Progettazione e gestione operativa di impianti energetici ibridi

Direct current

Alternating current

BATTERIES
SOC

LOAD

E_{WBh}

E_{PBh}

E_{BLh}

E_{GLh}

E_{PVh}

PV SYSTEM

WIND TURBINE

E_{WLA}

E_{WLB} + E_{PVL}

E_{GLh}

CHARGE CONTROLLER

INVERTER

GRID

WIND TURBINE

SOC

BATTERIES

LOAD

E_{WBh}

E_{PBh}

E_{BLh}

E_{GLh}

E_{PVh}

PV SYSTEM

Direct current

Alternating current

Exploitation of atmospheric and load short-term forecast to improve HES operation management: HA and MILP comparison in January week.

SOC [kWh]

0 2 4 6 8 10 12

Daily hour [h]

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Time slot F2-F3

Time slot F1

Time slot F1

HA management

MILP management

BES management (SOC) determined by HA and MILP in relation to the electricity purchase time slots, July cloudy week.

Time slot F2-F3

Exploitation of atmospheric and load short-term forecast to improve HES operation management: HA and MILP comparison in January week.

SOC [kWh]

0 2 4 6 8 10 12

Daily hour [h]

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

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SOC [kWh]

0 2 4 6 8 10 12

Daily hour [h]

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Electricity [kWh/m²]

0,0 0,5 1,0 1,5 2,0 2,5 3,0 3,5 4,0

Monthly average

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Average wind speed [m/s]

Average irradiance [kWh/m²]

Yearly month

Daily hour

Irradiance

Wind speed

SOC [kWh]

0 2 4 6 8 10 12

Daily hour [h]

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

SOC [kWh]

0 2 4 6 8 10 12

Daily hour [h]

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

SOC [kWh]

0 2 4 6 8 10 12

Daily hour [h]