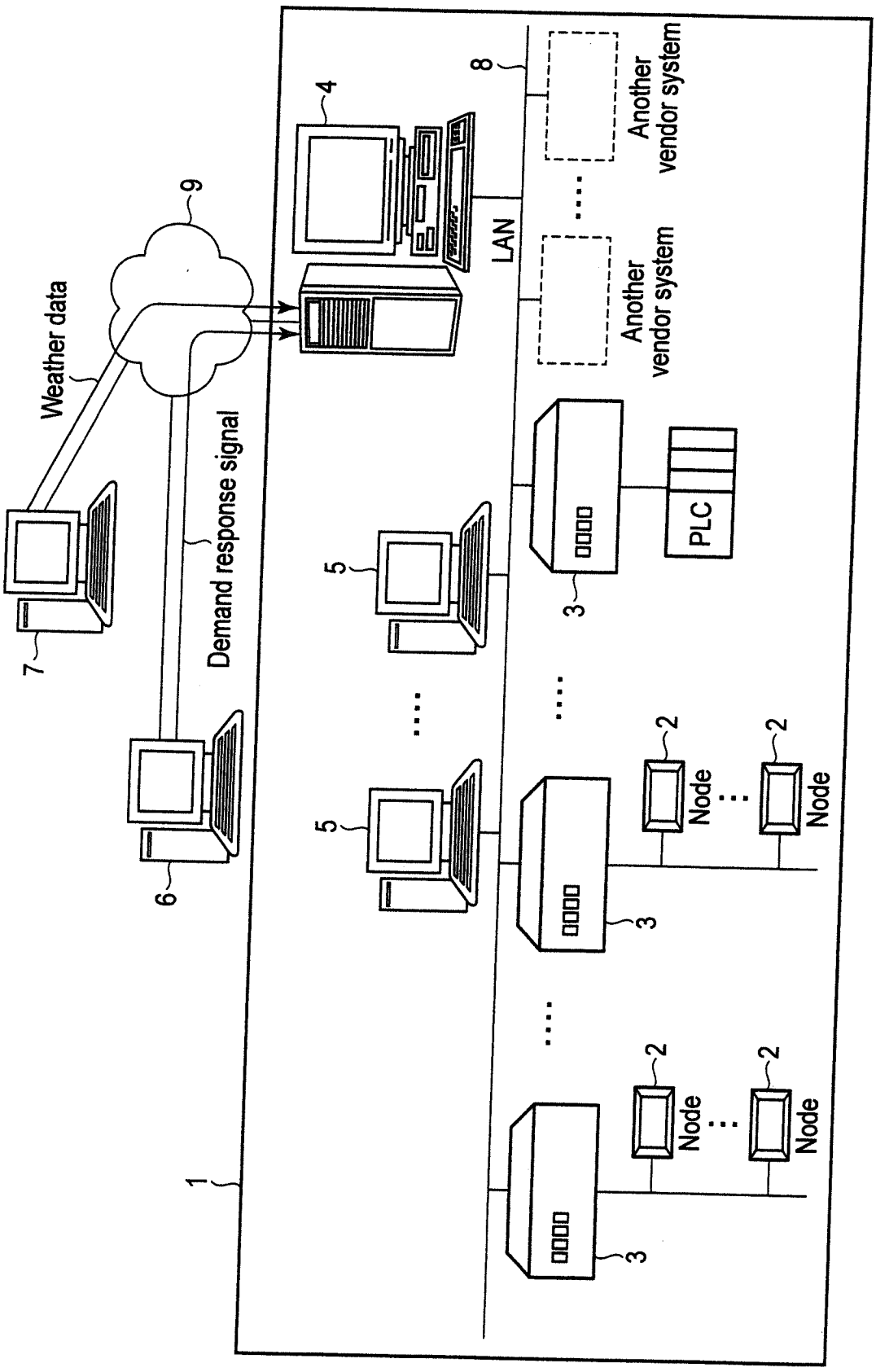

1
2
Node
Node
3
4
5
6
7
8
9
LAN
Another vendor system
Another vendor system
PLC
Weather data
Demand response signal

