FIG. 1

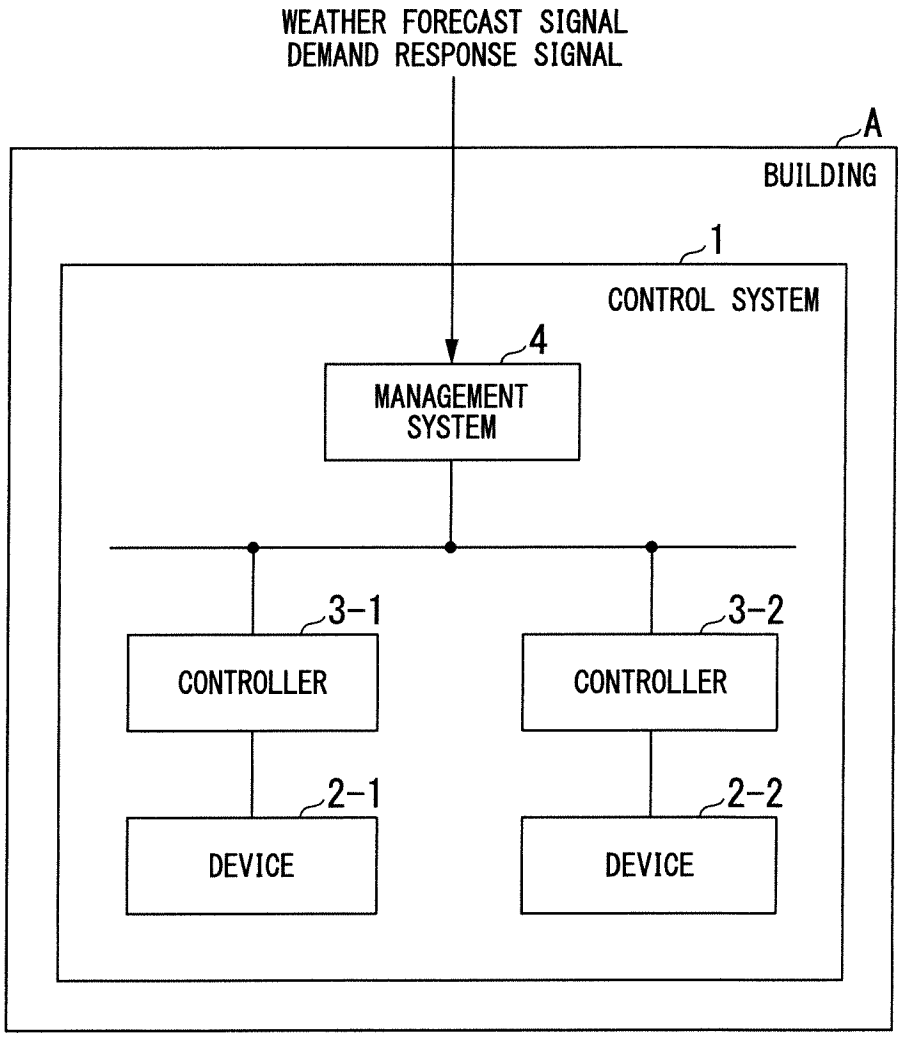

WEATHER FORECAST SIGNAL
DEMAND RESPONSE SIGNAL
A
BUILDING
1
CONTROL SYSTEM
4
MANAGEMENT SYSTEM
3-1
CONTROLLER
3-2
CONTROLLER
2-1
DEVICE
2-2
DEVICE

FIG. 2

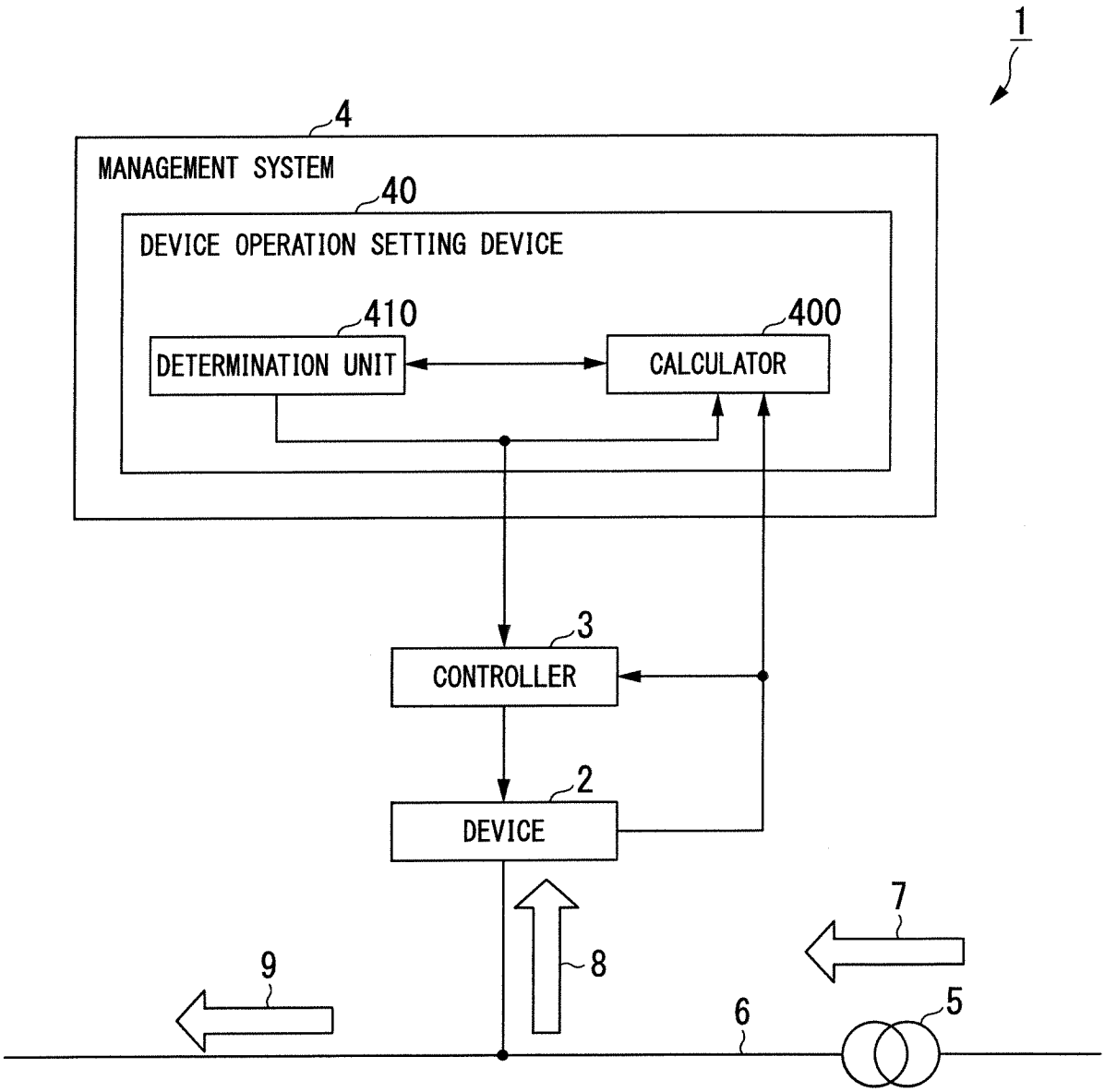

1
4
MANAGEMENT SYSTEM
40
DEVICE OPERATION SETTING DEVICE
410
DETERMINATION UNIT
400
CALCULATOR
3
CONTROLLER
2
DEVICE
7
9
8
6
5

