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List of Symbols and Abbreviations

i	Subscript referring to area i (i = 1, 2, 3)
H	Per unit inertia constant
f^0	Rated Frequency
Δf_i	Incremental change in frequency
ΔP_{tie}	Incremental change in tie-line power flowing out of area
D	Load frequency constant
ΔPi	Power interchange deviation
ω	Rotational speed (rad/sec)
α	Rotational acceleration
δ	Phase angle of a rotating machine
T_{net}	Net accelerating torque in a machine
T_{mech}	Mechanical torque exerted on the machine by the turbine
T_{elec}	Electrical torque exerted on the machine by the generator
P_{net}	Net accelerating power
P_{mech}	Mechanical power input
I	Moment of inertia for machine
ΔP_g	Incremental change in power generation
ΔP_d	Incremental change in load demand
ΔP_c	Incremental change in speed changer position
ΔX_{gv}	Incremental change in governor valve position
ΔP_R	Incremental change in intermediate output of reheat thermal turbine.

T_g	Speed governor time constant
Tt	Turbine time constant
Tr	Reheater time constant
T_w	Hydro turbine time constant
R	Speed regulation parameter
Pr	Rated area power output
Kr	Reheat coefficient
T_p	Power system time constant
M	Effective rotary inertia
a_{12}	Area size ratio coefficient
B	Frequency bias constant
δ	Area power angle
T_{dc}	Time constant of HVDC link
K_{dc}	Gain associated with DC link
T_{12}	Synchronizing coefficient of EHVAC link/ Tie-line Constant
LFC	Load frequency control
AGC	Automatic generation control
AVR	Automatic voltage regulator
ACE	Area control error
ISE	Integral square error
LQR	Linear quadratic regulator
FLC	Fuzzy logic controller
GA	Genetic algorithm

ANN	Artificial neural network
SA	Simulated annealing
HVDC	High voltage direct current
AFRC	Automatic frequency ratio control