FIG. 1

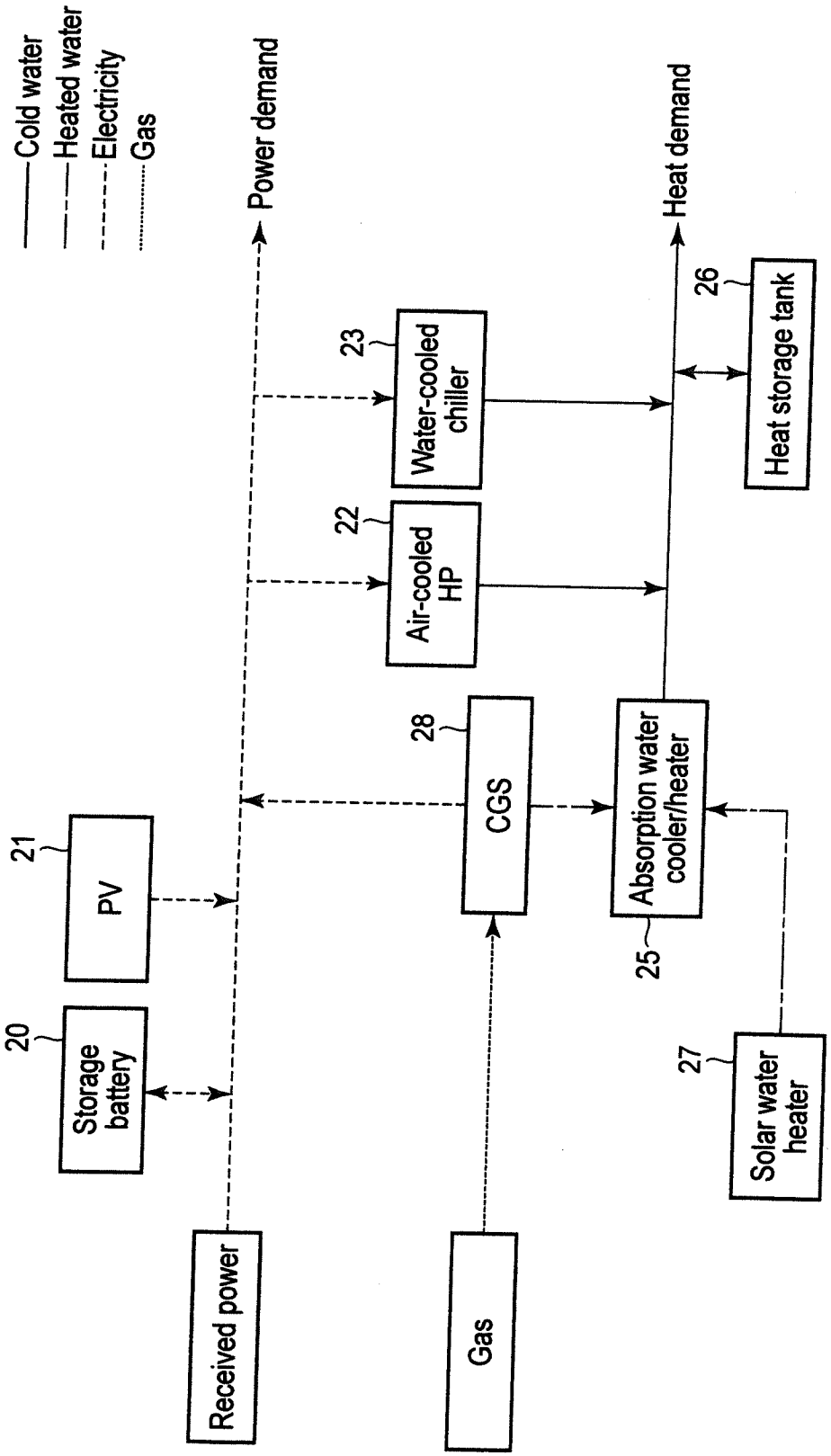

Cold water
Heated water
Electricity
Gas
Power demand
Heat demand
Received power
Gas
20
Storage battery
21
PV
22
Air-cooled HP
23
Water-cooled chiller
25
Absorption water cooler/heater
26
Heat storage tank
27
Solar water heater
28
CGS