FIG. 3

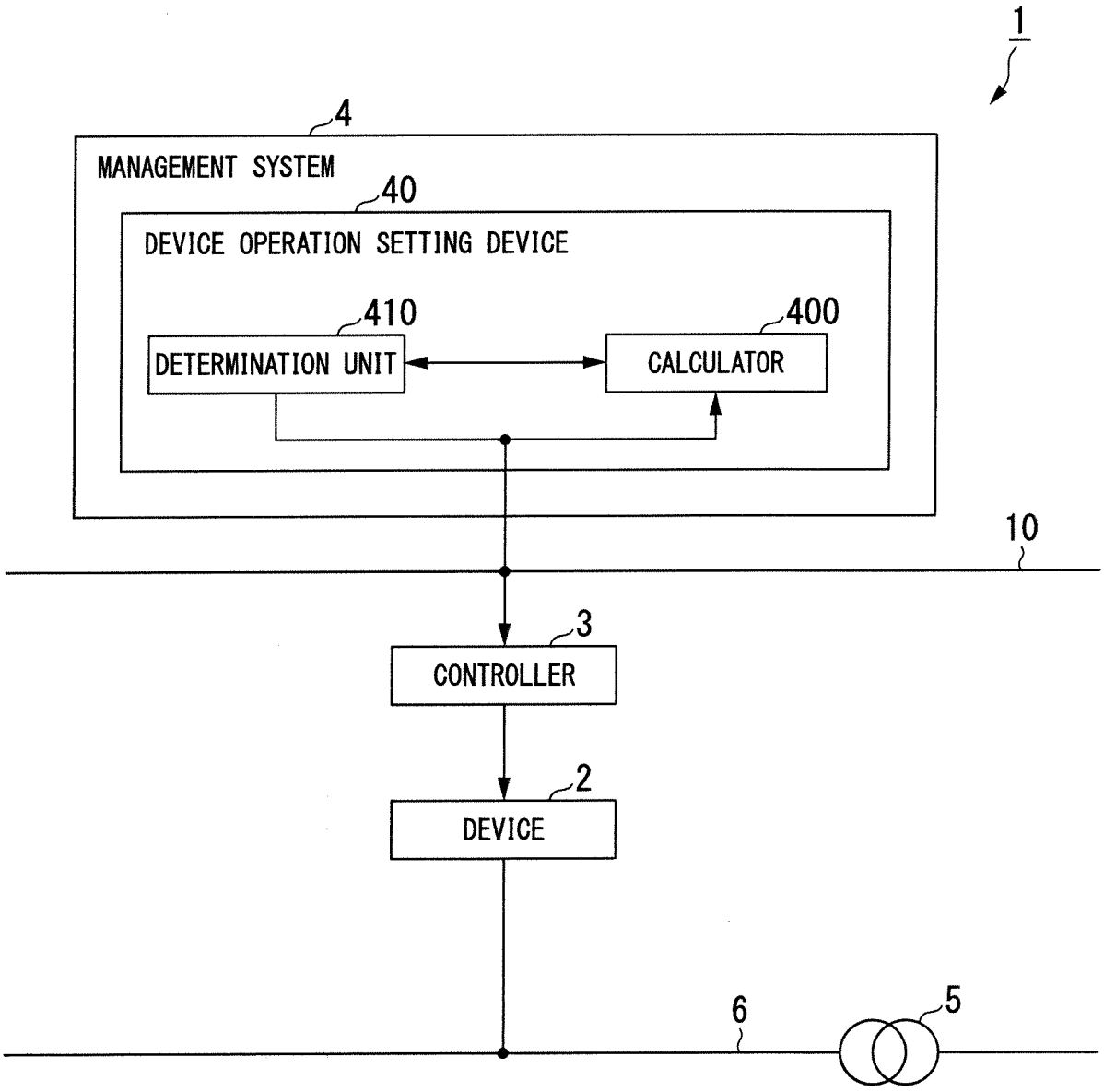

1
4
MANAGEMENT SYSTEM
40
DEVICE OPERATION SETTING DEVICE
410
DETERMINATION UNIT
400
CALCULATOR
10
3
CONTROLLER
2
DEVICE
6
5

