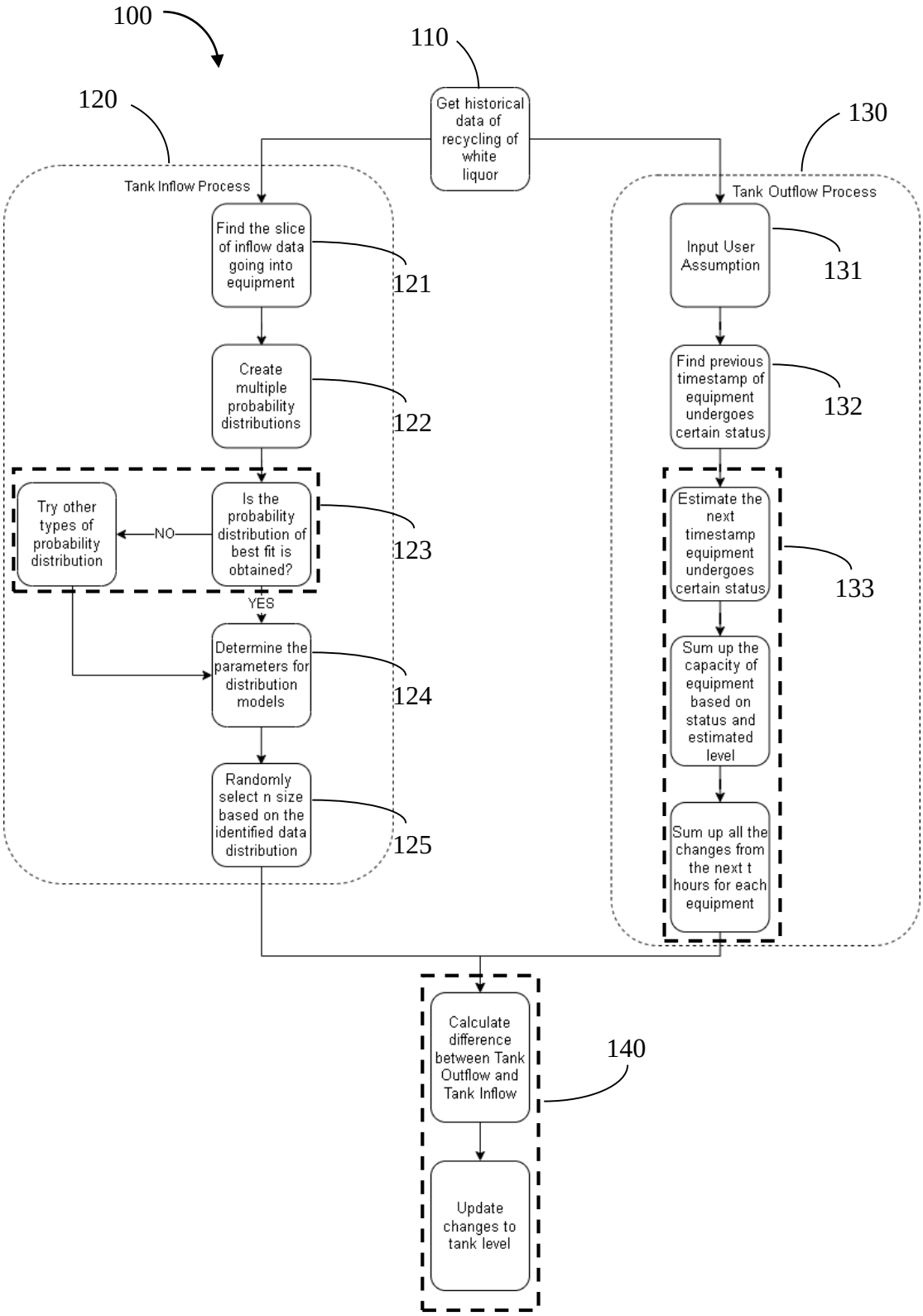

100
110
120
130
Get historical data of recycling of white liquor
Tank Inflow Process
Tank Outflow Process
Find the slice of inflow data going into equipment
121
Create multiple probability distributions
122
Is the probability distribution of best fit is obtained?
123
NO
Try other types of probability distribution
YES
Determine the parameters for distribution models
124
Randomly select n size based on the identified data distribution
125
Input User Assumption
131
Find previous timestamp of equipment undergoes certain status
132
Estimate the next timestamp equipment undergoes certain status
133
Sum up the capacity of equipment based on status and estimated level
Sum up all the changes from the next t hours for each equipment
Calculate difference between Tank Outflow and Tank Inflow
140
Update changes to tank level