FIG. 2

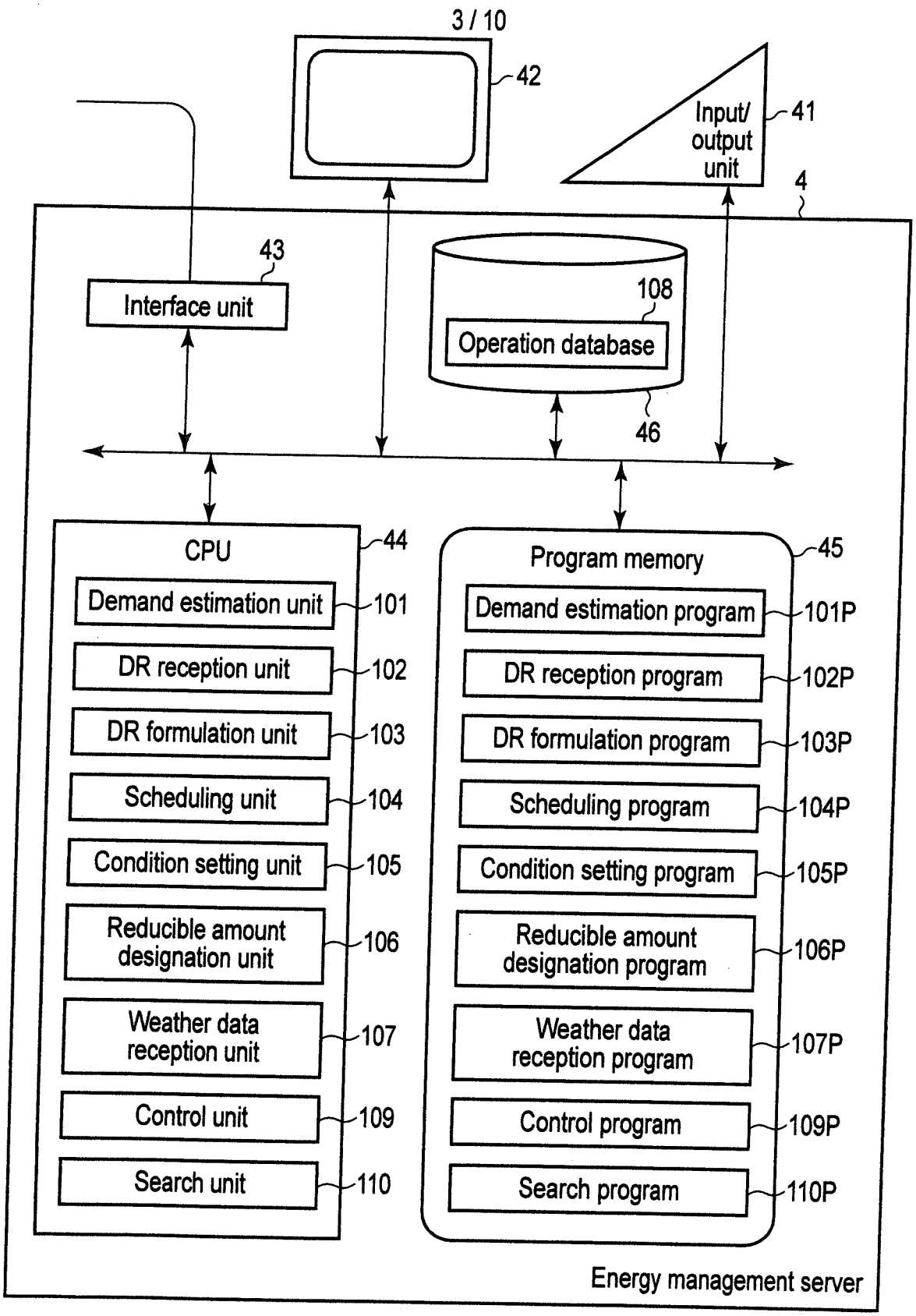

42
Input/
output
unit
41
4
43
Interface unit
108
Operation database
46
CPU
44
Demand estimation unit
101
DR reception unit
102
DR formulation unit
103
Scheduling unit
104
Condition setting unit
105
Reducible amount
designation unit
106
Weather data
reception unit
107
Control unit
109
Search unit
110
Program memory
45
Demand estimation program
101P
DR reception program
102P
DR formulation program
103P
Scheduling program
104P
Condition setting program
105P
Reducible amount
designation program
106P
Weather data
reception program
107P
Control program
109P
Search program
110P
Energy management server