FIG. 4

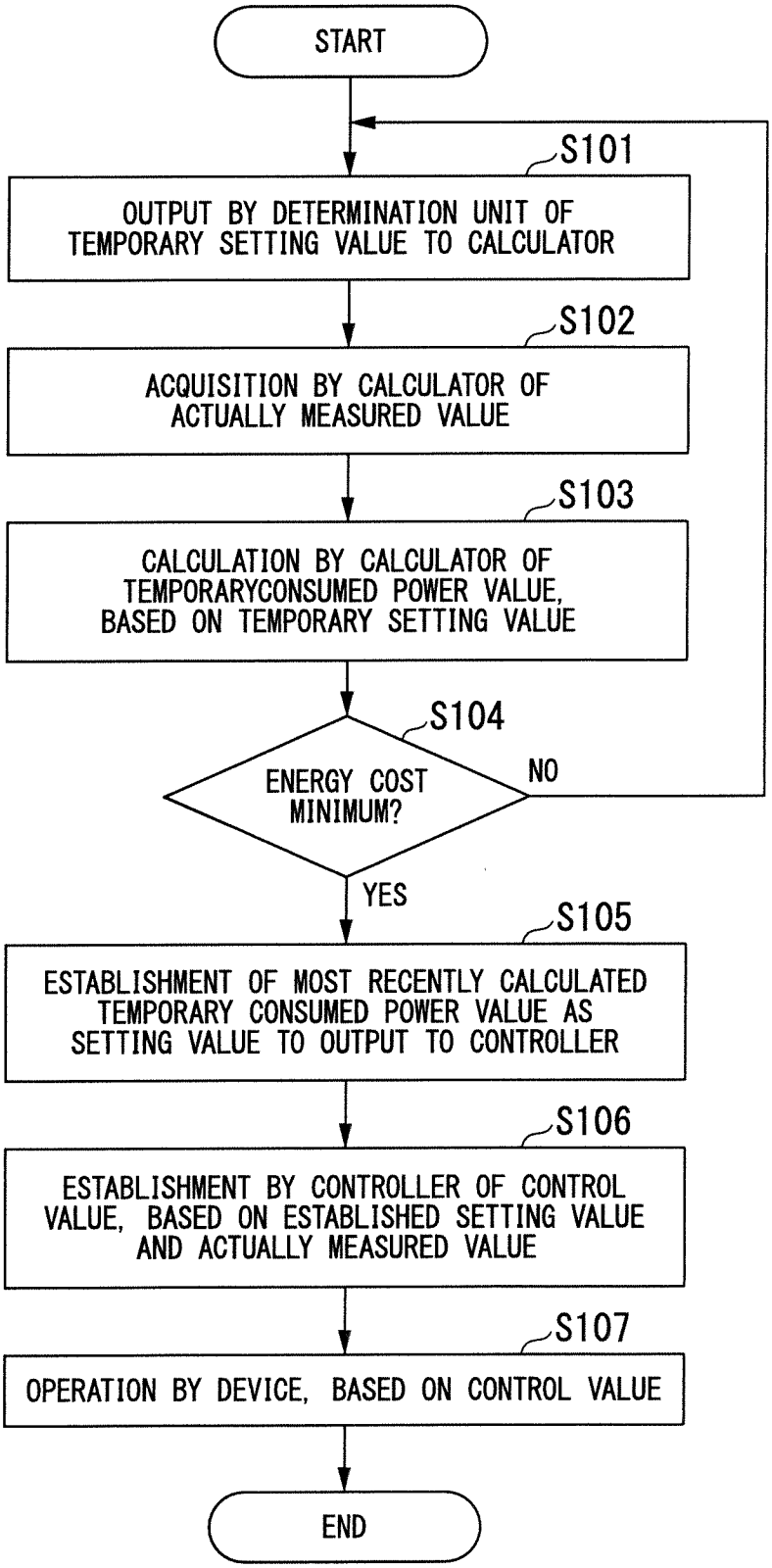

START
S101
OUTPUT BY DETERMINATION UNIT OF TEMPORARY SETTING VALUE TO CALCULATOR
S102
ACQUISITION BY CALCULATOR OF ACTUALLY MEASURED VALUE
S103
CALCULATION BY CALCULATOR OF TEMPORARYCONSUMED POWER VALUE, BASED ON TEMPORARY SETTING VALUE
S104
ENERGY COST MINIMUM?
NO
YES
S105
ESTABLISHMENT OF MOST RECENTLY CALCULATED TEMPORARY CONSUMED POWER VALUE AS SETTING VALUE TO OUTPUT TO CONTROLLER
S106
ESTABLISHMENT BY CONTROLLER OF CONTROL VALUE, BASED ON ESTABLISHED SETTING VALUE AND ACTUALLY MEASURED VALUE
S107
OPERATION BY DEVICE, BASED ON CONTROL VALUE
END