Figure 1

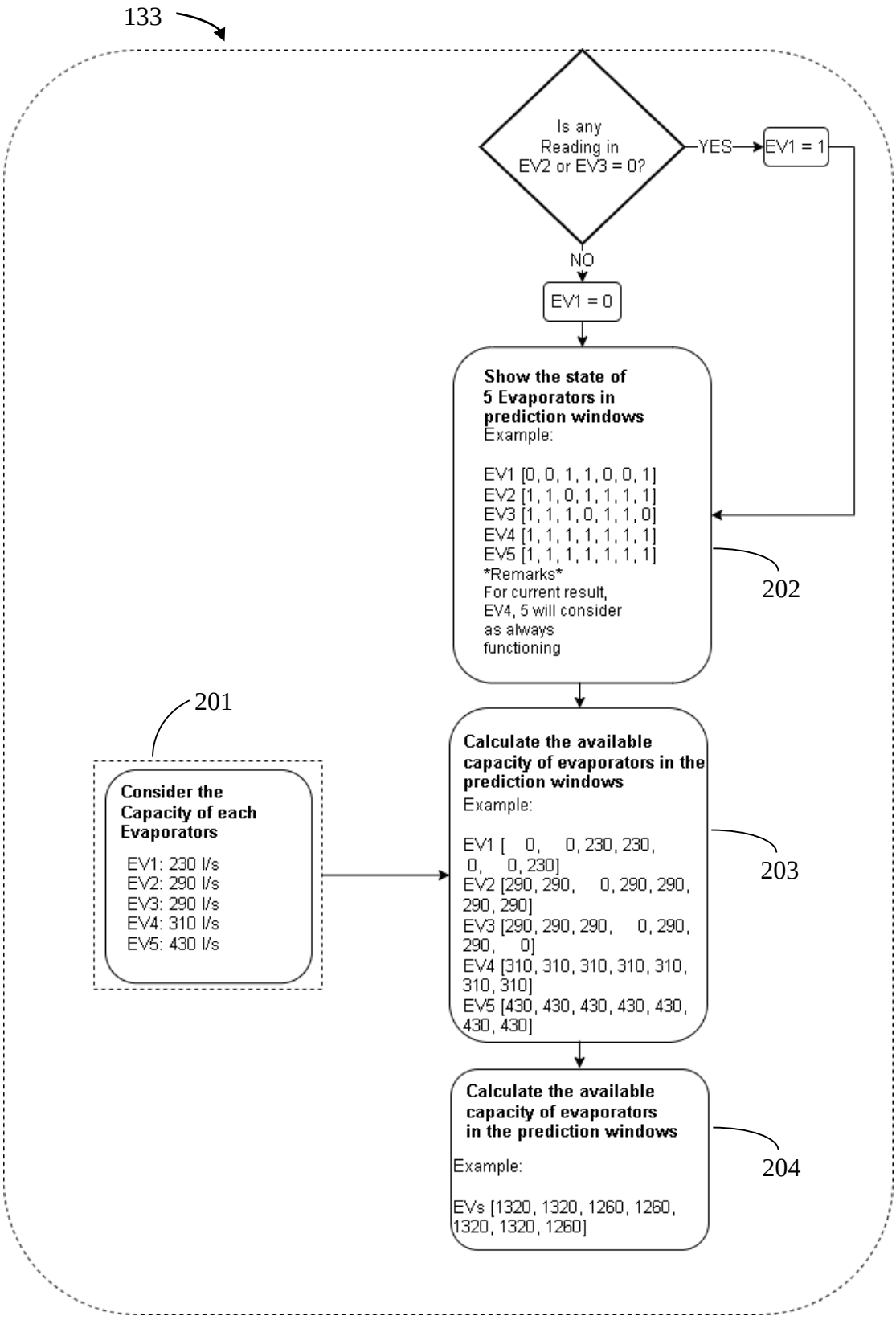

133
Is any Reading in EV2 or EV3 = 0?
YES
EV1 = 1
NO
EV1 = 0
Show the state of 5 Evaporators in prediction windows
Example:
EV1 [0, 0, 1, 1, 0, 0, 1]
EV2 [1, 1, 0, 1, 1, 1, 1]
EV3 [1, 1, 1, 0, 1, 1, 0]
EV4 [1, 1, 1, 1, 1, 1, 1]
EV5 [1, 1, 1, 1, 1, 1, 1]
Remarks
For current result, EV4, 5 will consider as always functioning
202
201
Consider the Capacity of each Evaporators
EV1: 230 l/s
EV2: 290 l/s
EV3: 290 l/s
EV4: 310 l/s
EV5: 430 l/s
Calculate the available capacity of evaporators in the prediction windows
Example:
EV1 [0, 0, 230, 230, 0, 0, 230]
EV2 [290, 290, 0, 290, 290, 290, 290]
EV3 [290, 290, 290, 0, 290, 290, 0]
EV4 [310, 310, 310, 310, 310, 310, 310]
EV5 [430, 430, 430, 430, 430, 430, 430]
203
Calculate the available capacity of evaporators in the prediction windows
Example:
EVs [1320, 1320, 1260, 1260, 1320, 1320, 1260]
204