FIG. 3

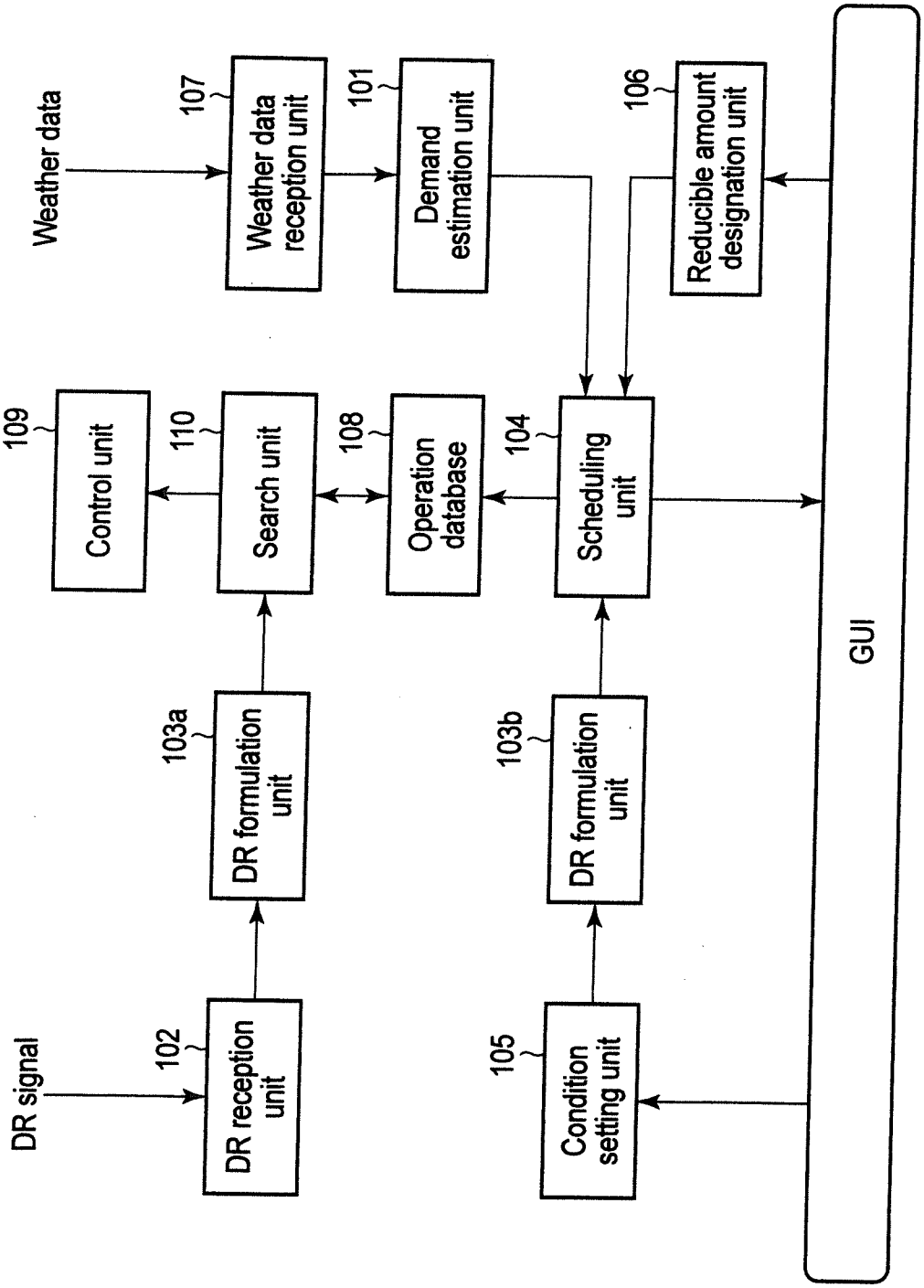

Weather data
107
Weather data reception unit
101
Demand estimation unit
106
Reducible amount designation unit
109
Control unit
110
Search unit
108
Operation database
104
Scheduling unit
GUI
103a
DR formulation unit
103b
DR formulation unit
DR signal
102
DR reception unit
105
Condition setting unit

FIG. 4

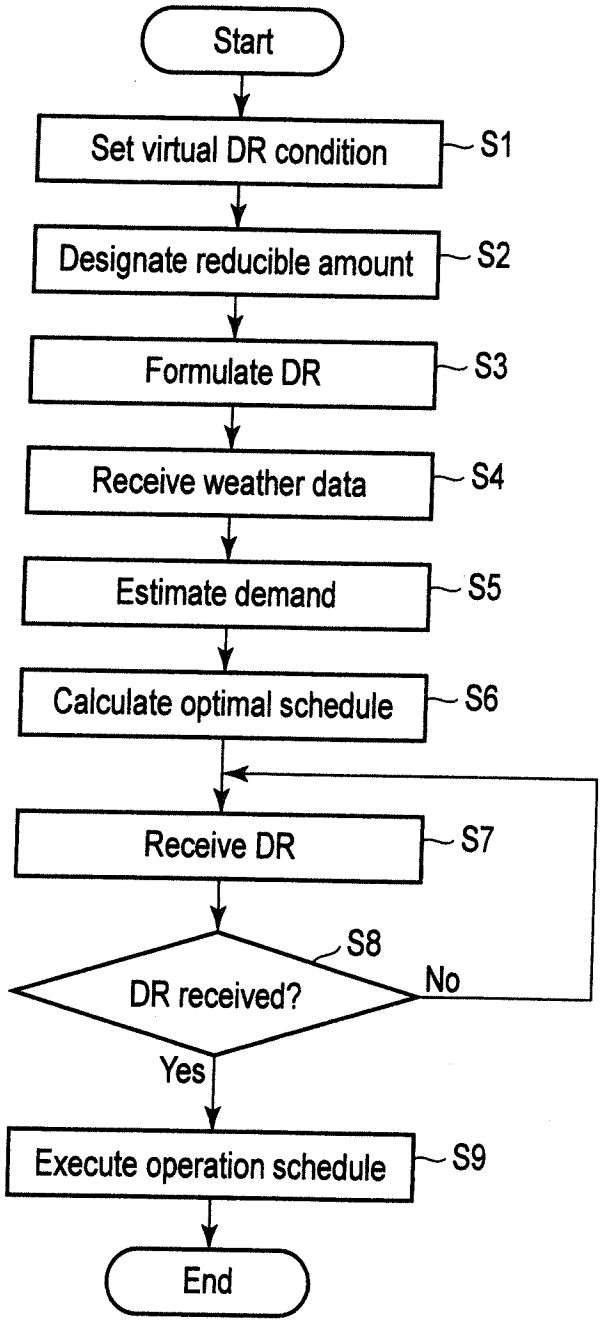

Start
Set virtual DR condition
S1
Designate reducible amount
S2
Formulate DR
S3
Receive weather data
S4
Estimate demand
S5
Calculate optimal schedule
S6
Receive DR
S7
DR received?
S8
No
Yes
Execute operation schedule
S9
End