FIG. 5

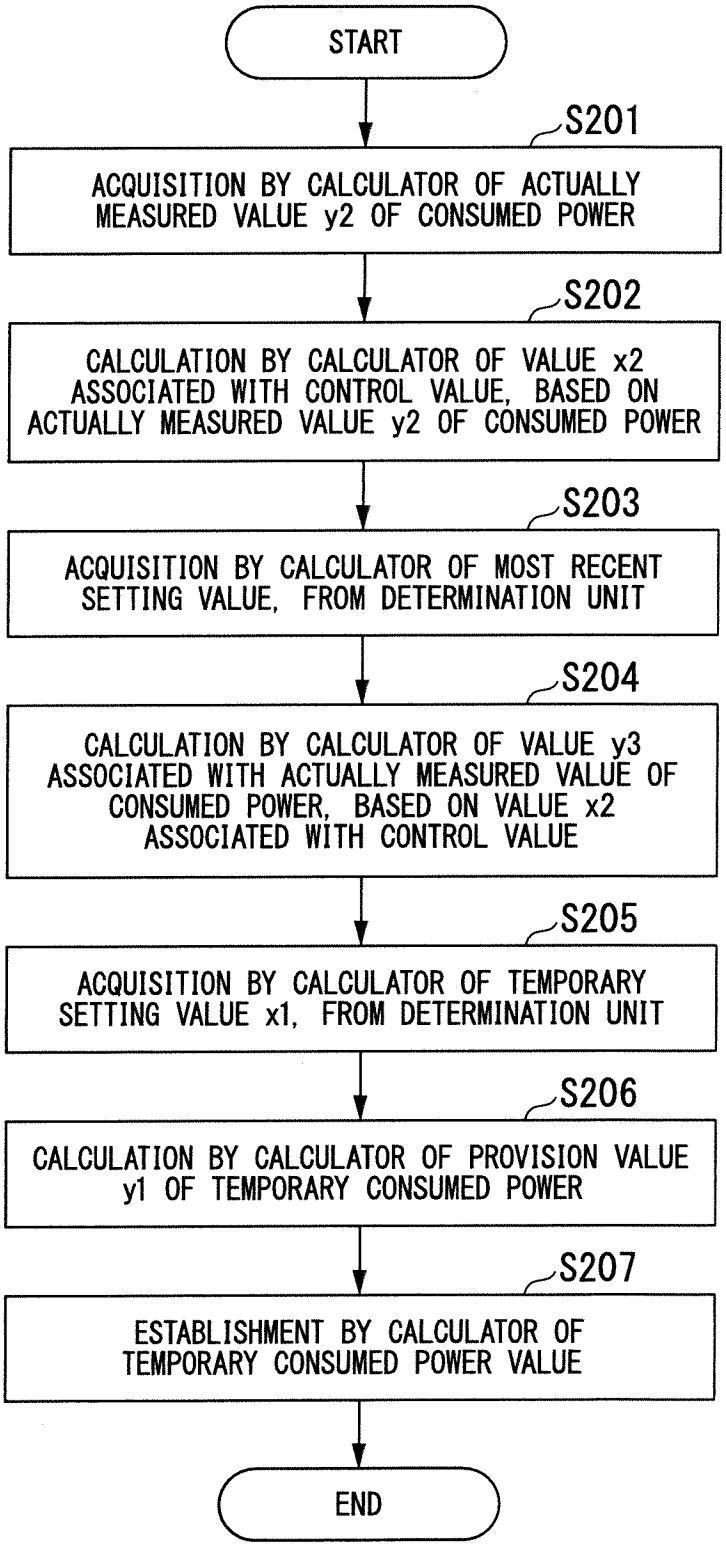

START
S201
ACQUISITION BY CALCULATOR OF ACTUALLY MEASURED VALUE y2 OF CONSUMED POWER
S202
CALCULATION BY CALCULATOR OF VALUE x2 ASSOCIATED WITH CONTROL VALUE, BASED ON ACTUALLY MEASURED VALUE y2 OF CONSUMED POWER
S203
ACQUISITION BY CALCULATOR OF MOST RECENT SETTING VALUE, FROM DETERMINATION UNIT
S204
CALCULATION BY CALCULATOR OF VALUE y3 ASSOCIATED WITH ACTUALLY MEASURED VALUE OF CONSUMED POWER, BASED ON VALUE x2 ASSOCIATED WITH CONTROL VALUE
S205
ACQUISITION BY CALCULATOR OF TEMPORARY SETTING VALUE x1, FROM DETERMINATION UNIT
S206
CALCULATION BY CALCULATOR OF PROVISION VALUE y1 OF TEMPORARY CONSUMED POWER
S207
ESTABLISHMENT BY CALCULATOR OF TEMPORARY CONSUMED POWER VALUE
END

FIG. 6

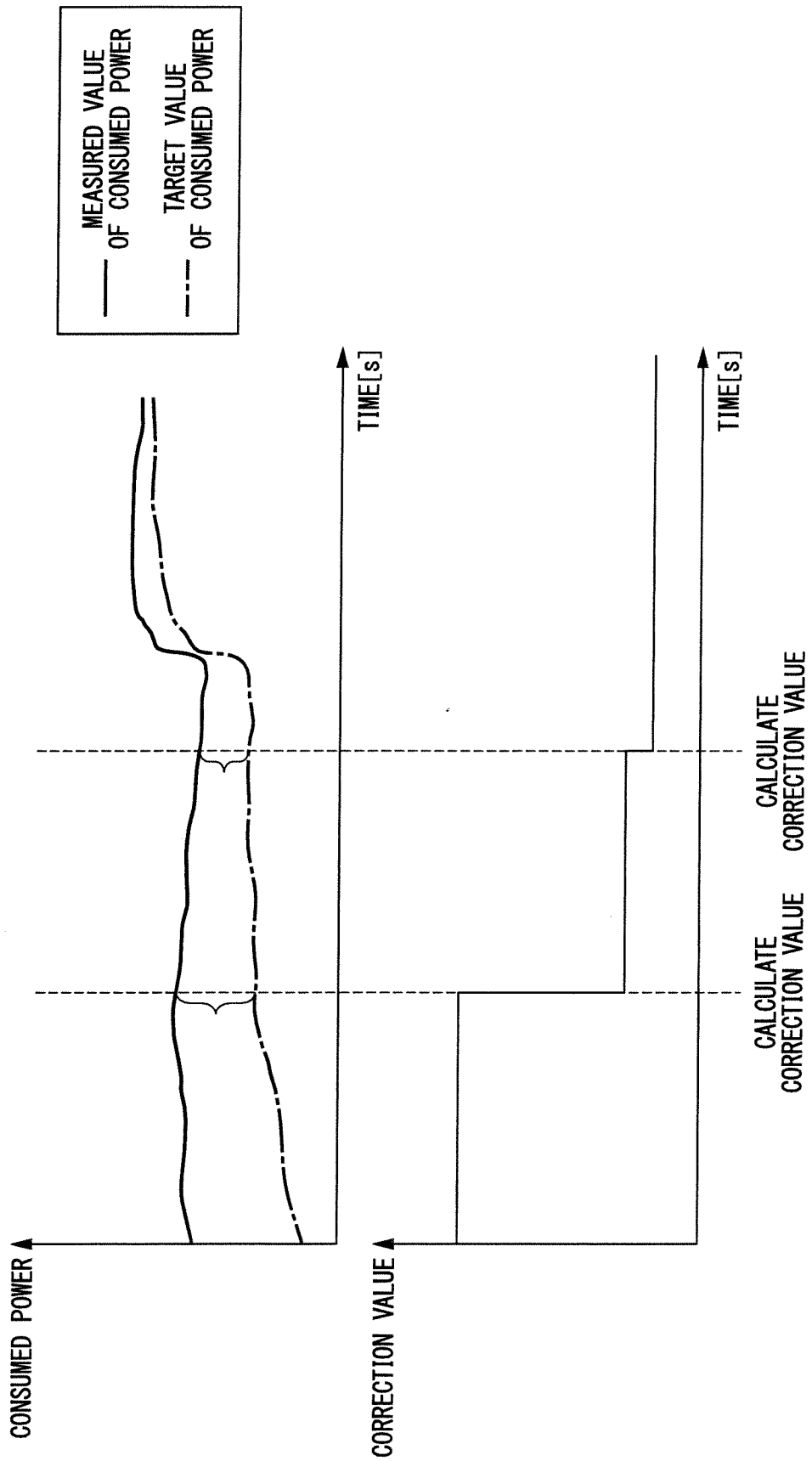

MEASURED VALUE OF CONSUMED POWER
TARGET VALUE OF CONSUMED POWER
CONSUMED POWER
TIME[s]
CORRECTION VALUE
TIME[s]
CALCULATE CORRECTION VALUE
CALCULATE CORRECTION VALUE

