

Nomenclature.

$X_i = X_{i1}, X_{i2}, X_{i3}, \dots, X_{iD}$, position of each particle for a D-dimensional value are represented as and $V_i = V_{i1}, V_{i2}, V_{i3}, \dots, V_{iD}$ p_{dg_i} = power generation of Distributed Generator

$p_{dg_i}^{emin}$ = expected minimum real power generation of wind/solar power DG

$p_{dg_i}^{emax}$ = expected maximum real power generation of wind/solar power DG

F_e = economy based objective function

F_T = Technical based objective factor

n_{dg} = No of dg

n_{sdg} = No of solar dg

n_{mtdg} = No of microturbine dg

n_{wdg} = No of wind dg

SD = storage device

C_O = Operating cost of DG which is a function of no. of actual unit generated.

U_{wdg_i} = actual unit generated of wind power DG

U_{sdg_i} = actual unit generated of solar power DG

U_{mtdg_i} = actual unit generated of microturbine DG

C_U = cost of uncertainty

p_{dg}^{mt} = power generation of microturbine

P_{WG_i} = probable power generation of i_{th} wind unit in KW

P_{SG_i} = probable power generation of i_{th} solar power unit

$C_{O_{SD}}$ = operating cost of storage devices

$p_{dg_s^w}^{\frac{eava}{h}}$ = estimated hourly average power generation of solar/wind unit per day

$p_{dg_s^w}^{\frac{aava}{h}}$ = actual hourly average power generation of solar/wind unit per day

α_w, α_s , = levelised cost of electricity of wind and solar unit respectively

α_{mt} = cost- coefficient of microturbine

W_e = weightage of economic factor

W_t = weightage of Technical Factor

C_{ui} = cost coefficient of underestimation and over estimation of renewable power generation

SOC = State Of Charge of energy storage devices

$E_{SD_{r_i}}$ = rated energy storage capacity of SD unit i

$C_{char/dis}$ = charging discharging cost coefficient

$P_{SD_{w/s_i}}^{cha/dis}$ = Charging discharging power of storage unit attached with wind/solar unit

$P_{blosses}$ = branch losses

V_i, V_j =voltage at node i and j

$SBDI$ = substation dependency index

CON = number of constraints

P_{L_i} =load at each bus

SOC =actual energy stored/rated energy storage capacity

Where, i = 1, 2, 3n

number of distributed generators F_e : cost function