FIG. 5

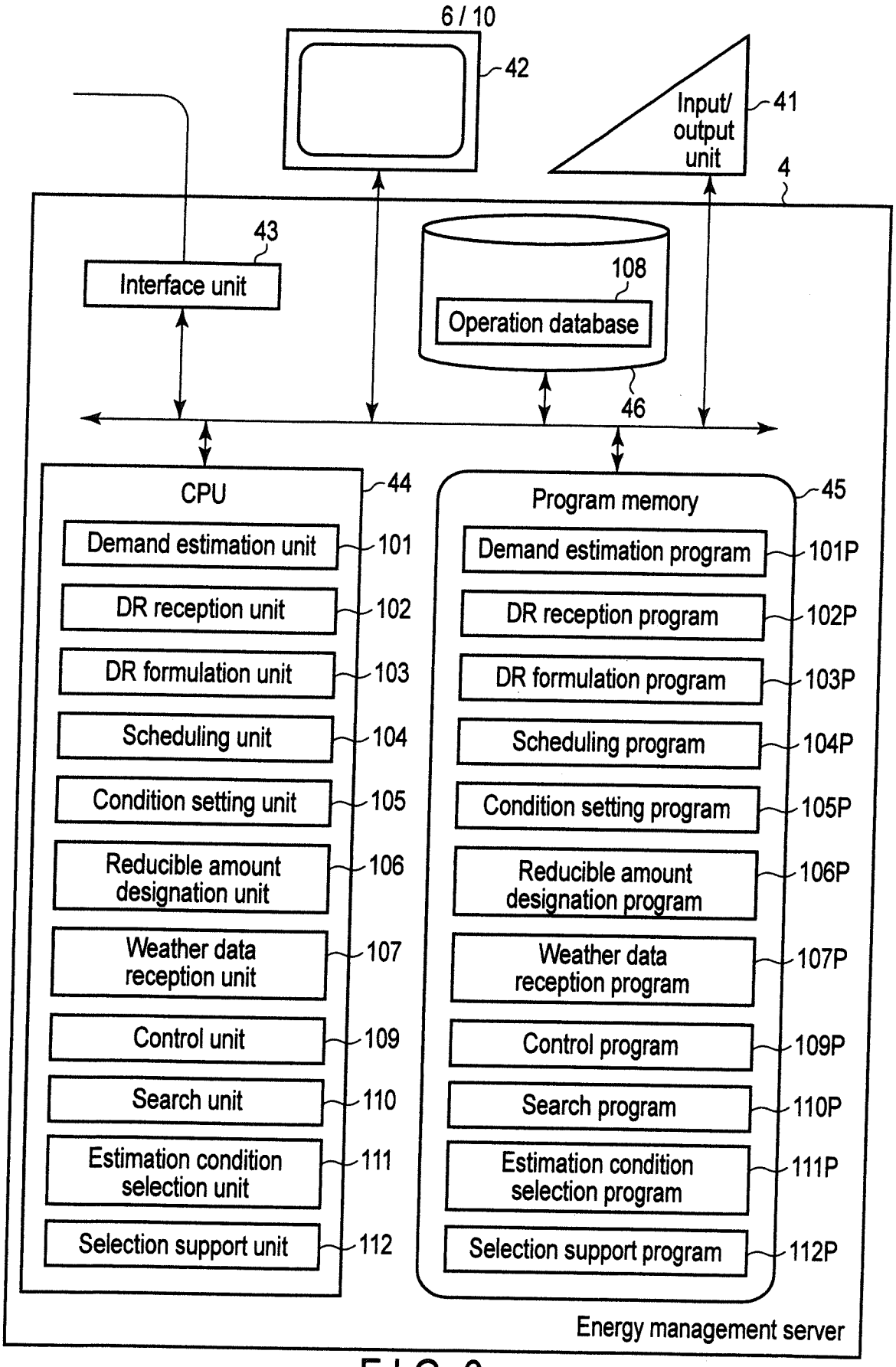

42
Input/
output
unit
41
4
43
Interface unit
108
Operation database
46
CPU
44
Demand estimation unit
101
DR reception unit
102
DR formulation unit
103
Scheduling unit
104
Condition setting unit
105
Reducible amount
designation unit
106
Weather data
reception unit
107
Control unit
109
Search unit
110
Estimation condition
selection unit
111
Selection support unit
112
Program memory
45
Demand estimation program
101P
DR reception program
102P
DR formulation program
103P
Scheduling program
104P
Condition setting program
105P
Reducible amount
designation program
106P
Weather data
reception program
107P
Control program
109P
Search program
110P
Estimation condition
selection program
111P
Selection support program
112P
Energy management server