FIG. 7

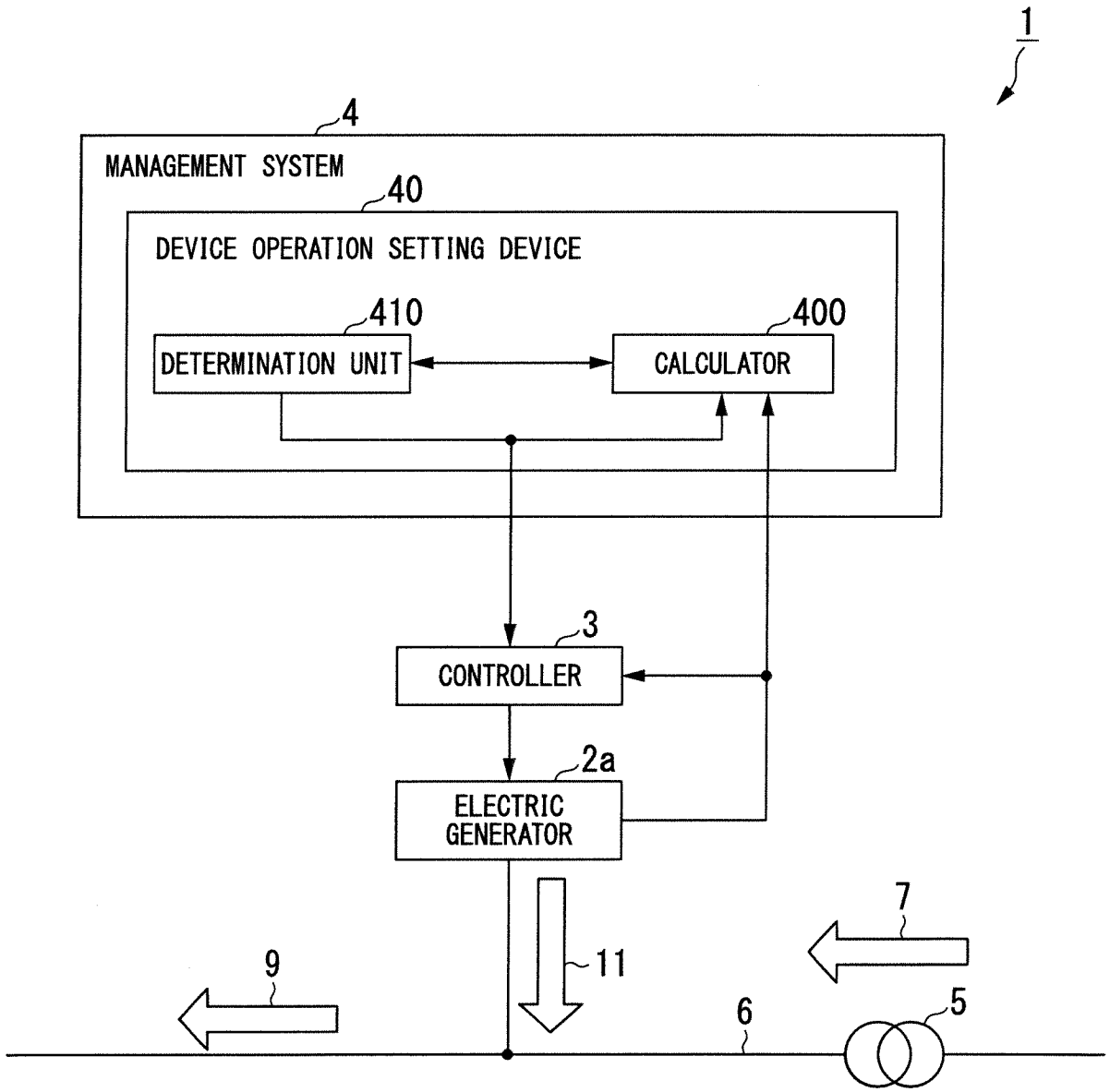

1
4
MANAGEMENT SYSTEM
40
DEVICE OPERATION SETTING DEVICE
410
DETERMINATION UNIT
400
CALCULATOR
3
CONTROLLER
2a
ELECTRIC GENERATOR
7
9
11
6
5

