance of the windings in high frequency coupled inductors filters. , 2012, , .		3
113	Direct instantaneous ripple power predictive control for active ripple decoupling of single-phase inverter. , 2016, , .		3
114	Direct decoupled active and reactive predictive power control of grid-tied quasi-Z-source inverter for photovoltaic applications. , 2017, , .		3
115	THD analysis for a high frequency link SCR-based PWM inverter. , 2018, , .		3
116	Parallel Operation of Capacitor-less D-STATCOM to Allow More Penetration of Photovoltaic Systems in Distribution Network. , 2020, , .		3
117	Decision making framework for solar photovoltaic power conditioning unit topologies using Six Sigma. , 2012, , .		2
118	Analysis and comparison of two active anti-islanding detection methods. , 2014, , .		2
119	Modeling the Electrical Production Potential of Non-Planar Photovoltaic Modules. , 2019, , .		2
120	Model Predictive Control Based Controller for Grid-Connected Ripple-Port Inverters. , 2020, , .		2
121	Adaptive MPC-based Cost Function for Capacitorless VAR Compensator in Distribution Networks. , 2020, , .		2
122	Application of a Capacitor-Less D-STATCOM for Power Quality Enhancement in a Typical Telecom Data Center. , 2022, , .		2
123	High fidelity â€œreplayâ€•arc fault detection testbed. , 2016, , .		1
124	Effect of Laser Wavelength on AZO Surface Texturing by Direct Laser Processing / Patterning for Thin-Film Silicon Solar Cells Applications. MRS Advances, 2018, 3, 1411-1418.	0.5	1
125	Modeling Methodology for Determining Energy Collection Potential of Photovoltaics Applied To Curved Surfaces. , 2019, , .		1
126	New commutation method based on state machine for three-phase HF ac link inverter with passive loads. , 2019, , .		1

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127	Parameter Extraction Testbed to Optimize Interconnections of Non-Planar Photovoltaics. , 2020, , .		1
128	A Techno-Economic Study of Rooftop Grid-Connected Photovoltaic-Energy Storage Systems in Qatar. , 2020, , .		1
129	Sizing of Differential Power Processing Converters Based on In-Situ Meteorological Data for Non-Planar Photovoltaic Applications. , 2020, , .		1
130	Low Cost, Stand-Alone, In-situ PV Curve Trace. , 2020, , .		1
131	A System Design Approach for Unattended Solar Energy Harvesting Supply. IEEE Transactions on Power Electronics, 2009, , .	5.4	0
132	Decision making framework for photovoltaic cell technologies using six sigma. , 2012, , .		0
133	Multi-objective optimization of the DC-DC stage of a Module-Integrated Inverter based on an efficiency usage model. , 2013, , .		0
134	A Hill-Climbing Optimization Approach for Closed-Loop Auto-Tuning of the Grid-Connected Ripple-Port Inverters. , 2019, , .		0
135	Investigation of the Thermal Gradient Impact on Non-Planar Photovoltaics. , 2020, , .		0
136	Defining Performance Factors to Design Non-Planar Photovoltaic Interconnection Scheme. , 2020, , .		0
137	Methodology for Designing an Optimal Connection Scheme for Applications of Non-Planar Photovoltaics. , 2020, , .		0
138	Commutation Method for a Three-Phase Current-Sourced High-Frequency AC-link Inverter. , 2020, , .		0
139	Non-Planar Photovoltaic Testbed Based on in-situ Parameter Extraction for PV Simulation & Emulation. , 2020, , .		0
140	Voltage Profile Enhancement Using Capacitor-less D-STATCOM to Increase PV Integration in Distribution Network Under Transient Cloud Conditions. , 2020, , .		0