FIG. 6

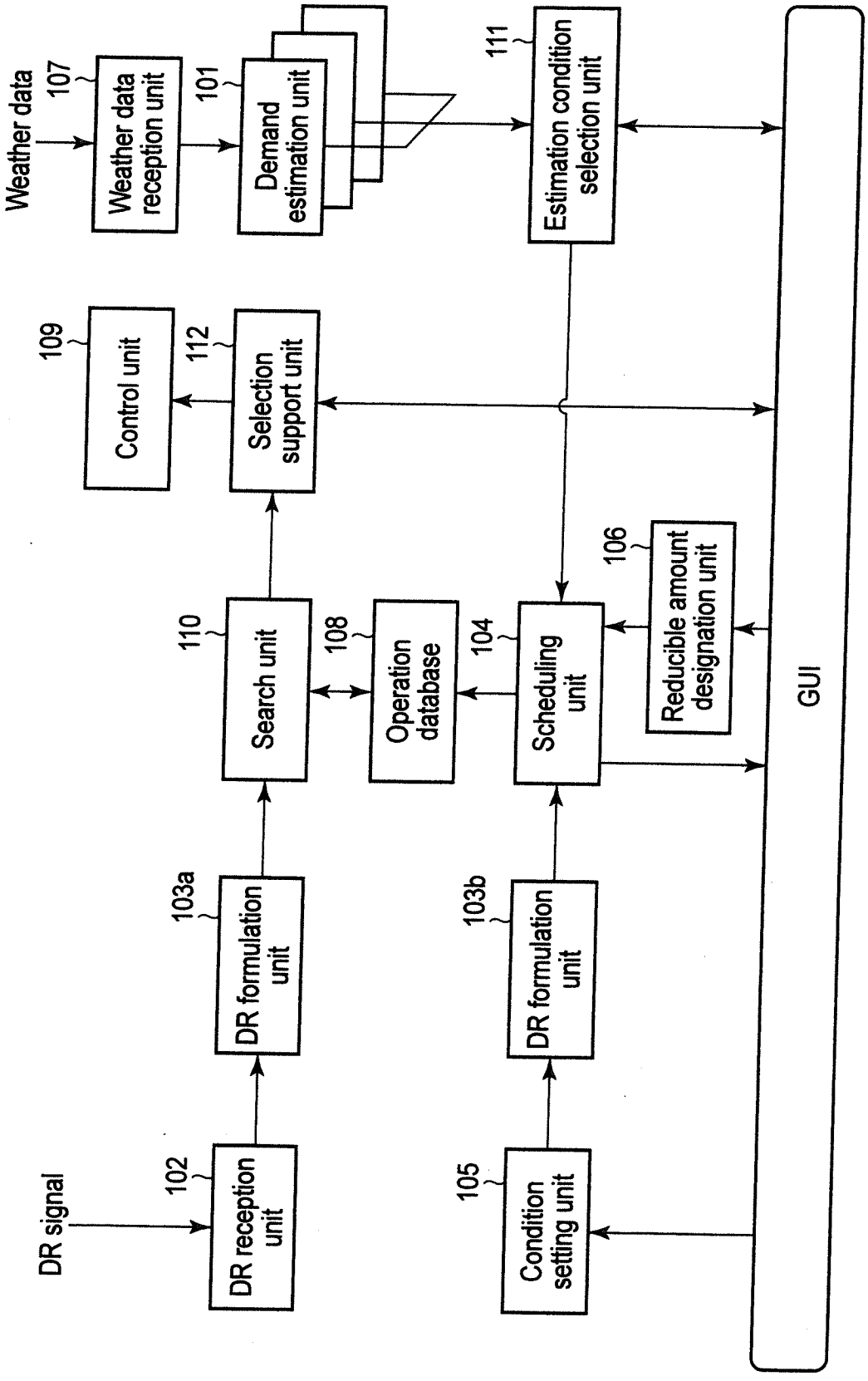

Weather data
107
Weather data reception unit
101
Demand estimation unit
111
Estimation condition selection unit
109
Control unit
112
Selection support unit
110
Search unit
108
Operation database
104
Scheduling unit
106
Reducible amount designation unit
GUI
DR signal
102
DR reception unit
103a
DR formulation unit
105
Condition setting unit
103b
DR formulation unit