FIG. 8

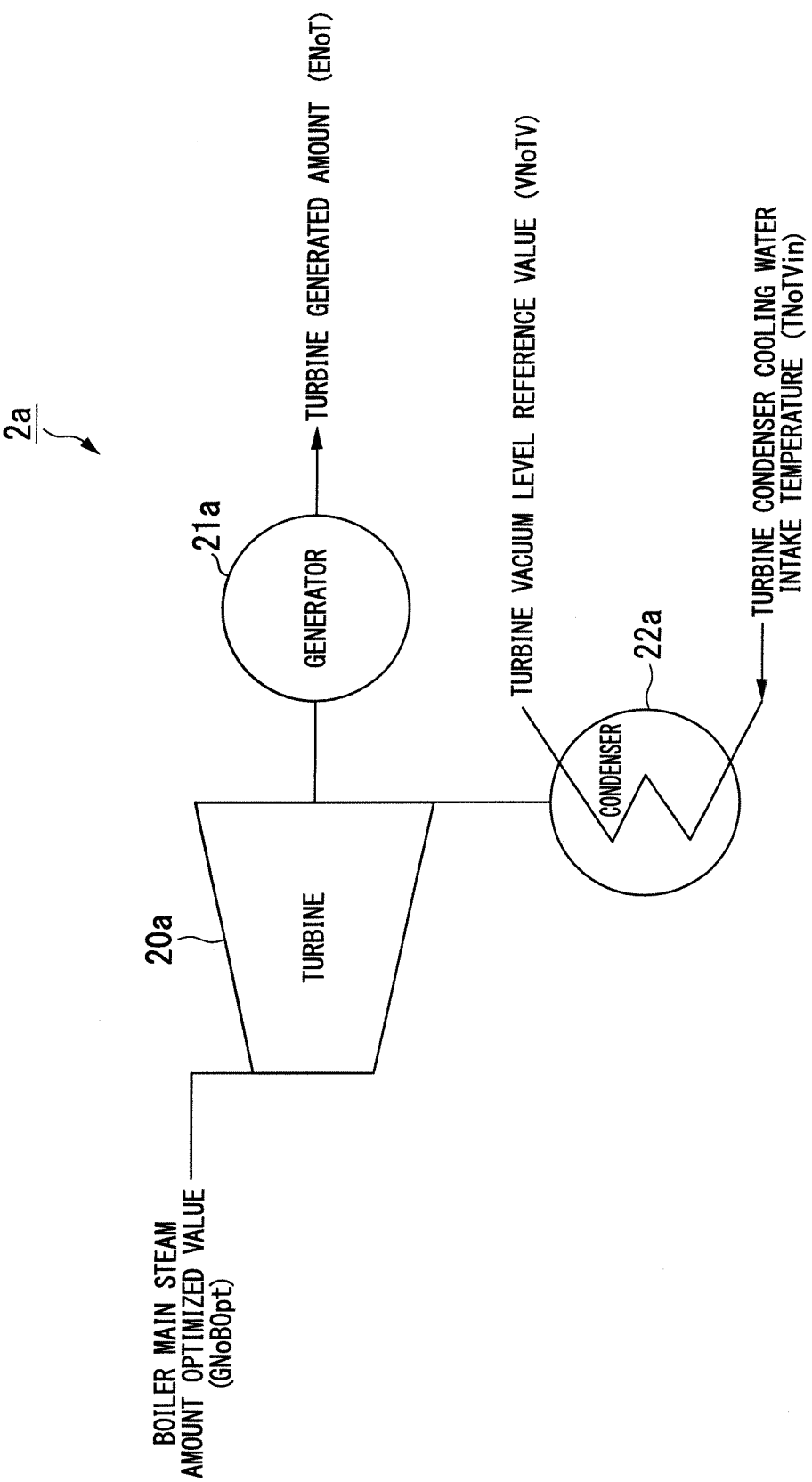
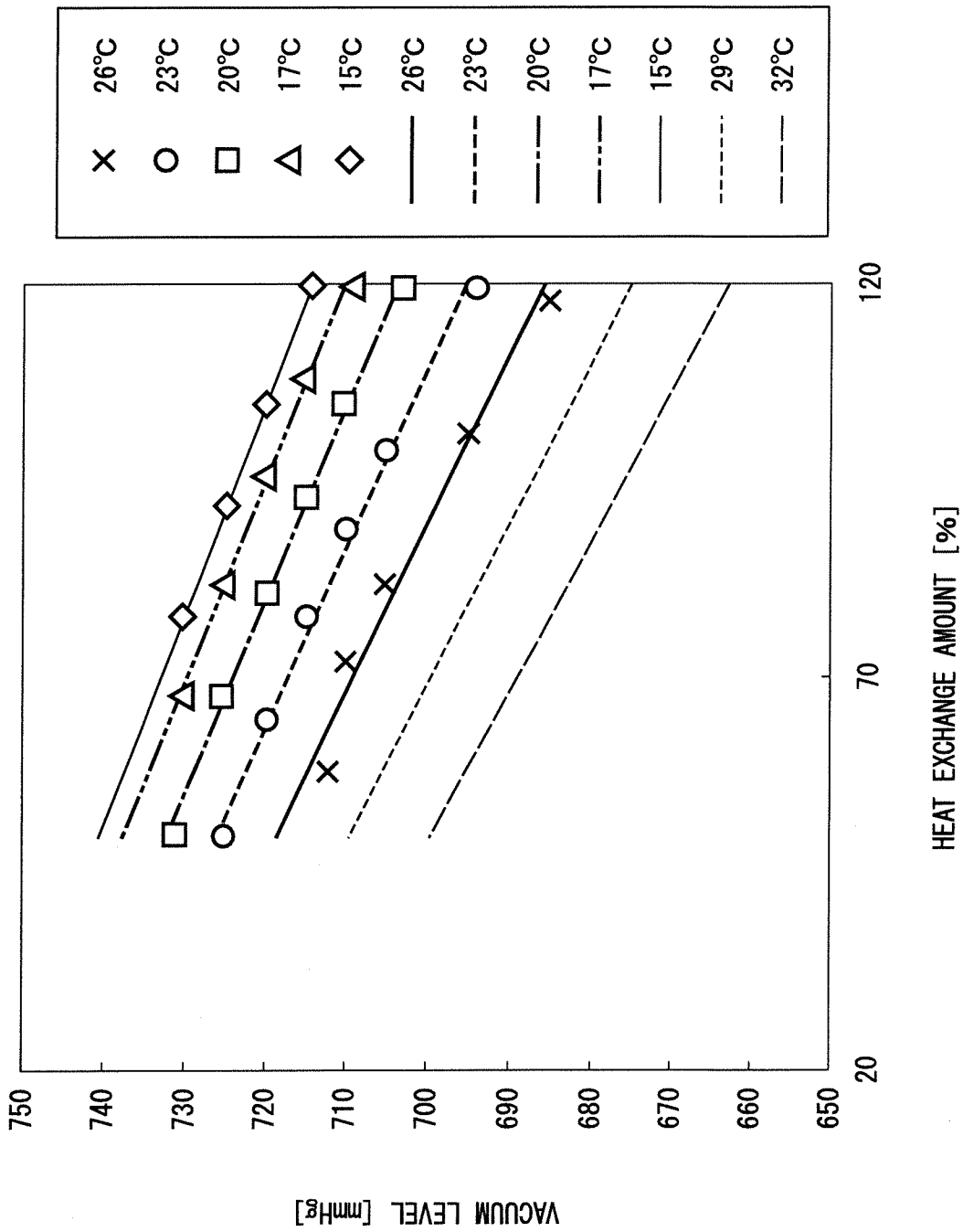

2a
21a
GENERATOR
TURBINE GENERATED AMOUNT (ENoT)
TURBINE VACUUM LEVEL REFERENCE VALUE (VNoTV)
22a
CONDENSER
TURBINE CONDENSER COOLING WATER INTAKE TEMPERATURE (TNoTVin)
20a
TURBINE
BOILER MAIN STEAM AMOUNT OPTIMIZED VALUE (GNoBOpt)

FIG. 9

| ITEM | NAME OF VARIABLE |
|---|---|
| BOILER MAIN STEAM AMOUNT | GNoB |
| TURBINE GENERATED AMOUNT | ENoT |
| TURBINE CONDENSER COOLING WATER INTAKE TEMPERATURE | TNoTVin |
| TURBINE MODEL CONSTANTS a0 TO a7 | aNoT |
| TURBINE CONDENSER MODEL CONSTANTS a0 TO a7 | aNoTV |
| TURBINE CONDENSER FLOW AMOUNT RATING | GNoTex0 |
| TURBINE VACUUM LEVEL REFERENCE VALUE | VNoTV0 |
| TURBINE CONDENSER UPPER LIMIT MODEL CONSTANTS a0 TO a4 | cNoTV_h |
| TURBINE CONDENSER LOWER LIMIT CONSTANTS a0 TO a4 | cNoTV_l |
| TURBINE MAIN STEAM OPTIMIZED VALUE | flg_NoTOpt |
| BOILER MAIN STEAM OPTIMUM VALUE | GNoBOpt |
| TURBINE GENERATED POWER OPTIMUM VALUE | ENoTOpt |
| INFLOW AMOUNT TO CONDENSER | GNoTex |
| OPTIMUM VALUE OF INFLOW AMOUNT TO CONDENSER | GnoTexOpt |
| CONDENSER VACUUM LEVEL OPTIMUM VALUE | VNoTVOpt |
| GENERATED POWER CALCULATED VALUE | ENoTCal |
| GENERATED POWER CALEULATED OPTIMUM VALUE | ENoTOptCal |
| CONDENSER INFLOW AMOUNT CORRESPONDING TO CONDENSER VACUUM LEVEL UPPER LIMIT | GNoTex_h |
| CONDENSER INFLOW AMOUNT CORRESPONDING TO CONDENSER VACUUM LEVEL LOWER LIMIT | GNoTex_l |

FIG. 10


26°C
23°C
20°C
17°C
15°C
26°C
23°C
20°C
17°C
15°C
29°C
32°C
750
740
730
720
710
700
690
680
670
660
650
VACUUM LEVEL [mmHg]
20
70
120
HEAT EXCHANGE AMOUNT [%]