Figure 2

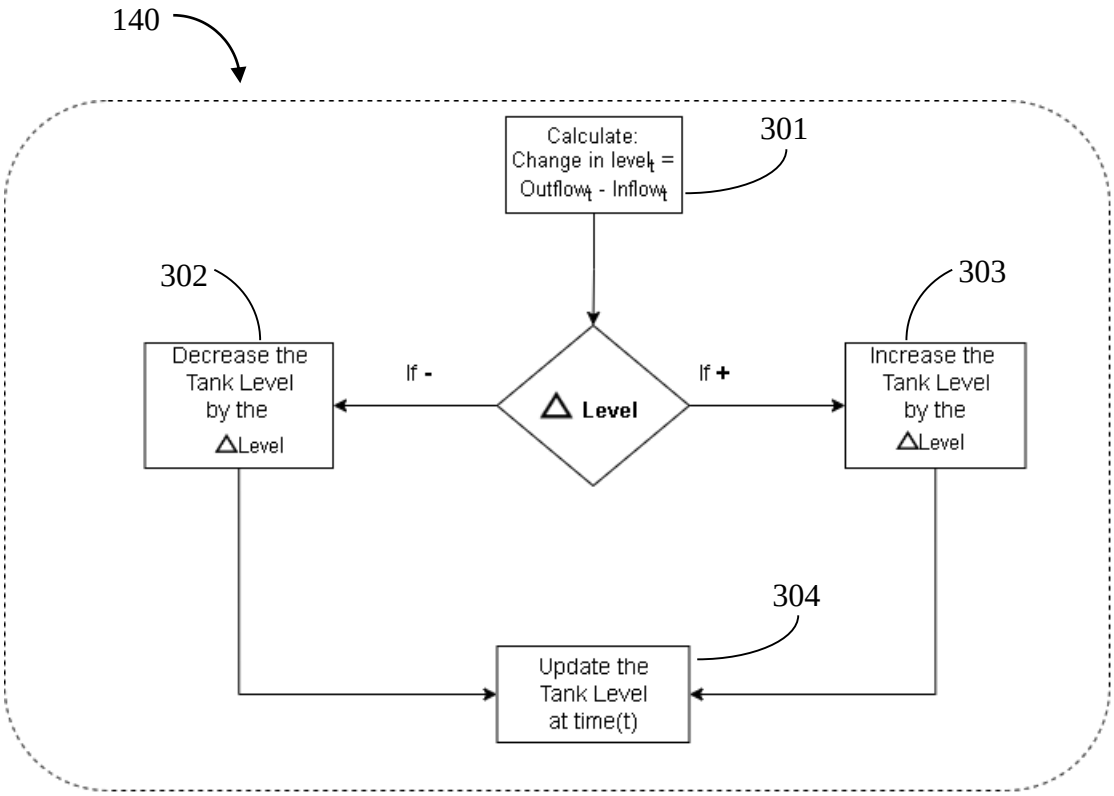
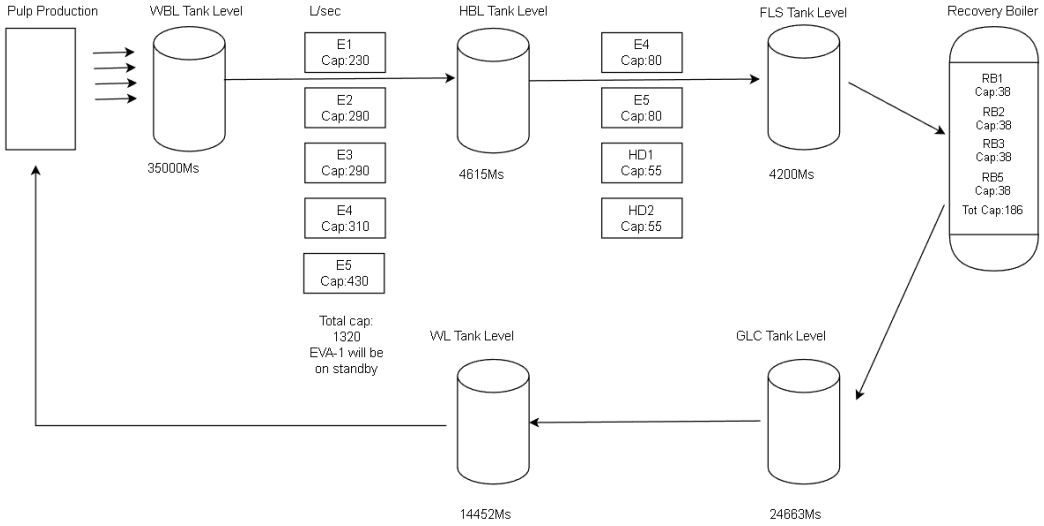

140
Calculate:
Change in level$_t$ =
Outflow$_t$ - Inflow$_t$
301
302
303
Decrease the
Tank Level
by the
△Level
If -
△ Level
If +
Increase the
Tank Level
by the
△Level
304
Update the
Tank Level
at time(t)

Figure 3



	Terms	Full Meaning
1	WBL	Weak Black Liquor
2	HBL	Heavy Black Liquor
3	FLS	Firing Liquor System
4	GLC	Green Liquor Clarifier
5	WL	White Liquor
6	E	Evaporator
7	HD	High Density Concentrate
8	RB	Recovery Boiler

Figure 4