FIG. 7

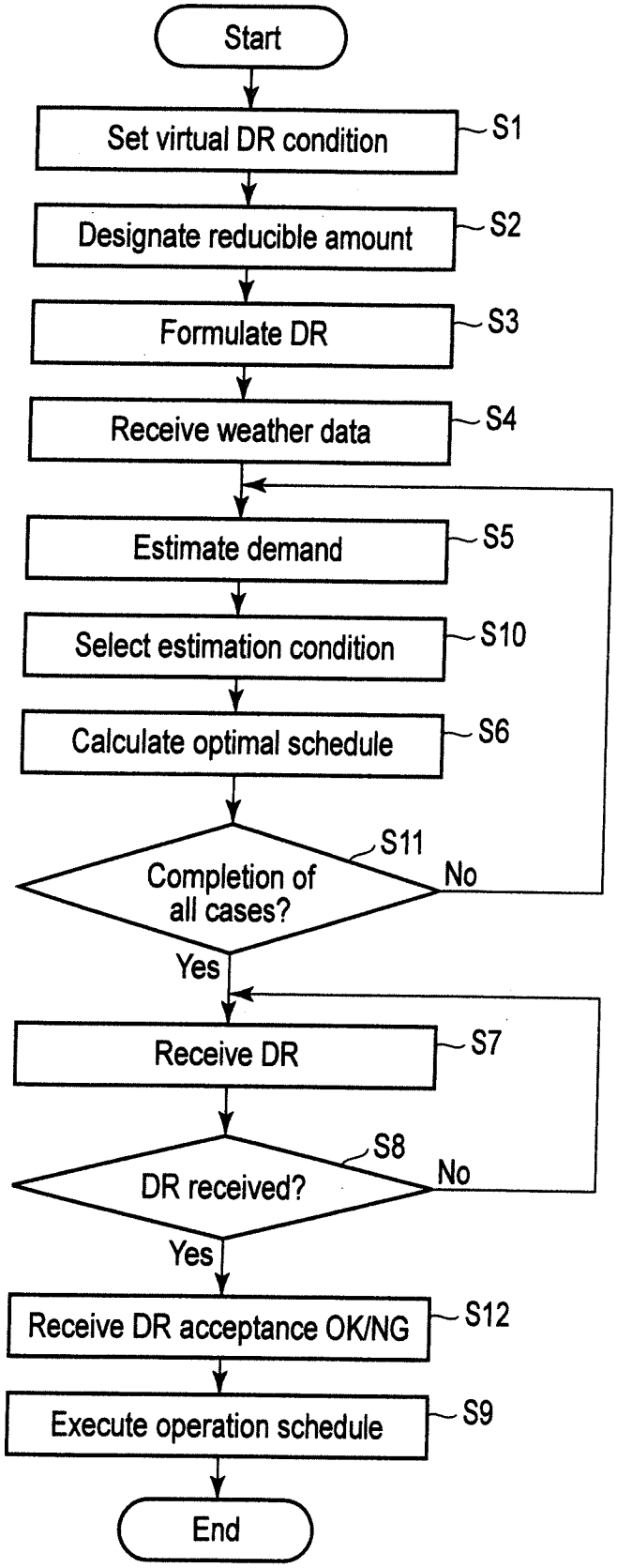

Start
Set virtual DR condition
S1
Designate reducible amount
S2
Formulate DR
S3
Receive weather data
S4
Estimate demand
S5
Select estimation condition
S10
Calculate optimal schedule
S6
Completion of all cases?
S11
No
Yes
Receive DR
S7
DR received?
S8
No
Yes
Receive DR acceptance OK/NG
S12
Execute operation schedule
S9
End