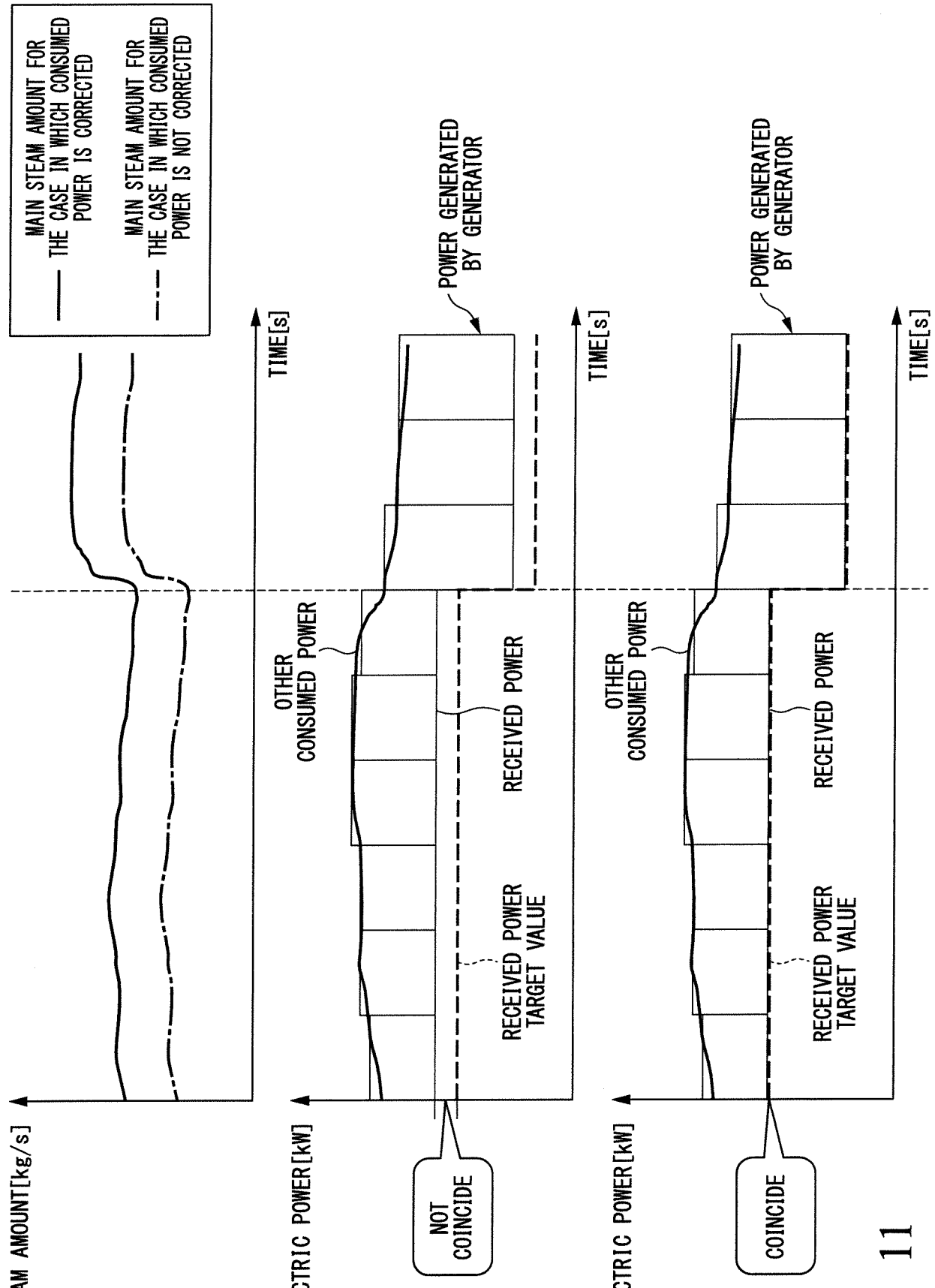
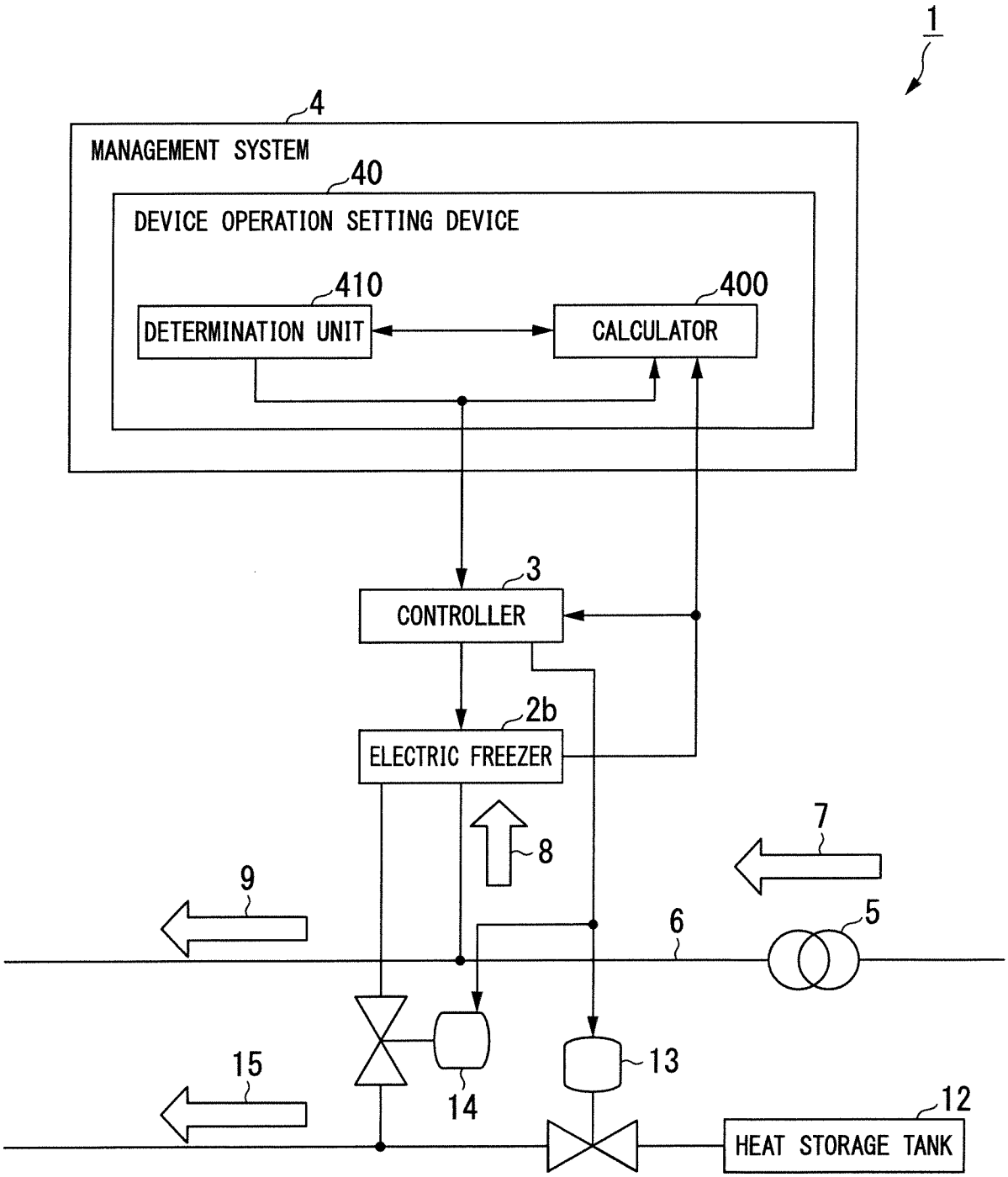

