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List of Abbreviations

ANFIS	Adaptive Neuro Fuzzy Inference System
ANN	Artificial Neural Network
APF	Active Power Filter
ASD	Adjustable Speed Drives
CAMC	Cascaded Asymmetric Multilevel Converter
CHIL	Controller Hardware In Loop
CPD	Custom Power Device
CSC	Current Source Converter
DFT	Discrete Fourier Transform
DG	Distributed Generation
EPPL	Enhanced Phase Locked Loop
FFT	Fast Fourier Transform
FLC	Fuzzy Logic Controller
HFAC	High Frequency AC
IRPT	Instantaneous Reactive Power Theory
ISCT	Instantaneous Symmetrical Component Theory
LQR	Linear Quadratic Regulator
MMC	Modular Multilevel Converter
MPPT	Maximum Power Point Tracking
MRAS	Model Reference Adaptive System
PAC	Power Angle Control
PCC	Point of Common Coupling
PQ	Power Quality
PSO	Particle Swarm Optimization
PV	Solar Photovoltaic
RES	Renewable Energy Sources
SPPT	Single Phase PQ Theory

SRFT	Synchronous Reference Frame Theory
THD	Total Harmonic Distortion
UPQC	Unified Power Quality Conditioner
UPQC-DG	Unified Power Quality Conditioner with Distributed Generation
UVTG	Unit Vector Template Generation
VA	Volt-Ampere rating
VSC	Voltage Source Converter

List of Symbols

V_S	Source (grid) voltage measured at PCC
V_L	Voltage at load terminals
V_{Sr}	Voltage injected by series APF
I_S	Source current
I_L	Load current
I_{Sh}	Current injected by shunt APF
f	Frequency of source voltage
a	Overloading factor
n_T	Turns ratio of series injection transformer
P, Q, S	Real power, reactive power, and complex power respectively
<i>Greeks letters</i>	
ϕ	load phase angle
ω	Angular frequency of grid voltage
δ	Power angle
δ_C	Calculated value of power angle in every time step
δ_{max}	Maximum permissible value of power angle
λ	Ratio of reactive power shared by series APF to total reactive power of load
α	Angular frequency of load voltage
<i>Subscripts</i>	
a, b, c	For phase A, B, C (or R-Y-B) of quantities in a three phase system
cr, pp	Peak to peak ripple current of compensator
DC	DC link/side quantities

<i>L</i>	Parameters relating load
<i>S</i>	Source quantities
<i>Sh</i>	Shunt APF parameters
<i>Sr</i>	Series APF parameters
<i>T</i>	Parameters of transformer
<i>PV</i>	PV array parameters



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