FIG. 8

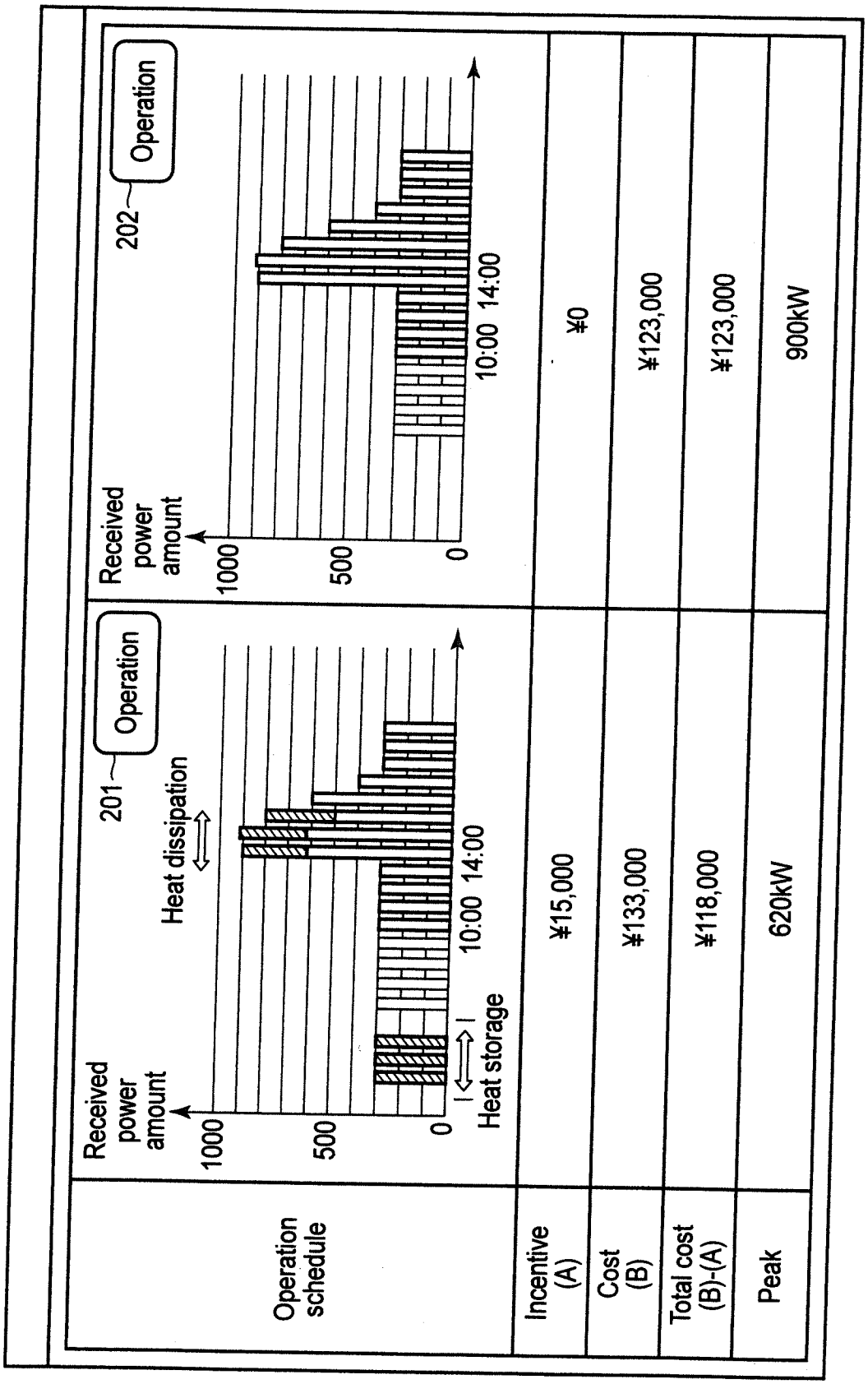

Operation schedule
201
Operation
Received power amount
1000
500
0
Heat dissipation
Heat storage
10:00 14:00
202
Operation
Received power amount
1000
500
0
10:00 14:00
Incentive (A)
¥15,000
¥0
Cost (B)
¥133,000
¥123,000
Total cost (B)-(A)
¥118,000
¥123,000
Peak
620kW
900kW

FIG. 9

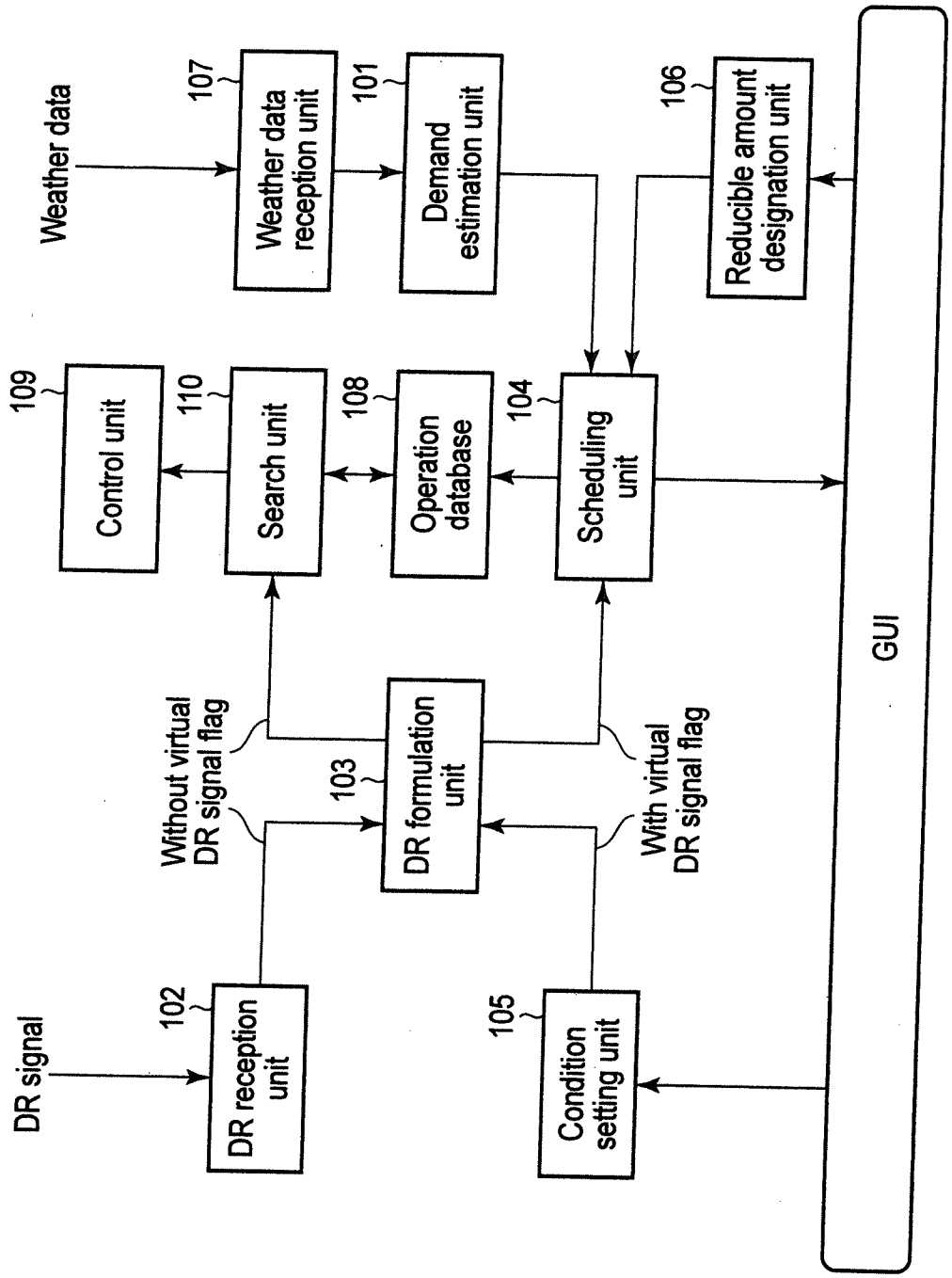

Weather data
107
Weather data reception unit
101
Demand estimation unit
106
Reducible amount designation unit
109
Control unit
110
Search unit
108
Operation database
104
Scheduling unit
GUI
Without virtual DR signal flag
103
DR formulation unit
With virtual DR signal flag
DR signal
102
DR reception unit
105
Condition setting unit

FIG. 10