MAIN STEAM AMOUNT FOR THE CASE IN WHICH CONSUMED POWER IS CORRECTED
MAIN STEAM AMOUNT FOR THE CASE IN WHICH CONSUMED POWER IS NOT CORRECTED
MAIN STEAM AMOUNT[kg/s]
TIME[s]
POWER GENERATED BY GENERATOR
OTHER CONSUMED POWER
RECEIVED POWER
RECEIVED POWER TARGET VALUE
ELECTRIC POWER[kW]
NOT COINCIDE
TIME[s]
POWER GENERATED BY GENERATOR
OTHER CONSUMED POWER
RECEIVED POWER
RECEIVED POWER TARGET VALUE
ELECTRIC POWER[kW]
COINCIDE
TIME[s]

FIG. 11

FIG. 12


1
4
MANAGEMENT SYSTEM
40
DEVICE OPERATION SETTING DEVICE
410
DETERMINATION UNIT
400
CALCULATOR
3
CONTROLLER
2b
ELECTRIC FREEZER
8
7
9
6
5
15
14
13
12
HEAT STORAGE TANK

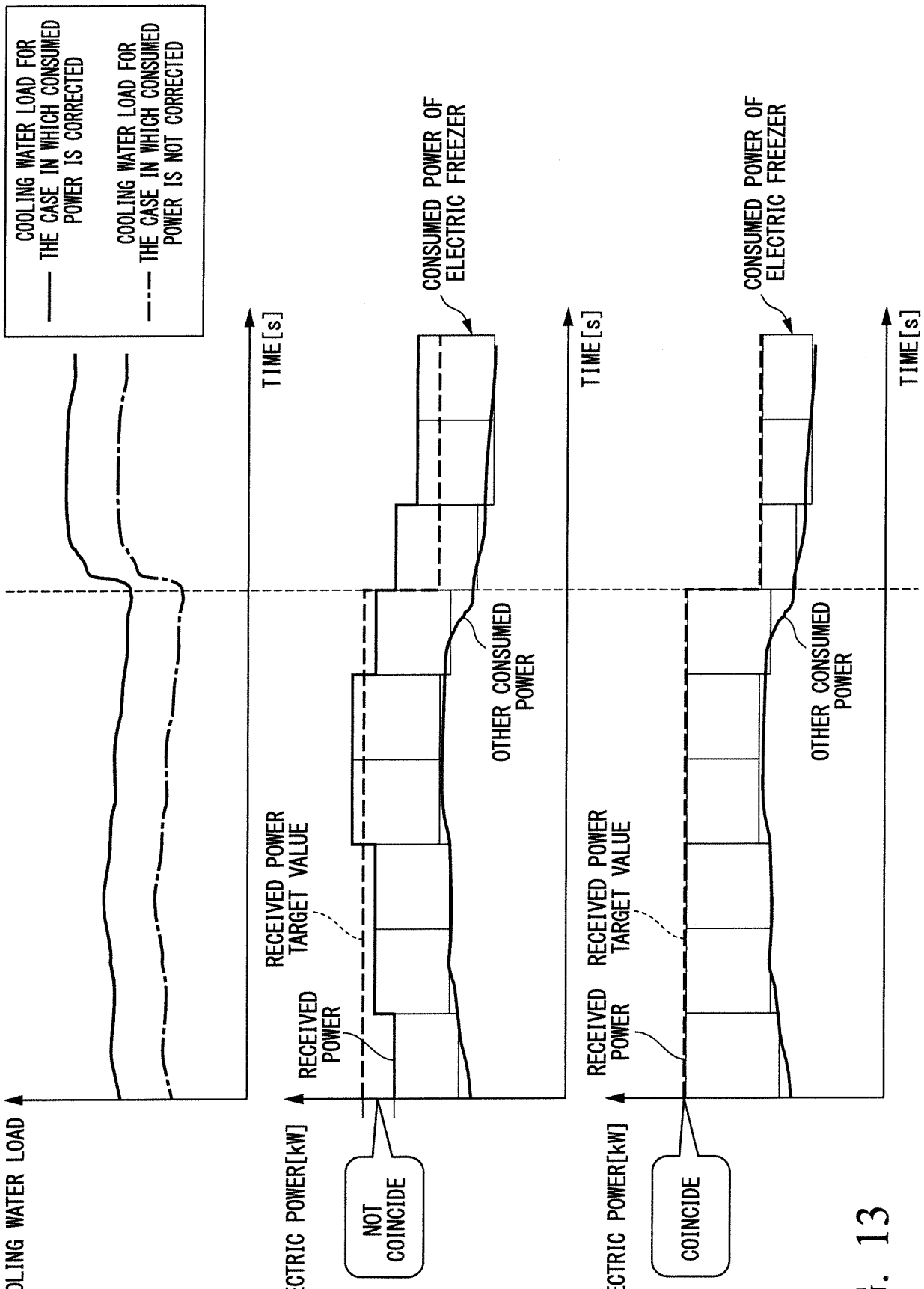

COOLING WATER LOAD FOR THE CASE IN WHICH CONSUMED POWER IS CORRECTED
COOLING WATER LOAD FOR THE CASE IN WHICH CONSUMED POWER IS NOT CORRECTED
COOLING WATER LOAD
TIME[s]
ELECTRIC POWER[kW]
RECEIVED POWER TARGET VALUE
RECEIVED POWER
CONSUMED POWER OF ELECTRIC FREEZER
OTHER CONSUMED POWER
NOT COINCIDE
TIME[s]
ELECTRIC POWER[kW]
RECEIVED POWER TARGET VALUE
RECEIVED POWER
CONSUMED POWER OF ELECTRIC FREEZER
OTHER CONSUMED POWER
COINCIDE
TIME[s]

FIG. 13